

50  
years



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**World coffee trade (1963 – 2013):  
A review of the markets, challenges  
and opportunities facing the sector**

### **Background**

After 50 years in existence, the Organization is well placed to provide an overview of the dynamics of the world coffee market and its prospects for the future. In particular, its adaptation to a changing environment characterized by new challenges such as climate change, risk management in response to price volatility, the growing cost of inputs, the sustainability of the sector, and the development of world consumption. In this study, the first part focusses on coffee market developments, particularly in terms of fundamentals and prices, during the last 50 years. Part two looks at the current challenges and opportunities for the coffee market, with a particular focus on the three 'pillars' of sustainability: economic, social and environmental.

### **Action**

The Council is requested to take note of this document.

**WORLD COFFEE TRADE (1963 – 2013):  
A REVIEW OF THE MARKETS, CHALLENGES  
AND OPPORTUNITIES FACING THE SECTOR**

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# **WORLD COFFEE TRADE (1963 – 2013): A REVIEW OF THE MARKETS, CHALLENGES AND OPPORTUNITIES FACING THE SECTOR**

## **INTRODUCTION**

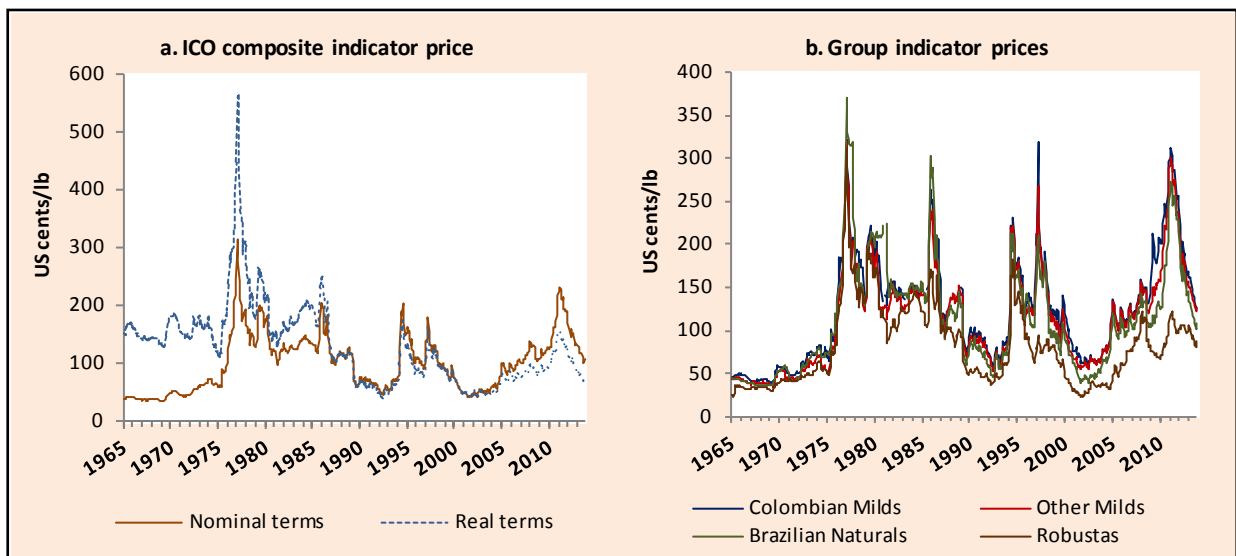
1. The world coffee market has undergone a significant transformation over the last 50 years. This document is designed to provide an overview of the market trends and developments since the ICO was established in 1963, utilising the broad array of statistical and economic research which has been undertaken in that time period.
2. Section I provides a summary of price movements, the dynamics of supply and demand, and developments in international trade. Up until 1989, the coffee market was regulated by a series of International Coffee Agreements which were intended to manage supply and maintain price stability. This system subsequently collapsed, and since 1990 the coffee market has been subject to the free market forces of supply and demand. This report compares and contrasts market prospects in the two time periods, and considers how developments in market fundamentals have influenced prices over time.
3. Section II looks at the current challenges and opportunities for the coffee market, with a particular focus on the three 'pillars' of sustainability: economic, social and environmental. It gives an assessment of the impact of price volatility on coffee producers, including the use of risk management instruments and managing the various costs of production. It describes and defines the social indicators of sustainability, taking into particular account the human dimension of coffee production. Finally, it gives a broad overview of one of the most significant threats to sustainable coffee production – the impact of climate change.
4. The report concludes by offering opportunities and prospects for the coffee industry, in terms of consumption and production, particularly the growing demand from emerging markets and the expansion of niche value markets in traditional consuming countries.
5. This study is intended as a macro-economic overview of the global coffee trade for members of the general public interested in the dynamics of the evolution and key issues affecting the future of the sector. In-depth analysis of the topics introduced in this document can be found in ICO documents on our website at [www.ico.org](http://www.ico.org).

## SECTION I: COFFEE MARKET DEVELOPMENTS (1963 – 2013)

### i. Prices

5. The ICO composite indicator price and group indicator prices since 1965 are shown in Figure 1 below. As indicated in the graphs, prices levels during the regulated market period (1965 to 1989) were relatively high since both upward and downward trends were corrected through the application of export quotas. Under this system, export quotas were in effect during the periods between 1963 and September 1972, from October 1980 to February 1986 and from November 1987 to July 1989.

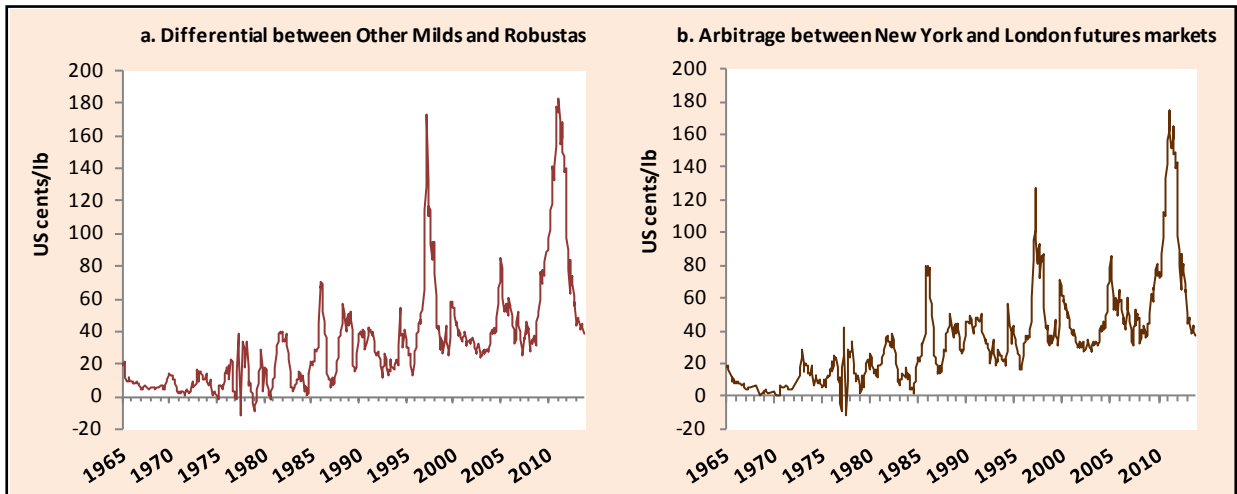
Figure 1: World coffee prices (Monthly averages: 1965 - 2013)



6. The free market period beginning in 1990 had two sub-periods of markedly low price levels: 1989 to 1993 and 1999 to 2004. The latter sub-period recorded the longest period of low prices ever recorded, known as *the coffee crisis*, with severe negative consequences on the coffee economies of exporting countries. Prices recovered strongly after 2004, reaching a 34-year high in mid-2011. However, there has subsequently been a severe deterioration in prices while costs of coffee production inputs, particularly fertilizers and labour, continue to rise.

7. The differential between Arabica and Robusta prices, as shown in Figure 2, was relatively low during the regulated market period, with the annual average of the differential between Other Milds and Robustas at 14.86 US cents/lb. The highest annual average during this period was 47.53 US cents/lb recorded in 1986, when Arabicas were in short supply following a drought in Brazil. During the free market period the price differential widened considerably, recording an annual average of 52.25 US cents/lb. More specifically, the Arabica/Robusta differential rose to 161.86 US cents/lb in 2011. The arbitrage between the New York and London futures markets was 17.32 US cents/lb during the regulated period, with a maximum of 56.78 US cents/lb in 1986. In the free market period, the average differential between New York and London was 52.02 US cents/lb and the highest was 155.13 US cents/lb in 2011

Figure 2: Price differentials (Monthly averages: 1965 - 2013)



**Box 1: Price volatility**

As is the case of many commodities, price volatility is a major concern for stakeholders in the world coffee market. In exporting countries, volatility is a source of uncertainty in relation to export earnings and tax revenues, as well as instability in producer incomes. In importing countries, price volatility makes it difficult for roasters to control processing costs and affects profit margins for traders and stockholders, making their activities less attractive. There are various methods for measuring volatility. The method chosen for this study is the application of the standard deviation formula, which is based on price variation from one day to the next, determined as follows:

Equation 1: 
$$Var (P_j, P_{j-1}) = Ln \left( \frac{P_j}{P_{j-1}} \right)$$

where var = daily variation in price  
 $P_j$  = price on day  $j$   
 $P_{j-1}$  = price on previous day  
 Ln = natural logarithm

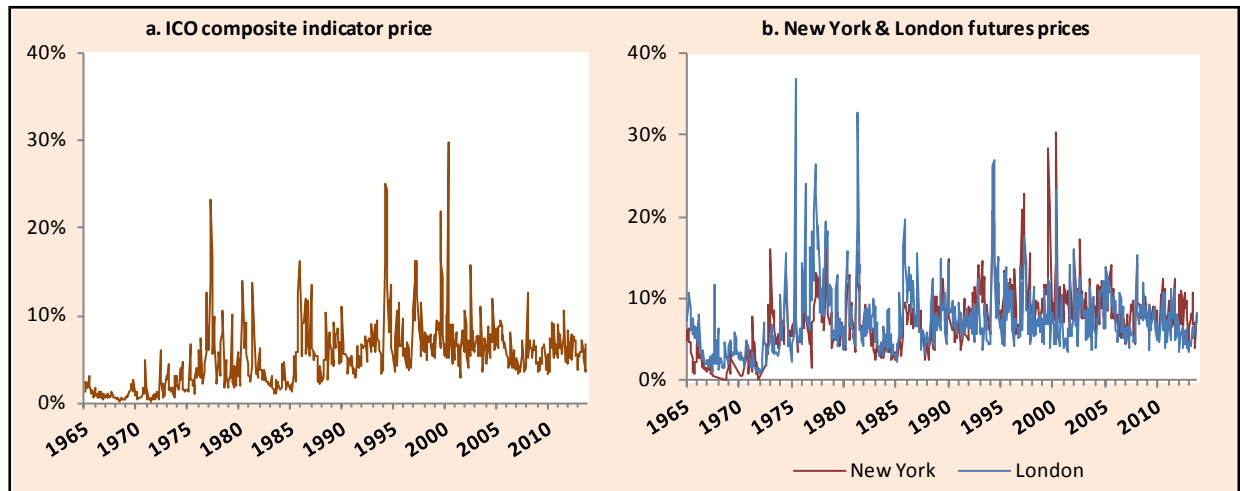
Equation 2: 
$$\sigma = \sqrt{\sum_{j=1}^N Ln \left( \frac{P_j}{P_{j-1}} \right)}$$

where  $\sigma$  = standard deviation for the year  
 $N$  = total number of months

Equation 3: 
$$Volatility = \sigma \times \sqrt{N}$$

Prices in the futures markets have been significantly more volatile than the ICO indicator price. During the regulated market period the highest volatility coefficients were recorded in years following severe climate shocks recorded in exporting countries, notably in Brazil in 1975 and 1985. The highest volatility levels are generally recorded for the months of May, June, July and August, since they cover the period of possible frosts in Brazil, fuelling speculative activity. During the free market, statistical tests show that coffee prices have been very volatile since 1990. More specifically, high volatility coefficients were recorded in 1994, 1997 and 1999. It may be noted that in two of these three years, namely 1994 and 1999, climate shocks were recorded in Brazil.

Figure 3: Price volatility (Monthly: 1965 - 2013)

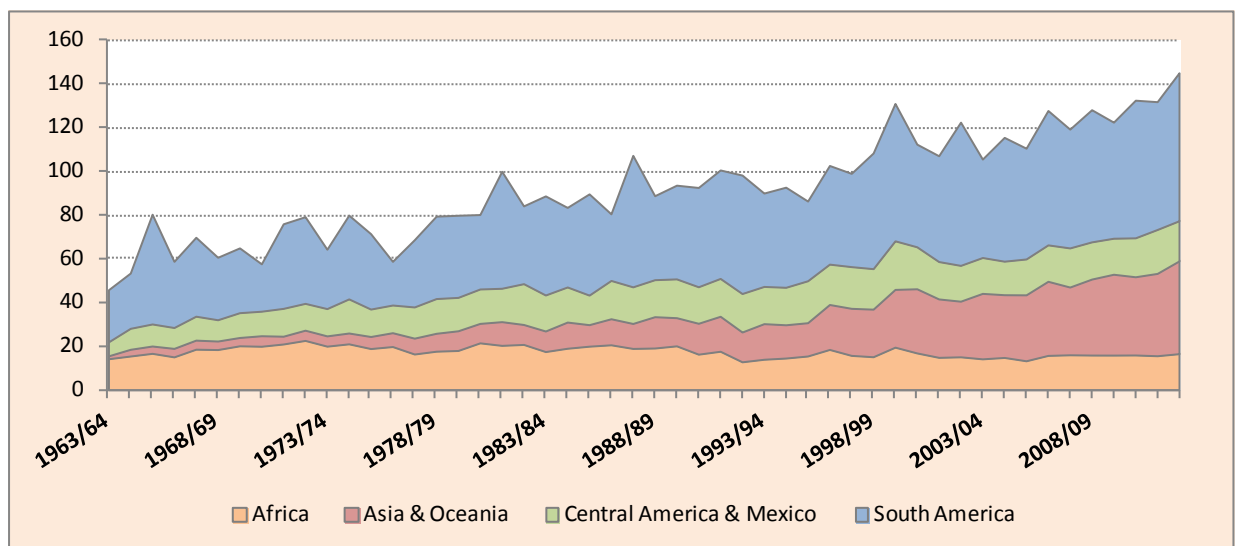


Price volatility since 1990 highlights a significant change in the world coffee industry. On the one hand, the delay in the price response to exogenous impacts such as climate shocks has become considerably shorter, while on the other, however strong the reactions may be, they do not persist for very long. The factors responsible for excessive coffee price volatility should be considered initially in terms of market fundamentals, particularly those related to supply. Supply is frequently influenced either by exogenous factors related to climate in the sense that a period of short supply may be followed by a period of over-production and vice versa. Developments in market fundamentals may, therefore, favour or prevent the emergence of speculative factors.

ii. Production

8. The dynamics of world coffee production are generally characterised by considerable instability, with a large crop in one year frequently followed by a smaller crop in the next. Over the last 50 years, there has been steady growth in world production, interspersed with periodic falls. The average growth rate since 1963 was 2.4%, with 2.8% annual growth in the market-controlled period, and 2% since 1990. In crop year 2012/13, world coffee production reached 145.1 million bags, the largest on record. With the exception of Africa, all coffee-growing regions recorded a steady growth in their production over the time period.

Figure 4: World coffee production by region (1963/64 - 2012/13)



## **Africa**

9. Production in Africa has exhibited negative growth over the last 50 years, from an average volume of 19.1 million bags in the regulated period to 15.8 million under the free market. Africa's share in world production has hence decreased from 25% to an average of 14%. Since 1990, production levels have generally stagnated, registering less than 20 million bags every year. During the regulated market period, many African countries benefited from both from an assured market in the European Union under the framework of EU-ACP Agreements and from guaranteed prices for producers, recording a growth in production through the rapid expansion of the areas planted to coffee. The subsequent decline in production was initially attributable to structural factors given low yields and ageing coffee trees as well as the economic liberalization programmes implemented in the 1990s. Other factors were related to the regional conflicts affecting certain countries. Production in crop year 2012/13 is estimated at 16.7 million bags.

10. In terms of individual countries, it may be noted that **Angola**, which accounted for an average of 5% of annual world production until the mid-1970s, has lost its place among the region's leading producers, with production of some 33,000 bags in 2012/13. The **Democratic Republic of Congo** and **Madagascar** have also lost significant market share, on 327,000 and 522,000 bags respectively. However, coffee rehabilitation programmes being carried out in these countries, particularly in Angola, may help to reverse the downward trend. **Côte d'Ivoire** and **Cameroon** are still significant producers but their production has fallen substantially during the free market period, to 2 million and 366,000 bags respectively. In **Côte d'Ivoire** production fell from an annual average of 4 million bags until 1989/90 to 2.9 million bags since 1990/91. **Cameroon** has been producing less than one million bags a year in the free market period compared to 1.5 million bags during the preceding period.

11. Average production in **Kenya** during the period 1990/91 to 2012/13 was 1 million bags compared with 1.3 million bags during the controlled market period. Average production fell slightly in **Tanzania**, at 792,000 bags for the period 1990/91 to 2012/13 compared to 820,000 bags from 1963/64 to 1989/90. There was an improvement in crop year 2012/13, however, with production estimated at 1.1 million bags compared to 862,000 bags in 1989/90.

12. The most dynamic growth in African production was observed in **Ethiopia**, which recorded an average annual growth rate of 2.6% during the last 50 years, increasing to 3.6% since 1990. The country's production trend is generally upward despite some downward interruptions, reaching 6.4 million bags in 2012/13. Ethiopia is also unique in Africa by having a strong domestic coffee consumption culture, which frequently accounts for over half of production. To a lesser extent, **Uganda** has recorded sustained growth in its production, with an annual average of 2.9 million bags since 1990/91 compared to 2.8 million bags during the regulated market period, increasing to 3.7 million in 2012/13.

## **Asia and Oceania**

13. **Asia and Oceania** recorded the strongest production growth in the course of the last 50 years, particularly during the last 20 years with the emergence of the coffee industry in Vietnam. Between 1990/91 and 2012/13 production in the region averaged 26.5 million bags per crop year, representing 23.5% of world production compared to only 7.4 million bags, or 9.7% of world production during the period 1963/64 to 1989/90. Production in crop year 2012/13 is estimated at 42.4 million bags. Overall, there was no regular biennial cycle of high and low production years, since observations show lengthy periods of successive increases in production followed by short-term falls.

14. The main producers in the region recorded high growth rates in their production. In **India** average annual production during the free market period was 4.2 million bags compared to 1.8 million for the preceding period. The country's production in crop year 2012/13 is estimated at 5.3 million bags compared to 1.8 million bags in 1989/90. During the free market period average production in **Indonesia** was 7.7 million bags a year compared to 4 million bags between 1963 and 1989. Production in crop year 2012/13 is estimated at 12.7 million bags, representing 6.8% of world production compared to 6.9 million bags in 1989/90.

15. Production in **Vietnam** has increased dramatically since the 1980s. After a lengthy period of uninterrupted successive increases there has been alternation between higher and lower since crop year 2001/02. Between 1990/91 and 2012/13 production averaged 11.6 million bags compared to only 451,000 bags between 1980 and 1989. Production in crop year 2012/13 is estimated at 22 million bags, compared to 1 million bags in 1989/90. **Papua New Guinea** recorded significant production levels during the free market period, at an average of 1 million bags, as did **Thailand**, recording 717,000 and 608,000 respectively in 2012/13.

#### **Central America and Mexico**

16. This region produced an annual average of 18 million bags during the period from 1990 to 2012 compared to 13.8 million bags during the preceding period under study. Production in crop year 2012/13 is estimated at 18.5 million bags, similar to the level of 18 million bags in 1989/90. Production in the region as a whole does not seem to show marked volatility from one crop year to the next. Nevertheless, its share in world production fell to an average of 15.9% during the free market period compared to 18.1% in the preceding period. However, the recent outbreak of coffee leaf rust disease could cause a reduction in the production levels of many countries in the region (see Box 2).

17. In **Costa Rica** annual production averaged 2.1 million bags between 1990 and 2012 compared to 1.7 million bags between 1963/64 and 1989/90. Production in crop year 2012/13 is estimated at 1.6 million bags compared to 2.3 million bags in 1989/90. In **El Salvador** production decreased from 2.5 million bags a year during the period 1963/64 to 1989/90 to 1.9 million bags during the free market period. Production in crop year 2012/13 is estimated at 1.4 million bags compared to 2.8 million bags in 1989/90. Average annual production in **Guatemala** during the period 1990/91 to 2012/13 was 4 million bags compared to 2.4 million bags in the preceding period. Production in crop year 2012/13 is estimated at 3.7 million bags compared to 3.5 million bags in 1989/90. Production in **Honduras** grew steadily despite a few interruptions. The annual average was 1 million bags between 1963/64 and 1989/90 compared to 2.9 million bags since 1990. Production in crop year 2012/13 is estimated at 4.5 million bags compared to 1.8 million bags in 1989/90.

18. During the free market period **Mexico** recorded an average annual production of 4.5 million bags compared to 3.9 million bags during the preceding period. Mexico's production in crop year 1989/90 was 5.1 million bags, a level reduced to 4.3 million bags in 2012/13, in part as a result of the coffee leaf rust epidemic that is rife in the region. Despite a recent decrease, **Nicaragua** has recorded an increase in its production during the last 50 years. Annual production from 1990/91 to 2012/13 averaged 1.3 million bags compared to 747,000 bags between 1963/64 and 1989/90. Production in crop year 2012/13 fell to an estimated 1.9 million bags compared to 2.2 million bags in the preceding year.

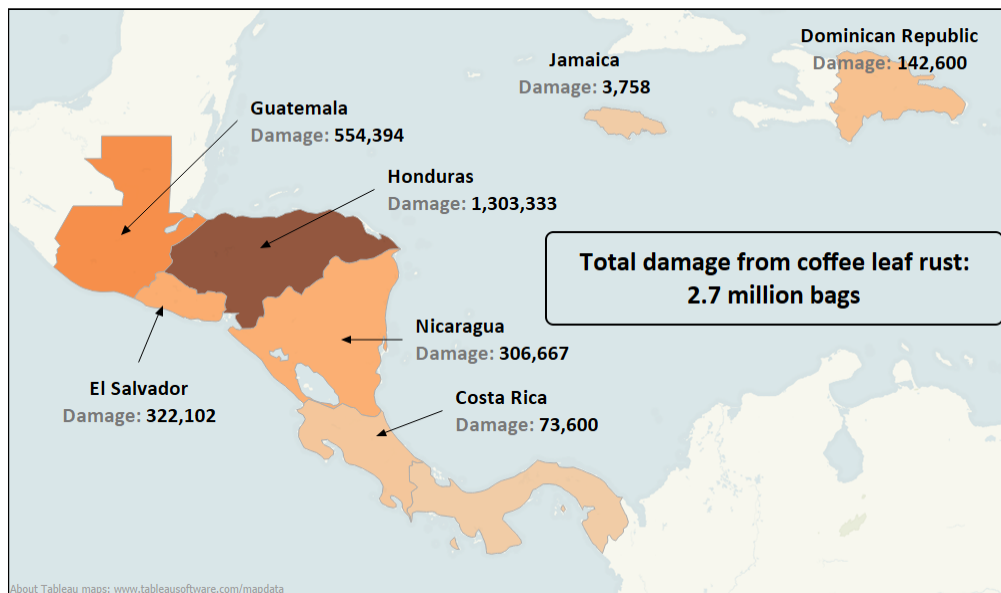


### Box 2: Coffee leaf rust in Central America

Coffee production in Central America was severely affected in 2012/13 by an outbreak of coffee leaf rust in the region. Although not a new phenomenon, this epidemic is considered one of the worst ever recorded, with incidence rates exceeding 50% of the coffee production area. States of phytosanitary emergency have been declared in Costa Rica, Guatemala and Honduras, with Nicaragua and El Salvador also badly affected. The disease, which attacks the leaves of coffee trees and inhibits the cherry from ripening, is expected to have a severe negative impact both on the current crop and also future production.

Figure 5 below shows a summary of the effect of coffee leaf rust on production in 2012/13, according to provisional figures from PROMECAFE. Total damage is estimated at around 2.7 million bags, costing a total of US\$500 million. In addition to the economic cost, there is a social aspect which must be taken into account. Most coffee in Central America is grown by smallholder farmers, who may well be unable to cope with the expected losses. It is estimated that some 374,000 jobs will be lost in the 2012/13 season, as the labour used to harvest the crop will simply not be needed. In addition, the already precarious situation of some farmers could lead to issues of food insecurity in many areas.

Figure 5: Coffee leaf rust in Central America (2012/13)



### South America

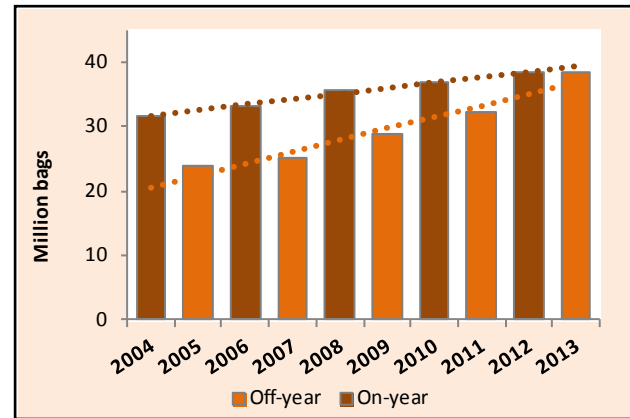
19. This region continues to be the world's leading producing region with an annual production averaging 52.5 million bags since 1990/91, a level representing 46.6% of the total. Average production was 36 million bags during the period 1963/64 to 1989/90, accounting for 47.2% of the world total. For crop year 2012/13 total production in the region is estimated at 67.6 million bags compared to 42.8 million bags in 1989/90. Total production in the region follows a regular biennial cycle of increases and decreases over successive crop years, except in a few cases of increases over successive years, particularly from 1989/90 to 1992/93.

20. This pattern in the region's total production is largely attributable to the cyclic pattern of Brazilian production. **Brazil** produced an annual average of 35.7 million bags for the period 1990/91 to 2012/13 compared to 22.6 million bags for 1963/64 to 1989/90. Despite the pattern of Brazilian production from year to year, it has increased substantially over the last 50 years, from 23.2 million bags in 1963/64 to 50.8 million bags in 2012/13. Production for crop year 1989/90 was 24.5 million bags. Apart from the biennial cycle characterizing its Arabica production, the marked volatility of Brazilian production is attributable mainly to the impact of climate shocks (frosts and droughts).

**Box 3: Biennial cycle of production in Brazil**

Traditionally, coffee production in Brazil has followed an alternating two-year cycle between large 'on-year' and lower 'off-year' crops. This cycle is driven by Arabica production, which accounts for around three quarters of Brazil's output, as the trees need time to recover following a large crop. However, in recent years the difference between the on and off-year crops has been waning, as shown in Figure 6, with the 2013/14 off year just 3.3%, or 1.7 million bags, lower than the 2012/13 on year. Much of this development can be attributed to better farm management and husbandry in Brazil, such as increased use of irrigation and mechanization.

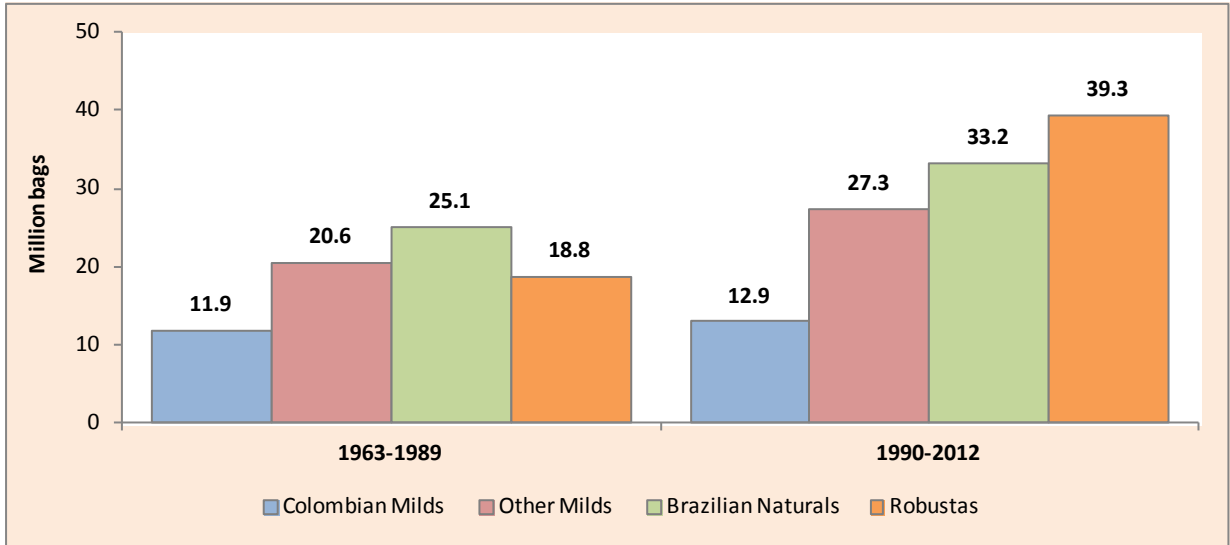
**Figure 6: Coffee production in Brazil (2004/05 - 2013/14)**



21. In **Colombia**, annual production between 1990/91 and 2012/13 averaged 11.5 million bags compared to 10.1 million bags during the regulated market period. Colombian production fell significantly between 2008/09 and 2011/12, due to the effects of coffee leaf rust, but Colombia's ongoing replanting programme seems to be working, with production in crop year 2012/13 recovering to around 10.4 million bags. Production in **Ecuador** fell slightly during the period 1990 to 2012 to an average of 1.2 million bags compared to 1.4 million bags between 1963 and 1989. In absolute terms, however, there was a significant decrease in the country's production, which fell from 2.2 million bags in crop year 1989/90 to 828,000 bags in 2012/13. With an average annual production of 2.7 million bags since 1990, **Peru** is the region's third largest producer. Its production growth rate is also high at around 7% for the period 1990/91 to 2012/13. For crop year 2012/13 Peru's production was estimated at 4.5 million bags compared to 1.5 million bags in 1989/90.

22. Analysis by type of coffee shows a dramatic growth in the production of Robustas, which increased from 18.8 million bags a year during the regulated market period to 39.3 million bags from 1990/91 to 2012/13. Total Robusta production in crop year 2012/13 is estimated at 56.5 million bags, representing a share of 38.9% of world coffee production, compared to 25.9 million bags in 1989/90, representing a share of 27.5%. This drastic increase in the production of Robustas can mostly be attributed to the growth of Vietnam. Arabica production averaged 73.4 million bags for the period 1990/91 to 2012/13, compared to 57.5 million bags during the regulated market period, representing an average increase of 1.3% a year. Total Arabica production in crop year 2012/13 is estimated at 89 million bags, accounting for 61.3% of world production, compared to 68.3 million bags in 1989/90 (72.5% of world production).

Figure 7: Average production by group of coffee

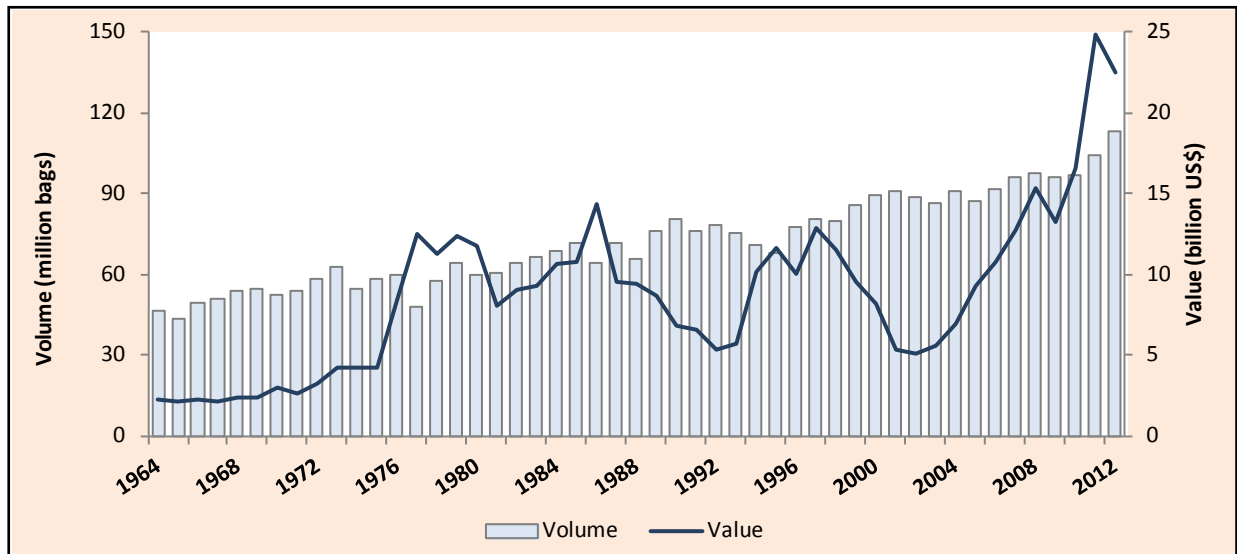


iii. *International trade*

**Exports**

23. Total exports by exporting countries increased steadily during the last 50 years despite some interruptions in the upward trend, notably between 1976 and 1978, as well as in 1987/88 and 1994/95. During the course of the regulated market period, until the suspension of the economic clauses of the Agreement in July 1989, the highest level of exports was 81.3 million bags recorded in 1989/90. Following a slight fall to the level of 65.7 million bags in 1994/95, total exports increased steadily, reaching a record level of 111.6 million bags in 2012/13. The increase in exports since 1990 was more marked in the case of Robustas, which reached a level of 42.6 million bags in 2012/13 compared to 23.6 million bags in 1990/91, representing an average annual growth rate of 2.7%. Over the same period, Arabica exports grew at an average annual rate of 1.4%. In individual terms, exports by exporting countries during the period from 1990/91 to 2011/12 show varying performances. Of the 20 leading exporting countries, Vietnam recorded a high growth rate in its exports (13.9%), followed by Peru (6.2%), Nicaragua (7.3%), Honduras (5.2%), India (5.7%) and Ethiopia (6.2%). In terms of volume, Vietnam exported 20 million bags in 2012/13 compared to 1.1 million bags in 1990/91. Brazil exported 31.2 million bags in 2012/13, while Colombia recorded a negative growth rate in its annual exports (-1.5%) as a result of the prolonged falls in its production during recent years. Decreases in exports were also recorded in Cameroon (-7.6%), Côte d'Ivoire (-4.1%), Kenya (-3.1%) and El Salvador (-2.5%).

Figure 8: Volume and value of exports by all exporting countries (1964 - 2012)



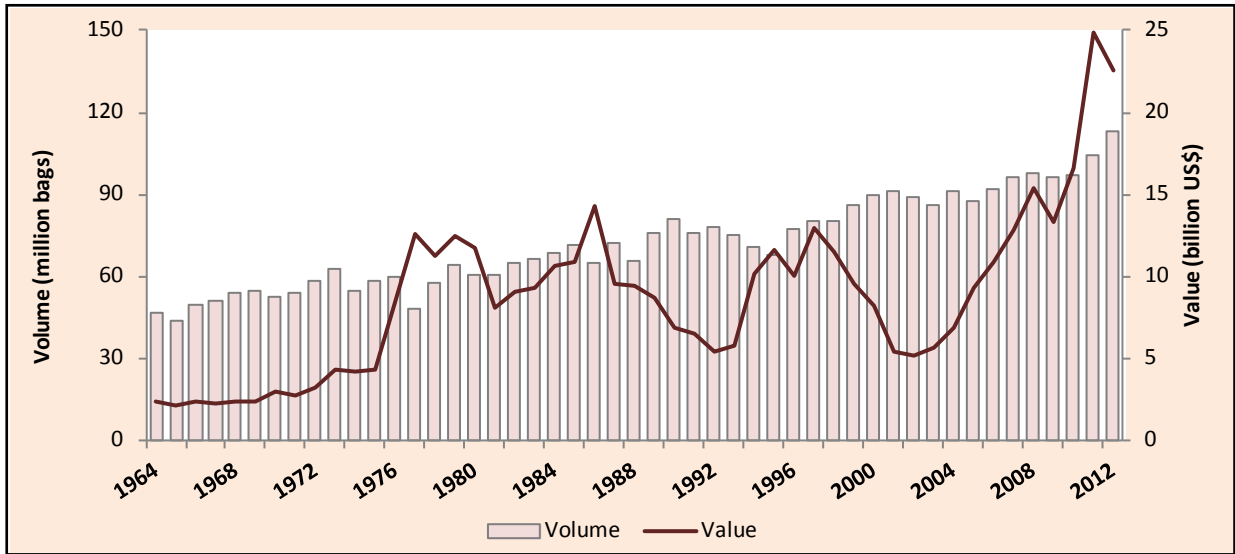
24. Over the period 1963/64 to 2012/13 as a whole, the average annual value of exports by all exporting countries was US\$8.9 billion for an average volume of 72.8 million bags. During the regulated market period 1963 to 1989 the average value was US\$6.9 billion for a volume of 59.9 million bags. For the free market period the total average value was US\$11.1 billion for an average volume of 87.9 million bags. In absolute terms, the estimated total value of exports was US\$19.1 billion in 2012/13 for a volume of 111.6 million bags, a clear improvement in relation to the level of US\$5.8 billion for a volume of 90.7 million bags in 2000/01.

25. Compared to the average for the period 1990 to 2011, the following exporting countries recorded significant earnings: Brazil (US\$3.1 billion), Colombia (US\$1.7 billion), Vietnam (US\$888 million), Indonesia (US\$573 million), Guatemala (US\$525 million), Mexico (US\$502 million) and Honduras (US\$422 million).

### Re-exports

26. During the free market period, importing countries earned an annual average of US\$5.5 billion from re-exports of 24.2 million bags of coffee, compared to US\$962 million for the period 1965 to 1989. Germany earned the substantial sum of US\$1.4 billion for average re-exports of 6.6 million bags a year, accounting for 27% of the total value of re-exports by all importing countries during the free market period. Belgium ranked second with US\$542 million, representing 9.9% of the total value of re-exports by all importing countries, followed by the USA and Italy. Both the value and volume of re-exports increased significantly during the free market period. The average annual volume and value of re-exports was even higher since 2000, at US\$5.3 billion from 31.4 million bags of coffee. Lastly, it should be noted that the value of re-exports has increased considerably over the last few years. For calendar year 2012, total value is estimated at US\$14.7 billion for a volume of 41.7 million bags, compared to US\$2.4 billion in 2000 from 20.5 million bags.

Figure 9: Volume and value of re-exports by all importing countries (1964 - 2012)



27. Overall, it should be noted that re-exporting activities in importing countries have shown consistent growth over the last 50 years, with re-export value gaining considerable momentum since 2000. These re-exports comprise all three forms of coffee, namely green coffee, roasted coffee and soluble coffee. Nevertheless, re-exports by some importing countries are clearly dominated by a particular form of coffee. In Belgium and Germany green coffee is the predominant form of coffee re-exported, while roasted coffee is the predominant form of coffee re-exported by Italy, Poland, Sweden and the United States. For the other importing countries soluble coffee is the main form of coffee re-exported, more particularly by Japan, Spain and the United Kingdom.

### Coffee value chain

28. The concept of a value chain relates to all revenues generated by activities carried out along the entire supply chain of a product, from production to end use. As in the case of many other agricultural commodities, activities involved in the coffee production chain are divided between producing countries, which generally export green coffee, and consuming countries, which transform imported green coffee into finished products for final consumption.

29. In exporting countries most of the value is generated by coffee exports, mainly in the form of green coffee, although domestic consumption accounts for a substantial share of the value chain in some countries. Exports of processed coffee in roasted or soluble form also account for a no less significant share in some of these countries. Although there are, of course, many stakeholders in the coffee chain, this analysis only covers producers, the export industry, the processing industry (wholesalers) and domestic consumption distribution.

30. Whatever the final destination of the product (for example local processing or export), coffee producers generate earnings from sales of their crop on a farm-gate basis. In some exporting countries, farm-gate prices account on average for a significant share of the unit value of their exports. With the improvement in world coffee prices in recent years, the value earned by producers has increased in most

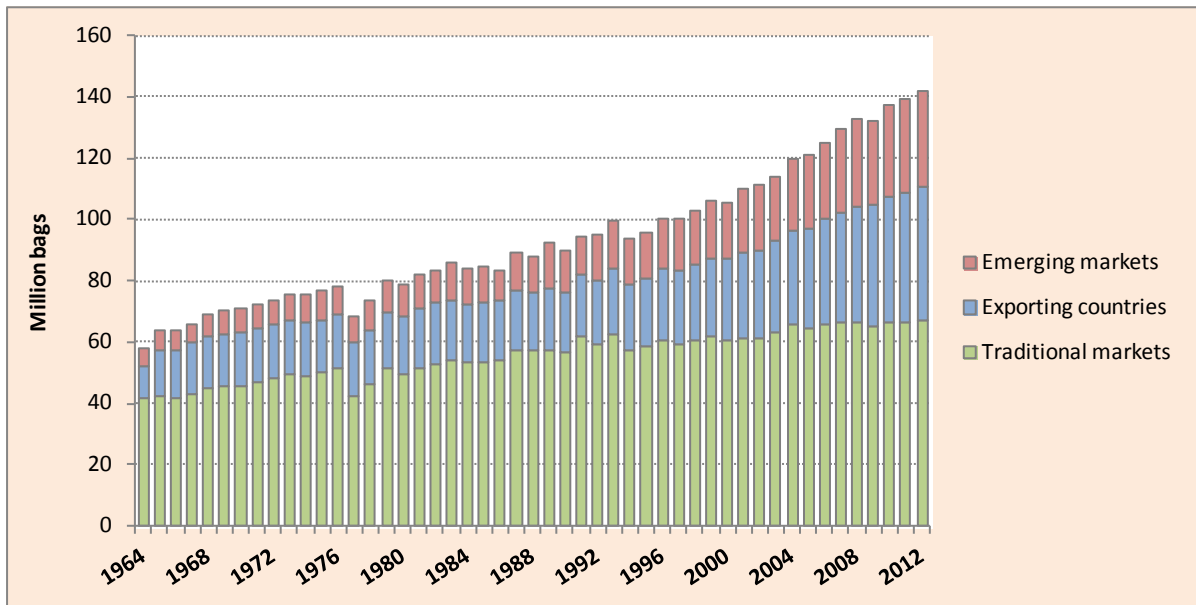
exporting countries. For countries where statistical information is available, theoretical gross earnings by coffee producers averaged US\$10.8 billion a year for an average production of 112.9 million bags during the period 1990 to 2012, compared to US\$6.3 billion for an average total production of 84.6 million bags between 1965 and 1989. During the recent period from 2000 to 2012, theoretical gross earnings by producers totalled US\$11.6 billion for an average annual production of 121.8 million bags.

31. In terms of the total value of the coffee industry, this was estimated at around US\$173.4 billion in calendar year 2012, based on world consumption data and retail prices, where such information is available. In exporting countries and emerging markets, consumption is predominantly based at home, whereas in traditional importing countries, out-of-home consumption accounts for the majority of the value generated. This is particularly true of European countries such as Portugal, Spain, Greece and Turkey, see document [ICC-109-8](#) (Trends in coffee consumption in selected importing countries for more information). A full methodology for this consumption value breakdown is available in the Annex.

*iv. Consumption*

32. World consumption increased at an average annual growth rate of 1.9% over the last 50 years, from 57.9 million bags in 1964 to 142 million bags in 2012. This growth rate accelerated since 1990 to 2.1%, and to 2.4% since 2000. As can be seen in the graph below, traditional importing markets such as Japan, the European Union and the USA have historically accounted for the majority of global coffee demand. However, in recent years, demand in coffee-producing countries and emerging markets have expanded significantly, providing much of the impetus behind recent demand growth. These markets are examined in more detail below.

**Figure 10: World coffee consumption by type of market (1964 - 2012)**



### **Domestic consumption in exporting countries**

33. Spearheaded by Brazil, domestic consumption in exporting countries has grown significantly from a level of 10.4 million bags in 1964 to 43.5 million bags in 2012, an average annual growth rate of 3%. Between 2000 and 2012 such domestic consumption increased by 64.7% from a level of 26.4 million bags to 43.5 million, accounting for over 30.6% of world consumption in 2012.

34. With domestic consumption of 20.2 million bags in 2012, representing 46.4% of the total consumption in exporting countries, Brazil is not only the biggest consuming country among the world's coffee exporting countries but also the world's second biggest consuming country after the United States. Other exporting countries which have significant levels of domestic consumption are Indonesia (8.2% of domestic consumption by all exporting countries in 2012), Ethiopia (7.8%), Mexico (5.4%), Philippines (5%), India (4.4%), Venezuela (3.8%) and Vietnam (3.6%). In terms of per capita domestic consumption, Brazil continues to account for relatively high rates (6.1 kg per capita in 2012), followed by Venezuela (3.3 kg), Costa Rica (3.3kg), Honduras (2.6kg), El Salvador (2.6kg) and Ethiopia (2.3 kg). Although per capita consumption levels are still low in several exporting countries, there is considerable potential in the medium and short term, particularly given their economic development prospects.

### **Consumption in traditional importing markets**

35. Total consumption in importing countries was estimated at 98.6 million bags in 2012 compared to 70.4 million bags in 1990 and 47.5 million bags in 1964. The average annual growth rate for consumption by all importing countries was 1.5% for the period 1990 to 2012, compared to 1.7% for the period 1964 to 1989. Average consumption in the United States during the period 1990 to 2012 was 19.7 million bags, but the country's consumption in 2012 was estimated at 22.2 million bags, accounting for 15.7% of world consumption. The other leading coffee consuming countries are Germany (an average of 9.5 million bags a year), Japan (6.5 million), France (5.4 million) and Italy (5.2 million).

36. Despite the increase in population, consumption growth in traditional importing markets continues to be weak, at an average rate of 0.7% for the period 1990 to 2012 compared to 1.3% for the period 1964 to 1989. Total consumption was estimated at 70.6 million bags in 2012 compared to 60.2 million bags in 1990. During the period 1990 to 2012 average growth rates for consumption were below 1% in the ten largest traditional markets except Canada (2.6%), Japan (1.6%), Spain (1.1%) and the United Kingdom (1%). Average per capita consumption fell in most traditional markets, which explains the low average growth rates for the period 1990 to 2012.

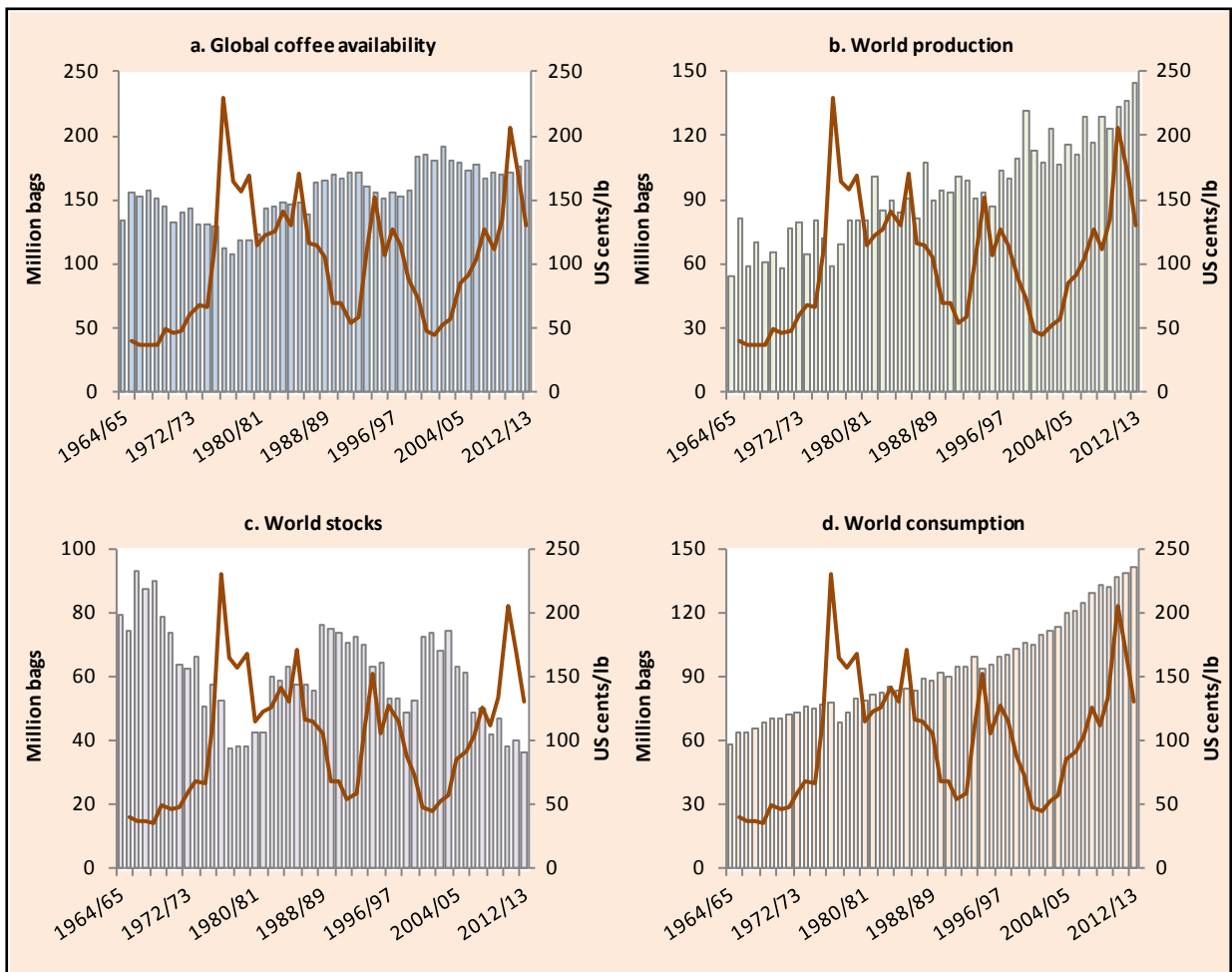
### **Consumption in emerging markets**

37. Coffee consumption in emerging markets has increased considerably in the last 50 years. From 2.9 million bags in 1964, it grew to 27.9 million in 2012, representing an increase of 855.1%. An increase of 173.4% was recorded between 1990 and 2012 meaning that the average annual growth rate of consumption during the period 1990 to 2012 was 4.7%. Emerging markets are therefore expected to be a significant source of growth in world consumption over the next few years.

v. Relationship between fundamentals and prices

38. The main factors determining coffee prices are production, consumption and stock movements, as well as any exogenous elements which may change the impact of these factors on price formation. Correlations between these fundamental market factors and coffee prices are explored below. Figure 11 shows developments in supply, production, stocks and consumption compared to the ICO composite indicator price during the period 1964 to 2012.

Figure 11: Relationship between market fundamentals and coffee prices



39. Global coffee supply is made up of world production and stocks, comprising opening stocks in exporting countries and inventories held in importing countries. As is the case of most agricultural commodities, coffee is subject to considerable variations in production that are attributable to agricultural and climatic conditions. Too little or too much rainfall, for instance, can affect the volume of production from one crop year to the next. Increases in the costs of fertilizers and labour can also limit their use, leading to reduced production. Correlation coefficients between production and coffee prices are not very significant, however there is a negative correlation observed between world stocks and prices. In other words, low stock levels generally entail high prices.



40. More detailed analysis shows that opening stocks in exporting countries have a strong influence on prices. The correlation coefficient with the ICO indicator price was -0.67 compared to -0.09 for the correlation with inventories in importing countries. This coefficient for exporting countries was -0.76 for the regulated market period compared with -0.71 in the free market period.

**Table 1: Correlation coefficients between selected market fundamentals and ICO composite indicator price**

	1965 - 2012	1965 - 1989	1990 - 2012
Global coffee availability	-0.33	-0.50	-0.40
World production	0.20	0.32	0.38
World consumption	0.23	0.45	0.49
Stocks in importing countries	-0.09	-0.11	-0.15
Stocks in exporting countries	-0.67	-0.76	-0.71
Total world stocks	-0.77	-0.77	-0.81

41. The relationship between prices and market fundamentals can perhaps be better understood through an analysis of supply and demand ratios. For the period 1965 to 2012, the global availability/consumption ratio averaged 1.63 (see Table 2). The world production/consumption ratio was 1.01 and world stocks/consumption ratio was 0.63.

42. During the regulated market period, the global availability/demand ratio averaged 1.81, indicating a global supply level equivalent to almost double that of world consumption. This ratio was very significant during the regulated market period as it remained about 1.5 during the first ten years of the period. Climate shocks affecting Brazilian production in the mid-1970s led to a fall in this ratio, but it rose again until the new climatic crisis of the mid-1980s. The world production/consumption ratio was 1.02 but world stocks represented 80% of consumption.

43. Overall, it should be noted that the behaviour of coffee prices shows strong quantitative correlations between global availability/consumption, world stocks/consumption and opening stocks/consumption. The production/consumption ratio has a much weaker influence on prices.

**Table 2: Supply and demand ratios (Period averages)**

	1965 - 2012	1965 - 1989	1990 - 2012
Global availability/consumption	1.63	1.81	1.50
World production/consumption	1.01	1.02	1.00
World stocks/consumption	0.63	0.80	0.50

## SECTION II: CHALLENGES AND PROSPECTS FOR A SUSTAINABLE COFFEE ECONOMY

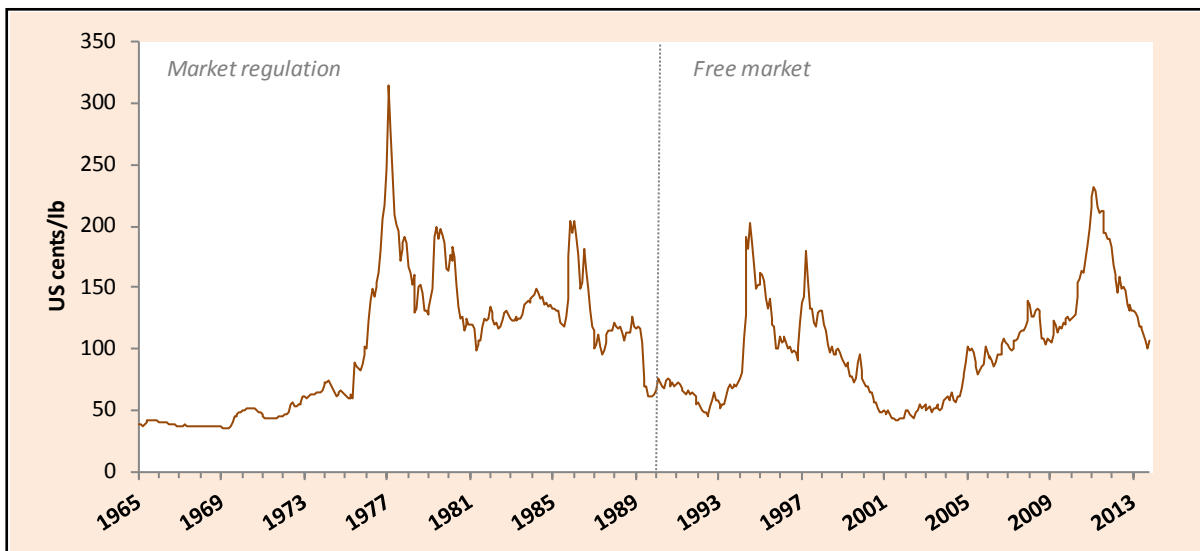
44. The 1992 Rio Earth Summit identified three mutually reinforcing ‘pillars’ of sustainable development as economic, social and environmental. These three pillars are further recognized and emphasized in the International Coffee Agreement 2007 as a major objective for the global coffee sector. A key tenet of the ICO’s work is to promote awareness of the need for a sustainable coffee economy, which is currently facing significant challenges under all three pillars.

### *i. Economic sustainability*

45. Price volatility can be a major source of uncertainty and vulnerability for coffee producers. Investment and planning decisions have to be made based on the information available at the time, but unforeseen changes in prices can undermine these choices, often with detrimental consequences.

46. Over the last 50 years, world coffee prices have varied enormously (see figure below), from less than 50 US cents/lb to over 300 cents. In the free market period since 1990, smallholder farmers in many countries have been more exposed to fluctuations in coffee prices, as the internal regulatory mechanisms in producing countries were predominantly dismantled. These price fluctuations have increased rural poverty as it became difficult for small producers to efficiently plan their resource allocations. As a result, risk management strategies are becoming increasingly recommended to producers in developing countries; however the scope and applicability of these instruments can vary significantly.

