



International Coffee Council
121st Session
9 – 13 April 2018
Mexico City, Mexico

Development of Coffee Trade Flows

Background

1. In accordance with Article 34 of the International Coffee Agreement 2007 and the Programme of Activities for coffee year 2017/18, the International Coffee Organization is required to provide Members with studies and reports on relevant aspects of the coffee sector. This document contains a study on the Development of Coffee Trade Flows comparing the periods 1992-1996 and 2012-2016 and using export data collected by the ICO.

2. The main findings of the study show that during a 20-year period, coffee production increased by 61% and domestic consumption in producing countries doubled. With 72% of green coffee production exported and an average growth of 57% in total exports, coffee remains a primary commodity. The exporting side of the market has experienced a trend towards higher concentration, while the importing side has diversified with 22 countries gaining ground as trade partners. Arabica remains the dominant coffee variety in the global trade, comprising two thirds of total exports. However, Robusta exports have grown faster over the past twenty years. In terms of coffee by form, 91% of exports continue to be in green form but the share of processed coffee exported has increased, opening further growth opportunities in the soluble segment.

Action

The Council is requested to take note of this document.

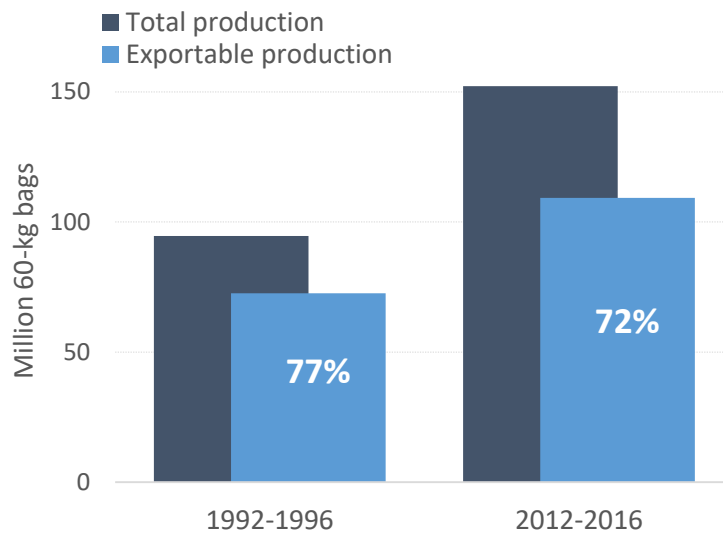
DEVELOPMENT OF COFFEE TRADE FLOWS

I. INTRODUCTION

1. The aim of this study is to present a comprehensive picture of the development of global coffee trade flows in a 20-year period. Comparing the periods 1992-1996 and 2012-2016¹, the study focuses on: (i) tracking the evolution of imports and exports by volume and market, (ii) the analysis of the changes in the share of Arabica and Robusta in total exports, and (iii) the assessment of the role of processed coffee in overall traded volumes.

2. Coffee is a growth market and provides economic benefits at each step of the global value chain, from growers to consumers. Over the past two decades, global production of coffee has increased by almost 61%, from 94.6 million bags on average in the first half of the 1990s to 152.2 million bags on average estimated for 2012-2016. Over this period, domestic consumption in producing countries doubled while the overall market grew by around 55%. As a result, the share of exportable production in global production decreased from 77% to 72% on average (Figure1). However, most coffee produced is still exported, making it one of the most traded agricultural commodities in the world with a total export value of US\$19 billion in 2016.

Figure 1: Share of exportable production in total production

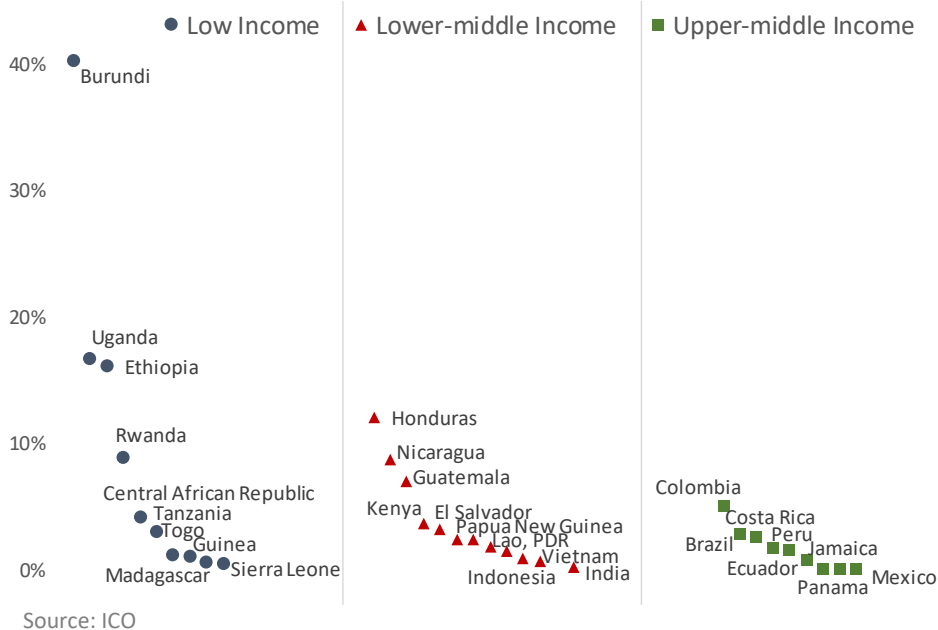


Source: ICO

¹ This study uses export data, collected by the ICO from Member countries, with import data derived from the reported exports. The data focuses on yearly exports by volume (thousand 60-kg bags). It records all trade transactions at country level, from origin to destination countries, between 1992 and 1996, and, 2012 and 2016. Average volumes of trade flows (exports and imports) for the periods 1992-1996 and 2012-2016 were calculated to compare the evolution of coffee trends and to capture the production cycle, seasonal impacts and changes in the market.

3. The global coffee industry contributes to the economies of both exporting and importing countries². At origin, production of coffee provides employment and income directly to an estimated 25 million households. For example, it is estimated that in Colombia, the third largest producer worldwide, 800,000 jobs depend on coffee, representing 17.4% of total rural employment in the country in 2013³. International trade in coffee is also an important source of foreign exchange, as shipments of green and processed coffee represent a high proportion of total exports in many producing countries, and particularly in those with lower income levels (Figure 2). For example, in Burundi, Uganda and Ethiopia the share of coffee in export earnings is between 10% and 40%. Dependence on coffee might be a potential concern in these countries as they are exposed to price fluctuations in a volatile market. Lower- and upper-middle income economies, such as Brazil and Vietnam, have diversified their export sector, making them less exposed to price fluctuations and volatility.

Figure 2: Coffee exports as percentage of total country exports by World Bank income level classification



4. Additional economic benefits are captured by actors along the global value chain, be it as traders, roasters or part of the hospitality industry, most of which are in importing countries. For example, according to the National Coffee Association, it is estimated that in the United States “coffee-related economic activity comprises approximately 1.6% of the total gross domestic product” (GDP) in 2015, with a total economic impact of US\$225.2 billion,

² The term ‘country’ is used in a broad sense for what are officially classed as ‘customs territories’, but which may not be countries in the usual sense of the word. The denomination and classification used herein do not imply, on the part of the ICO, any judgement as to the legal or other status of any territory, or any endorsement or acceptance of any boundary.

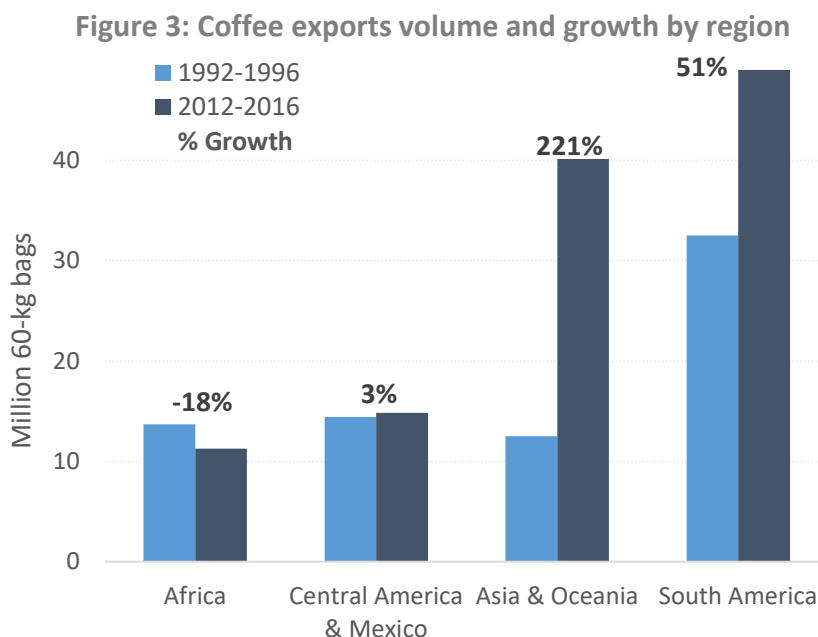
³ https://www.federaciondecafeteros.org/algrano-fnc-es/index.php/comments/el_sector_cafetero_es_motor_de_la_economia_y_garantia_de_estabilidad_y_paz/

1,694,710 jobs and 76% of adults reporting they drink coffee⁴. In a faster growing market, such as the United Kingdom, consumers spent US\$12.1 billion⁵ in coffee shops in 2015, which represented a 0.4% contribution to GDP in that year.

II. EXPORTS

A. Development of export volume

5. Between the two five-year periods 1992-1996 and 2012-2016, the average volume of coffee exports grew by 57%, with 42.1 million more bags traded globally. In terms of regional exports, the highest growth was in Asia, where exports tripled in 20 years. Coffee exports from South America also increased significantly by 51%, while those from Central America showed some stagnation and increased by just 3%. Africa's exports experienced a reduction in volume of 17.6% (Figure 3).



Source: ICO

6. Analysing growth in exports by region conceals differences between individual countries. Further disaggregation of the data shows that the growth in South America was mainly the result of good performance in Brazil and Peru, where coffee exports doubled and nearly tripled, respectively (Figure 4). This expansion offset losses in other countries in the region. In Central America, Honduras and Nicaragua were the best performing countries with exports being almost three times higher than in the early nineties. Other countries in the region experienced a reduction in their coffee exports, with the largest losses in El Salvador and Cuba, which can be partially attributed to the coffee leaf rust crisis.

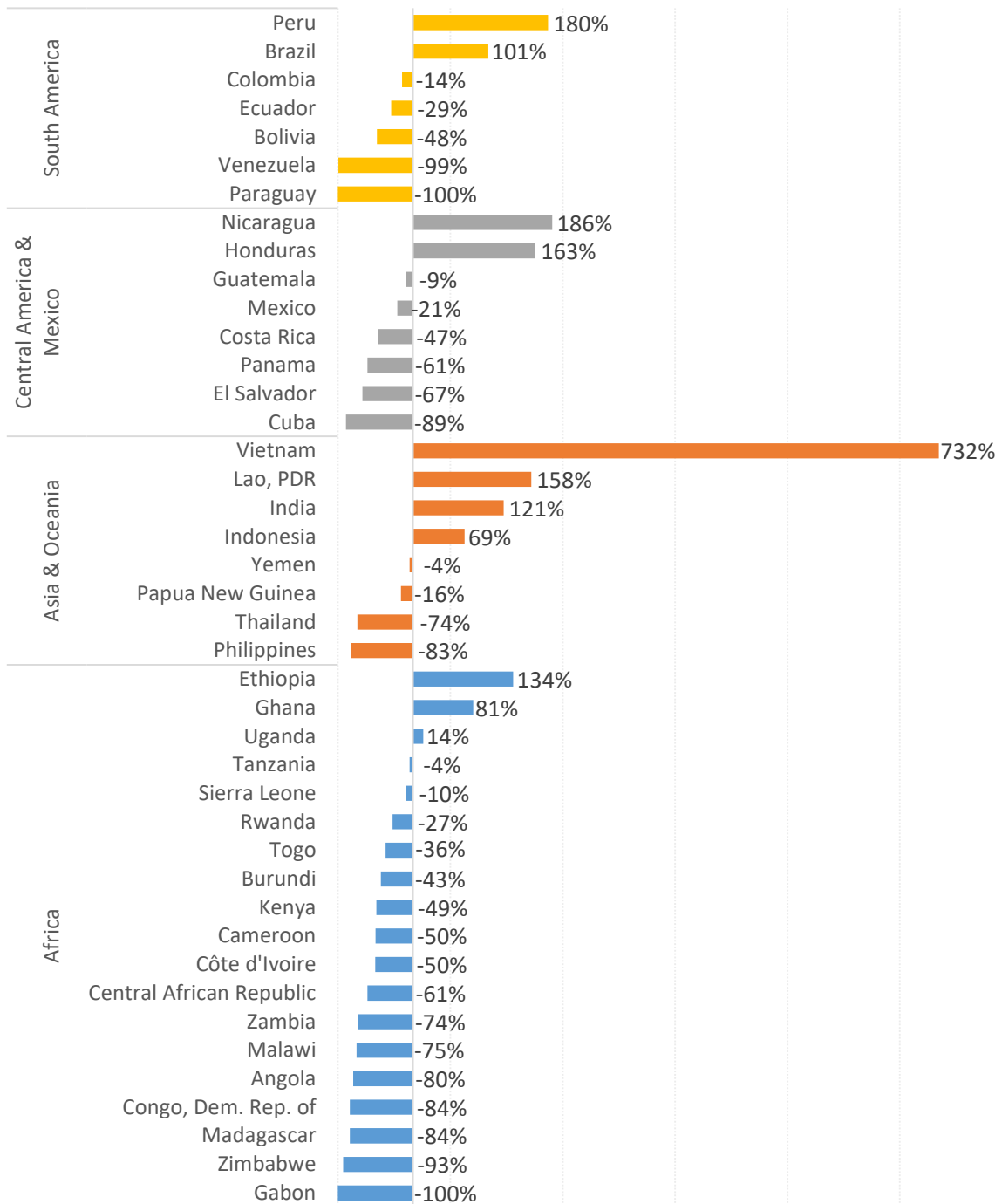
⁴ <http://www.ncausa.org/Industry-Resources/Economic-Impact>

⁵ <http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/12048234/Coffee-shops-stir-7.9bn-into-market-as-cafe-culture-dominates.html>.

7. In Asia and Oceania, Vietnam, India and Indonesia experienced gains in their coffee exports, with average growth rates of 732%, 121% and 69%, respectively.

8. In contrast, African exports suffered a significant decrease (-18%) due to an average 50% reduction in coffee production in most African countries, although Ugandan exports increased by 14% and Ethiopian exports stand out with a high growth of 134%.

Figure 4: Growth of coffee exports by country between 1992-1996 and 2012-2016 (in %)

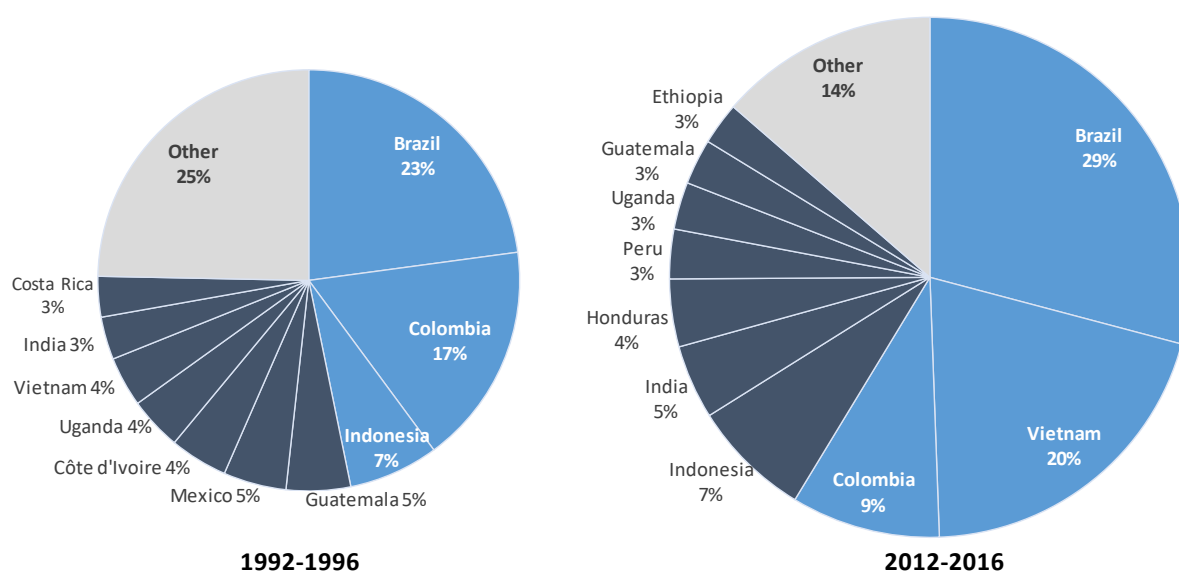


Source: ICO

B. Concentration of exports

9. As a result of changes in export volumes across countries, fewer origins represent a larger share of exports today. Plotting exports by country reveals that the ten main coffee exporting countries covered 75% of global exports (Figure 5) in the 1992-1996 period. Twenty years later, the ten main coffee exporting countries cover 86% of the global trade, which is an indication of higher market concentration on the exporting side. The ranking of producers has also changed, Vietnam climbed to second place while India moved up to the fifth place. Honduras, Peru and Ethiopia entered the list of the ten largest exporters, while Mexico, Côte d'Ivoire and Costa Rica dropped out.

Figure 5: Share of global coffee exports by country



Source: ICO

10. The Herfindahl–Hirschman Index (HHI)⁶, a measure of market concentration, is employed to validate quantitatively the results from plotting the data. This measure is useful for evaluating the concentration of export origins in both time periods. The HHI calculated for global coffee exports, using the market share of the 57 exporting countries, is 0.102 for 1992-1996 and 0.149 for 2012-2016 (Table 1). This indicates that the exporting side of the coffee market is characterized by moderate concentration during both periods. The HHI values also confirm that the level of concentration of exporters increased in the last 20 years.

⁶ The HHI is calculated as the sum of the squares of the market shares. Formally, $HHI = \sum_{i=1}^N s_i^2$, where s_i is the market share of country i in the market, and N is the number of countries. The result is a weighted average of market shares, with values ranging from 0 to 1, where 0 indicates no concentration and 1 full concentration in the market (this would be the case of a monopoly). The UK's Competition and Markets Authority (CMA) defines a market as 'concentrated' (CMA, 2010) if the HHI is higher than 0.1 (or 10%) and as 'highly concentrated' if the HHI is higher than 0.2. The US Federal Trade Commission (US FTC) defines a slightly different threshold with HHI values above 0.18 as a 'highly concentrated market', and above 0.1 as 'moderately concentrated' (FTC, 2015). A market with a HHI below 0.1 is usually considered as 'non-concentrated'.

Table 1: HHI reference thresholds and HHI of concentration of coffee exports

Market characterization	HHI thresholds		HHI of Global Coffee Exports	
	CMA	US FTC	1992-1996	2012-2016
No concentration	≤ 0.1	≤ 0.1		
[Moderate] Concentration	$0.1 > \text{HHI} < 0.2$	$0.1 > \text{HHI} < 0.18$	0.102	0.149
High concentration	≥ 0.2	≥ 0.18		

Thresholds source: CMA (2010) and FTC (2015).

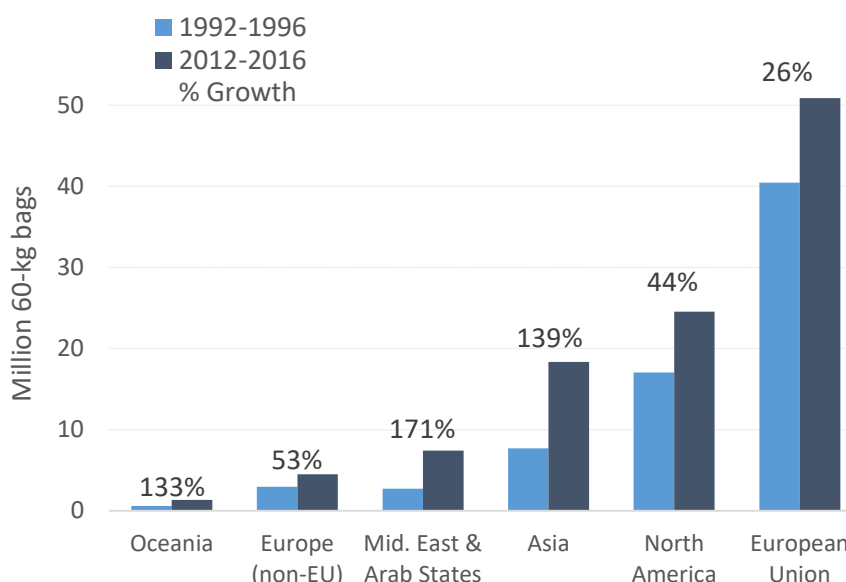
HHI calculations: ICO

III. IMPORTS

A. Development of import volume

11. Turning to the importing side of global trade in coffee, the emergence of new markets becomes apparent. Since the early nineties, North America and the European Union (EU) have increased their coffee imports in volume by 44% and 26%, respectively (Figure 6). However, their combined global market share has fallen to 65%, compared to 79% two decades ago. This is the result of growing imports by Asia, the Middle East and Arab states and the rest of Europe (non-EU), which increased their shares in the market to 15%, 7% and 5%, respectively. Among these ‘non-traditional markets’, the highest growth in the volume of coffee imports was in the Middle East and Arab States (171%) followed by Oceania (133%) and Asia (131%).

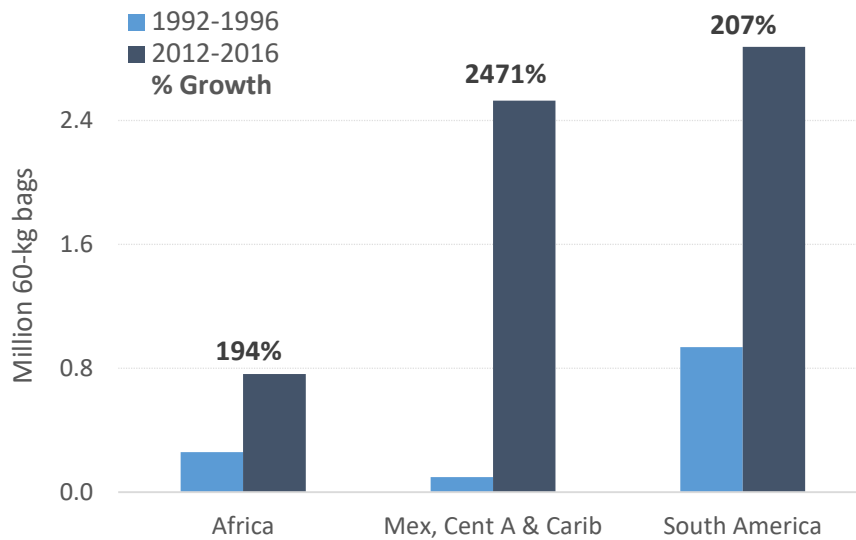
Figure 6: Coffee imports volume and growth by region



Source: ICO

12. Imports by producing countries have also greatly increased over the past 20 years, albeit from a low base (Figure 7). Some countries, such as Ecuador, began to import green coffee for their emerging soluble industry when demand started to exceed supply of locally grown coffee. On balance, the role of coffee-producing countries as importers remains marginal with none of the producing regions exceeding a share of on average 2.5% in total imports in the period 2012-2016.

Figure 7: Coffee imports of producing countries (volume) and growth by region

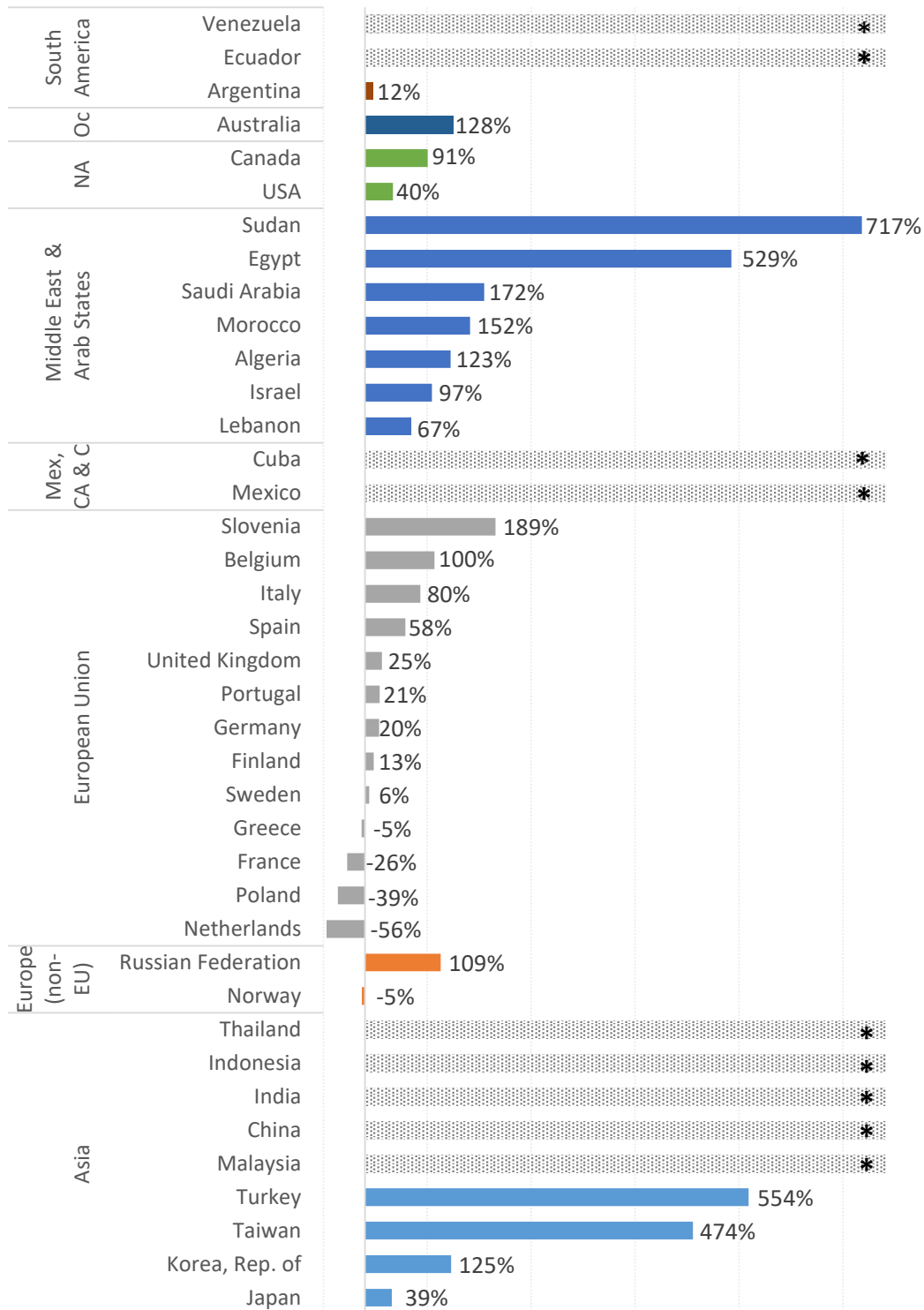


Source: ICO

13. Figure 8 details the individual growth rates of imports by country, listing the 40 countries which absorbed 90% of the global coffee exports in 2012-2016. Countries in light grey recorded particular strong growth in their imports, albeit from a small base. This is a group of ten countries in Asia and Latin America, including India, Indonesia, Mexico and Ecuador.

14. Among the other 30 countries, the strongest growth was observed in 'non-traditional markets': Turkey (Asia), Taiwan (Asia) and Australia (Oceania) experienced remarkable increases in their coffee imports growing by 554%, 474% and 128%, respectively. Countries in the Middle East and Arab States had an average growth of 162%.

Figure 8: Growth of coffee imports by country between 1992-1996 and 2012-2016 (in %)



* Increase of more than ten-fold

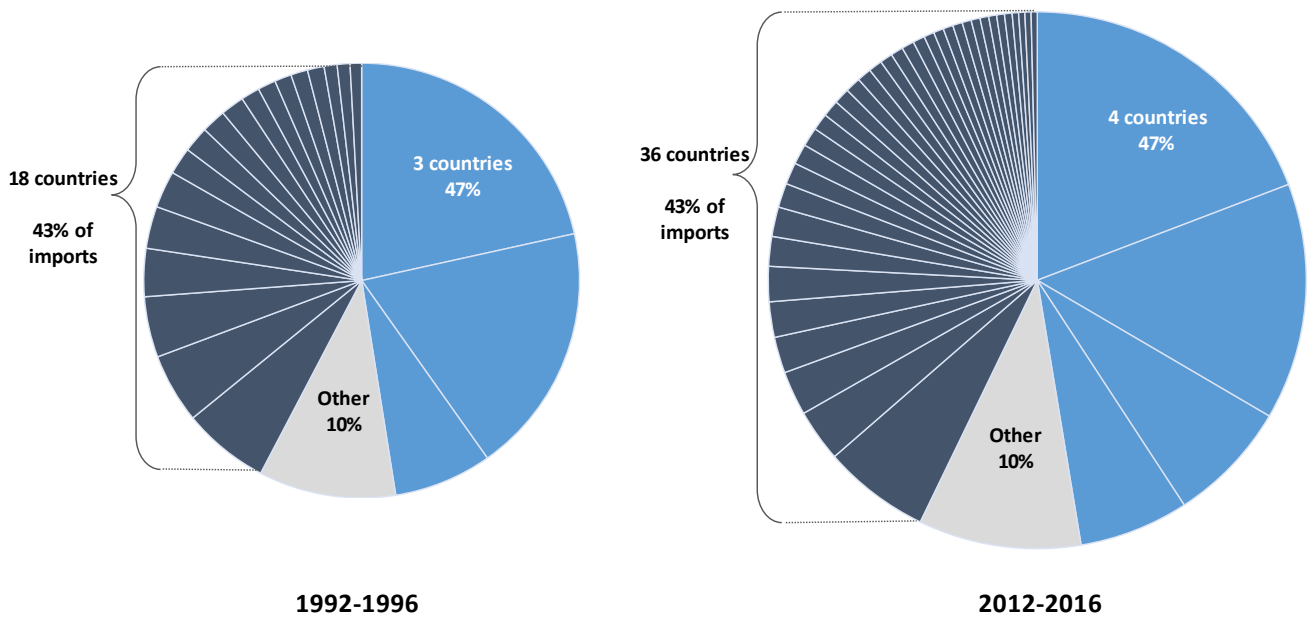
Oc: Oceania, NA: North America, CA & C: Central America & Caribbean.

Source: ICO

B. Diversification of importers

15. While a concentration on the exporter side of the market can be observed, there is a reverse trend on the side of importers. The number of countries that imported 90% of the coffee trade in 2012-2016, almost doubled from 21 to 40 since 1992-1996 (Figure 9).

Figure 9. Share of global coffee imports by country



Source: ICO

16. The group of 40 countries includes 22 additional countries where imports grew by an average of 386% between 1992-1996 and 2012-2016. Three countries (Singapore, Switzerland and Denmark) dropped out of the initial group of 21 countries that accounted for 90% of imports in 1992-1996.

17. Analogous to the export side, the HHI is calculated for the importing side of the global coffee market, using the market share of all importers in both periods. The HHI values are 0.101 for 1992-1996 and 0.077 for 2012-2016 (Table 2). This validates the results from plotting the data and indicates that the importing coffee market has moved from ‘moderate concentration’ to a ‘non-concentrated’ market in 20 years, in terms of destination countries.

Table 2: HHI reference thresholds and HHI of concentration of coffee imports

Market characterization	HHI thresholds		HHI of Global Coffee Imports	
	CMA	US FTC	1992-1996	2012-2016
No concentration	<= 0.1	<= 0.1		0.077
[Moderate] Concentration	0.1 > HHI < 0.2	0.1 > HHI < 0.18	0.101	
High concentration	>= 0.2	>= 0.18		

Thresholds source: CMA (2010) and FTC (2015).

HHI calculations: ICO.

18. While the destination of trade flows is becoming more diversified, as mentioned above, the coffee industry is also undergoing a process of consolidation. For example, a series of company transactions have resulted in a combined market share of 39% on global coffee sales by the two biggest coffee companies in the USA and Europe.

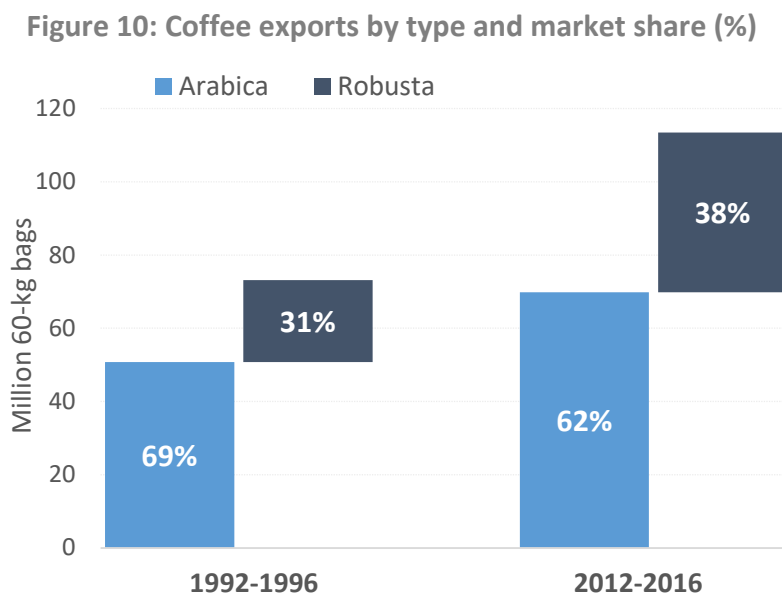
19. Highlighting the trade flows from the ten largest exporters, Figures A1a and A1b in the Annex provide an additional more detailed visualization of the global coffee trade flows from exporting countries to importing regions in the last 20 years. The data is plotted using Sankey diagrams, in which the width of the arrows shows the magnitude of the flow.

20. Figures A2a and A2b in the Annex depict the global coffee trade flows from exporting countries to countries that absorb 90% of the total global exports, in the periods 1992-1996 and 2012-2016, highlighting the trade flows from the top five exporters.

IV. COFFEE TRADE BY TYPE (ARABICA/ROBUSTA)

A. Exports

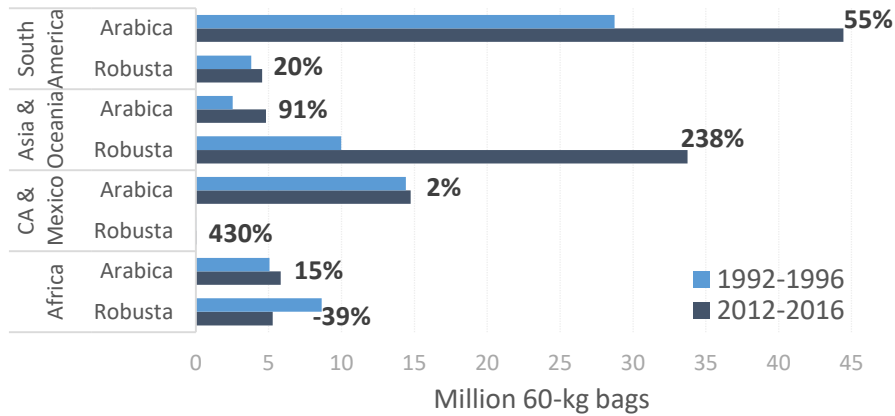
21. Over the past twenty years, the global coffee market has also seen a shift in the importance of Robusta compared to Arabica coffee. In terms of global coffee exports, Arabica coffee represented 62% in 2012-2016, seven percentage points lower than in 1992-1996 (Figure 10). The change in market share is the result of a 95% increase in Robusta coffee exports in the last two decades, while the increase in the volume of Arabica coffee exports during the same period was only 38%.



Source: ICO

22. The strong growth in exports of Robusta coffee is mainly due to a 238% increase in exports from Asia, particularly Vietnam (Figure 11). In South America, Arabica exports grew significantly more than Robusta exports. Africa is the only region where Robusta coffee exports fell (-39%) while exports of Arabica coffee increased (+15%).

Figure 11: Coffee exports and growth by type and region

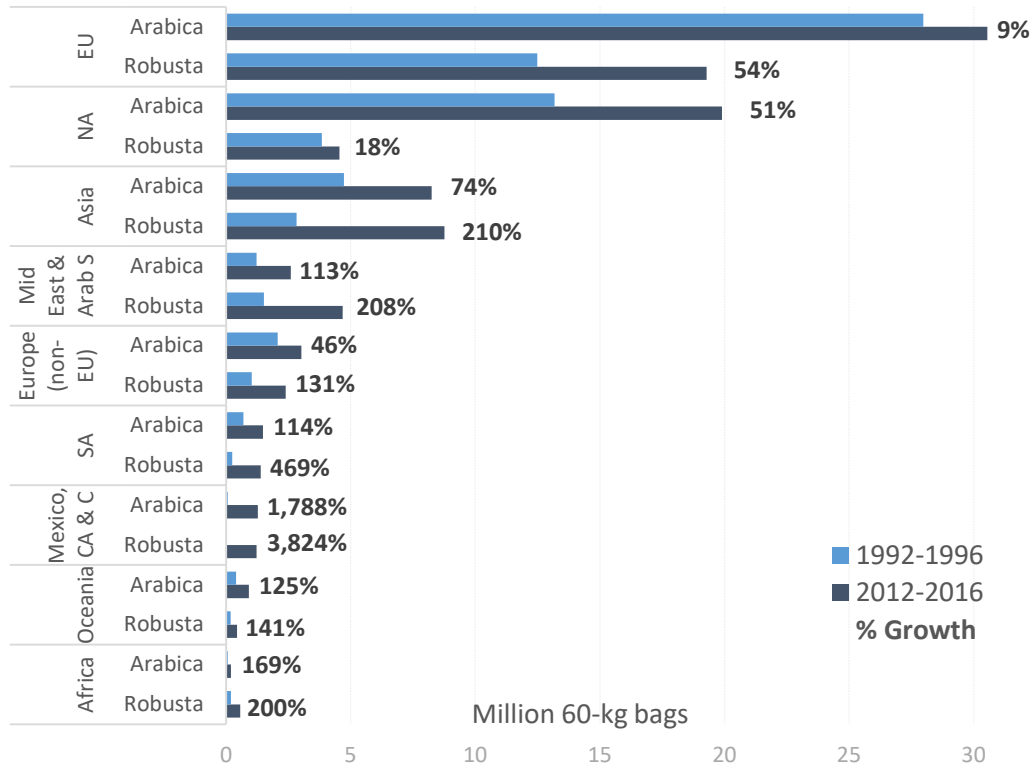


CA: Central America
Source: ICO

B. Imports

23. On the demand side, the volume of Robusta coffee imports increased at a higher rate than Arabica imports across all regions, except North America (Figure 12). Arabica is imported in higher proportions than Robusta in the European Union, the rest of Europe, North, Central and South America, and Oceania, while Robusta is favored in Asia, the Middle East and Arab States and Africa. This reflects the preference for Arabica, which is consumed as fresh coffee in traditional markets of high-income countries, compared to emerging low and middle income countries where Robusta is consumed in soluble form.

Figure 12: Coffee imports and growth by type and region



NA: North America, SA: South America, CA & C: Central America & Caribbean.
Source: ICO

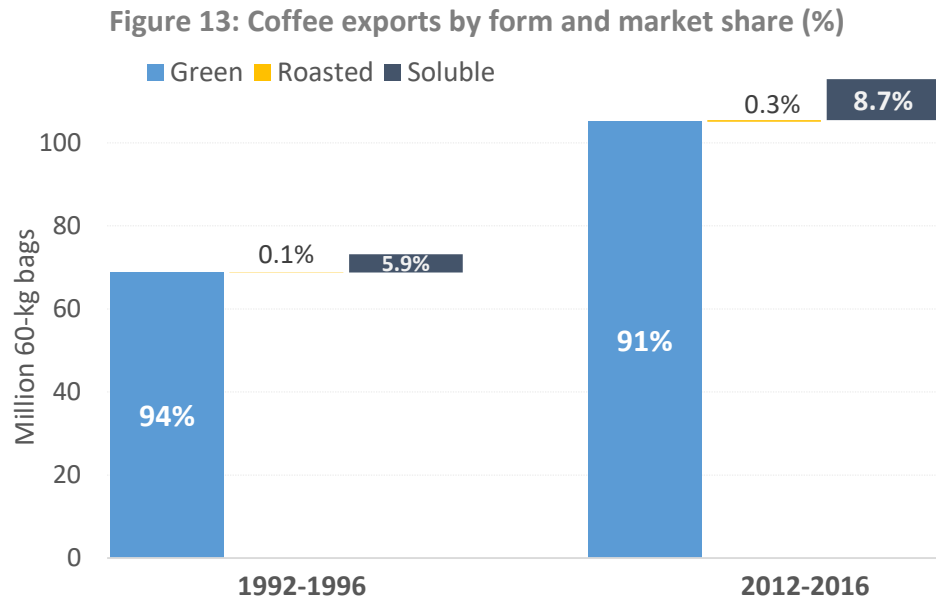
24. Between the period 1992-1996 and 2012-2016, a wider set of countries has become importers of Arabica coffee. The number of countries that absorbed 90% of exports increased from 18 to 29, with greater participation from ‘non-traditional markets’. Figures A3a and A3b in the Annex show a visualization of the trade flows to the group of countries that imported 90% of Arabica coffee in 1992-1996 and 2012-2016.

25. Similar to the Arabica segment, the importer base in the global Robusta market increased. The set of countries absorbing 90% of exports increased from 21 to 37. Annex figures A4a and A4b visualize the trade to the group of countries that imported 90% of Robusta in 1992-1996 and 2012-2016.

V. TRADE BY FORM OF COFFEE

26. In this section we turn to coffee exports by form, i.e. green, roasted and soluble. The overall picture has not changed significantly over the past 20 years, as the vast majority of coffee is still traded in green form. Hence, most of the value addition in the coffee industry occurs in importing countries. As depicted in Figure 13, green coffee exports represented 94% of total exports in 1992-1996 and still made up 91% in 2012-2016. Exports of other forms of

coffee have increased only slightly. Exports of roasted coffee have increased by 342% in the last two decades, albeit from a low base. Exports of soluble coffee more than doubled but remain small in volume terms.



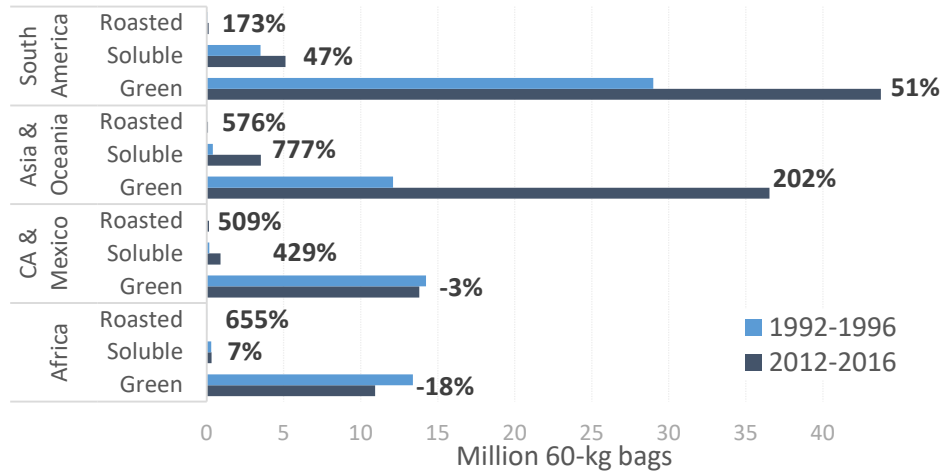
Source: ICO

27. The breakdown by region, presented in Figure 14, reveals that the majority of green and soluble coffee exported globally consistently stems from South America. Between 1992-1996 and 2012-2016, annual green coffee exports of this region increased on average by 51% to 43.8 million bags, while annual soluble shipments rose by almost 47% to 5.1 million bags Green Bean Equivalent (GBE).

28. Exports of soluble coffee also experienced high growth rates in Asia, Central America and Mexico, regions that now ship up to eight times the volume of soluble coffee exported in the early nineties.

29. Central America and Mexico, on the other hand, accounted for the lion's share of global roasted coffee exports. The shipments increased from 24,000 bags GBE per annum on average in 1992-1996 to 146,000 bags GBE in 2012-2016. The largest increase in roasted coffee exports was recorded in Africa, growing almost seven-fold in twenty years. However, as the overall volume of roasted coffee exports from Africa remains marginal, the positive development in the roasted coffee segment does not offset the significant decline in the green coffee segment.

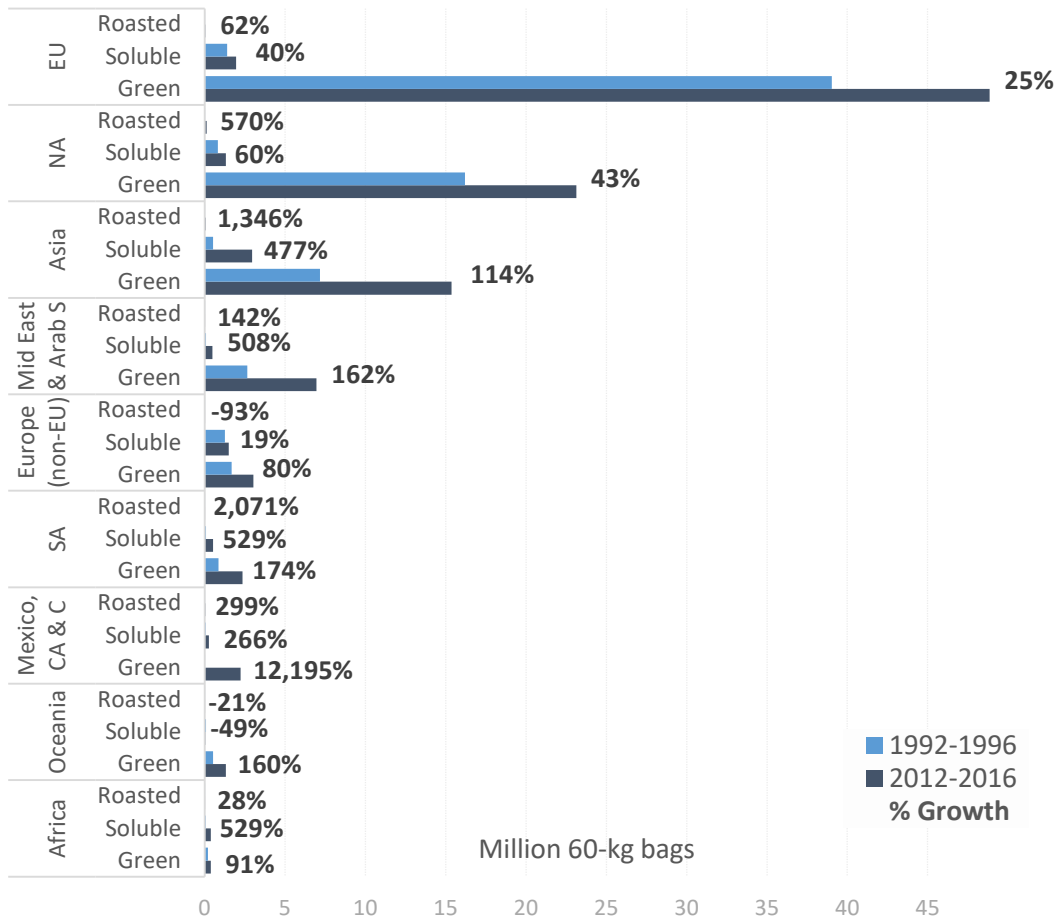
Figure 14. Coffee exports and growth by form and region



CA: Central America.
Source: ICO

30. On the importing side, the Oceania region (largely Australia) is now importing less processed coffee and more green coffee than in the early nineties. In the remaining regions, imports of processed coffee increased sharply compared to the early nineties (Figure 15).

Figure 15: Coffee imports and growth by form and region



NA: North America, SA: South America, CA & C: Central America & Caribbean.
Source: ICO

VI. CONCLUSIONS AND OUTLOOK

31. This study analyses the evolution of global coffee trade flows by origin, export destination, variety and type between 1992-1996 and 2012-2016.

32. There are five main findings:

- (a) **Over the period, coffee production and exports have increased by 61% and 57% respectively.** While an increasing share of total production is consumed domestically, creating new markets for coffee growers, 72% of green coffee production is exported, thus coffee remains a primary commodity.
- (b) **On the exporting side of the market there is an ongoing trend towards higher concentration.** In the early nineties, the ten largest exporters shipped 75% of the coffee traded internationally, while twenty years later the share increased to 86%. This trend can be explained, among other factors, by differences in production costs that led to a shift of coffee production towards a smaller number of producers. As a result, higher concentration could increase the supply risk as production becomes less regionally diversified and hence more vulnerable to weather-induced shocks.
- (c) **On the importing side, there is a trend towards market diversification.** Over the past twenty years, the group of countries that imported significant amounts of coffee has increased. With overall growing demand, the pool of countries absorbing 90% of exports has increased from 21 to 40. The spread of coffee consumption in low- and middle-income countries provides coffee-exporting countries with new markets. At the same time, mergers and acquisitions are causing further consolidation in the coffee industry and increasing the influence of leading buyers.
- (d) **While Arabica remains the dominant coffee type, comprising two thirds of global coffee exports, Robusta exports have grown faster over the past twenty years.** The rise of Vietnam to become the second largest producer worldwide increased the availability of Robusta coffee while growing demand in emerging markets, where coffee is predominantly consumed in soluble form, has boosted the demand for Robusta. Looking ahead, various factors may determine the future path of Robusta. In the medium term Robusta may benefit from increasing demand in emerging markets, however further economic development and rising incomes may change consumer preferences. This could trigger, in the long term, a switch from Robusta to

Arabica coffee, cooling the demand for Robusta. On the other hand, the impact of climate change on coffee production may be more severe for Arabica, increasing the cost of production, making Robusta more competitive.

- (e) **The share of processed coffee has increased slightly, nevertheless more than 90% of coffee exports continue to be in green form.** The value addition in the coffee supply chain still occurs mainly in importing countries. While there is scope for further growth in the soluble segment, roasted coffee remains largely sold domestically due to limitations related to logistics and competition with well established brands in traditional markets even if the niche segment of specialty coffee is opening new market opportunities.

33. It is likely that the trends identified as part of this study will continue to shape the global coffee market in the future. Against the prevailing backdrop of low coffee prices and dwindling farm profits in many producing regions⁷, additional research should help to identify ways to further the sustainable expansion of the coffee sector. For example, a better understanding is required of the potential and constraints of value addition in coffee and the reduction and utilization of waste, the impact of climate change on both Arabica and Robusta producing regions, and how exporters can position themselves either in the expanding specialty coffee segment in traditional markets, or the volume segment in emerging economies.

⁷ ICO (2016). *Assessing the economic sustainability of coffee growing*. ICC-117-6. International Coffee Council. 117th Session. 19 – 23 September 2016. London, UK. Available at: <http://www.ico.org/documents/cy2015-16/icc-117-6e-economic-sustainability.pdf>

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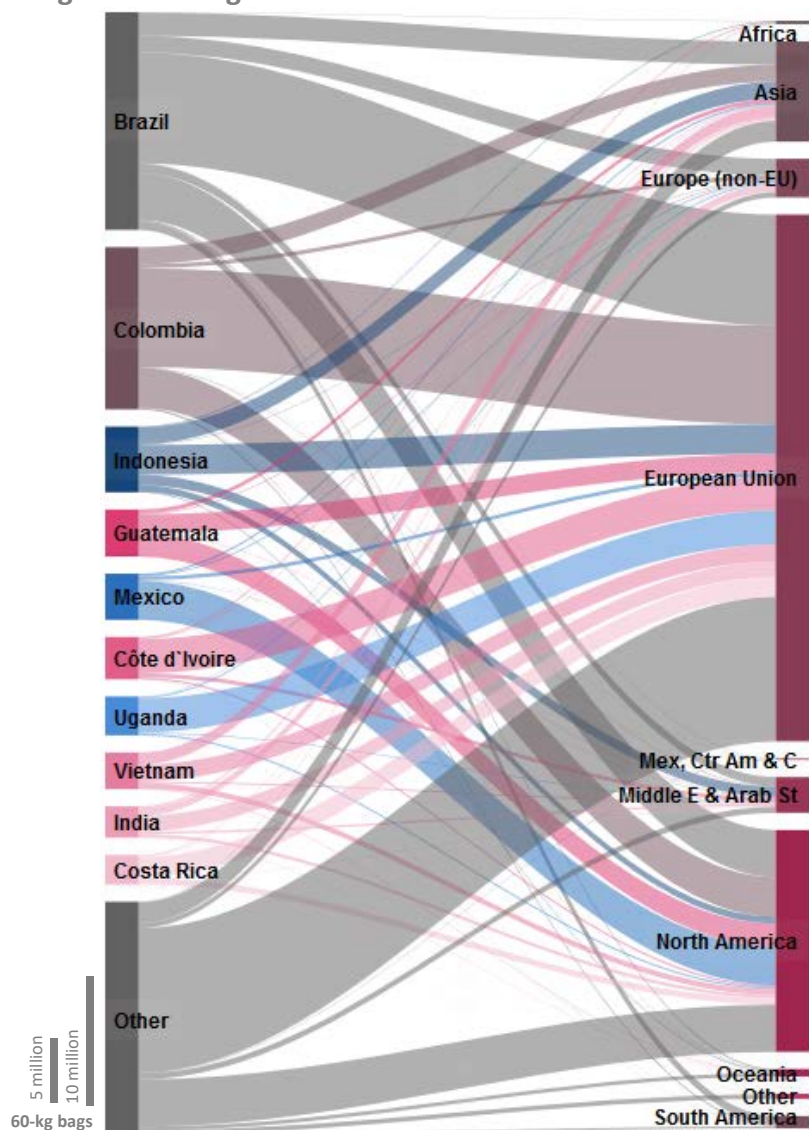
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Figure A1a. Regional Global Coffee Trade flows 1992-1996



Source: ICO

Figure A1b. Regional Global Coffee Trade flows 2012-2016

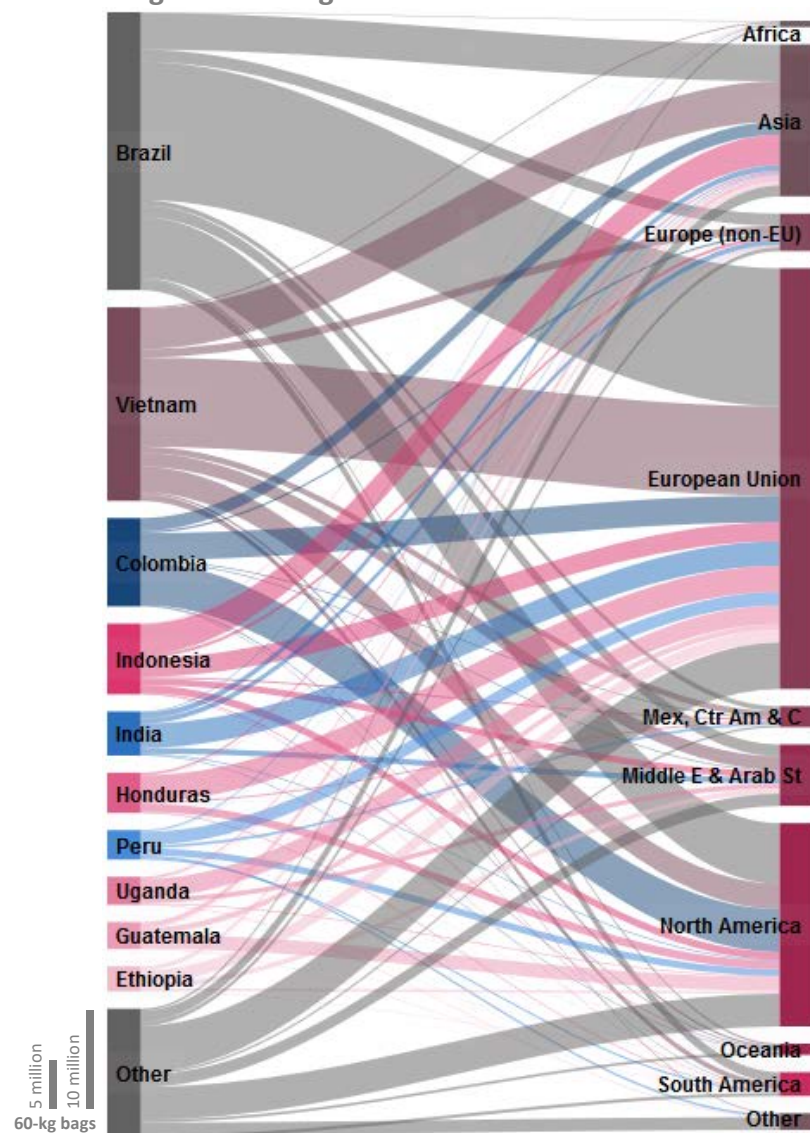


Figure A2a. Global Coffee Trade flows 1992-1996

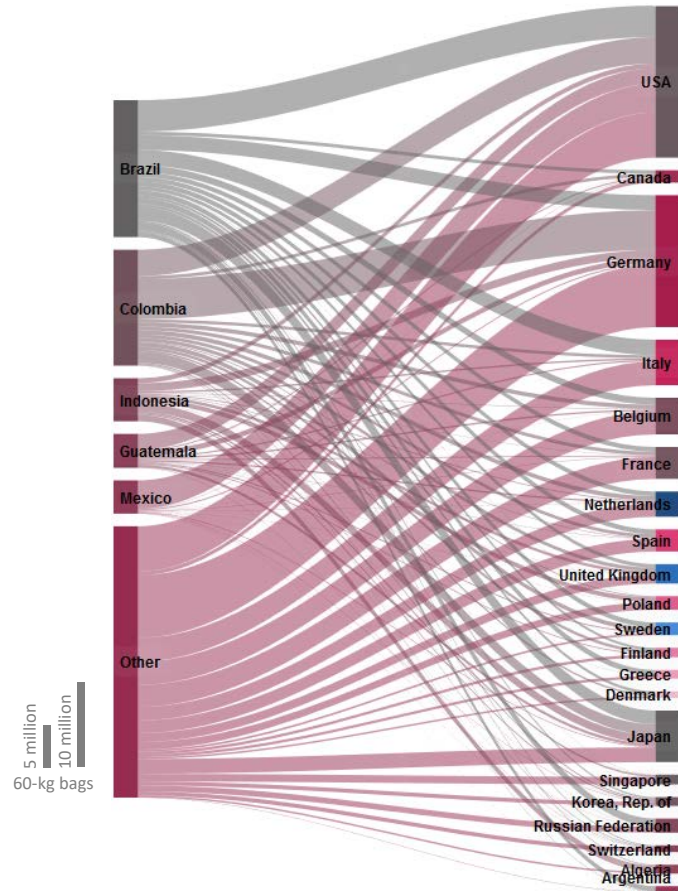
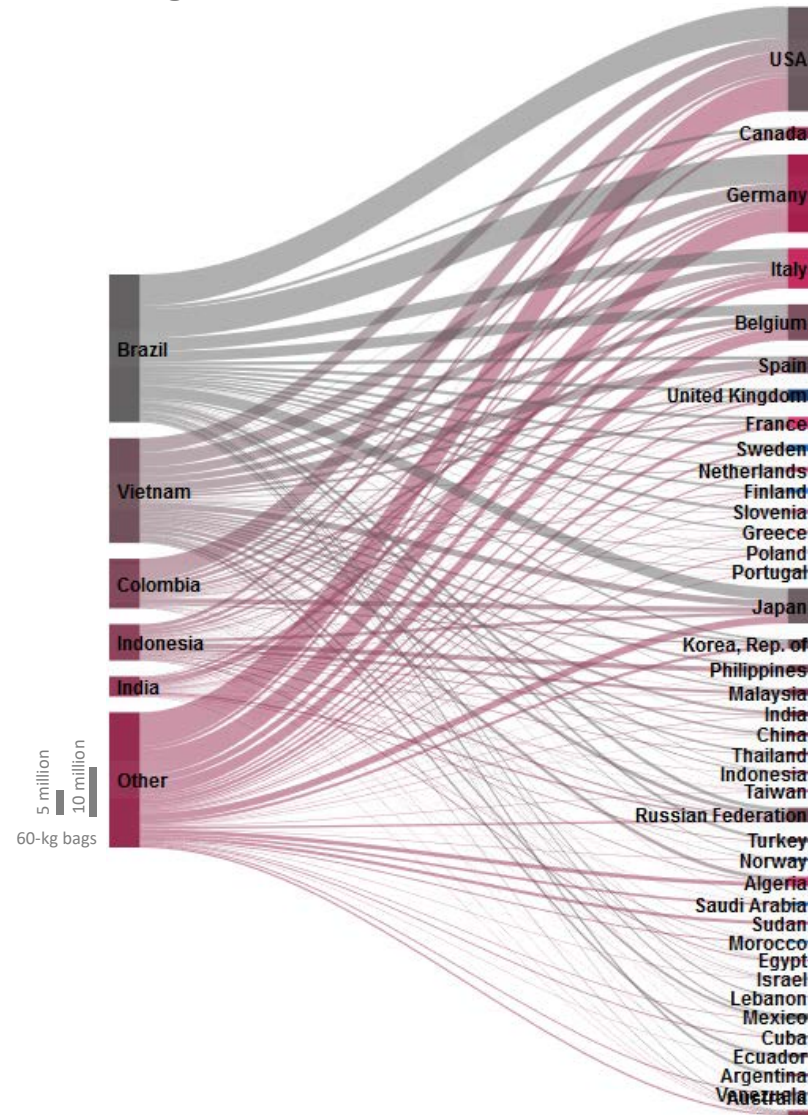
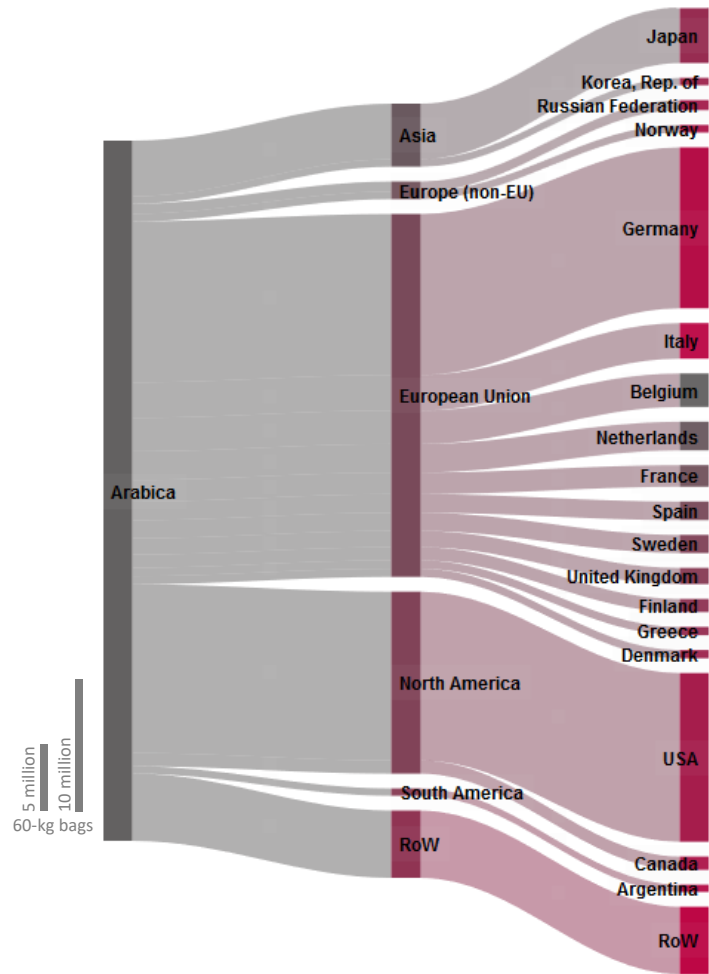


Figure A2b. Global Coffee Trade flows 2012-2016



Source: ICO

Figure A3a. Arabica Coffee Global Trade flows 1992-1996



Source: ICO

Figure A3b. Arabica Coffee Global Trade flows 2012-2016

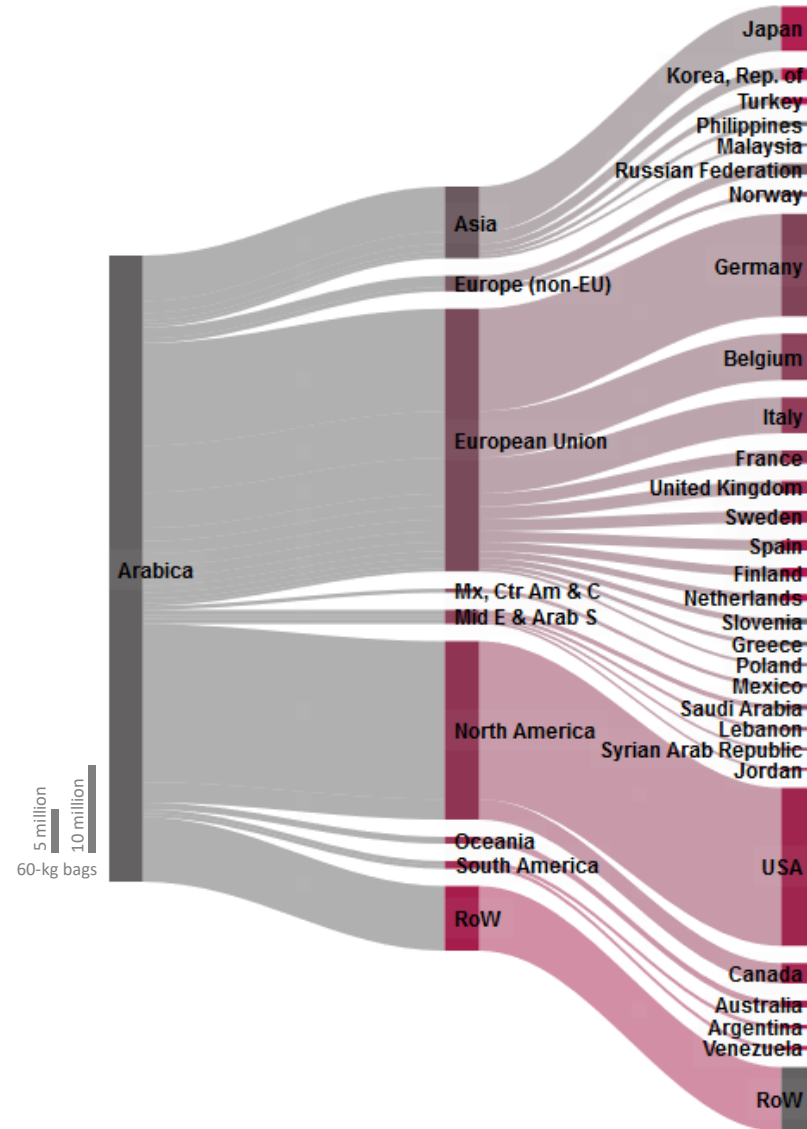
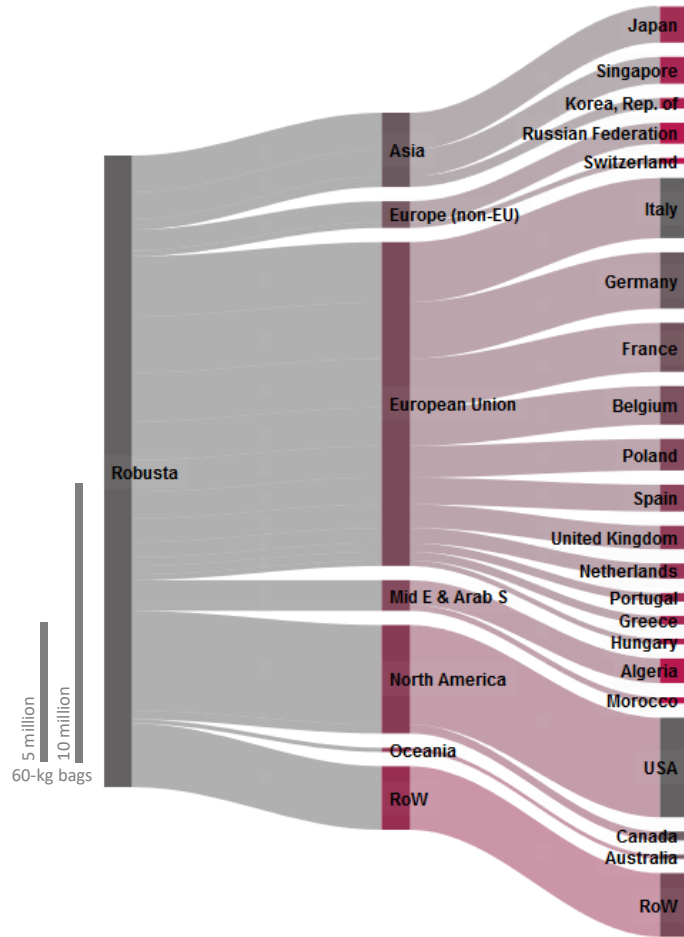


Figure A4a. Robusta Coffee Global Trade flows 1992-1996



Source: ICO

Figure A4b. Robusta Coffee Global Trade flows 2012-2016

