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Value addition in the African coffee sector

Background

In accordance with Article 34 of the International Coffee Agreement 2007, 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 Value addition in the African coffee sector.

Action

The Council is requested to take note of this document.

VALUE ADDITION IN THE AFRICAN COFFEE SECTOR

I. Introduction

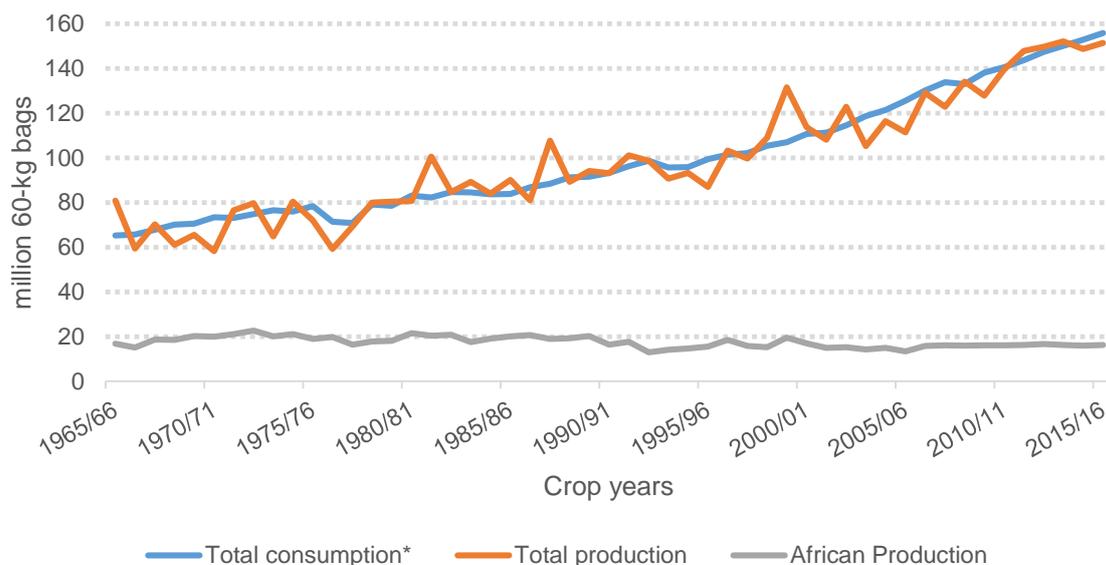
1. Economic growth in Sub-Saharan Africa is expected to rebound to 2.6% in 2017 after a sharp decline the year before, according to a recent World Bank publication.¹ The growth forecast remains positive for the 2018/19 period in view of a recovery of commodity prices from their low in 2016 and other internal factors, such as more favourable weather conditions benefitting the important agricultural sector. In view of this positive direction the overall economy is taking, this study examines the prospects for the African coffee sector, which has largely stagnated in recent years.

2. Specifically, the aim of this study is to review the development of production and consumption patterns since the liberalization of the global coffee market. Specific emphasis is placed on an assessment of the level of value added in the African coffee sector compared to other producing regions. Finally, the main constraints to increasing value addition are identified and investment requirements highlighted.

II. Production

3. Since the dismantling of the quota system in 1989, global production has increased by almost 60%, from 95.4 million bags on average in the first half of the 1990s to 151.6 million bags estimated for 2016/17 (Figure 1).

Figure 1: Global demand and supply balance



*Consumption for importing countries on coffee year basis

¹ World Bank (2017): *Africa's Pulse*. Volume 15.

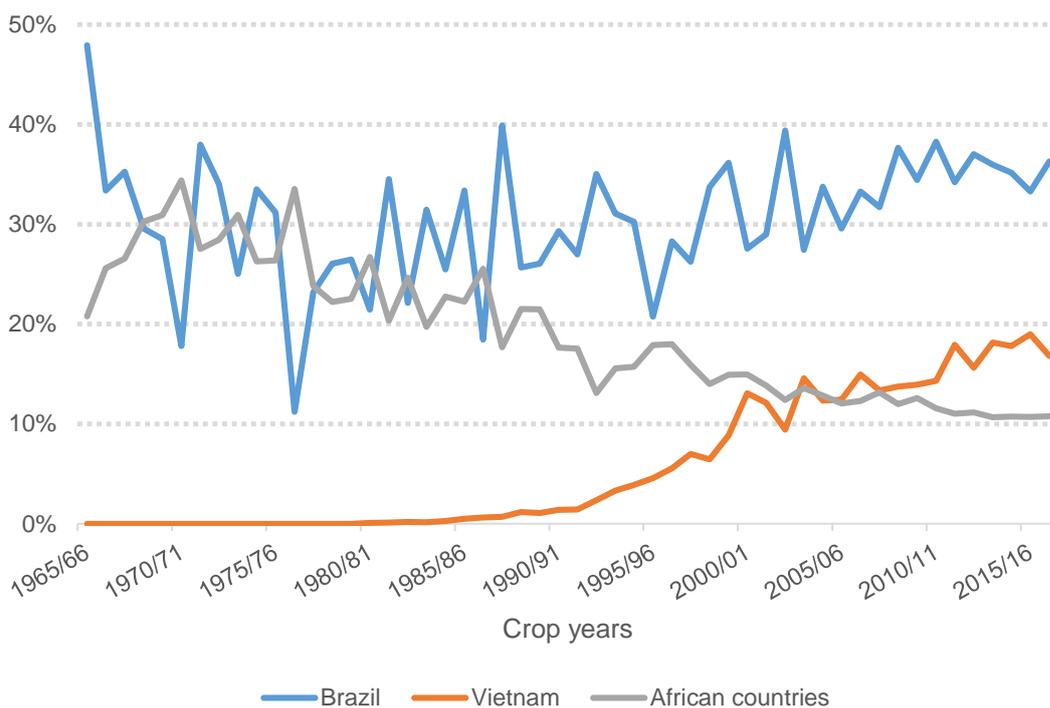
<http://documents.worldbank.org/curated/en/348741492463112162/Africas-pulse>

4. Global growth in demand, which to a large degree is the result of increased domestic consumption in coffee-producing countries and emerging economies, has provided additional markets for growers. However, not all producing countries have benefitted to the same degree.

5. As can be seen in Figure 2, major producers like Brazil, for example, managed to increase production broadly at the rate of global output. As a result, Brazil maintained a market share of around 30% over the past two decades. Other countries, such as Vietnam, increased their production at a rate higher than growth in global supply. Hence, Vietnam has steadily increased its share in global output to more than 15% and established itself as the second largest producer. Over the same period, coffee production in Africa has lost traction. The continent's share in global output decreased from 17.6% in 1990 to 10.8% in 2016 as production has broadly stagnated for two decades. Over the same period Africa's share in the total value of global exports fell by a greater proportion, from 21% in 1990 to only 9.4% in 2016.

6. However, a disaggregated view of the 25 African countries that produce coffee reveals a more nuanced picture. Since 1989/90, when cumulative coffee production in Africa stood at more than 20 million bags, individual producing countries took very different paths. Some countries managed to increase output, while others produce significantly less today than 25 years ago.

Figure 2: Share of selected countries in global coffee output



7. Figure 3 below depicts the development of coffee production in the ten largest producing countries on the African continent (as per 1990/91 output). The majority of countries experienced a sharp decline in production of around 50%. Output decreased in the early 1990s and remained at low levels in Burundi, Cameroon, D.R. Congo and Rwanda. In Tanzania the initial drop in production was less pronounced and the level of output today is similar to that achieved in 1990/91.

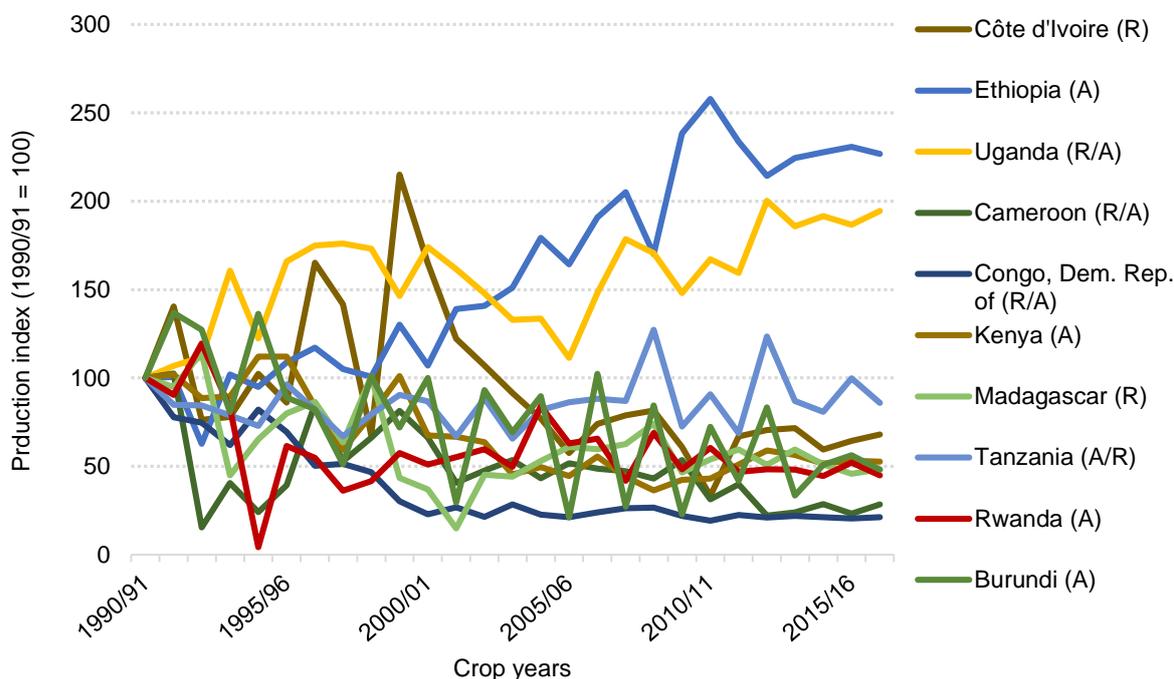
8. The reasons behind the decline of the coffee sectors in most of the countries are diverse. An important pattern is the liberalization of the coffee sectors following the dismantling of the export quota systems under the International Coffee Agreement. Regulatory frameworks and national coffee institutions, such as coffee boards which were buying coffee from farmers at institutional prices to market the coffee in Europe and other centres of consumption at the time, were dissolved. When coffee prices dropped as a result of oversupply in the immediate aftermath of the end of the economic clauses of the Agreement, many national coffee sectors stalled.

9. In some countries, e.g. Burundi, D.R. Congo and Rwanda, these effects were exacerbated by violent conflicts and civil war. In this context Côte d'Ivoire is noteworthy as the coffee sector expanded after the liberalization and output initially grew until the civil war in the early 2000s resulted in a collapse of production levels.

10. Productivity is low in most coffee-producing countries in Africa with an average yield of 400 kg/ha in the period 2011/12 to 2013/14. The use of mineral fertilizers and pesticides is limited and ageing trees are only slowly replaced as access to finance is severely constrained. The lack of effective extension services in most countries also hampers the transfer of skills and the adoption of modern farming techniques.

11. Two notable exceptions to this general negative trend, are Ethiopia and Uganda. Both countries increased their production post-1990, roughly doubling output. While Ethiopia is an Arabica-producing country, coffee farmers in Uganda cultivate predominantly Robusta.

Figure 3: Development of coffee production in selected African countries



12. Despite this trend of broadly stagnating production, coffee remains very important to the overall economy of many African countries. In 1990, coffee contributed as much as 5.3%, 3.3% and 3.2% to the GDP of Burundi, Uganda and Rwanda, respectively (Table 1). In 2015 the share in GDP still remained above 1%, except for Rwanda with an estimated share of 0.8%. Coffee is an important cash crop for rural households. It is estimated that the cultivation of coffee provides a livelihood and employment for approximately 7 million households in Africa, most of which are smallholders.

13. In 1990, coffee was by far the most important export commodity in many countries, making up more than three quarters of total exports (by value) in Uganda, Burundi, Ethiopia and Rwanda. The share has since decreased significantly as exports diversified. However, the dependence on coffee in earning foreign exchange remains high and thus a potential concern for Burundi, Uganda and Ethiopia as it comes at a cost of exposure to a notoriously volatile market with strong price fluctuations.

Table 1: Economic significance of coffee in selected African countries

Country	Coffee share in % of GDP		Coffee share in % of export value	
	1990	2015	1990	2015
Uganda	3.3	1.5	92.1	17.9
Burundi	5.3	1.3	80.6	35.6
Ethiopia	1.1	1.2	44.0	18.9
Rwanda	3.2	0.8	75.2	9.4
Togo	1.1	0.5	6.6	1.6
Cote d'Ivoire	2.6	0.3	9.2	1.0
Kenya	2.4	0.3	20.0	3.6
Tanzania	1.9	0.3	24.2	3.0
Guinea	0.2	0.3	0.8	0.8
Central African Republic	0.7	0.2	8.5	4.1

II.I Domestic consumption

14. Compared to other world regions, the African continent contributes only modestly to global demand for coffee. In 2015/16, around 10 million bags were consumed across African countries. Accordingly, the share of both exporting and importing countries on the continent amounts to 6.8% of global demand. Between 2012/13 and 2015/16 demand grew by 1% annually, which is faster than Europe and South America but slower than the global average.

Table 2: Global demand for coffee (in million 60-kg bags)*

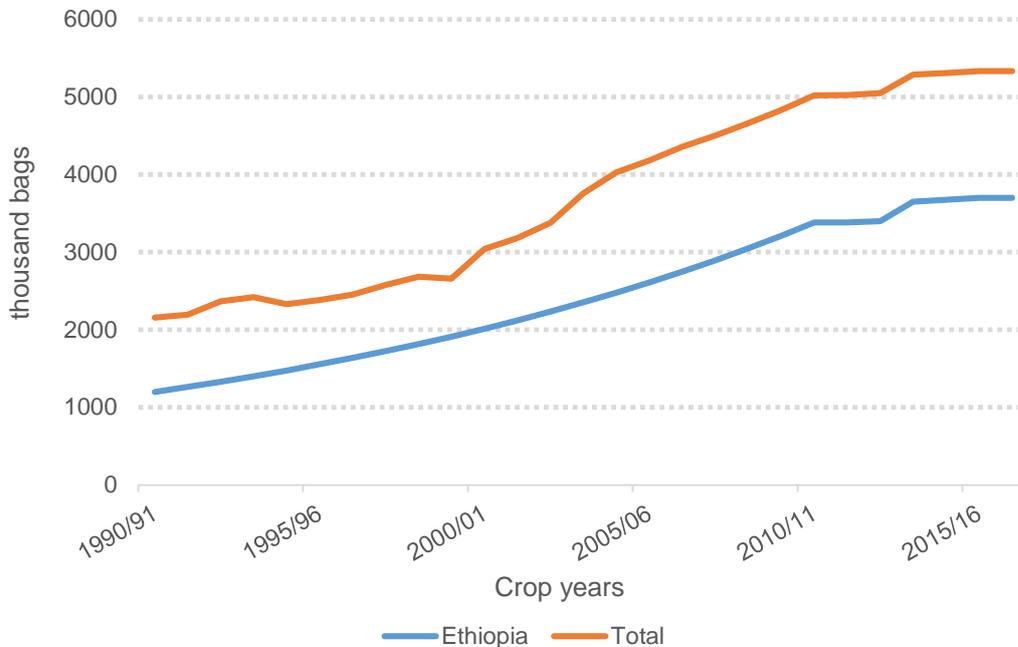
	2012/13	2013/14	2014/15	2015/16	CAGR (2012/13 - 2015/16)
World total	146 964	149 022	151 758	155 469	1.9%
Africa	10 470	10 597	10 754	10 794	1.0%
Ethiopia	3 400	3 650	3 675	3 700	2.9%
Côte d'Ivoire	317	317	317	317	0.0%
Uganda	216	221	229	234	2.7%
Asia & Oceania	29 445	30 701	32 550	33 611	4.5%
Central America & Mexico	5 200	5 156	5 235	5 306	0.7%
Europe	50 028	50 179	50 912	51 590	1.0%
North America	26 778	27 706	27 359	28 931	2.6%
South America	25 042	24 682	24 949	25 237	0.3%

*Consumption for importing countries on coffee year basis

15. Focusing on coffee-producing countries on the African continent, it becomes apparent that domestic consumption has increased significantly in this subset of countries (Figure 4). Between crop years 1990/91 and 2015/16 annual consumption in these markets more than doubled from 2.2 to 5.3 million bags. The main driver behind the increase was Ethiopia, which experienced an average growth in consumption of 4.4% per annum. Demand in the remaining

coffee-producing countries in Africa grew at only 2.5%. As a result, the share of Ethiopia in the domestic consumption of these countries increased from 55% to 70% since the beginning of the 1990s.

Figure 4: Domestic consumption in coffee-producing countries in Africa

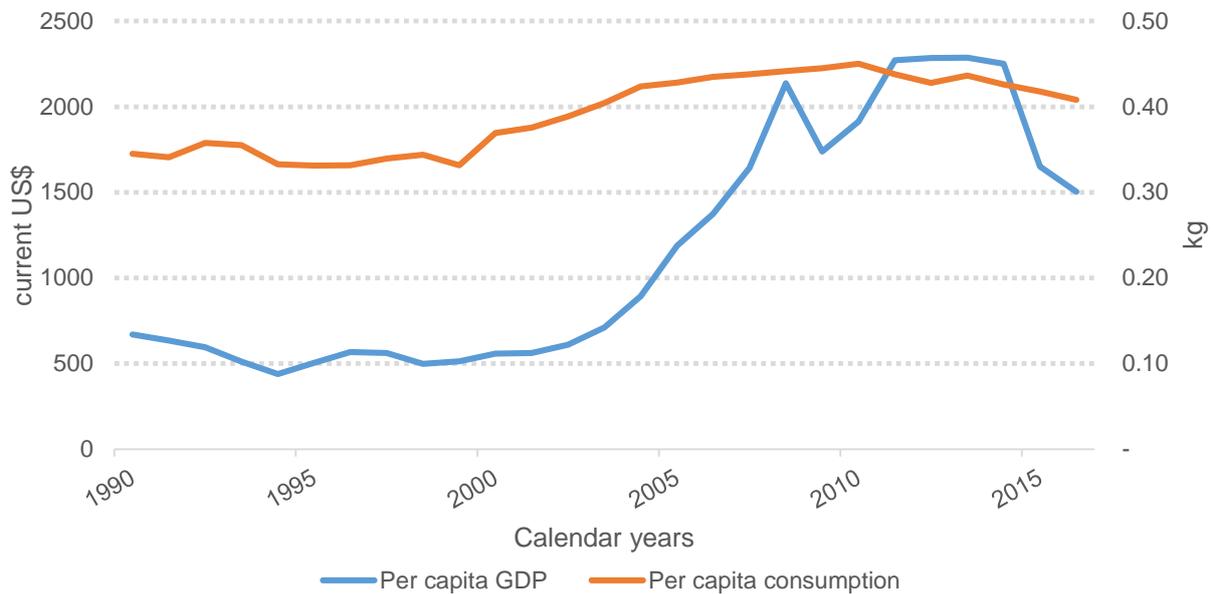


16. The rise in domestic demand for coffee is the result of both strong population growth and, until recently, increasing per capita consumption. Figure 5 shows that coffee became more popular in the period from 2000-2008 when GDP per capita increased from around US\$500 to US\$2,000 on average in coffee-producing countries. Over the same period per capita coffee consumption increased from 0.35kg to 0.45kg suggesting that income constraints and cultural factors hampering coffee consumption were gradually overcome.

17. Ethiopia shows the highest per capita consumption levels (2.6 kg) while other major producers, such as Côte d'Ivoire and Uganda, remain below 1kg per capita. It should be noted however, that the average population age on the African continent is very low in comparison to other world regions. For example, in 2015 the median age in Burundi and Ethiopia was 17 years compared to almost 30 years in Colombia. As coffee is more likely to be consumed by adolescents and adults rather than children, per capita consumption tends to be lower in countries with a low median age.

18. Notably, the economic growth in the period under investigation was driven mainly by a boom in commodity exports (e.g. oil). Since the financial crisis in 2008, per capita consumption of coffee has fallen slightly. With a positive outlook for economic growth this trend might reverse in the coming years.

Figure 5: Per capita GDP vs. per capita coffee consumption in African producing countries



III. Value added in the African coffee sector

19. In view of the strong contribution of the national coffee sectors to many African economies, the level of value added in the countries of origin is examined. The coffee supply chain linking coffee growers and coffee consumers comprises multiple stages, including exporters, traders, roasters and retailers. Most of the value added in the coffee supply chain is created in importing countries. However, there are ways to add and or retain more value in producing countries.

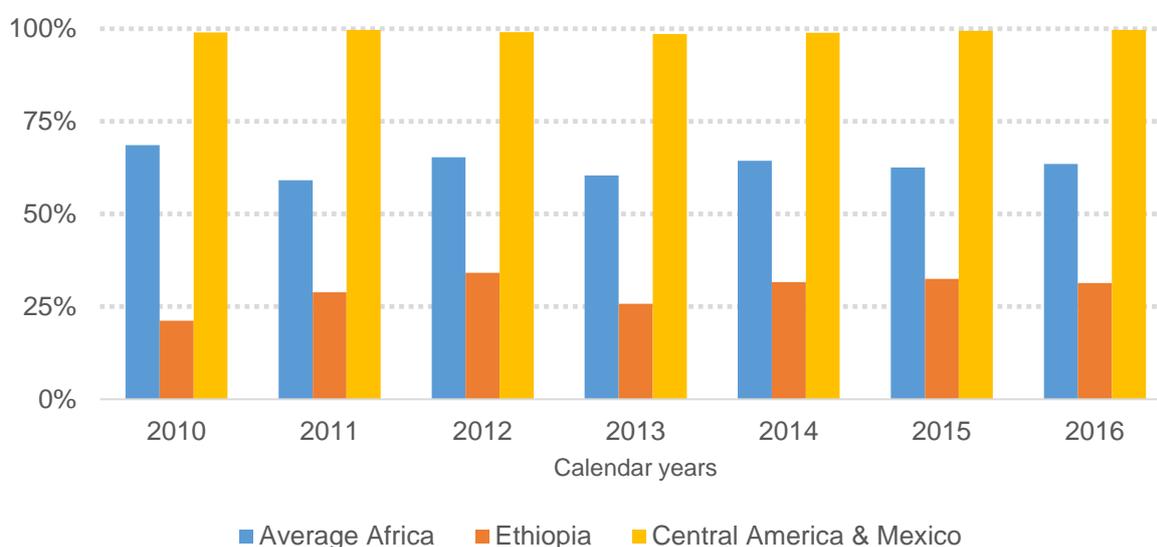
III.1 Wet- and dry-processed green coffee exports

20. The quality of coffee beans is greatly influenced by the immediate post-harvest processing. Usually, this is divided into dry and wet processing of the coffee cherries harvested by farmers. Dry processing requires less investments in facilities and machinery but yields lower quality coffee beans. Wet processing, the water-based depulping of coffee cherries, leads to a cleaner taste profile which in many consumer markets is regarded as superior. However, easy access to a cooperatively owned or privately operated washing station is crucial.

21. The post-harvest process has a significant impact on the prices farmers can expect to receive. Wet-processed or washed coffee fetches a significant premium on the world market. In the case of Ethiopia an empirical study has found that washed coffee was sold at prices 20% above dry-processed coffees.²

22. Figure 6 shows that the share of washed coffee in total exports varies between countries. For example, while the share of washed coffee in Ethiopia has remained relatively stable at 30%, virtually all Kenyan coffee was washed.

Figure 6: Share of wet-processed coffee in total Arabica exports (2010-2016)



23. There is also scope for African producers to tap into the high-value market segment of specialty coffees, which are characterized by specific taste profiles and are sold in small batches, usually to smaller roasters. This market segment has shown very high growth rates in recent years. For example, according to a study carried out in 2015 by Allegra, a market research firm, growth in the specialty coffee segment (13% per annum) outpaces that of the market as a whole (10% per annum) in the United Kingdom.

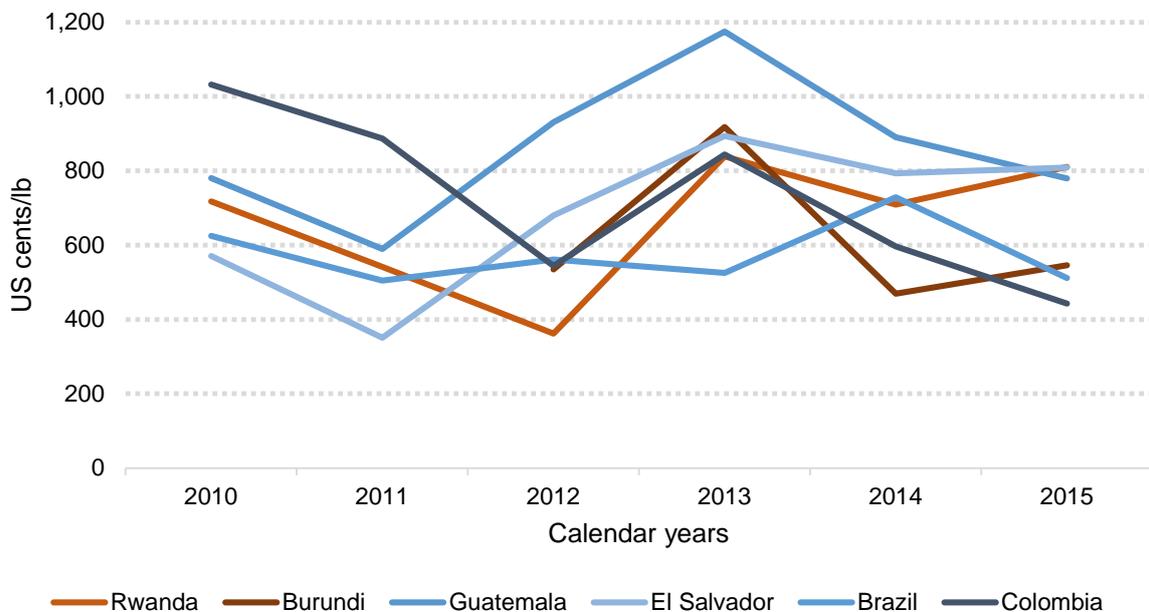
24. Some producing countries have successfully positioned themselves in the specialty coffee segment. Data on auction results obtained from the Alliance for Coffee Excellence (ACE), a non-profit organization that runs the Cup of Excellence programme, reveals that Rwanda and Burundi are well positioned to produce higher grade coffee. Figure 7 shows the differential between average auction prices realised and the Arabica futures price (average of the 2nd and 3rd position) at the time of the auction. The average premium for small

² Tamru S. and B. Minten (2016). Value addition and processing by farmers in developing countries: evidence from the coffee sector in Ethiopia. Invited poster at the 5th International Conference of the African Association of Agricultural Economists, 23-26 September 2016, Addis Ababa

lots of specialty coffee was significant, ranging from close to 400 US cents/lb to almost 1,200 US cents/lb, depending on the year. During the period under study, coffee from two African producers participating in the Cup of Excellence auctions, Burundi and Rwanda, seem to have been competitive vis-à-vis coffee from other origins such as Brazil, Colombia and El Salvador. Lots from Guatemala seem to have been priced consistently above the other countries in the sample.

25. The economic significance of this high-end market segment for exporters is still relatively limited. For example, in total 909 lots³ of specialty coffee were sold at auction in Burundi in 2015. The cumulative value was close to US\$400,000 which is equivalent 0.1% of total exports during the same period.

Figure 7: Average premium over Arabica futures prices at Cup of Excellence auction



Source: ICO calculations based on Cup of Excellence auction data

III.2 Soluble coffee and roasted coffee

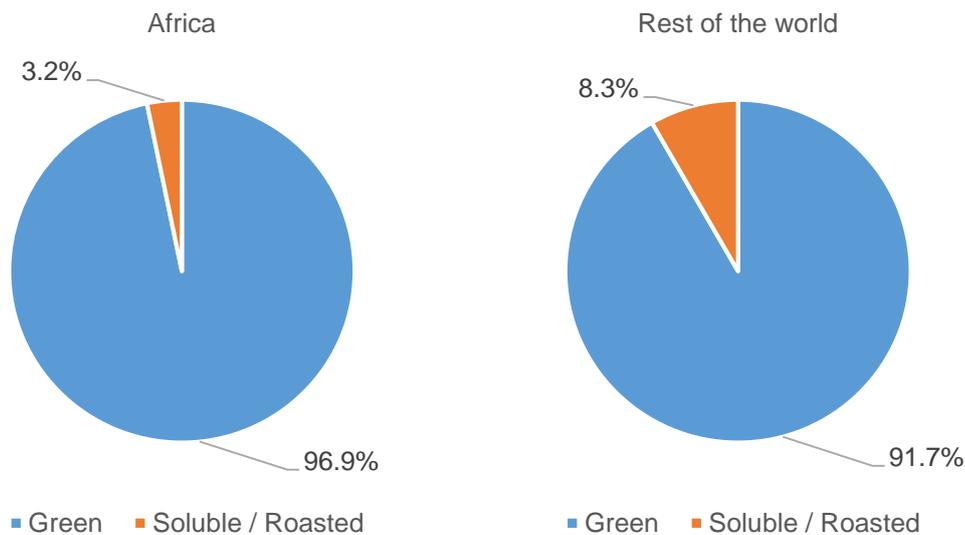
26. The economic significance of the coffee sector is not only determined by the production volume but also by the degree to which coffee is processed industrially before being shipped or consumed domestically. However, the role of processing of coffee in Africa today is only marginal.

³ 30-kg/lot

27. Figure 8 indicates that in 2015 the vast majority of African coffee shipments was in the form of green coffee. Only 3.1% was exported in processed form (mostly soluble). This compares unfavourably to a share of 8% of processed coffee in total exports from all other producing countries, suggesting that value addition in African countries is lower than the world average.

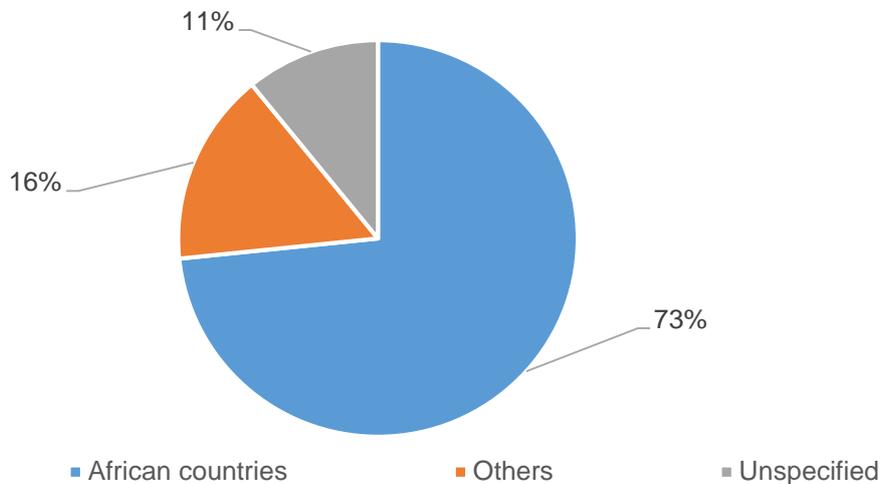
28. Côte d'Ivoire is by far the most important producer of soluble coffee among the producing countries in Africa. Exports of soluble coffee from this country amounted to 323,000 bags in 2015, which represented 96% of all soluble coffee exports from the African continent. Exports of soluble coffee from Côte d'Ivoire have fluctuated significantly over the past two decades. After a period of steady growth between 1990 and the early 2000s resulting in a doubling of exports, shipments declined sharply from 411,000 bags in 2003 to 165,000 bags recorded in 2006. Since then output recovered but has not reached pre-civil war levels, illustrating the long-term impact of political instability and conflict on the coffee sector.

Figure 8: Breakdown of total exports by form (2015)



29. Figure 9 shows that the main export destinations of soluble coffee from Côte d'Ivoire are countries in the region (22% and 14% are shipped to Burkina Faso and Senegal, respectively). At least 73% of the soluble coffee produced in the country remains on the African continent, with the remainder exported to Europe.

Figure 9: Destinations of soluble coffee exported from Côte d'Ivoire (2015)



30. Coffee roasted at origin for export plays an even smaller role than soluble coffee. Notably, the total quantity of roasted coffee exports has decreased significantly from close to 6,500 bags in 1989/90 to around 1,800 bags in 2015/16. Kenya, Rwanda and Guinea account for 95% of exports of coffee in roasted form.

IV. Addressing constraints to higher value addition

31. The route taken in order to add value to the green beans produced depends on the nature of a country's coffee industry. Those countries that predominantly produce Arabica may increase value added by improving quality of the output, allowing them to tap into higher-value markets. On the other hand, Robusta or low quality Arabica-producing countries may be able to process beans internally and supply domestic, regional or international markets. This, however, depends on the competitiveness of the industry and the development of domestic demand. Nonetheless, there are constraints which need to be overcome both at farm level and with respect to the integration of coffee producers and domestic coffee sectors into global value chains.

IV.1 Improving quality

32. The foundation for supplying markets with quality beans is laid at the farm. Coffee growers need to have access to skills and knowledge about modern farming methods. This requires strong coffee institutions, including research institutes and extensions services, to develop and disseminate locally adapted production techniques.

33. Coffee producers in Sub-Saharan Africa use less fertilizer and pesticide than their peers in other regions of the world, resulting in low productivity. Access to factor markets and access to finance needs to be improved in order to allow for an adequate use of inputs and narrow the existing yield gap. The formation of effective farmer associations could also play an important role in the marketing of crops.

34. In view of ageing trees bearing less cherries, replanting and rehabilitation of coffee trees is crucial. Furthermore, modern varieties are not only more resistant to pests and diseases, but are also better adapted to the impact of climate change.

35. This is particularly important as research results suggests that both yield and quality could suffer under changing climatic conditions. A comprehensive study showed that the area suitable for Arabica production could decrease by 50% globally across various emission scenarios.⁴ For East Africa, the model predicts increased suitability for coffee production. However, these lands are currently covered by forest. A recent study focusing on Ethiopia found a severe impact on existing coffee-producing areas, including those famous for high quality such as Yirgacheffe, Harar and Bale.⁵ Up to 60% of the production area could be affected by climatic changes and rendered unsuitable for coffee production. To maintain or even increase quality output will require migration of production to higher altitudes. In Ethiopia there seems to be sufficient land at higher altitudes better suitable for growing Arabica during climatic changes.

36. However, significant investment is required, including in human capital, to gradually build a new production base in other areas. While migration, if done properly, may be a strategy to maintain domestic production and thus a sizeable coffee sector in Ethiopia, this is not an option in all countries since it could harm ecosystems, e.g. through deforestation. Furthermore, in many countries the topographical profile simply does not allow for a migration to higher altitudes.

37. Finally, the post-harvest processing infrastructure needs to be expanded in order to increase the share of washed coffee in total exports. In some areas the utilization rate of currently installed capacity needs to be increased in order to improve the profitability of washing stations.

⁴ Bunn, C., P. Läderach, O. Ovalle Rivera, and D. Kirschke (2015): *A bitter cup: climate change profile of global production of Arabica and Robusta coffee*. *Climatic Change*, Vol. 129 (1-2), pp 89–101

⁵ Moat J., J. Williams, S. Baena, T. Wilkinson, T.W. Gole Z.K. Challa, S. Demissew, A.P. Davis (2017). *Resilience potential of the Ethiopian coffee sector under climate change*. *Nature Plants* Vol. 19(3).

38. Overcoming these constraints will come at a cost. According to a recent study by the Global Coffee Platform (GCP), a membership organization of the coffee industry, US\$1.4 billion of investments would be required over the next ten years in nine African origins surveyed. The majority (83%) of funds would support the provision of farmer training and meet working capital needs.⁶

IV.2 Market integration

39. Trade costs determine the ability of producing countries to access regional and international markets. As coffee producers are price takers, high trade costs reduce the price paid to growers and erode the economic viability of coffee farming.

40. The level of trade costs is determined by a variety of factors. According to the World Bank Trade Cost Database, between 0-10% of trade costs are the result of tariffs while 10-30% are related to physical costs of trade resulting from geographical factors. The majority of trade costs (60-80%), however, stem from non-tariff trade barriers, including customs procedures, regulatory environment, currency fluctuations and other factors.⁷

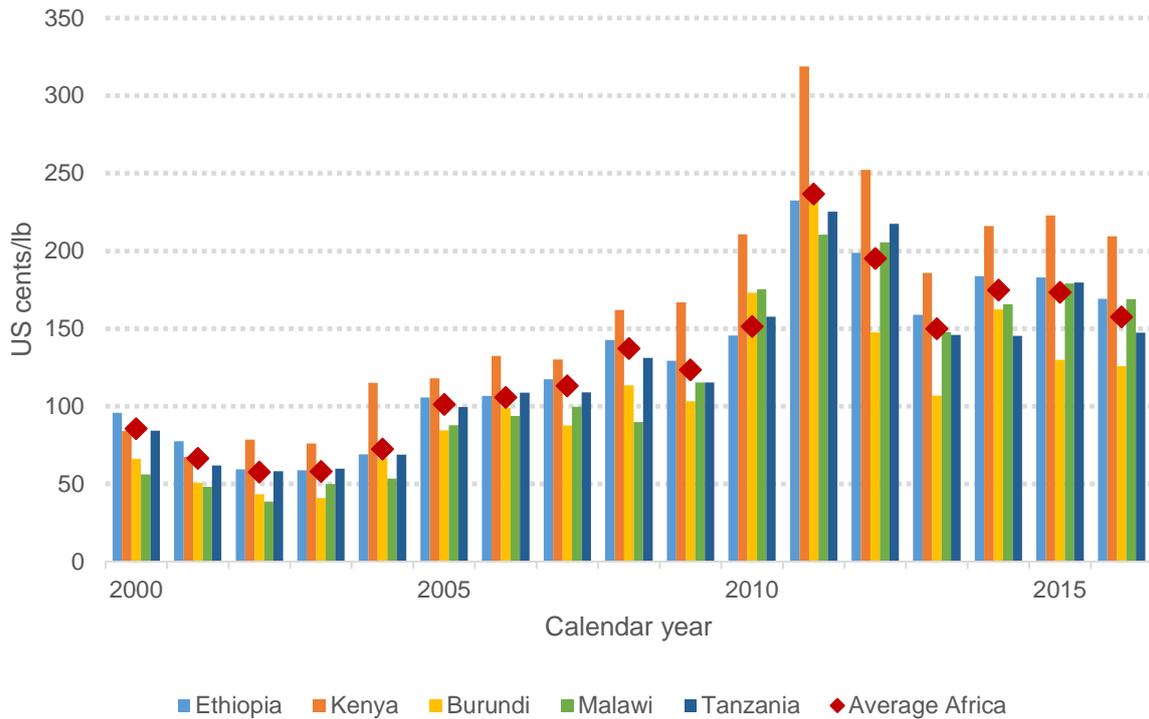
41. Figure 10 shows the development of the unit value of Arabica exports from selected African countries over the period 2000-2016. The highest average unit value was recorded for Kenya (161.81 US cents/lb), and the lowest in Burundi (107.95 US cents/lb). The variation in unit values between countries can be explained by mainly two factors: differences in quality and differences in trade costs. While further analysis would be required to determine the relative importance of the quality and trade cost effects, it is evident that those countries for which below average unit values were recorded are landlocked. Trade costs for countries that are geographically more isolated tend to be higher, as transit of goods through neighbouring countries is likely to increase costs. This was also confirmed by the survey of African coffee-producing countries recently carried out by the GCP.

42. Hence, investments are required to improve transport infrastructure, such as road and rail links. Furthermore, red tape should be reduced by streamlining custom procedures. Lower trade costs can significantly improve the competitiveness of African coffee in export markets.

⁶ *Global Coffee Platform (2016): African coffee sector investment opportunities.* <http://www.globalcoffeeplatform.org/resources/african-investment-review-full-reports>

⁷ *OECD & WTO (2015): Aid for Trade at a Glance 2015 – Reducing trade costs for inclusive, sustainable growth.* Chapter 6, p. 171

Figure 10: Unit value of Arabica exports (all forms) for selected African countries



V. Conclusion

43. While coffee production on the African continent as a whole has stagnated over the past years, some countries have successfully revived their domestic coffee industries. The value added retained in producing countries could be increased by improving the quality of green coffee for export, building processing infrastructure to supply domestic markets, and by better integrating domestic coffee producers into regional and international markets.

44. Achieving greater value addition requires investments at farm level into improved production techniques and the replanting of ageing trees. Coffee institutions, including research institutes which have long been neglected, need to be strengthened. At the same time physical infrastructure to reduce transport costs should be improved while non-tariff trade barriers should be reduced and customs procedures simplified. This would disproportionately benefit landlocked countries.