Figure 12: ICO composite indicator price (Monthly averages: 1965 - 2013)



### Price risk management techniques

47. The potential instruments for tackling price risk management include forward contracts, futures contracts and options contracts. A forward contract agrees the purchase or sale of a given quantity of coffee at a set future date and at a predetermined price. The advantage of the forward contract is that prices are pre-arranged and remain fixed for the buyer and seller. The risk is that potential gains are foregone if prices change before the end of the contract. This sales strategy was used in various forms by

many exporting countries, especially those with marketing systems under monopoly state control. With the liberalisation of marketing systems, however, the forward contract became risky for those exporting countries which no longer used *caisses de stabilisation* (price stabilization funds) or marketing boards.

48. Coffee futures contracts are fully regulated, standardised paper contracts for a particular quantity of coffee, which specify a minimum quality, place of delivery and expiry date. Unlike forward contracts, futures do not necessarily result in delivery of the physical product. Using the futures market for 'hedging' a coffee position entails protecting oneself against the risk of price variation by taking a position on the futures markets which balances out one's existing position. Hedging on the futures market allows for moderate protection against broader changes in coffee prices, but doesn't protect against the *differential risk*, which applies to specific origins or types of coffee. The use of futures contracts has increased in recent years, but does not eliminate price risk and can entail a significant capital expense.

49. Finally, options contracts provide protection against negative price movements, while at the same time affording the change to profit from favourable price changes. An option provides the right, but not the obligation, to buy or sell a given quantity of coffee at a set price over a given time period. The premium is the price paid to acquire the option. An option to buy is termed a *call*, while an option to sell is known as a *put*. The buyer of the option alone is able to exercise this right, which the seller is obliged to respect. The buyer of the put option can exercise their right if the market price falls below the option contract price, while the reverse is true for the buyer of the call.

50. The use of these risk management instruments can assist local buyers and exporters to protect profit margins against price fluctuations, which in turn allows them to pay producers higher prices. Where the possibility to utilize these instruments does not exist, buyers and exporters will be obliged to deduct large margins from prices paid to producers in order to make provision for downturns in international prices. Furthermore, the use of risk management instruments allows exporters to adopt a flexible strategy for supplying the international market, and to protect the value of their coffee stocks to regulate market supply. It is worth noting that these modern instruments are no panacea, and only constitute one aspect of a comprehensive coffee development framework.

### **Costs of production**

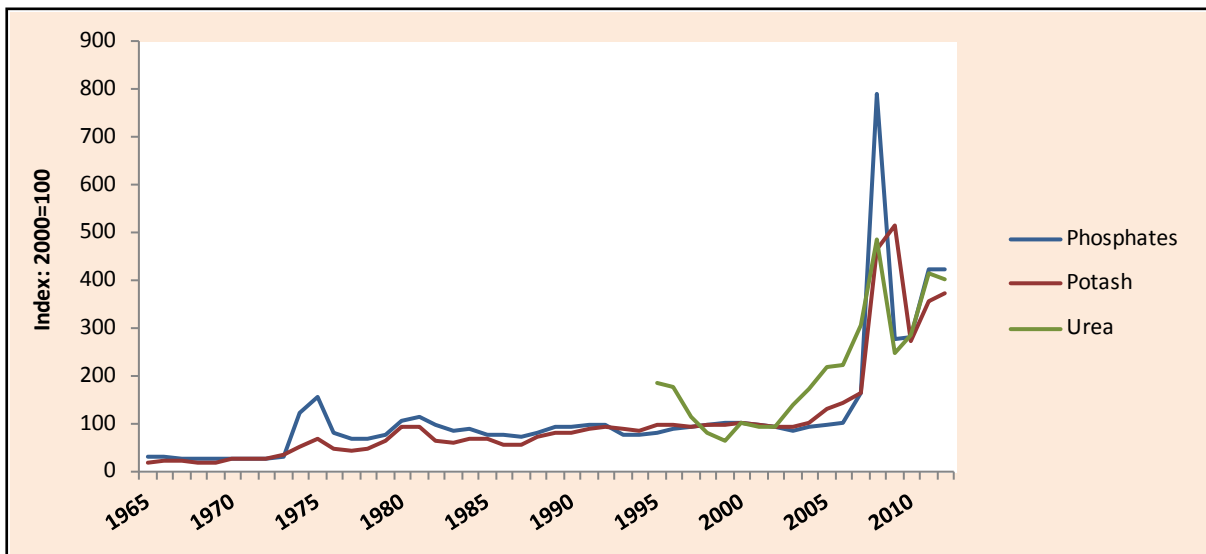
51. Price volatility is just one side of the economic sustainability equation. Changes in production costs over time can severely affect a producer's ability to make a sustainable living from their coffee crop. The main components of production costs for coffee producers are labour, fertilizers and phytosanitary products such as pesticides.

52. Labour costs are one of the major limiting factors for the development of coffee production. In many countries, one of the explanatory reasons for declining production levels is the ageing agricultural population, and the lack of youthful workers to replace it, due largely to urban migration from rural areas. Coffee is a labour-intensive crop, with little mechanization in many producing countries, and global urban wages are generally increasing.

53. In coffee farming, the nutrients most widely needed to enrich soils and improve yields are nitrogen, potassium and phosphates. Nitrogen plays a key role in the healthy growth of the coffee tree, and the

formation of new branches and leaves. Potassium is necessary for fruit and seed formation, while phosphate fertilizers contribute to the development of roots, flowering and fructification. These three key elements are usually joined together but specific combinations depend on many factors, such as the nature of the soil, rainfall patterns and the age of the coffee tree. Figure 13 below shows an index of fertilizer prices since 1965, using the price of urea as a reference for nitrogen, and potash for potassium fertilizers. All three have risen considerably over time, particularly in recent years; since 2000, prices of nitrogen, potassium and phosphate fertilizers have increased by 301%, 275% and 325% respectively.

Figure 13: Index of fertilizer prices (1965 - 2012)<sup>1</sup>



54. Finally, the use of phytosanitary products to combat pests and diseases can also incur significant costs. There are two major scourges which have ravaged the world's coffee farms and continue to cause considerably destruction. One is a disease caused by a microscopic fungus, *hemileia vastatrix*, or coffee leaf rust. The second is an insect parasite that attacks the coffee bean, known as coffee berry borer. Coffee wilt disease, or *tracheomyces*, which causes a sudden interruption of plant growth, also poses an ongoing threat to coffee production, particularly in Africa. The struggle against these coffee pests and diseases can involve very heavy expenditures, particularly when taking into account the environment and human health. This is the case for endosulfan, for example, a pesticide spray which is very effective against coffee borers but has harmful effects on both the surrounding environment and human health.

55. A summary of production costs in selected exporting countries is given below. It should be noted that costs in all countries are increasing over time, while coffee prices go both up and down. The dramatic decline in world coffee prices observed between 2011 and 2013 has caused many producers to sell their product at a price which is not remunerative, falling below the costs of production in many countries. Whenever prices paid to producers are lower than their production costs, there is likely to be a consequential fall in production and quality as a result of reduced farm maintenance.

<sup>1</sup> Source: IMF International Financial Statistics

**Table 3: Production costs in selected exporting countries**

	Brazil Arabica	Brazil Robusta	Colombia Arabica	Costa Rica Arabica	Ecuador Arabica	Guatemala Arabica	Kenya Arabica
<b>2002/03</b>			39.88	73.05	34.59	72.39	129.50
<b>2003/04</b>	58.65	37.57	34.87	66.63	35.80	74.49	129.24
<b>2004/05</b>	70.55	44.31	38.36	72.31	36.10	87.75	148.58
<b>2005/06</b>	98.92	56.14	48.77	77.75	41.30	91.43	153.48
<b>2006/07</b>	97.57	59.97	58.28	76.39	45.70	100.46	158.15
<b>2007/08</b>	121.15	64.10	66.04	90.35	52.30	102.80	182.15
<b>2008/09</b>	119.79	69.60	79.00	101.31	63.10	119.72	139.98
<b>2009/10</b>	166.61	91.52	74.72	106.67	53.80	115.58	139.11
<b>2010/11</b>			80.05	122.66	66.90	116.86	
<b>2011/12</b>			92.68	135.46	82.30	142.54	
<b>2012/13</b>			100.77	138.56	90.00		

In US cents/lb

*ii. Social sustainability*

56. Social indicators relate to the human dimension in its broadest sense, particularly education and access to primary health. Social indicators also cover working conditions, the poverty threshold and access to food, safe drinking water and housing. Population movements (rural exodus, emigration to developed countries) and social stability are also social indicators of sustainable development. It is widely recognized that in social terms, coffee plays an important role in the settlement of the farming population and the creation of employment in rural areas. Coffee also permits wider distribution of income among farming families. When prices are lower than production costs, opportunities for the rural population to renew itself are diminishing given the lack of interest in farming among young people and the exodus to urban centres and developed countries. This situation threatens the sustainability of the economy in countries heavily dependent on coffee for the bulk of their export earnings.

57. The human dimension of sustainability lies in the reduction of poverty and inequality, access to resources, health care, education and culture. The principles of sustainable development in the coffee economy should be based on the following elements:

- Producers should receive a level of prices/wages that covers the cost of production, living costs and environmental costs in a competitive context.
- Working conditions should comply with International Labour Organization conventions.
- Producers should adopt sustainable practices in environmental terms.
- Access to credit and diversification opportunities should be improved.
- Access to commercial information and marketing chains should be improved.

**Certification: advantages, costs and challenges**

58. A sustainable coffee economy includes all the different aspects of the agricultural world designed to favour more equitable development. The promotion of a sustainable coffee economy must take into account all these different aspects and prioritize accordingly. One way to address these issues is through

certification and verification schemes. Certification had its origin in the concept of sustainable development. The emergence in many countries of consumers who were increasingly sensitive to sustainability issues led to numerous initiatives for certification or the development of standards by non-governmental organizations. Certification is a procedure whereby an accredited third party provides written assurance that a product or process conforms to certain standards, which are prepared with reference to the economic viability of the farmers, preservation of the environment and social responsibility.

59. Certification labels adopt different approaches in following their particular specifications. For example, the Rainforest Alliance works mainly to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices, water and soil protection and the fight against pests. UTZ Certified coffee refers to a worldwide certification programme for 'responsible coffee', requiring social and environmental quality in coffee growing. The 4C Common Code for the Coffee Community, on the other hand, is a verification scheme which promotes sustainable social, economic and environmental practices.

60. Certification standards have contributed to a focus on environmental aspects of coffee growing in an organised and appropriately monitored framework. In addition, greater awareness of good farming and agro-forestry practices is becoming far more common in the coffee sector. Other positive aspects include reduced risk of contamination from insecticides and fertilizers, management of water resources and encouragement of biological practices. Nevertheless, for producers, the financial advantages, particularly in the form of higher prices, are not always evidence, while the additional costs of certification eligibility are considerable. These costs include initial investments in production and protection equipment, additional investments and registration fees. Certification and audit procedures also entail a cost in addition to the registration fee, and frequently require a process of changing cultural practices.

61. Despite the rapid development of the certification concept in the international coffee trade and its adoption by leading stakeholders in importing countries, there are still a number of major challenges. Among these, matters relating to its impact on coffee yields and quality must still be clarified. Similarly, the contribution it makes to reducing producer vulnerability to exogenous shocks such as falling prices needs to be further investigated. Finally, production of certified coffee generally exceeds demand, with many certified producers unable to sell all their coffee in any given programme. It therefore remains to be seen whether the certified sector has sufficient capacity to expand beyond a niche market.

*iii. Environmental sustainability*

62. Sustainable development takes into account environmental factors, particularly the ecosystem, soil erosion, desertification, deforestation and pollution. On the whole, even though the contribution made to environmental matters by coffee production has been positive in comparison with most economic activities, many challenges remain and require special attention. Negative effects that need to be countered relate to reduction of forest areas, soil degradation and water pollution caused by excessive use of chemical pesticides.

### **Coffee production and deforestation**

63. The importance of these negative effects depends on the production areas concerned and the production systems adopted. In West Africa, for instance, extensive coffee production was developed at the expense of forest areas, contributing to deforestation. Studies carried out in these areas have shown a strong correlation between deforestation and coffee cultivation without shade<sup>2</sup>. Intensification of production through the use of organic fertilizers is one of the positive measures adopted by the coffee authorities to limit the disappearance of forests.

### **Coffee production and soil degradation**

64. Coffee growing provides very little soil protection and, depending on the cultivation method used, the percentages of organic matter in soils could diminish. It should be noted, however, that coffee does not affect soils directly, since the soil under coffee trees is covered. Coffee tends to exhaust the soil content of nitrogen, potassium and calcium, which accounts for the use of fertilizers by farmers. Excessive use of fertilizers can cause problems due to their transfer to water sources, thus contributing to water pollution.

### **Coffee production and water and air pollution**

65. Apart from water pollution caused by excessive use of chemical fertilizers, pesticides and herbicides can also contribute to water pollution and affect people's health. One of the main problems for some regions is water pollution arising from wet processing. To address this issue, the ICO assists coffee farmers in producing countries to use environmentally friendly technologies for the washing process through pilot projects.

### **Encouragement of good agricultural practices**

66. It is also necessary that the economic environment should encourage stability and reasonable living standards for the populations involved with coffee, and ensure the maintenance of coffee quality. In fact, coffee is an evergreen shrub and hence an important contributor to carbon sequestration as well as being effective in stabilizing soils. It also permits the preservation of much of the original biodiversity in planted areas. It is vital that coffee production and processing take into account environmental needs to ensure sustainability. However, environmental issues relating to coffee should preferably be approached on a regional rather than a worldwide basis since every region has its own distinctive features and different priorities.

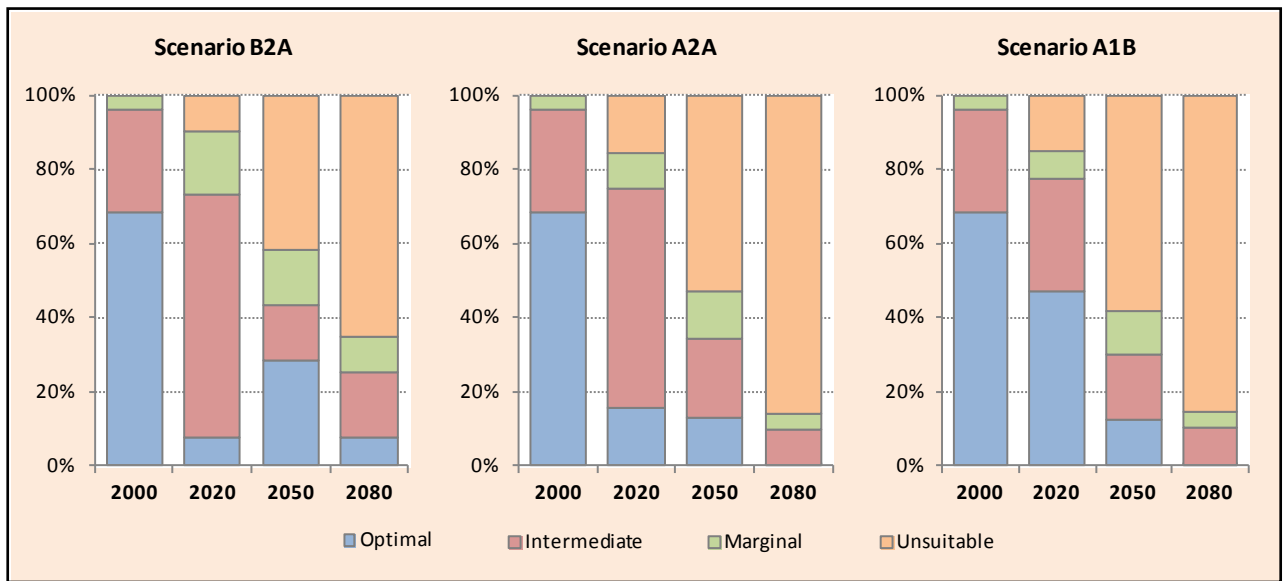
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<sup>2</sup> UNCTAD (1993) *“Experiences concerning environmental effects of commodity production and processing: synthesis of case studies on Cocoa, Coffee and Rice”* & Denis Seudieu (1993) *“L’impact de la production et de la transformation du café, du cacao et du riz sur l’environnement en Côte d’Ivoire”*.

**Box 4: Coffee and climate change**

Changing climatic conditions and rising global temperatures pose one of the most significant threats to world coffee production. This is a particular concern for Arabica coffee, which requires relatively specific ecological and meteorological conditions in order to produce quality coffee beans, including an optimum mean temperature range of between 15° to 23°C. A sustained rise in global temperatures could severely reduce the available growing regions for coffee. Other climatic factors can also negatively affect productivity, including rainfall, soil composition and frequency of pest and disease infestations. A 2012 study by scientists from the Royal Botanic Gardens in the UK analysed the potential effects of climate change on wild indigenous Arabica growth in Ethiopia, concluding that, in the worst case scenarios, optimal available land for Arabica production could entirely disappear by 2080 (Figure 14).

**Figure 14: Potential climate change scenarios for wild indigenous Arabica in Ethiopia<sup>3</sup>**



There are generally two main interrelated policy responses to climate change: mitigation and adaptation. Mitigation involves reducing the impact of one's activities on the climate, while adaptation looks to lower one's vulnerability to climatic changes. According to the *International Trade Centre*<sup>4</sup>, although potential actions can be taken along the coffee chain to reduce emissions, the economic incentives are not yet strong enough to encourage significant changes. In terms of adaptation, it must be noted that smallholder coffee farmers are both among the most vulnerable to changes in the climate, and also the least able to meet these emerging challenges. However, recent initiatives such as *Coffee & Climate* are promoting awareness of the threat of changing climatic conditions and disseminating information on how best to prepare against this increasing risk.

<sup>3</sup> Graphs reconstructed using figures from Davis PD, Gole TW, Baena S & Moat J (2012) *The Impact of Climate Change on Indigenous Arabica Coffee (Coffea Arabica): Predicting future trends and identifying priorities*. PLoS ONE 7(11): e47981.

<sup>4</sup> International Trade Centre (2012) *Climate Change and the Coffee Industry*.



### CONCLUSIONS: OUTLOOK FOR THE WORLD COFFEE SECTOR

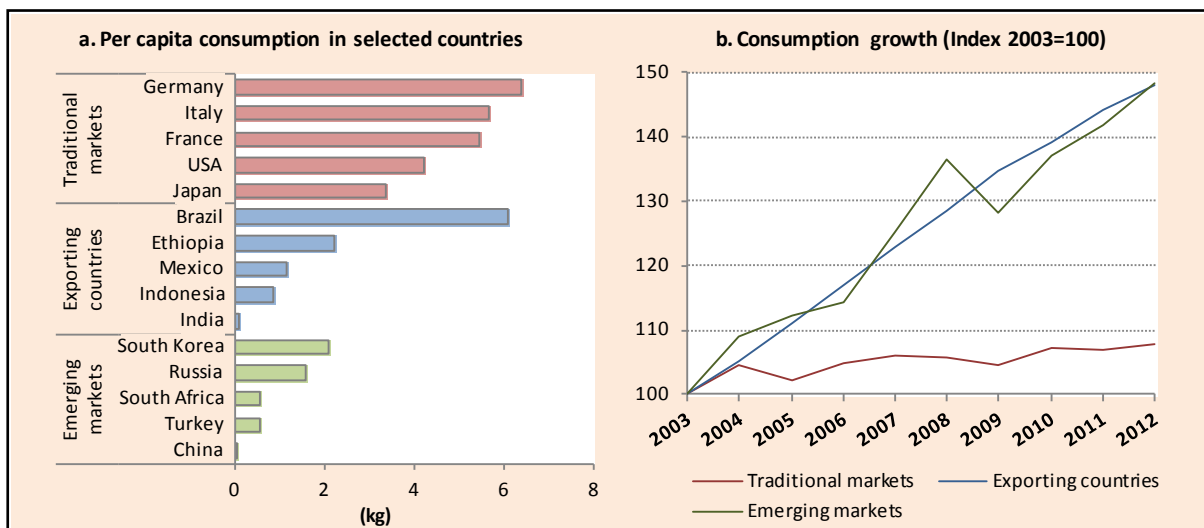
67. At the end of 2013, coffee prices had fallen to their lowest levels in six and a half years, as a surplus of production over consumption weighed heavily on the market. The historically high prices of 2011 had provided an incentive for producers to invest and expand their output, resulting in two consecutive years of record world production in 2012/13 and 2013/14. The inelasticity of both supply and demand to changes in coffee prices in the short term prevent the coffee market from easily correcting a surplus or deficit, and promotes the price volatility and over-corrections observed in recent years.

68. Looking ahead to the future, it seems likely that these price swings will continue, particularly as environmental factors increase the probability of short-term supply shocks. Nonetheless, in terms of the global coffee balance, the general outlook seems positive. Between 1990 and 2012, world production increased by more than 50%, mostly due to the emergence of Vietnam as a major producer. In many countries, however, cultivatable land is shrinking and production costs are rising, suggesting that many producers may be reaching their saturation point. Barring the emergence of a new major producer, which seems unlikely, production will struggle to maintain such a high growth rate in the near future.

69. World coffee consumption, on the other hand, is thriving. Although many traditional markets are growing only modestly, with consumption appearing to have reached saturation point in many countries, there still exist several dynamic niche opportunities for producers to benefit from, such as specialty and certified coffees. Furthermore, over the last 50 years, the perception of coffee as a healthy product has changed significantly, with a corresponding increase in the amount of scientific research into the positive health properties of coffee.

70. Consumption in emerging markets and exporting countries has been growing rapidly and shows strong potential for further growth. Exporting countries whose economic prospects are favourable to increased coffee consumption include Brazil, Indonesia, India and Mexico. Living standards in some coffee-exporting countries continue to improve, creating a strong potential for growth in domestic coffee consumption given an expanding middle class. Emerging markets are found in newly industrialized countries which have experienced considerable economic and social development. As a group, these emerging markets have recorded considerable growth in coffee consumption, with an increase from 10.2 million bags in 1990 to 27.9 million in 2012, representing an average annual growth rate of 4.7%.

Figure 15: Consumption trends in traditional markets, exporting countries and emerging markets

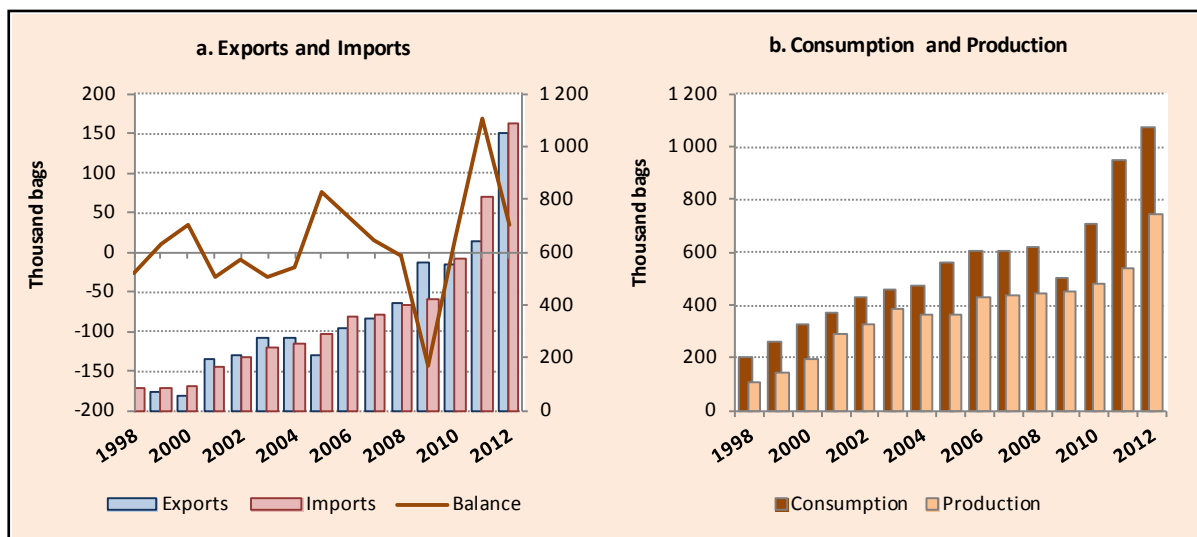


71. Figure 15 shows per capita consumption in selected countries and consumption growth over the last 10 years. Despite the fast growth rates observed in exporting countries and emerging markets, per capita consumption remains relatively low, with the exception of Brazil. This shows the potential for further growth in such markets; particularly more populous countries such as India and China (see Box 5).

**Box 5: Coffee in China**

China is both a consumer and producer of coffee, and all aspects of the sector are growing rapidly. As shown in Figure 16 below, net imports of coffee vary significantly from year to year, ranging from negative to positive over the last fifteen years. In terms of production, China predominantly grows Arabica beans, in Yunnan province, which are mostly destined for export. In 2012, production was estimated at around 750,000 bags, and has been growing at 15.1% per annum since 1998. Consumption has also been increasing significantly, at a yearly rate of nearly 13%, to reach an estimated 1.1 million bags in 2012. With a population of some 1.3 billion, per capita consumption in China comes to just 25 grams. However, despite this low base, if coffee consumption in China continues to maintain the same growth rate, it could reach 2.8 million bags by 2020, roughly equivalent to consumption in the United Kingdom

**Figure 16: Coffee sector in China (1998 – 2012)**



72. To conclude, world production grew steadily over the last 50 years despite climatic shocks. It will be difficult to maintain this trend, however, mainly on account of the continued rise in production costs as well as problems related to pests and diseases which could affect this steady growth in production. Moreover, climate change could also have a negative impact on production in many countries unless urgent research is carried out on adaptation measures.

73. On the other hand, prospects for growth in world coffee demand remain promising, mainly in emerging markets and exporting countries, in addition to the expansion of niche markets in traditional consuming countries. This growth in consumption should help to maintain a tight balance between supply and demand. In addition, the development of a processing industry in exporting countries could enable them to increase added value in the coffee sector.

74. It is worth noting that the barriers to increased coffee consumption in many exporting countries and emerging markets are related mainly to cultural and economic factors, as per capita GDP is generally low and coffee is considered as a luxury good in many countries. As incomes rise, consumption of coffee will likely become more prevalent and the vast potential of these emerging markets and exporting countries will be increasingly fulfilled. Finally, sustainable development of the coffee economy needs to be based on actions designed to promote a consistent balance between supply and demand that is remunerative to growers.

## METHODOLOGY USED TO ESTIMATE THE TOTAL VALUE OF THE COFFEE INDUSTRY

### Consumption data

Consumption data for importing and exporting countries is provided in the first column for calendar year 2012, which amounts to 142 million 60kg bags. This data is then converted to the roasted equivalent by dividing by the conversion factor of 1.19<sup>5</sup>.

### At-home and out-of home consumption

The percentage shares of at-home and out-of-home consumption for each selected importing country were estimated using a proxy based on previous market studies.

### Retail prices for roasted coffee

Annual average retail prices for coffee were considered for each selected country, where such data was available for 2012.

### Average sales price for out-of-home consumption.

In the selected countries the average minimum price of a cup of coffee is estimated at US\$2 for traditional markets, and \$1.5 for exporting countries and emerging markets. Some independent reports indicate high unit prices.

### Number of cups per kilogramme

Generally, a kilogramme of roasted coffee can provide between 50 and 140 cups of coffee for consumption. Bearing in mind various losses, as well as the use of water, milk and sugar, however, only **60 cups** of coffee were considered as sold on the basis of a kilogramme of roasted coffee. These estimates apply to out-of-home consumption only.

### Total consumption value

The aggregation gives an estimated gross value of **US\$173.4 billion** in all exporting and importing countries in 2012. It should also be noted that the gross value chain of coffee consumption does not include the value of re-exports estimated at US\$10.4 billion in 2012 as well as the value of exports by all exporting countries estimated at US\$19.1 billion in 2012/13.

In conclusion, it should be noted that the estimates of Gross value Chain of coffee consumption will be affected by two main hypotheses:

- Number of cups produced from 1 kg of roasted coffee: It seems that 1 kg of roasted coffee gives 60 very good quality cups of coffee. This number can increase to 144 cups for a fair and regular quality cup of coffee;
- Unit price of a cup of coffee: This can vary from country to country and also from city to city in the same country.

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<sup>5</sup> To convert roasted coffee into green bean equivalent, multiply the net weight of roasted coffee by 1.19. (see the Annex of document ED-2123/11).

## ANNEX (contd 1)

TABLE 1: FINAL CONSUMPTION VALUE OF THE GLOBAL COFFEE INDUSTRY IN 2012

	Total consumption (thousand 60kg bags GBE)	Total consumption (thousand kg)	At-home consumption (%)	Retail price (US cents/lb)	Retail price (US\$/kg)	Total at-home value (thousand US\$)	Out-of-home consumption (%)	Cost per cup (US\$/kg)	Number of cups/kg	Total out-of-home value (thousand US\$)	Total consumption value (thousand US\$)
<b>Exporting countries</b>	<b>43 467</b>	<b>2 191 596</b>				<b>15 625 173</b>				<b>9 862 180</b>	<b>25 487 353</b>
Brazil	20 178	1 017 353	95%	259	6	5 529 111	5%	1.5	60	4 578 088	10 107 199
Colombia	1 439	72 575	95%	445	10	676 802	5%	1.5	60	326 587	1 003 389
Ethiopia	3 387	170 786	95%		9	1 460 218	5%	1.5	60	768 536	2 228 754
India	1 917	96 655	95%		9	826 404	5%	1.5	60	434 950	1 261 354
Indonesia	3 584	180 681	95%		9	1 544 820	5%	1.5	60	813 063	2 357 883
Mexico	2 354	118 689	95%		9	1 014 792	5%	1.5	60	534 101	1 548 892
Philippines	2 175	109 664	95%		9	937 626	5%	1.5	60	493 487	1 431 113
Venezuela	1 650	83 193	95%		9	711 303	5%	1.5	60	374 370	1 085 672
Vietnam	1 583	79 815	95%		9	682 419	5%	1.5	60	359 168	1 041 587
Others	5 200	262 185	95%		9	2 241 678	5%	1.5	60	1 179 831	3 421 509
<b>Importing countries</b>	<b>98 533</b>	<b>4 968 073</b>				<b>48 206 667</b>				<b>99 689 844</b>	<b>147 896 511</b>
E.U.	40 642	2 049 180				20 407 731				49 784 506	70 192 237
Austria	1 269	63 984	88%	838	18	1 039 674	12%	2.0	60	928 022	1 967 696
Belgium	915	46 116	82%	620	14	516 403	18%	2.0	60	998 046	1 514 450
Bulgaria	376	18 955	95%	344	8	136 727	5%	1.5	60	85 298	222 024
Cyprus	85	4 306	95%	539	12	48 643	5%	1.5	60	19 376	68 019
Czech Republic	685	34 549	95%	713	16	516 015	5%	1.5	60	155 472	671 487
Denmark	802	40 457	78%	672	15	469 426	22%	2.0	60	1 055 047	1 524 474
Estonia	104	5 243	95%		9	44 825	5%	1.5	60	23 592	68 417
Finland	1 082	54 556	88%	480	11	507 040	12%	2.0	60	792 789	1 299 829
France	5 790	291 941	81%	392	9	2 038 957	19%	2.0	60	6 739 440	8 778 397
Germany	8 830	445 197	85%	474	10	3 940 325	15%	2.0	60	8 211 407	12 151 732
Greece	1 076	54 257	69%		9	334 505	31%	1.5	60	1 538 089	1 872 593
Hungary	252	12 718	95%	607	13	161 679	5%	1.5	60	57 231	218 911
Ireland	215	10 855	95%		9	92 812	5%	2.0	60	65 131	157 943
Italy	5 731	288 970	77%	849	19	4 145 003	23%	2.0	60	8 113 144	12 258 147
Latvia	101	5 102	95%	808	18	86 340	5%	1.5	60	22 958	109 298
Lithuania	185	9 307	95%	709	16	138 145	5%	1.5	60	41 881	180 025
Luxembourg	212	10 664	95%	789	17	176 151	5%	2.0	60	63 986	240 137
Malta	21	1 059	95%		9	9 052	5%	1.5	60	4 764	13 816
Netherlands	1 382	69 704	79%	583	13	704 005	21%	2.0	60	1 793 044	2 497 048
Poland	1 936	97 620	93%	416	9	832 207	7%	1.5	60	623 371	1 455 577
Portugal	836	42 156	47%	568	13	247 883	53%	2.0	60	2 685 256	2 933 139
Romania	849	42 818	95%		9	366 094	5%	1.5	60	192 681	558 775
Slovakia	201	10 138	95%	671	15	142 463	5%	1.5	60	45 622	188 086
Slovenia	185	9 327	95%	448	10	87 459	5%	1.5	60	41 973	129 431
Spain	3 435	173 205	57%	447	10	966 664	43%	2.0	60	9 010 128	9 976 793
Sweden	1 159	58 454	80%	520	11	535 631	20%	2.0	60	1 405 629	1 941 259
United Kingdom	2 926	147 523	71%	915	20	2 123 603	29%	2.0	60	5 071 129	7 194 732
Japan	7 131	359 544	63%	757	17	3 773 318	37%	2.0	60	16 019 185	19 792 503
Norway	723	36 472	76%	548	12	333 094	24%	2.0	60	1 069 065	1 402 159
Switzerland	1 047	52 794	82%	659	15	630 475	18%	2.0	60	1 129 363	1 759 838
Tunisia	421	21 234	95%		9	181 549	5%	1.5	60	95 552	277 101
Turkey	679	34 234	65%	747	16	369 313	35%	1.5	60	1 062 996	1 432 309
USA	22 232	1 120 924	82%	568	13	11 450 130	18%	2.0	60	24 707 566	36 157 697
<i>Other importing countries</i>	<i>25 658</i>	<i>1 293 691</i>	<i>95%</i>		<i>9</i>	<i>11 061 058</i>	<i>5%</i>	<i>1.5</i>	<i>60</i>	<i>5 821 609</i>	<i>16 882 667</i>
<b>World total</b>	<b>142 000</b>	<b>7 159 669</b>				<b>63 831 840</b>				<b>109 552 024</b>	<b>173 383 864</b>