

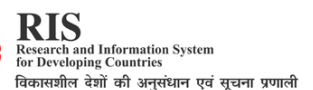


Cambodia's Agri-Food Trade: Structure, New Emerging Potentials, Challenges & Impacts of Covid-19

Research Paper 5

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FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI) RESEARCH PAPERS

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EXECUTIVE SUMMARY

This study provides overall analysis and informs readers about Cambodia's agri-food trade regarding recent structures of trade flows, new emerging potentials, main challenges, and impacts of COVID-19. The main data source is BACI datasets produced by Centre d'Études Prospectives et d'Informations Internationales (CEPII), the French leading center research and expertise on the world economy.

Cambodia is a net importer of agricultural products for the last several years, resulting in agricultural trade deficit of 1.26 billion US dollars in 2018. Top agricultural products for export include cassava, rice, rubber, nuts, and animal feeds. At the same time, Cambodia imports massive amounts of tobacco products (i.e. cigarette), sugar, non-alcoholic beverages, and beer. The country is seen to export low-value agricultural primary products (i.e. fresh manioc or sliced cassava) and import high-value manufactured products and processed foods (i.e. starch, flour, and prepared meats).

Comparing to neighboring countries, Cambodia still lags behind in terms of product quality, productivity, and export competitiveness due to low value addition, high costs of production, unfavorable transport conditions, burdensome of border documents, and market diversification.

Cambodian's economy faced negative growth for the first time in decades. The COVID-19 pandemic, however, does not hurt agricultural sector much in Cambodia. The Royal Government of Cambodia, during the pandemic, has banned export of white rice to ensure domestic consumption. The export of fragrant rice, on the other hand, was seen substantially increased in 2020. In late 2020, Cambodia has signed free trade agreement with China, allowing 340 agricultural products to enter Chinese market. However, there was a significant drop of manioc export from Cambodia.

As policy recommendation, Cambodia should explore import substitution in processed foods to diversify its export structure that heavily depends on garments and primary agriculture. Consequently, promoting more investments in domestic processing industry of the primary agricultural products and enhancing current processing capacity are the foremost step to increase value-addition of agricultural sector. Cost of production including electricity, gas or oil, water, and quality transportation should be highly considered by relevant government ministries to achieve better efficiency of each stage of value chains. Technology in agriculture such as AI, drone, and farm-based technology is immensely needed to improve productivity and quality assurance of the products for commercialization. At broader perspective, not solely depending on regional or free trade agreements, Cambodia should explore further potential markets around the globe to expand its exports of agricultural products. Therefore, joint coordination among relevant government ministries and stakeholders is immensely needed to achieve the ambitious goal.

TABLE OF CONTENTS

FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI) RESEARCH PAPERS II	
STATEMENT OF SUPPORT	III
AUTHORS	III
AUTHORS' ACKNOWLEDGMENTS.....	III
EXECUTIVE SUMMARY	IV
TABLE OF CONTENTS.....	V
LIST OF TABLES.....	VI
LIST OF FIGURES.....	VI
ACRONYMS AND ABBREVIATIONS	VII
EXECUTIVE SUMMARY	1
INTRODUCTION.....	2
AGRI-FOOD TRADE.....	3
1. CAMBODIA'S RECENT ECONOMIC PERFORMANCE.....	3
2. AGRI-FOOD STRUCTURE	4
a. <i>Agri-Food Exports.....</i>	<i>5</i>
b. <i>Agri-Food Imports.....</i>	<i>8</i>
c. <i>Processed and Unprocessed Food.....</i>	<i>9</i>
3. CHALLENGES IN AGRI-FOOD TRADE	10
a. <i>Low Value Addition of Agri-Food Commodities.....</i>	<i>11</i>
<i>Non-Tariff Barriers.....</i>	<i>12</i>
b. <i>Logistics Performance.....</i>	<i>13</i>
4. NEW EMERGING POTENTIALS.....	15
a. <i>Commercialization of Agricultural Commodities</i>	<i>15</i>
b. <i>Recent Shift of Trade Agreement: CCFTA</i>	<i>15</i>
CONCLUSION	21
REFERENCES	22

LIST OF TABLES

Table 1: Values of top 10 agri-food exports of 2014-2018 compared with 2000-2004, in thousand USD (2015=100).....	6
Table 2: Share of important Agri-food exports from Cambodia to Thailand in 2014-2018, in thousand USD (2015=100)	7
Table 3: Share of important Agri-food exports from Cambodia to Viet Nam in 2014-2018, in thousand USD (2015=100)	7
Table 4: Values of top 10 agri-food imports of 2014-2018 compared with 2000-2004, in thousand USD (2015=100).....	9
Table 5: Imports of unprocessed and processed food in 2014-2018, in thousand USD	10
Table 6: Exports of unprocessed and processed food in 2014-2018, in thousand USD	10
Table 7: Top 10 agri-food commodities exported to China, average value 2014-2018, in thousand USD (2015=100).....	17
Table 8: Export of jasmine rice in 2020	18

LIST OF FIGURES

Figure 1: Real (2010) GDP by sector (2006-2019) in Cambodia, million USD	4
Figure 2: Cambodia's GDP (constant 2010) and agri-food trade, 2009 to 2018, billion USD.....	5
Figure 3: Share of 10 key exporting partners of Cambodia's agri-food export, average value 2009-2018.....	6
Figure 4: Economic Fitness ranking among ASEAN countries	12
Figure 5: Logistics Performance Index (LPI) among Cambodian's neighboring countries	14
Figure 6: Six indicators of LPI of Cambodia, compared with 3 neighboring countries.....	14
Figure 7: Major banana importers (2019), in metric tons	16
Figure 8: Quantity of exported banana from Cambodia, in metric tons	16
Figure 9: Export quantity of top agri-food commodities in 2020 and 2019, in metric tons	19
Figure 10: Quantity of Cambodian milled Rice Export, metric tons	19
Figure 11: Types of Cambodian Milled Rice Export in 2020, % of total exports.....	20

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ADB	Asian Development Bank
AFRE	Department of Agricultural, Food, and Resource Economics
AI	Artificial Intelligence
CCFTA	Cambodia-China Free Trade Agreement
CCFTA	Cambodia-China Free Trade Agreement
CDRI	Cambodia Development Resource Institute
CEPII	Centre d'Études Prospectives et d'Informations Internationales
CTIS	Cambodia Trade Integration Strategy
DEC	USAID Development Experience Clearing House
EBA	Everything but Arms
EU	European Union
FDI	Foreign direct investment
FSG	Food Security Group
GDA	General Department of Agriculture
GDP	Gross Domestic Product
IFPRI	International Food Policy Research Institute
ISSER	Institute for Statistical, Social, and Economic Research, University of Ghana
LPI	Logistics Performance Index
MAFF	Ministry of Agriculture, Forestry and Fisheries
MSU	Michigan State University
NBT	Non-technical Barriers to Trade
OECD	Organisation for Economic Co-operation and Development
PRCI	Policy Research, Capacity, and Influence
RCEP	Regional Comprehensive Economic Partnership
ReNAPRI	Regional Network of African Policy Research Institutes
RGC	Royal Government of Cambodia
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
USD	US \$
WDI	World Development Indicators
ADB	Asian Development Bank
AFRE	Department of Agricultural, Food, and Resource Economics
AI	Artificial Intelligence
CCFTA	Cambodia-China Free Trade Agreement
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CTIS	Cambodia Trade Integration Strategy
DEC	USAID Development Experience Clearing House
EBA	Everything but Arms
EU	European Union
FDI	Foreign direct investment
FSG	Food Security Group
GDA	General Department of Agriculture
GDP	Gross Domestic Product
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RGC	Royal Government of Cambodia
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
USD	US \$
WDI	World Development Indicators

Executive Summary

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Comparing to neighboring countries, Cambodia still lags behind in terms of product quality, productivity, and export competitiveness due to low value addition, high costs of production, unfavorable transport conditions, burdensome of border documents, and market diversification.

Cambodian's economy faced negative growth for the first time in decades. The COVID-19 pandemic, however, does not hurt agricultural sector much in Cambodia. The Royal Government of Cambodia, during the pandemic, has banned export of white rice to ensure domestic consumption. The export of fragrant rice, on the other hand, was seen substantially increased in 2020. In late 2020, Cambodia has signed free trade agreement with China, allowing 340 agricultural products to enter Chinese market. However, there was a significant drop of manioc export from Cambodia.

As policy recommendation, Cambodia should explore import substitution in processed foods to diversify its export structure that heavily depends on garments and primary agriculture. Consequently, promoting more investments in domestic processing industry of the primary agricultural products and enhancing current processing capacity are the foremost step to increase value-addition of agricultural sector. Cost of production including electricity, gas or oil, water, and quality transportation should be highly considered by relevant government ministries to achieve better efficiency of each stage of value chains. Technology in agriculture such as AI, drone, and farm-based technology is immensely needed to improve productivity and quality assurance of the products for commercialization. At broader perspective, not solely depending on regional or free trade agreements, Cambodia should explore further potential markets around the globe to expand its exports of agricultural products. Therefore, joint coordination among relevant government ministries and stakeholders is immensely needed to achieve the ambitious goal.

Introduction

Located in Southeast Asia, Cambodia's economy has gone through significant transformations, from largely agrarian in the early 1990s to manufacturing-based and serviced-based economy in the last decade. The main drivers for growth for the country are agriculture, garment exports, construction, and tourism. Cambodia has maintained an average growth rate of 8% between 1998 and 2018 (the World Bank 2020).

Theoretically and empirically, international trade is a resilient source of growth which has been confirmed by well-known economists (Adam Smith 1776, David Ricardo 1817, Romer 1986, 1987, 1990, and 1994, Lucas 1993, Barro and Sala-i-Martin 2004). Recently, trade liberalization and facilitating measures across countries or regions have become a vital foundation for sustainable growth (Aciti and Jun 2008; Mustafa et al. 2017; Chhuor 2017, Phon 2020). Likewise, looking at international trade of Cambodia, the main export commodities comprise of manufactures (85.3%), agricultural products (5.3%), fuels and mining products (0.3%), and others (9.1%), and the top destinations include European Union (30.1%), United States of America (24%), Japan (8.5%), United Kingdom (8%), China (6.8%), and other (22.7%), based on the World Trade Organization (WTO 2018). Rice exports account for almost 60% of total agricultural GDP.

From the early 1990s, not so long after recovering from internal civil wars, Cambodia's agricultural trade focused on exports of raw materials and unprocessed primary agricultural commodities to neighboring countries such as Thailand and Vietnam. The production and processing capacity were remarkably low at the time. Realizing the tremendous amount of the exports and great loss of value-added incomes, the Royal Government of Cambodia (RGC) started to promote country's processing capacity and quality refinement of the commodities for formal commercial activities. One of the biggest export destinations is European Union countries, when Cambodia enjoys Everything but Arms (EBA) Agreement privilege. Rice export to EU markets is well-known for Cambodia's agricultural trade. 62 percent of rice exports went to EU markets, according to Cambodia Rice report by International Finance Corporation in 2015. In the first 6 months of 2020, the amount of rice export to EU was 135,576 tons, while China is the largest importer of Cambodian rice with the amount of 147,949 tons (Cambodia Rice Federation).

In 2020, like other countries, the global pandemic Covid-19 has affected Cambodia's economy negatively in terms of agricultural productions, manufacturing exports, tourism, and constructions. Aviation activities have been halted, schools were closed down, garment workers have been laid off, and social gatherings were banned. Cambodia's economy faced negative growth at -2%, the sharpest decline in its recent history (World Bank 2020). At the same time of economic shock, Cambodia faces its partial suspension of preferential access to the EU market under the EBA initiative (World Bank 2020).

In October 2020, Cambodia signed Cambodia-China Free Trade Agreement (CCFTA). Agricultural trade with China includes exports of rice, mangoes, banana, and other agricultural products. According to Langcang-Mekong Cooperation (2020), the export volume of dried mangoes to China

was around 1,500 tons per year. At the same time, commercializing agricultural products is among top priorities to be achieved by the RGC. The Prime Minister of Cambodia, in July 2020, has also clearly mentioned and urged the relevant government institutions and ministries to pay high attention on agriculture sector, specifically on promoting local processing industry and productivity, to maintain the country's economy amid the Covid-19 pandemic crisis.

Based on current situation, Cambodia needs to take the right policy response for overcoming the unpredicted occurrence of the global shock. One lesson learnt during the Covid-19 pandemic is that the dependency of Cambodian's economy on manufacturing and services sectors, namely garment and tourism cannot compensate for the vast adverse impacts of the pandemic. Agricultural sector has provided employment opportunities for workers laid off in the garment and tourism sectors and also economic stabilizer during the Covid-19. Moreover, during the last decades, Cambodia has faced significant shifts in its trading partners, making policy makers to decide and prepare precisely. As Cambodia is about to transform from a least developed country to a developing country soon, trade policies should be prepared to cope with coming withdrawals of tax exemptions from the European Union (EU), USA, and other trading partners.

Therefore, this study will analyze Cambodia's agri-food trade flows by looking at opportunities and challenges of Cambodia's agri-food trade amid the rapid shifts of trading partners. In addition, the impacts of Covid-19 pandemic on the agricultural trade are another dimension of the study. In terms of research significance, this study will provide up-to-date evidence to policy makers such as Ministry of Agriculture, Forestry, and Fisheries, Ministry of Commerce, and other relevant stakeholders for policy designing and responses to trade flows changes under the new normal situation. The findings of this study will also serve as basis for policy dialogues among relevant government entities, researchers, and NGOs. Academically, the study can help shed light on the existing literature and pave the way for future research. In order to achieve above-mentioned objectives, it is worth reviewing existing academic literature, reports, and relevant policies.

This paper is organized as follows. First, reviews of existing academic literature, reports, and relevant policies are provided as background for the analysis. Second, the paper presents current structure of agri-food trade in Cambodia. Third, main challenges are reported, followed by new emerging potentials of Cambodia's agri-food trade. Impact of Covid-19 is also analyzed in the next section. The final section concludes and presents policy recommendations.

Agri-Food Trade

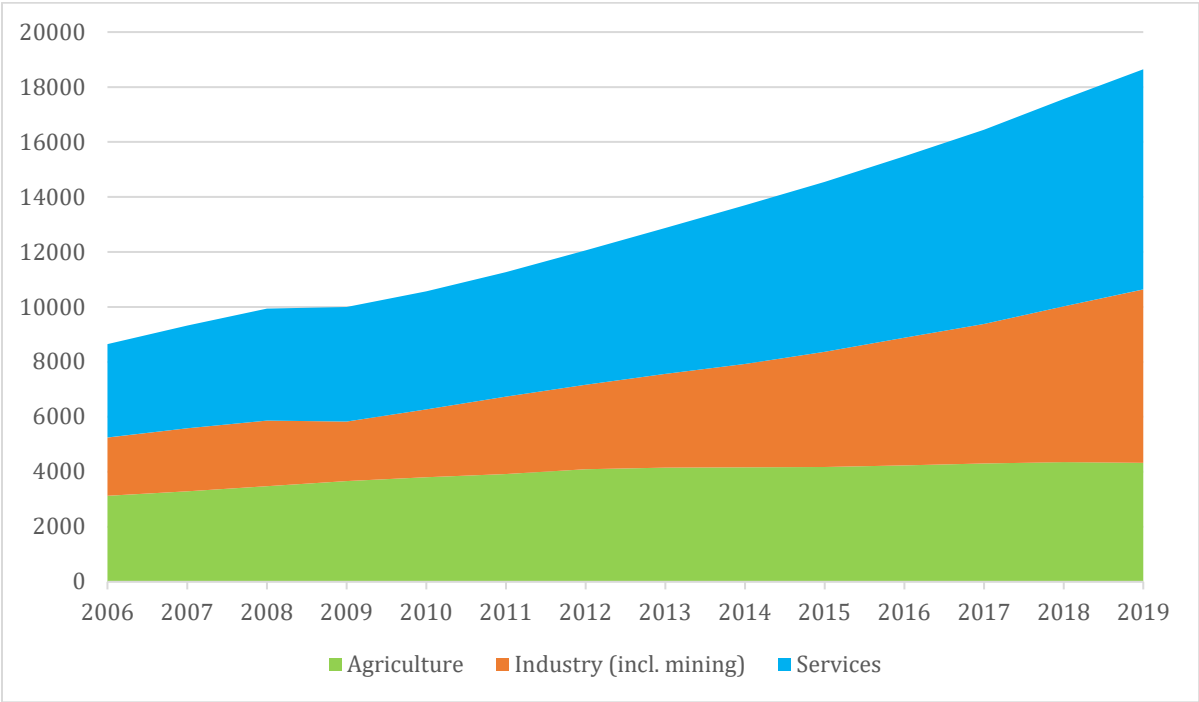
1. Cambodia's Recent Economic Performance

The Covid-19 pandemic has exacted a heavy toll on the economy at the global as well as country level. In Cambodia, the first half of 2020 saw the country's export-driven economy suffered heavily to the initial economic shocks which resulted in the sudden halt of international tourist arrival, lack of industrial raw materials and shipment, border closure, and domestic restrictions as well as fears of infection (Chheng 2020; Sun 2020; Ate 2020; Turton 2020). The situation modestly improved in

the second half of 2020 while pressures in certain sectors remained. In September, the new Asian Development Bank (ADB) forecast (2020) revealed the first negative growth rate in two decades, a 4% contractual growth in 2020 and a 5.9% rebound in 2021, slightly higher than the previous forecast of 5.5% (ADB 2020b). World Bank (2020) estimated that Cambodia’s economy faced negative growth of 2%. The most recent study by ADB in 2021 confirmed a 3.1% negative growth for Cambodian’s economy. As a result of no community outbreak, restrictions within the country loosened and domestic economic activities were revived (World Bank 2020; Starkey 2020). The domestic travel helped the tourism sector to gradually recover, though it was by no mean able to make up for the staggering 76.1% contraction of international tourist arrival (Hin 2020).

Among the major sectors contributing to economic growth in Cambodia, agricultural sector ranked the third, increasing from 3,130 to 4,332 million US \$ (USD) between 2006 to 2009 (Figure 1). Exports of agricultural products and other manufactures such as electronics, vehicle parts and accessories and bicycles rose significantly, although dropping demands decelerated export of garment, travel goods and footwears to Europe and North America (World Bank 2020). Rice exports account for almost 60% of total agricultural Gross Domestic Product (GDP). Cambodia’s export in 2020 still reached \$16 billion, a 14% increase from last year (May 2020).

Figure 1: Real (2010) GDP by sector (2006-2019) in Cambodia, million USD



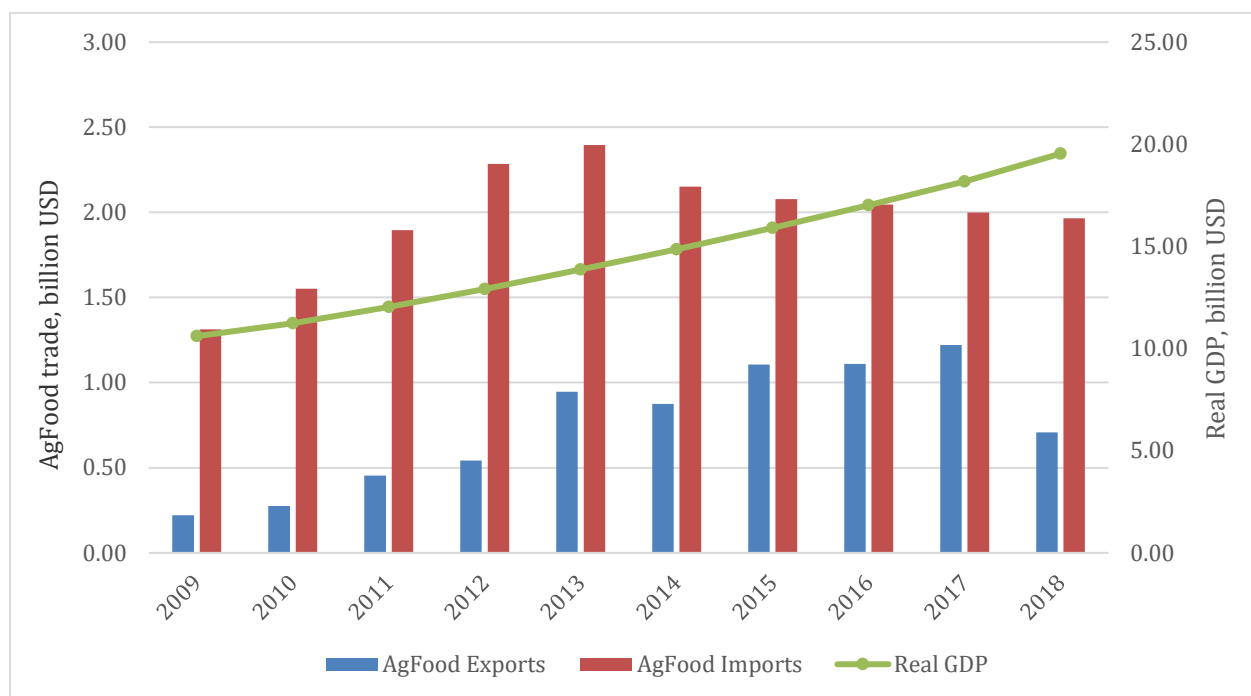
Source: Author’s calculation from World Development Indicators (World Bank 2021)

2. Agri-Food Structure

In the last several years, Cambodia has been a net importer in terms of overall trade and agri-food trade. The total agri-food export was about only 0.76 billion USD (real 2015), while the total value

of the import was almost 1.9 billion USD (real 2015), leaving 1.26 billion USD deficit in 2018 (Figure 2).

Figure 2: Cambodia's GDP (constant 2010) and agri-food trade, 2009 to 2018, billion USD



Source: Authors' calculation from World Development Indicators (World Bank 2021) and BACI (2020)

Note: AgFood values are in real values (2015=100) using the Consumer Prices Food Indices of Cambodia, FAOSTAT

a. Agri-Food Exports

The share of top 10 exporting agricultural commodities increased from 66.49% to 91.04% from period 2000-2004 to 2014-2018.

Cassava is the top exporting commodity, with the average export value of 369,393.76 thousand USD in period of 2014-2018. The export of cassava greatly increased from 134.26 thousand USD in 2000-2004. Notably, the exported cassava is in primary forms including fresh or sliced. The second largest export commodity is rice, followed by natural rubber. Cambodia's rice export (HS100630) to the world was about 546,722 metric tons or 415,333 thousand USD in 2019, becoming one among top 10 rice exporters (WITS 2021). China was the main importer of Cambodia's rice, and France became 2nd importer, with the import amount of 214,136 and 74,217 metric tons in 2019, respectively.

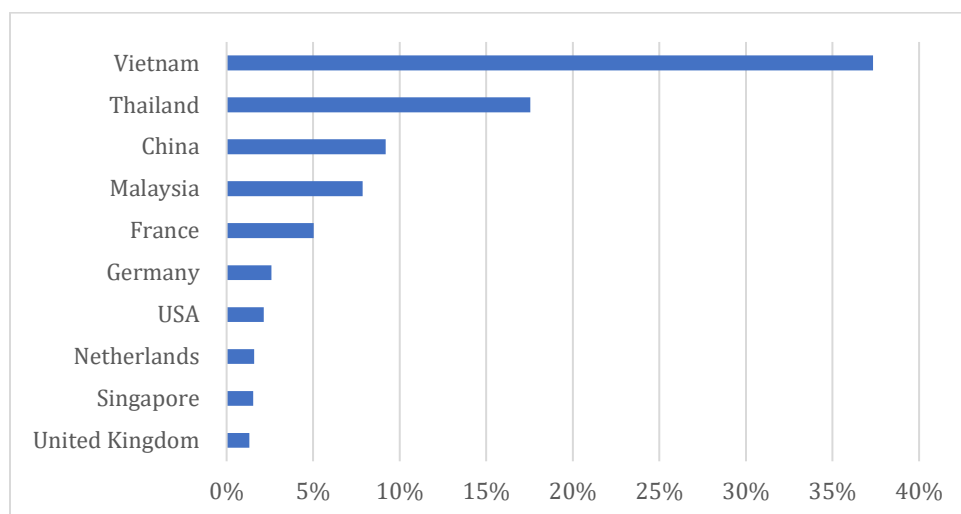
Animal feed (dog or cat foods) has also become one of Cambodia's top exporting commodities, with the exported value of 35,689 thousand USD in 2014-2018.

Table 1: Values of top 10 agri-food exports of 2014-2018 compared with 2000-2004, in thousand USD (2015=100)

Agri-Food Exports	2000/04	2014/18
Cassava	134.26	369,393.76
Rice	4,339.66	312,032.24
Natural rubber	95,012.94	144,145.14
Nuts	9,680.26	93,054.87
Animal feeds	10.24	35,689.52
Cane or beet sugar and chemically pure sucrose, in solid form	-	27,457.94
Soya beans; whether or not broken	107.96	20,087.66
Palm oil	1,382.58	19,377.14
Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes	3,748.14	14,237.37
Tobacco, unmanufactured; tobacco refuse	2,468.95	13,210.87
subtotal of Top 10	116,885.00	1,048,686.50
Total	175,784.99	1,151,795.33
<i>Share of Top 10 in agri-food export</i>	<i>66.49%</i>	<i>91.05%</i>

Source: Author's calculation using BACI dataset at product level (2020)

Figure 3: Share of 10 key exporting partners of Cambodia's agri-food export, average value 2009-2018



Source: Author's calculation using BACI dataset at product level (2020)

Table 2: Share of important Agri-food exports from Cambodia to Thailand in 2014-2018, in thousand USD (2015=100)

Agri-Food Exports	share of total exports to Thailand	share of total exports from Cambodia
Cigarettes	0.51%	8.34%
Animal feeds	8.18%	52.71%
Spirits obtained by distilling grape wine or grape marc	0.88%	99.97%
Sugar from sugar cane	0.93%	28.92%
Soya beans	2.77%	31.66%
Maize	3.12%	67.74%
Fruit (guava, mangoes)	0.82%	45.23%
<i>Cassava</i>	<i>80.19%</i>	<i>49.81%</i>
Molluscs	0.96%	99.98%
Fish	1.63%	99.98%

Source: Author's calculation using BACI dataset at product level (2020)

Table 3: Share of important Agri-food exports from Cambodia to Viet Nam in 2014-2018, in thousand USD (2015=100)

Agri-Food Exports	share of total exports to Viet Nam	share of total exports from Cambodia
<i>Cassava</i>	<i>41.70%</i>	<i>46.20%</i>
<i>Cashew nuts</i>	<i>22.46%</i>	<i>99.00%</i>
Natural Rubber	19.03%	54.02%
Soya beans	3.35%	68.24%
<i>Sucrose (sugar)</i>	<i>2.94%</i>	<i>86.96%</i>
<i>Tobacco</i>	<i>2.56%</i>	<i>95.35%</i>
Sugar from sugar cane	1.28%	71.08%
Cigarettes	1.28%	36.87%
Pepper	1.11%	56.91%
<i>Leguminous</i>	<i>0.88%</i>	<i>98.92%</i>
Paddy rice	0.02%	5.82%

Source: Author's calculation using BACI dataset at product level (2020)

From the above tables, we can see that large amount of cassava has been exported as fresh and chip to Thailand and Vietnam for further processing into final goods. The existing trend negatively affects value addition of the agricultural commodity from Cambodia. According to Cambodia Trade Integration Strategy (CTIS) (2019), there are only 18.9% of fresh cassava being absorbed domestically for processing in 9 provinces, producing approximately 499,000 MT/year. The remaining amounts, on the other hand, are being exported directly as raw materials to Thailand and Vietnam. During 1994-2019, approved Foreign Direct Investment (FDI) from China was about 21.81 percent in Cambodia, followed by Korea, Malaysia, Japan, Hong Kong, