



Projects Committee
16th Meeting
18 September 2018
London, United Kingdom

**Identifying coffee sector challenges
in selected countries in Asia and Oceania**

Background

1. In accordance with Article 34 of the International Coffee Agreement 2007 and the Programme of Activities for coffee year 2017/18, the International Coffee Organization (ICO) is required to provide Members with studies and reports on relevant aspects of the coffee sector.
2. The Five-Year Action Plan of the Organization sets out as one of the priority actions under Strategic Goal I “Delivering world-class data, analysis and information” which includes the preparation and dissemination of studies on emerging issues in the global coffee sector, together with the socioeconomic aspects of coffee production and impacts of agricultural policies.
3. In this context the Organization is seeking to raise awareness of the challenges faced by the coffee sector, to share this information among ICO Members and to identify priority challenges that could be addressed by policy action as well as by technical cooperation.
4. This document contains an interim report on these challenges for the coffee sector in selected countries in Asia and Oceania. It is based on ICO data and desk research, and on responses to the Executive Director’s Communication ([ED-2258/17](#)) requesting Members to provide relevant information in order to map out the challenges in the coffee sector. Inputs were received from the following Member countries: India, Indonesia, Nepal, Papua New Guinea, the Philippines, Thailand and Vietnam.

5. The Secretariat also welcomes any additional contributions from Members, since relevant project proposals are expected to be prepared to address these challenges. It should be noted that a similar report was prepared for Africa ([ICC-114-5 Rev. 1](#)), which was used to draft a concept note for the Africa Coffee Facility submitted to the African Development Bank Group for funding. Another similar report that covered selected Central American countries and Mexico was presented to the Committee in April 2018 ([PJ-120/18](#)), following which Members were invited to provide the Secretariat with further information and relevant project proposals to address the challenges facing the coffee sector.

Action

The Projects Committee is requested to consider this report.

**IDENTIFYING COFFEE SECTOR CHALLENGES IN SELECTED
COUNTRIES IN ASIA AND OCEANIA
INTERIM REPORT – SEPTEMBER 2018**

INTRODUCTION

1. From a small annual production averaging 6.2 million bags until the late 1970s, representing 8.5% of the world total, Asia and Oceania have emerged as the second major coffee-producing region in the world, with an average annual level currently above 40 million bags and representing 29.5% of the world production¹. While Vietnam has become the epicentre of Robusta production, both Robusta and Arabica are produced in the region. Another peculiarity of the region is that one country, the Philippines, produces all four commercial varieties of coffee, namely Arabica, Robusta, Excelsa and Liberica. The region is also known for its increasing domestic consumption, reaching 14 million bags in 2016/17 compared to 3.3 million bags in 1990/91, which equates to an annual increase of 5.5%. In spite of the very positive trends in terms of production and consumption, the coffee sector in the region is facing many challenges that need to be addressed to maintain its sustainability. The purpose of the present document is to identify these challenges and potential actions to address them.

2. The present report provides only preliminary information for selected countries in Asia and Oceania² and will be updated when further relevant information becomes available. The following points will be covered:

- (i) Contribution of coffee to the economy
- (ii) Challenges facing the coffee sector
- (iii) Conclusion and way forward

I. CONTRIBUTION OF COFFEE TO THE ECONOMY

3. The contribution of coffee to the economy can be assessed by the importance of its production levels, the generation of foreign earnings, its impact on gross domestic product, income distributed to growers and other stakeholders, as well as on employment.

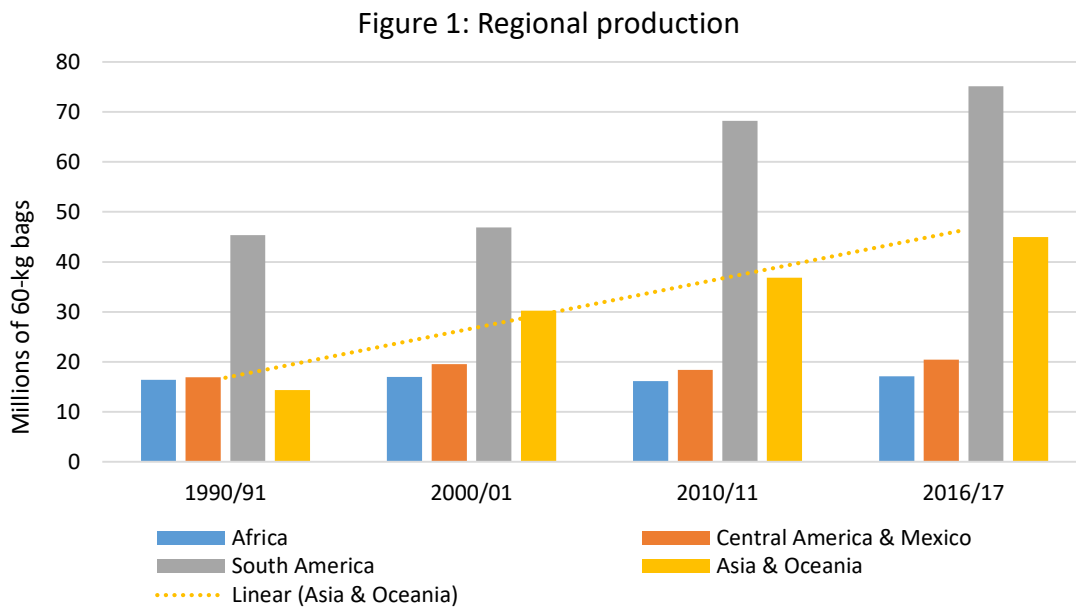
1.1 Production trends in the region

4. The region has emerged as the second largest coffee producer in the world after South America. The region produces both Robusta and Arabica, but Robusta is the main crop and accounts for over 80% of the total production. The region recorded the strongest production growth in the course of the last fifty years, particularly since crop year 1990/91 which marked

¹ *The coffee-producing region of Asia & Oceania includes 11 countries: India, Indonesia, Lao People's Democratic Republic, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Timor-Leste, Vietnam and Yemen.*

² *The following countries have been considered in the elaboration of this report: India, Indonesia, Lao People's Democratic Republic, Nepal, Papua New Guinea, Philippines, Thailand, Timor-Leste, Sri Lanka, Vietnam and Yemen.*

the emergence of the coffee industry in Vietnam. The region's production increased from 14.4 million bags in crop year 1990/91 to 45 million bags in 2016/17, representing an annual growth rate of 4.5%, compared to 1.6% in South America, 0.9% in Central America and Mexico, and 0.3% in Africa. More specifically, the region's share of the world production was 28.2% during crop year 2016/17, compared to 15.4% in 1990/91. Figure 1 below shows the dynamics of the production of the region compared to other regions.



5. The main producers in the region recorded positive growth rates since 1990/91 (Figure 2). Vietnam recorded the highest annual growth rate of 11.6%, compared to 2.3% in India and 1.6% in Indonesia. From 1.3 million bags in crop year 1990/91 (1.4% of world production), Vietnam recorded a production of 25.5 million bags in 2016/17, representing 16% of the world production. Other countries with relatively significant production levels are Papua New Guinea and Thailand (Figure 3). The remaining countries of the region are marginal producers, although coffee represents an important source of income for many stakeholders. However, Lao People's Democratic Republic, Nepal, Timor-Leste and Yemen have also recently recorded increased production. The situation of the Philippines is quite different, as the country's production decreased substantially, while coffee imports have increased to meet its growing domestic consumption. It should also be noted that the Philippines is the only country in the region where all four commercial varieties of coffee are produced, namely Robusta (69% of total production), Arabica (24%), Excelsa (6%) and Liberica (1%), providing an opportunity to benefit from specialty niche markets.

Figure 2: Production trends in selected countries in Asia and Oceania

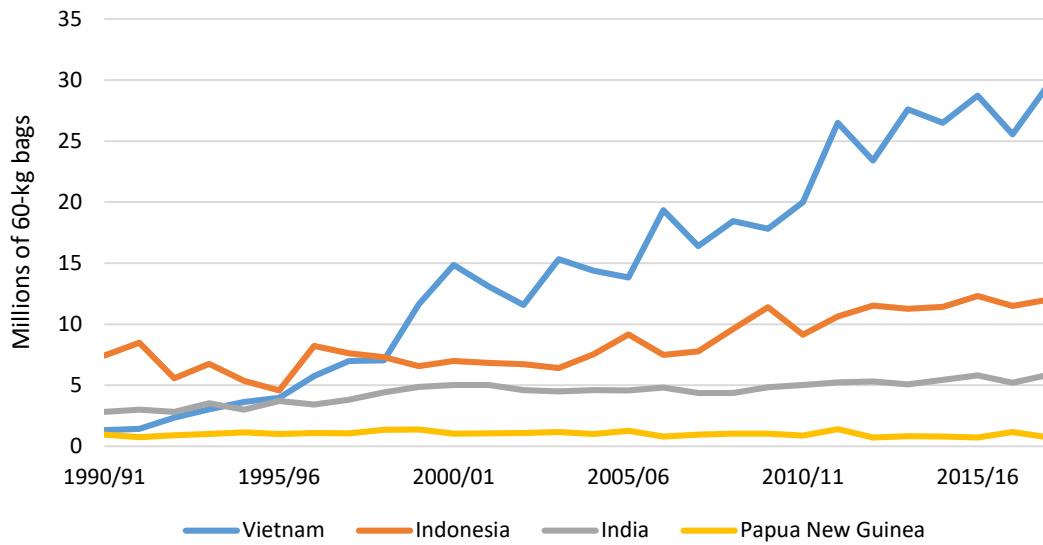
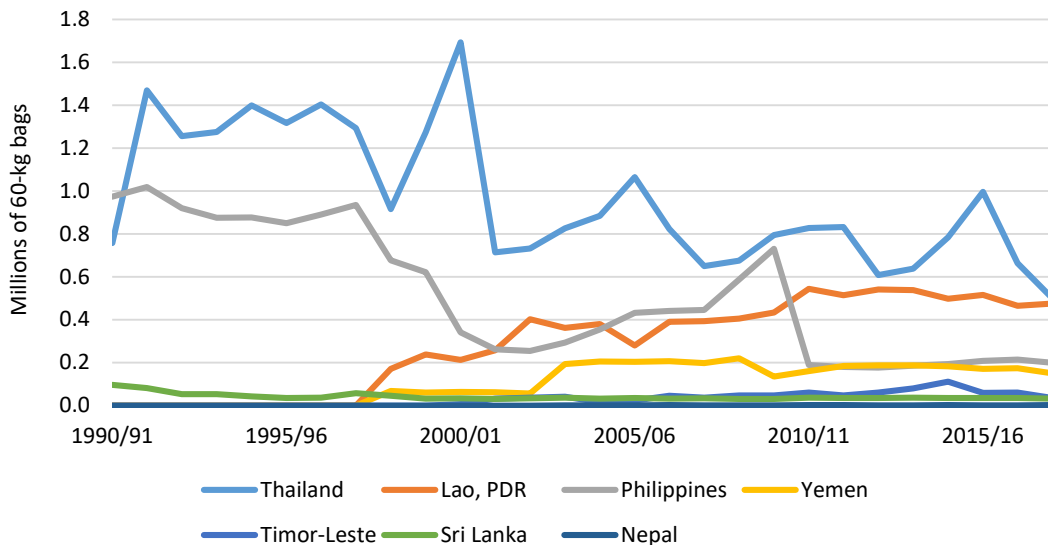


Figure 3: Production trends in selected countries in Asia and Oceania



Note: Data for Timor-Leste, Nepal and Yemen were collected only from early 2000s

I.1 Contribution to export earnings

6. Exporting countries of the region have shipped an annual average of 35.6 million bags since 2010, a substantial increase compared to the 14 million recorded in the 1990s. Total exports in 2017 were 39.4 million bags, compared to 42.3 million bags in 2016, due to a decrease in Vietnamese production. The region as a whole has become the second largest exporting area after South America (Figure 4: Average coffee export volume by region). The region's share in the world total averaged 32.2% in the 2010s compared with just 18.1% in the 1990s. Performance by individual country indicates strong performance by the three

major exporting countries (India, Indonesia and Vietnam). The fourth significant exporting country of the region is Papua New Guinea, whose exports have decreased over recent years (Figure 5: Exports performance by volume). The remaining seven exporting countries of the region have recorded relatively small export volumes, with the slight exception of Lao People’s Democratic Republic and Thailand (Figure 6).

Figure 4: Average coffee export volume by region

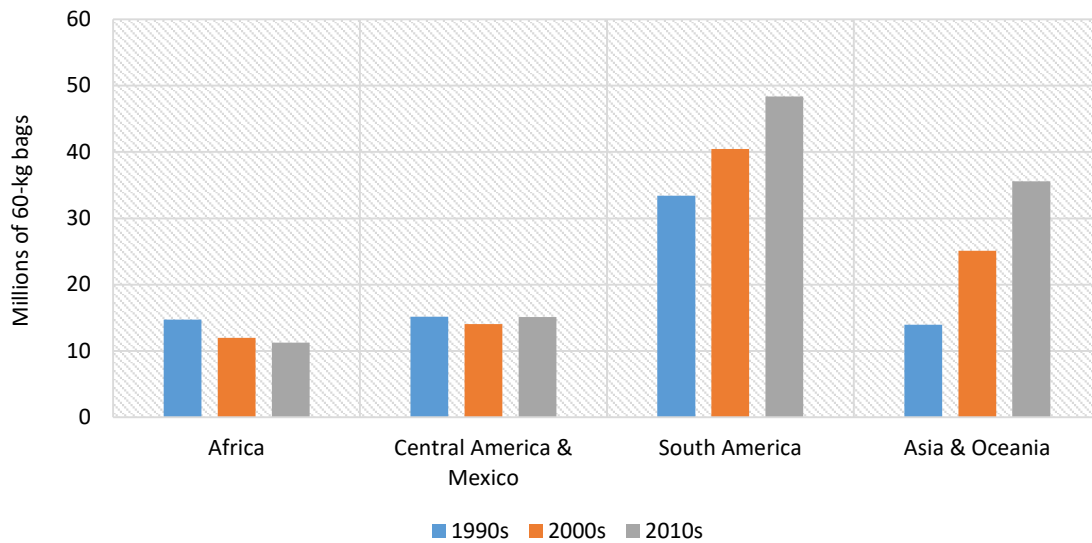


Figure 5: Export performance by volume

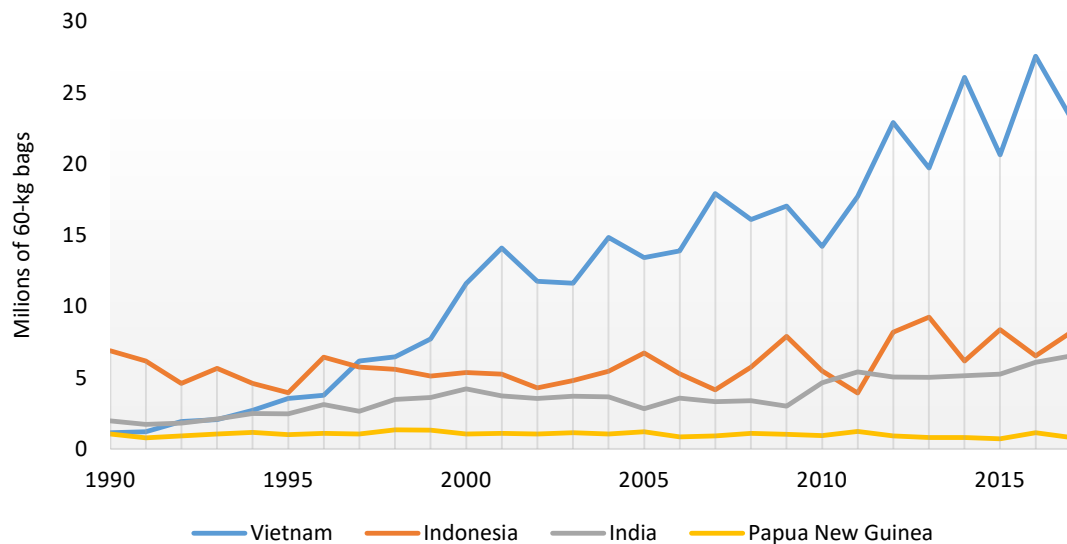
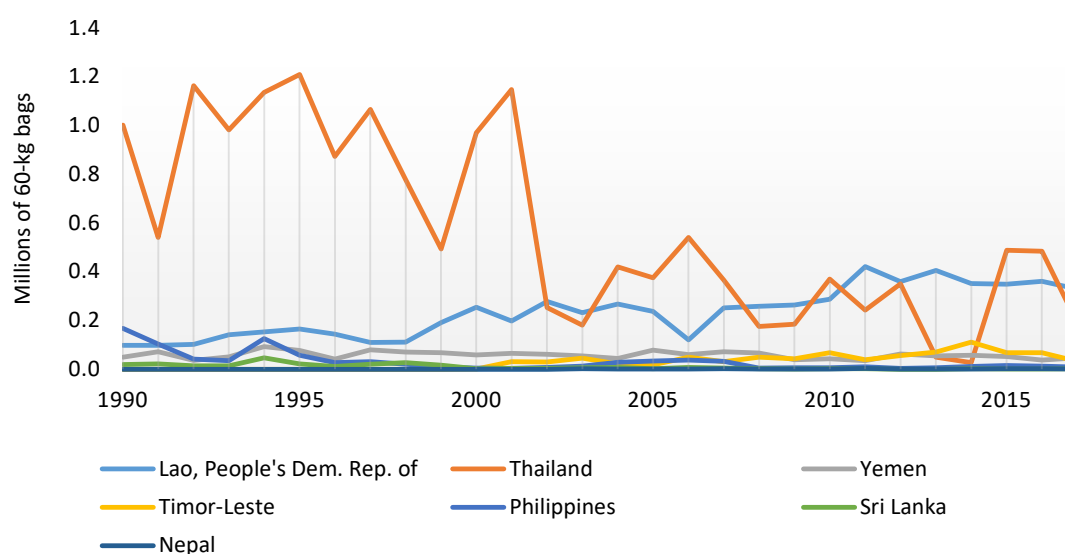


Figure 6: Export performance by volume



7. Exports of all forms of coffee generated an annual revenue of over US\$4.8 billion (24% of total export value) on average during the last decade, compared to US\$9.8 billion in South America (48.9%), US\$3.5 billion in Central America & Mexico (17.3%) and US\$1.9 billion (9.7%) in Africa (Table 1).

Table 1: Average exports value (All forms of coffee)

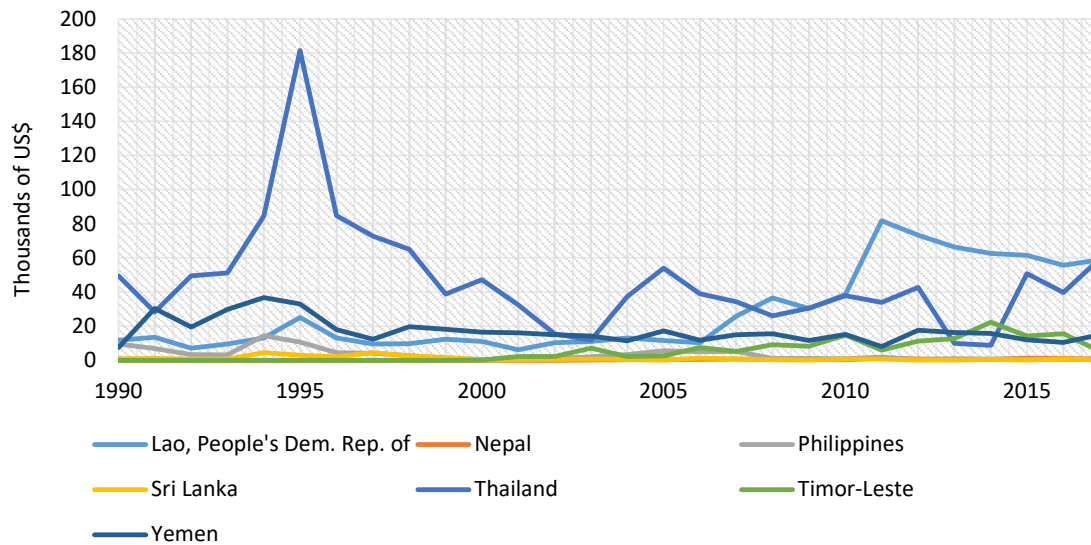
Currency: US\$ (Thousands)	1990s	2000s	2010s	World share In 2010
World total	9,029,656	9,306,030	19,945,590	
Africa	1,501,852	1,075,518	1,940,906	9.7%
Central America & Mexico	1,990,599	1,790,409	3,459,999	17.3%
South America	4,147,222	4,571,552	9,752,281	48.9%
Asia & Oceania	1,389,981	1,868,548	4,792,402	24.0%
India	303,665	342,051	822,002	4.1%
Indonesia	496,689	445,672	1,096,184	5.5%
Lao, People's Dem. Rep. of	12,477	16,606	62,319	0.3%
Nepal	6	301	817	0.0%
Papua New Guinea	153,039	122,302	206,124	1.0%
Philippines	6,027	2,540	805	0.0%
Sri Lanka	2,135	503	379	0.0%
Thailand	70,610	32,776	35,353	0.2%
Timor-Leste	0	4,633	12,733	0.1%
Vietnam	322,846	886,724	2,541,896	12.7%
Yemen	22,483.15	14,435	13,785	0.1%

8. Individual performance by country indicates that Vietnam, Indonesia and India have the highest average export revenues of US\$2.5 billion, US\$1.1 billion and US\$822 million, respectively (Table 1 and Figure 7).



9. It should be noted that the increase in export revenues started with the recovery from a severe crisis of low coffee prices in the early 2000s. Moreover, the relatively high coffee prices from 2011 had a positive impact on the export revenues of Vietnam, Indonesia and India, while Papua New Guinea recorded a negative trend due mainly to a fall in export volumes. Vietnam recorded US\$3.1 billion for 26 million bags exported in 2014, but this has come down to US\$2.9 billion in 2017 due to a decrease in coffee prices. Indonesia’s exports generated US\$1.6 billion in 2017, its highest level since 1990. For the rest of the producing countries of the region, Thailand and Lao, People’s Democratic Republic have recorded positive export revenues but at relatively insignificant levels due to their low production (Figure 8).

Figure 8: Value of exports in selected exporting countries in Asia & Oceania

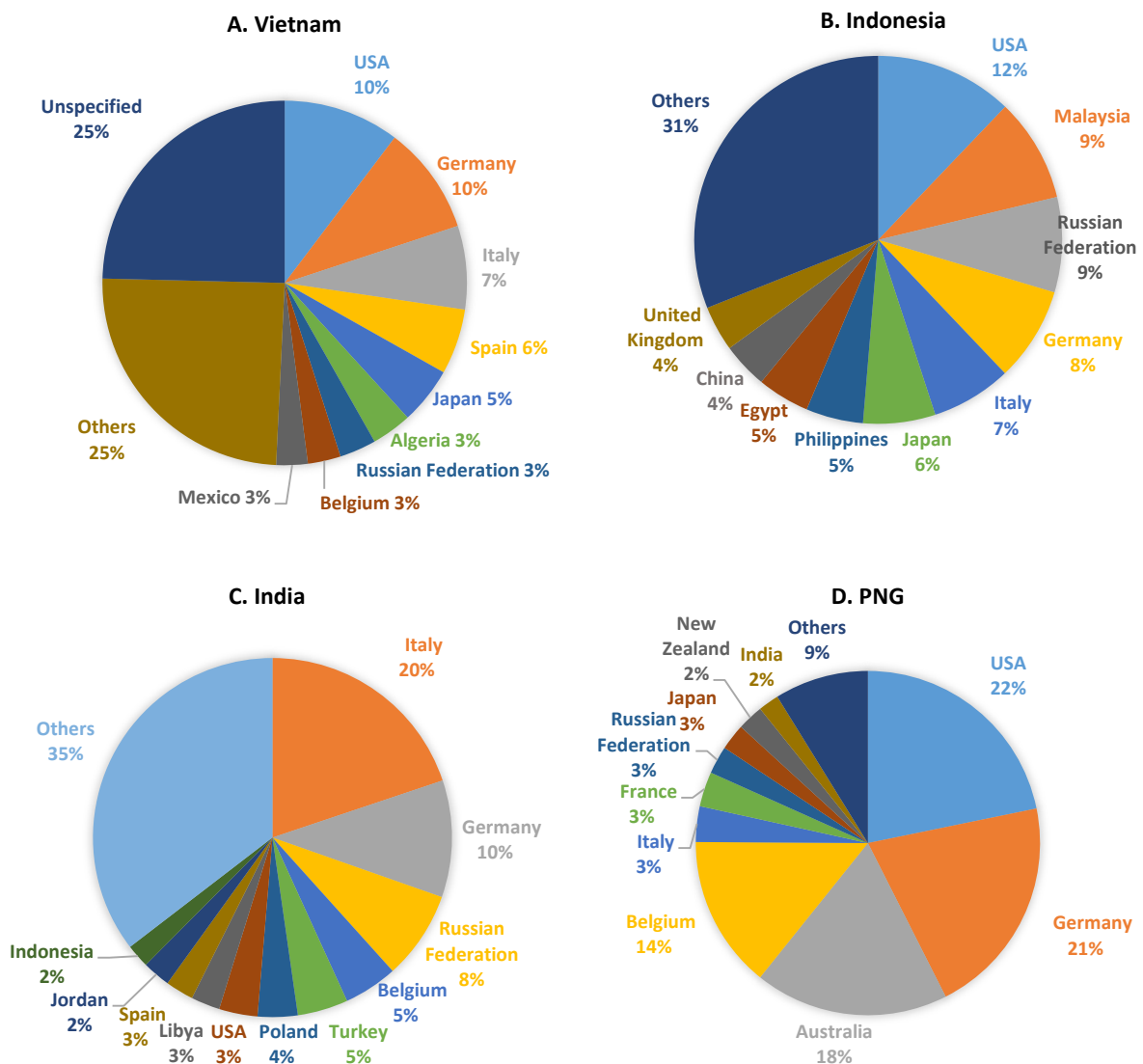


1.2 Export destinations

10. The largest producing countries of the region have a diversified range of export destinations, although overall, the European Union is the main destination of green coffee. Out of 22 million bags of green coffee exported by Vietnam in 2017, the European Union received 7.6 million bags (34.6% of the total green coffee exported), followed by other exporting countries (2.4 million – 11%) and the USA (2.4 million – 11%). Other exporting countries are also importing coffee from Vietnam, such as Mexico (3% of the total exports of Vietnam), India (2.6%) and Thailand (2%). Vietnam exported 1.2 million bags of soluble coffee in 2017, mainly to importing countries, including the European Union (19.3%) and the Russian Federation (8.4%). India, another exporting country, accounts for only 2.3% of total Vietnamese exports of soluble coffee. A substantial volume of soluble coffee exports of Vietnam, representing 50.4% (612,833 bags), has unspecified destinations. Indonesia, the second largest producing country of the region has a very diverse destination market of its green coffee exports. The main destination of its green coffee exports in 2017 was the European Union, with 2.1 million bags (25.5%), mainly Germany and Italy. The USA (12.1%), Malaysia (7.7%) and the Russian Federation (7.2%) were other important destinations of Indonesian green coffee exports. In 2017, total exports of green coffee by India were 4.5 million bags. Although India exported relatively small volumes of green coffee to various countries worldwide in 2017, its main destination was the European Union (2.9 million bags or 65.5%), with Italy (1.3 million bags) and Germany (679,419 bags) as the most important markets. Libya, Jordan and Australia are the next major destinations with 170,383 bags, 163,814 bags and 133,255 bags, respectively. India exported nearly 2 million bags of soluble coffee in 2017. The main destinations were the Russian Federation (340,047 bags,

representing 17.1%), Turkey (266,904 bags, or 13.4%) and the USA (173,707 bags, or 8.7%). Other exporting countries received 274,740 bags (13.8%), with Indonesia and Vietnam being the most important destinations. The main destinations of the green coffee exports of Papua New Guinea were the European Union (347,412 bags), USA (172,936 bags) and Australia (144,656 bags). These three destinations represented 83.8% of the total green coffee exports of the country. Figure 9 below shows the main export destinations of all forms of coffee by four major exporting countries in 2017.

Figure 9: Main export destinations of all forms of coffee by four major exporting countries in 2017



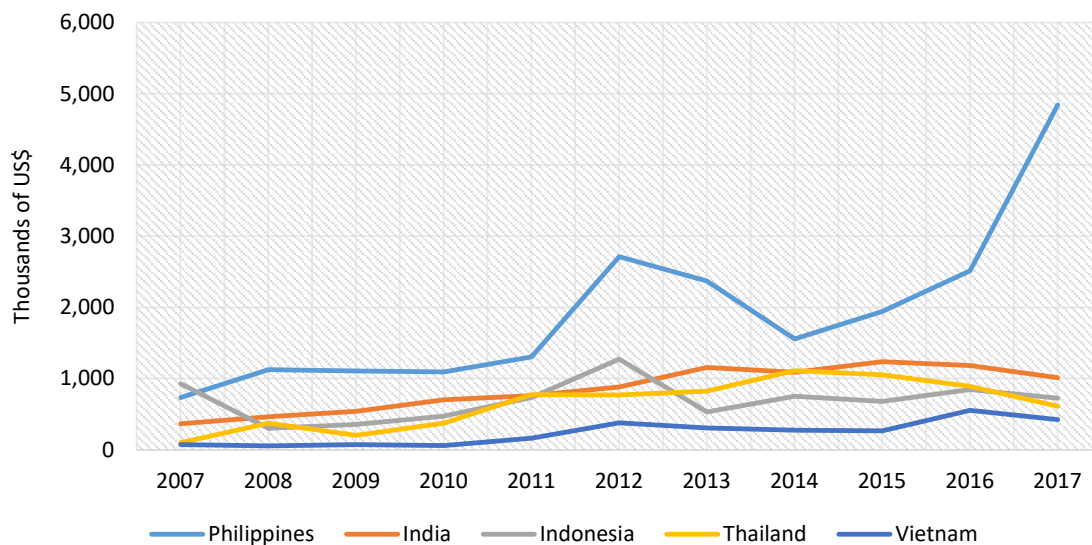
11. The remaining producing countries have relatively small export volumes, concentrated in a few destinations. The main destinations of Nepalese green coffee were Japan (285 bags, representing 30.8% of the total), the European Union (223 bags, or 24.2%) and Switzerland (152 bags, or 16.4%). Almost all exports of the Philippines are in soluble form and represent a very tiny volume. Its main destinations are exporting countries (7,842 bags)

representing 91.7% of the total exports of soluble coffee. Most of the destinations of soluble coffee from the Philippines are in Africa (Nigeria, Côte d'Ivoire, Kenya, etc.). Thailand exports mainly to the European Union and the Philippines. Timor-Leste exports mainly green coffee and the main destinations were the European Union (41.4%), USA (27.4%) and Canada (13.7%).

1.3 Import trends in the region

12. Five countries in the region import coffee, either to supply local processors for value addition creation or to meet domestic consumption needs (Figure 10). The Philippines recorded the largest coffee imports, with an average annual volume of 1.9 million bags since 2007. The current production of the Philippines is far too small to meet its domestic consumption. In crop year 2016/17 its production level was 215,000 bags, compared to imports of 4.8 million bags.

Figure 10: Coffee imports trends in selected countries in Asia and Oceania

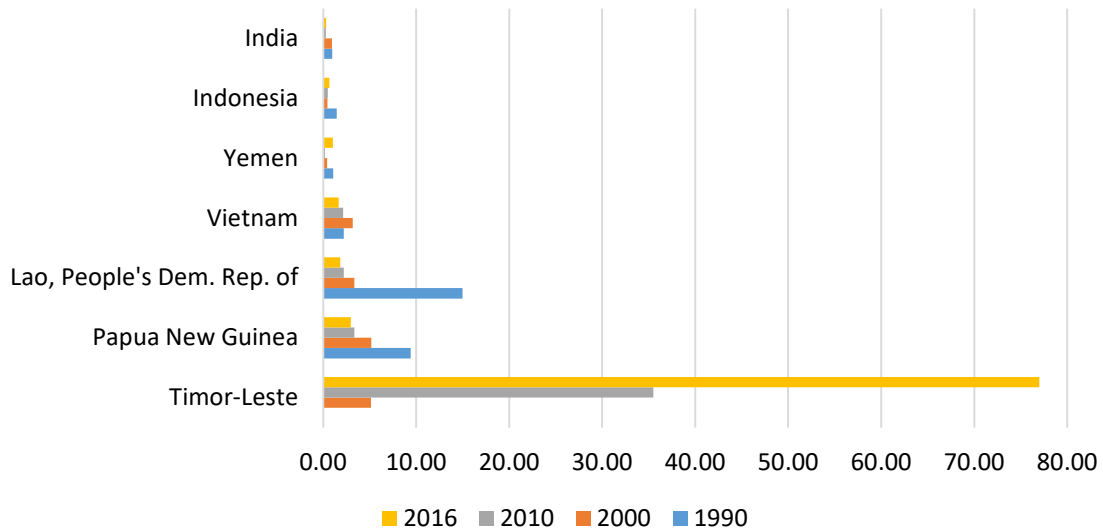


1.4 Contribution to the balance of trade and Gross Domestic Product

13. Although over 24% of the value of world coffee exports is generated by the region, coffee makes a relatively low contribution to national economies. The only country that depends heavily on coffee is Timor-Leste, with 77% of export revenues from all commodities derived from coffee in 2016, followed by Papua New Guinea (3%) and Lao, People's Democratic Republic (1.9%). Vietnam, the world's second largest coffee-exporting country depends on coffee for 1.7% of its total export revenues and 10.9% of its agri-forestry and aquatic product exports in 2016, contributing to 1.4% of the GDP. The main exports of agricultural products include wood & wood products (US\$7 billion in 2016), fisheries (US\$7 billion), coffee (US\$3.4 billion), cashew (US\$2.8 billion), fruits & vegetables (US\$2.3 billion),

rice (US\$2.2 billion), rubber (US\$1.7 billion), pepper (US\$1.4 billion) and tea (US\$223 million). Moreover, Vietnam has emerged as an important exporter of manufactured goods, with electrical and electronic products overtaking coffee, textiles and rice. Figure 11 shows the contribution of coffee to the generation of export earnings by selected countries, while Figure 12 illustrates its contribution to the GDP.

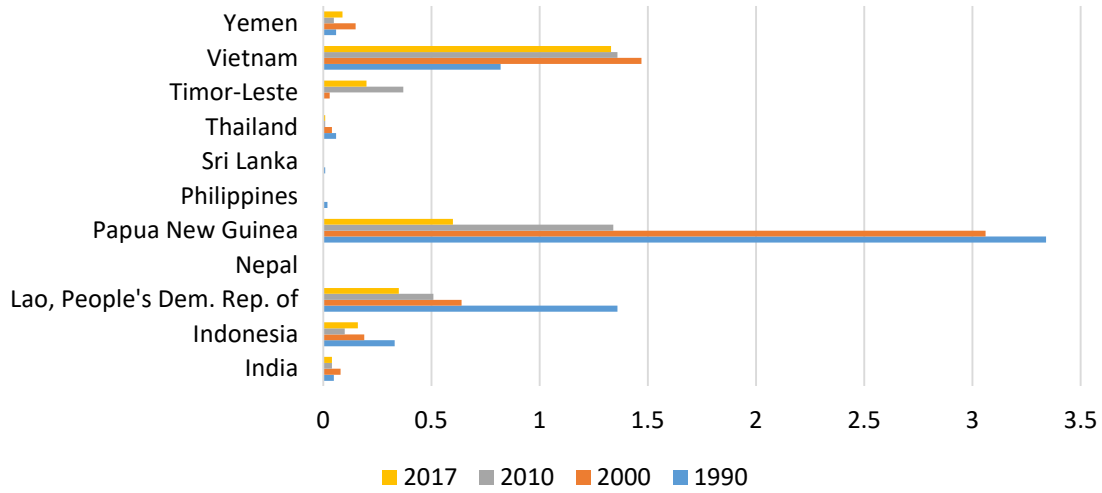
Figure 11: Percentage share of coffee in total value of exports



14. Although its contribution to the balance of trade and the Gross Domestic Product is relatively small, coffee production continues to play an important role as a source of employment and income for stakeholders in many rural communities in India, Indonesia and Vietnam. In India, while coffee is not an essential crop, nearly five million people in the South of India, including Karnataka, Kerala and Tamil Nadu, are dependent on the coffee industry (growers, processors, logistics) for their livelihoods.

15. The importance of coffee for the economic and social development of the countries of the region can be appreciated through an increasing trade flow in the region and with the rest of the world. Graphs 1 and 2 in Annex I show the dynamic nature of coffee trade intra-regionally and worldwide based on average trade volume between 2012 and 2016. This constitutes a strong contribution of the coffee sector to the balance of trade and to the creation of employment in other sectors, including services (transport logistics, banking and insurance, etc.).

Figure 12: Percentage share of coffee in the GDP of selected producing countries in Asia & Oceania



I.5 Contribution to farmer income and employment

16. Table 2 shows the estimated number of coffee farmers per country and areas planted with coffee. Coffee growers of the region are estimated to number 4.5 million, representing 21% of the world total of coffee growers, but only 2% of the total population of the region. Annex II presents prices paid to coffee growers since crop year 1989/90. Coffee is the primary source of income for millions of small-scale coffee farmers in the region and generates employment for thousands of people involved in the activity. Taking into account casual and seasonal workers the figure may be higher. Employment generated by the coffee sector includes cultivation/maintenance, harvesting and processing.

Table 2: Number of farmer households and coffee areas

Country	Numbers of farmers	Workers	Total	Total population estimates in 2017	Rural population	Rural population as % of total population	% share of rural population growing coffee
Asia & Oceania (11)	3,074,242	1,385,265	4,459,507	1,988,803,209	1,258,506,455	63.3%	0.35%
India	366,242	659,865	1,026,107	1,354,051,854	907,214,742	67%	0.11%
Indonesia	800,000	150,000	950,000	266,794,980	122,725,691	46%	0.77%
Lao, People's Dem. Rep. of	100,000	25,000	125,000	6,961,210	4,176,726	60%	2.99%
Nepal	32,000	12,000	44,000	29,624,035	23,995,468	81%	0.18%
Papua New Guinea	400,000	150,000	550,000	8,418,346	7,323,961	87%	7.51%
Philippines	276,000	60,000	336,000	106,512,074	59,646,761	56%	0.56%
Sri Lanka	160,000	60,000	220,000	20,639,000	16,923,980	82%	1.30%
Thailand	130,000	15,000	145,000	69,183,173	33,207,923	48%	0.44%
Timor-Leste	8,000	1,000	9,000	1,212,107	812,112	67%	1.11%
Vietnam	800,000	252,000	1,052,000	96,491,146	63,684,156	66%	1.65%
Yemen	2,000	400	2,400	28,915,284	18,794,935	65%	0.01%

Source: ICO estimates, country data, UN data on population and various reports and conference papers

17. Noting that rural population is still high in many countries of the region, the coffee sector is considered as one of the agricultural activities with great potential for employment generation and an important contributor to poverty alleviation, particularly in Vietnam where over one million small-scale farmers are dependent on coffee cultivation for their livelihoods. Many of these small-scale farmers are ethnic minorities in the mountainous areas in Vietnam, including the Central highlands.

II. Challenges facing the coffee sector

18. The coffee sector in Asia and Oceania faces numerous challenges to its future sustainability and shares similar problems with all producing regions. A sustainable coffee farmer is able to meet long-term environmental and social goals, and at the same time can compete effectively with other market participants and achieve prices that cover production costs and generate an acceptable profit margin. In this context, the main challenges facing the coffee sector in the region can be identified throughout the value chain from seed to cup, particularly production challenges and issues related to value addition. The challenge of the coffee value chain refers to the existing vertical structure, where green bean production occurs in exporting countries and roasting and consumption occurs in importing countries. It should also be noted that women make important contributions to the agricultural sector in the region and activities in the coffee and food sector are particularly remarkable. But, as has been the case in many producing countries worldwide, the contribution of women has yet to be adequately recognized and fairly remunerated in the region.

II.1 Challenges associated with production

19. Preliminary observations indicate that the constraints of the coffee sector in the region are many and diversified. Costs of production, due mainly to management of pests and diseases, low productivity and consequent low economic profitability of coffee farming, and in some countries, weak organizational capacity of small-scale coffee growers, limited research and development potential, low adoption of new technologies and limited support services to small-scale farmers are among the common challenges. The scope of these challenges varies among countries. In addition to the many constraints, coffee farming must also address the threat posed by climate change. Some of the most significant challenges to production are presented below.

II.1.1 Farm productivity

20. High yields are an important factor in achieving a sustainable coffee production. Apart from Vietnam and India, average yields in the region are generally low and have even decreased in some countries. On average, yields vary between 300kg and 500kg per hectare. In India, average yield is between 850 and 950 kg per hectare for Robusta and between 700kg and 900kg per hectare for Arabica. Significantly lower yields are recorded in Yemen, Nepal, Timor-Leste, Lao, People's Democratic Republic, Thailand, Sri Lanka, Philippines and Papua New Guinea. Coffee farms in Indonesia and Vietnam are the same size, but yields in Vietnam are more than three times higher than in Indonesia. The main reason for this low productivity is under-fertilization of soil and lack of regular husbandry. Limited soil fertilization is also due to higher fertilizer prices, while farm gate prices are relatively low. Furthermore, farmers in the Philippines, Nepal, Thailand and many others suffer from limited access to high quality and certified planting materials. Although Vietnam records high yields, coffee areas are ageing quickly as most of the trees were planted 20 to 25 years ago. The normal production cycle of coffee trees is from 20 to 25 years, with the trees reaching the highest yields between 8 and 16 years. It is expected that yields in Vietnam will be reduced in coming years if a replanting programme is not pursued effectively and in a timely fashion.

21. The largest users of fertilizers in the region are India, Vietnam and Indonesia. This has contributed to an increase of production costs, although farmers in many other countries have limited access to fertilizers due to high costs. Some of these countries, where there is an excessive use of chemicals versus organic production, could have an impact on production patterns in the future.

II.1.2 Limited extension services to smallholder farmers

22. The transfer of technology to farmers, provision of training and other agricultural advisory services generally fall under the responsibility of the government through national extension service organizations or research institutions. India is the only country in the region that provides good extension services to farmers. In Indonesia, government support to coffee farmers is relatively weak in comparison with the cocoa and palm oil sectors because coffee is not a strategic priority for the government, since it only accounts for 1% of export revenues. As a result, farmers in Indonesia have low adoption of advanced Good Agricultural Practices. Apart from Indonesia, countries where farmers have limited access to effective Good Agricultural Practices include Lao, People's Democratic Republic, Nepal, Papua New Guinea, the Philippines, Timor-Leste and Yemen. Thailand, on the other hand, provides strong support to coffee growing as a profitable replacement crop for opium farmers. Coffee farmers in Vietnam benefit from adequate extension services as a government policy towards providing incentives for export crops. However, coffee farming in Vietnam faces growing environmental constraints due to declining soil fertility and water scarcity. The country needs to adopt new technology for irrigating coffee farms during dry spells.

23. Notwithstanding the lack of government support to the sector, technologies are not limited. For instance, a unique technique for coffee cultivation in Vietnam is deep planting, while in India various advanced technologies are available to farmers. Critical skills to be acquired by coffee farmers to improve the management of coffee leaf rust and other diseases include knowledge about the preparation of chemical sprays, disease control inputs and timing of application of various fungicides or pesticides.

II.1.3 Ageing of farming population and plantations

24. As it is the case in many producing countries, the low remuneration of coffee farming tends to discourage young people from envisaging a future for themselves in agriculture. The most affected countries by the ageing population of coffee farmers are Indonesia, Lao, People's Democratic Republic and Papua New Guinea. Thailand is the only producing country with a significant number of young coffee farmers aged between 20 and 40 years.

25. Ageing coffee trees are another threat to sustainable coffee production in a number of countries. Old coffee trees are prevalent in Indonesia, the Philippines, Timor-Leste and Vietnam. Yields in Vietnam may not be sustained in the long term due to the age of the tree stock, unless a vast replanting programme is carried out. Declining production in the Philippines is essentially due to old trees and lack of rejuvenation. In Timor-Leste around a third of coffee trees are unproductive, withered by age and neglect.

II.1.4 Environmental challenges

25. Although coffee production makes a positive contribution to the environment in comparison with most other economic activities, many challenges remain and require special attention. Coffee is an evergreen shrub, hence an important contributor to carbon sequestration, and is effective in stabilizing soils. It also permits the preservation of much of the original bio-diversity in planted areas. Environmental challenges are related to landscaping and deforestation, soil degradation, water pollution and water shortages, as well as waste management. These negative impacts on the environment depend on the production systems adopted. Cultivation under shade is favourable for conservation of soils, water, plant varieties and animal species, and provides a natural microclimate moderator. Coffee growing without shade contributes to deforestation in a number of countries. Vietnam and India are the most affected by soil degradation and water pollution due to intensive fertilization. Coffee tends to exhaust the soil content of nitrogen, potassium and calcium, which accounts for the use of fertilizers. On the other hand, excessive use of fertilizers causes problems due to transfer to water sources, thus contributing to water pollution. Furthermore, wet processing in many countries also contributes to water pollution. For instance, in India the waste water from pulpers pollutes the natural water courses from December to February. Excessive use of pesticides and herbicides also contributes to water and air pollution and affects people's health. Moreover, 70% of the coffee-growing area in Vietnam is irrigated from underground water, while only 10% utilizes and apply water-saving technology. Utilization of pulp, husk and coffee silver skin as biomass or for other productive use may transform a potentially environmental challenge into a profit-making opportunity.

II.1.5 Labour shortages

26. Although the region is highly populated, with more than 60% living in rural areas, availability of agricultural labour is a serious issue in some countries. One of the most important limiting factors on the development of coffee production in the region is the cost and availability of labour. Producing countries in the region have limited possibilities to mechanize due to topography on the one hand, and to the shade-grown system on the other. In some of the countries examined, urban migration from rural areas has exacerbated labour shortages. The overall impact is to increase costs of production and reduce the profitability of coffee farming. The implementation of one ICO-sponsored project to address the issue of coffee leaf rust in India revealed that approximately 93 man-days of labour is required per acre for all operations in large estates. This represents about 230 man-days per hectare in order to effectively manage a coffee farm efficiently³.

³ *Socio-economic analysis of Increasing the resilience of coffee production to leaf rust and other diseases, 2013.*

I.1.6 Climate change

27. Based on available data and projections, many scientists believe that climate change has already affected coffee production in many regions. Climate change is expected to further adversely impact existing coffee production in coming years. Like in many producing countries, coffee farmers in Asia and Oceania must also be prepared to address the challenges posed by climate change, especially smallholders who are vulnerable to changes in weather patterns. Changes in annual rainfall patterns or erratic changes in temperature have a negative impact on coffee production, including through the proliferation of pests and diseases and subsequent drops in productivity. In Indonesia, continuous exposure to high temperatures is expected to affect plant growth while further decreasing yields. Although the coffee sector in India has developed some adaptation measures to climate change, such as temperature control under a shade-grown system, improving productivity by facilitating irrigation infrastructure is one of the current constraints. Irrigation for flower blossoming in the dry period is required, since Robusta is particularly sensitive to the level of precipitation. However, wider dissemination of such adaptation strategies to climate change is an important challenge, since this would involve smallholder farmers who represent 98% of coffee holdings in India.

II.1.7 Pests and diseases

28. Pest and disease management remains a serious challenge to coffee growing in many countries in the region, impacting smallholder farmers who have limited resources to apply adequate control measures. Coffee berry disease (CBD), the coffee stem borer (CSB) and coffee leaf rust (CLR) are the most serious factors affecting coffee production in the region, particularly in India, Indonesia and Papua New Guinea. Yield losses attributed to CLR are estimated at around 1.5 million bags, representing 40% of the production by smallholder farmers in India. The expected impact of loss of production includes losses in income, employment and exports. At the same time, both prevention and management of these diseases and pests increase the costs of production and reduce the economic profitability of coffee growing. The ICO has sponsored a number of projects to develop control measures to address these problems in India (CBD, CSB and CLR), and Papua New Guinea (CBD), with the aim of disseminating the results to other countries. The challenge remains the mobilization of relevant resources for a wider dissemination of the integrated management practices. In Nepal, the work of the Agricultural Research Council (NARC) to control pests and diseases is still limited.

II.1.8 Competition from other crops

29. Since coffee growing requires a lot of physical work and labour costs are high, it is subject to intense competition from other crops, such as cocoa, palm oil, rice and opium. The economic profitability of coffee farming is one of the most important challenges faced by the coffee sector. Given current price levels, many growers tend to shift to other crops or to convert their agricultural land to real estate. This has been observed particularly in the Philippines, even though production costs are relatively low. It is also a serious challenge in Thailand, where the government is trying to divert farmers from growing opium. In the Philippines, imports of cheap coffee from neighbouring countries limit the competitiveness of local coffee farmers. The rise in the cultivation of 'qat', which is an easier and more profitable crop to grow than coffee, should be noted.

II.1.9 Limited access to credit

30. Access to finance is a common challenge in many producing countries worldwide. Commercial banks are reluctant to lend to agriculture, particularly to activities related to production. With the exception of Vietnam and India, smallholders' access to finance remains a significant challenge. Due to the unpredictable nature of agricultural production as a result of high dependency on exogenous factors, credits from commercial banks are rare in many countries. In India many small-scale growers suffer from heavy debts and high interest rates. Financing programmes for coffee should be carefully tailored to achieve optimal solutions adapted to the specific conditions of each country.

II.1.10 Limited empowerment of women

31. The recognition and fair remuneration of women in agriculture, particularly in the production of food and cash crops, is a serious issue in many developing countries worldwide. As in many producing countries, women in the region of Asia and Oceania have less access to resources and services, including land, finance, capacity building, agricultural input and equipment. Nearly 80% of the coffee-farming labour force is composed of women in India, Indonesia and Vietnam. According to the Asian Farmers' Association for Sustainable Rural Development (AFA)⁴, the majority of women farmers in the region lack basic technology relating to farming. Although the involvement of women in coffee production was not mentioned specifically by the Forum, women were reported to play a crucial role in agricultural activities, including food, coffee, rubber and tea. This role was less recognized in

⁴ *Asia-Pacific women farmers' forum organized in October 2017 by Asian Farmers' Association (AFA) and Self Employed Women's Association (SEWA). The theme of the Forum was 'Recognizing and strengthening the contributions of women farmers in climate resilient agriculture-based livelihoods'.*

India, Indonesia, Vietnam, Thailand, Nepal, Philippines and Laos. In Papua New Guinea, women involved in food and coffee growing activities have raised similar concerns regarding gender inequality⁵. In these countries, women have limited statutory rights over land and less authority over family management compared to their husbands and male siblings.

II.1.11 Limited capacity of research and development

32. India and Vietnam are the only countries endowed with strong research institutions that have succeeded in developing new high yield and disease-resistant planting materials. The Central Coffee Research Institute (CCRI) in India is one of the best coffee research institutions in the world. The CCRI has already developed a new coffee variety, known as Chandragiri, that has manifested a strong resilience to changing environmental conditions. This programme was supported by the ICO-sponsored project mentioned above. With the strong support of the Coffee Board of India and the government, technology developed by the CCRI has been disseminated to coffee farmers. However, in many other countries, dissemination and adoption by smallholder farmers needs to be strengthened. Another challenge is for the remaining countries of the region to support their respective research institutions in order to move away from traditional coffee farming, develop new varieties and make use of modern techniques, particularly improving production and post-harvest technologies. Even Indonesia, the second largest coffee producer in the region and the fourth largest producer in the world, carries out limited research on coffee, particularly in the areas of genome, biodiversity conservation, development of new varieties that are more resistant to diseases and weather fluctuations.

II.2 Challenges associated with the coffee value chain

33. 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. The first phase in the coffee value chain encompasses the process from germination to production of coffee beans, including the construction of nurseries, planting, maintenance and harvesting of ripe cherries (primary phase in the value chain). The second phase comprises primary post-harvest processing. This phase can generate significant added value as the red cherries undergo wet processing. The third phase consists of marketing and packaging. The fourth comprises all activities involved in roasting and distribution for final consumption. The challenge is that the realization of the fourth phase of the value chain, which creates more value addition to coffee, is still rather limited in exporting countries.

⁵ *Women in Agricultural Development Foundation (PNG-WiADF).*

II.2.1 Post-harvest processing and quality coffee

34. Many countries in the region have outdated post-harvest systems. Wet processing infrastructure (washing stations) in India, Nepal, Indonesia and many other countries has become obsolete. Many small scale-farmers continue to use hand-pulpers. The quality of coffee depends heavily on pre-harvest and post-harvest activities. Pre-harvest operations include varieties selected, climatic factors and agronomic practices. Sorting, pulping, fermentation, washing, drying, storing, packaging and processing (hulling and grading) are post-harvest operations. Poor post-harvest operations with negative impact on coffee quality have been observed in many countries, including Nepal, Yemen, the Philippines, Indonesia and Vietnam. The challenge is to encourage coffee growers to improve quality for higher returns and to access high-value niche markets. Strengthening post-harvest infrastructure will contribute to improving coffee quality with impact on grading and pricing.

II.2.2 Market access for smallholder farmers

35. Smallholder farmers owning less than two hectares dominate coffee production across the region and their organizational and aggregation capacity is often quite weak. In most cases, an important gap exists between smallholder farmers and the market. For instance, after harvesting coffee cherries, smallholders sell their product to intermediaries, who then sell to wet mills. As a consequence, many intermediaries are involved in the value chain, reducing farmer income. Organization of farmers into structured groups and networks facilitates access to market and reduces transaction costs. It also reduces the cost of inputs through group purchases at bargain prices, as well as improving market access. Such organizations have not been generally observed in the region. Organizing coffee farmers has been identified as one of the priority actions to promote a sustainable coffee sector, particularly in the Philippines, India, Indonesia and Nepal. Moreover, developing marketing systems and platforms to build a more direct relationship with buyers will shorten the coffee value chain and improve farmers' income and the efficiency of the supply chain.

II.2.3 Exports of processed coffee and domestic consumption

36. As it is the case of many exporting countries, the realization of this final phase in the value chain is limited in the region. Most of the value is generated by exports of green coffee, although domestic consumption is being developed in some countries. Exports of processed coffee in roasted or soluble form remain low in the major exporting countries. Table 3 indicates average share of exports by form of coffee. During the 2010s over 94% of total exports of Vietnam, Indonesia and Papua New Guinea were green coffee. However, exports of processed coffee in roasted or soluble form also accounted for a significant share in some

of these countries. In the 2010s, roasted coffee represented 15% of total exports of Sri Lanka, followed by Nepal (3.4%), Yemen (3.1%) and the Philippines (2%). The soluble coffee industry appears to grow stronger in the region. On average exports of soluble coffee by Thailand and the Philippines represent 93.5% and 93.2% respectively of their total exports of coffee. India and Sri Lanka recorded 29.7% and 24% respectively.

Table 3: Average share of exports by form of coffee

	Green coffee			Roasted coffee			Soluble coffee		
	1990s	2000s	2010s	1990s	2000s	2010s	1990s	2000s	2010s
India	85.7%	80.1%	70.2%	0.1%	0.1%	0.1%	14.1%	19.8%	29.7%
Indonesia	98.4%	95.7%	94.2%	0.0%	0.0%	0.0%	1.6%	4.3%	5.8%
Lao, People's Dem. Rep.	100.0%	99.6%	99.4%	0.0%	0.4%	0.2%	0.0%	0.0%	0.4%
Nepal	100.0%	81.2%	96.5%	0.0%	1.6%	3.4%	0.0%	17.2%	0.1%
Papua New Guinea	99.9%	99.9%	100.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Philippines	79.4%	8.6%	4.8%	0.2%	0.3%	2.0%	20.4%	91.1%	93.2%
Sri Lanka	99.2%	71.3%	61.0%	0.1%	12.9%	15.0%	0.8%	15.8%	24.0%
Thailand	99.5%	74.5%	5.4%	0.0%	0.2%	0.9%	0.5%	25.3%	93.5%
Timor-Leste		98.7%	99.2%		1.3%	0.8%		0.0%	0.0%
Vietnam	99.9%	99.8%	98.1%	0.1%	0.0%	0.0%	0.0%	0.2%	1.8%
Yemen	96.3%	78.0%	96.8%	3.7%	22.0%	3.1%	0.1%	0.0%	0.1%

37. Although the region has recorded strong coffee-related trade flows in recent years it still lacks vertical integration of the industry with more processing activities at national level. Figure 12 shows export patterns during calendar year 2017. This confirm the development of the soluble industry in the Philippines and Thailand as mentioned above. Vietnam, the world's second coffee-producing country has a small processing activity.

Figure 12: Coffee export patterns in 2017



38. Domestic consumption generates value addition in the country. It has grown significantly in the region, from an average level of 3.6 million bags in the 1990s to 12.1 million bags in the 2010s (Table 4). Countries with significant domestic consumption are Indonesia, the Philippines, India, Vietnam and Thailand.

Table 4: Domestic consumption (thousands 60-kg bags)

Country	1990s	2000s	2010s
Asia & Oceania	3,656	5,932	12,057
India	860	1,236	2,069
Indonesia	1,404	2,291	4,059
Lao, People's Dem. Rep. of	0	97	150
Nepal		0	0
Papua New Guinea	2	2	2
Philippines	787	1,015	2,533
Sri Lanka	32	30	34
Thailand	305	508	1,117
Timor-Leste		0	0
Vietnam	265	671	1,963
Yemen	0	82	130

39. One of the important characteristics of the coffee sector in Asia and Oceania is intra-regional trade as shown by the increasing volume of imports within the region. The largest importing country is the Philippines (4.8 million bags in 2017), followed by India (1 million bags), Indonesia (over 725,000 bags) and Thailand (612,692 bags). The impact on the balance of trade is significant in the Philippines and Indonesia, as in 2017 the total value of their coffee imports was over US\$279 million and US\$107.5 million dollars respectively. The Philippines has become a net importer of coffee, as its domestic consumption is increasing while the production has decreased substantially. Its total production recorded in 2016/17 was 215,000 bags compared to total imports of 4.8 million bags in 2017. The challenge of the Philippines is therefore to increase production to balance growing domestic consumption or, at least, reduce import expenditures⁶.

⁶ *The Philippine Coffee Board, Inc. indicates that around US\$4 billion is spent per annum on imports of coffee for domestic consumption.*

III. CONCLUSION AND WAY FORWARD

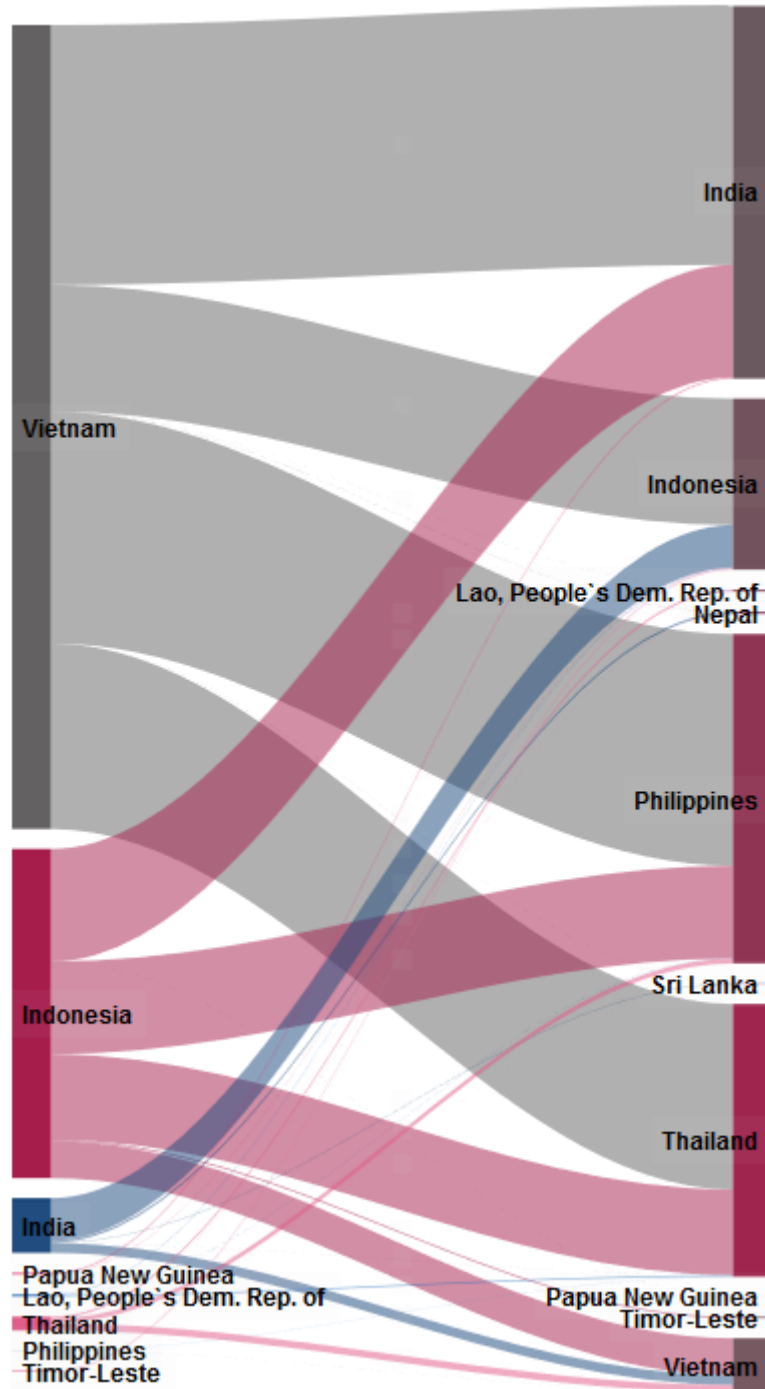
40. The main objective of coffee-producing countries is to maximize export earnings by enhancing the market share of both green and value-added coffees and promoting differentiated coffees in high value niche markets (specialty and gourmet coffee). Preliminary assessment of the coffee sector in selected countries in Asia and Oceania indicates that the common challenge is how to develop a more efficient coffee sector, which is reliable and environmentally-sound and profitable to all stakeholders.

41. Although the industry is dominated by small-scale farmers, priority actions to address various issues should take into account country-specific problems. The main challenges in many countries are low yields, labour shortages and lack of access to capacity building and advanced technologies to improve the skills of small-scale farmers. Major impacts of climate change on coffee production include a fall in the quality of the coffee bean, reductions in yield and increase in incidence of pests and diseases. Adaptation measures to climate change, such as irrigation, may increase costs of production and reduce farming profitability, while the potential of farm mechanization is limited due to the topography and coffee-growing systems.

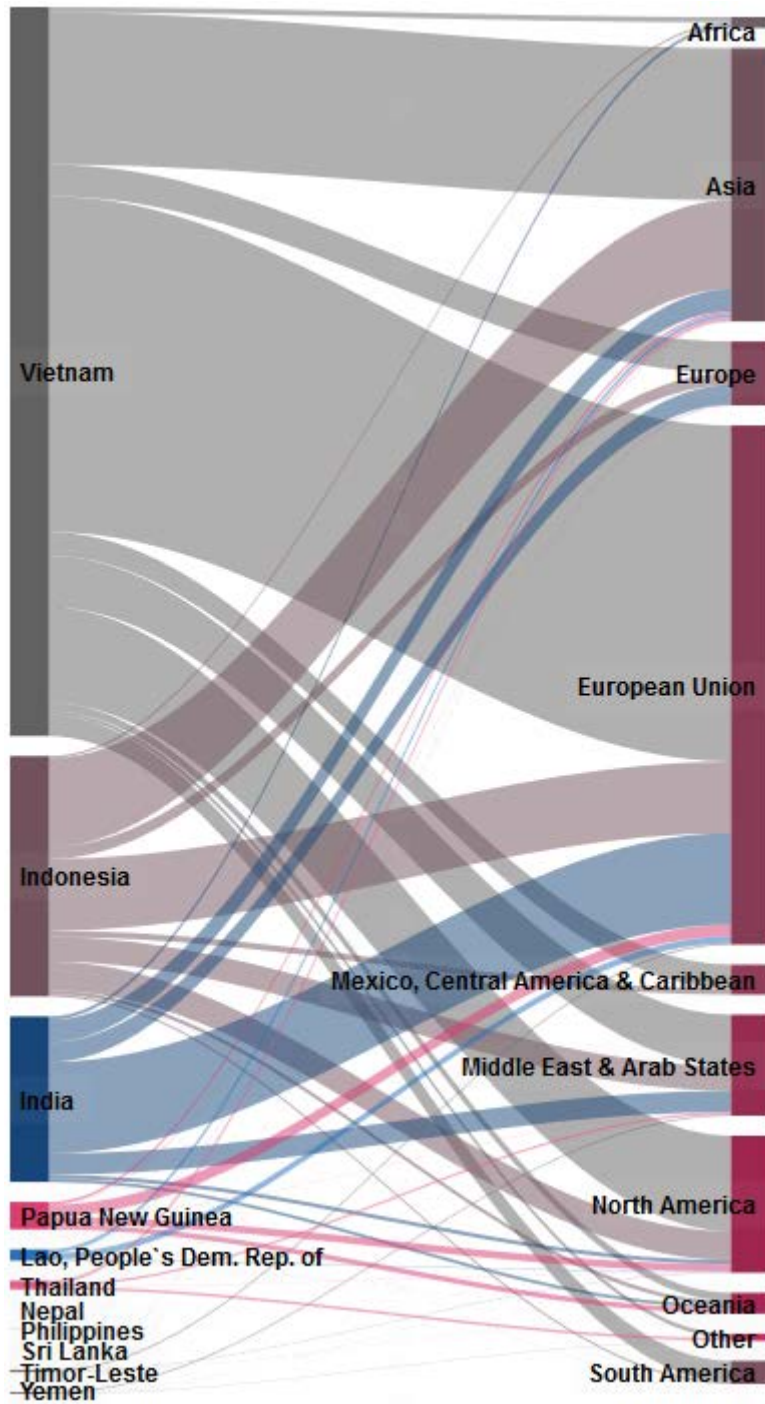
42. Furthermore, a number of capacity-building activities benefitting women would strengthen the coffee industry of the region, while substantially reducing rural poverty. For instance, one of the strategies to empower women would be involving them in contract farming, which provides opportunities to link directly with buyers, or integrating them into coffee value chains.

43. Finally, as the scope of the challenges and country priorities are not similar, technical cooperation and project design should focus on country-specific coffee challenges and opportunities. For instance, to reduce imports of coffee required to meet its increasing domestic consumption, the Philippine is seeking to increase production. In Vietnam, water-saving technology for irrigation and the development of greener coffee value chain and trademark would be crucial. Coffee farmers in India are facing huge debts, so an innovative strategy to address financial issues would be required, even as the country is implementing a programme for developing coffee in non-traditional areas as a means to reduce poverty.

GRAPH 1
COFFEE TRADE FLOW BETWEEN THE PRODUCING COUNTRIES OF THE REGION (2012 – 2016)



GRAPH 2
INTRA-TRADE FLOW BETWEEN THE PRODUCING COUNTRIES OF THE REGION
AND THE REST OF THE WORLD (2012-2016)



PRICES PAID TO GROWERS
Current US cents per lb

Crop year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Asia & Oceania														
India	47.82	56.83	75.01	97.20	75.42	75.93	106.04	101.20	101.93	99.04	94.57	78.13	96.86	87.37
Indonesia	25.91	39.02	53.40	56.73										
Papua New Guinea	22.91	24.70	34.49	26.09	33.73	27.73	30.41	39.97	34.05	22.33	23.29	24.67		
Philippines	33.38	46.58	66.77	86.25	77.17	67.08	109.53	101.79	93.28					
Sri Lanka														
Thailand	13.78	42.49	58.80	83.75	87.19	85.50	103.49	103.43	106.58	91.89	95.17			
Vietnam	31.13	52.20	67.76	90.35	67.18	63.39	96.37	88.48	87.84					
Arabica coffee growers														
India	93.08	91.05	105.15	123.19	126.67	146.88	217.15	180.15	126.15	154.07	171.60	130.03	139.69	124.38
Indonesia	96.28	112.35	108.85	118.88										
Papua New Guinea	44.85	65.57	74.21	86.61	98.55	75.20	112.93	133.38	87.13	60.17	89.59	62.24		
Philippines	71.09	69.33	73.24	93.61	90.68			255.61	268.41					
Sri Lanka														
Thailand										123.76	120.06			
Vietnam								84.35	84.93					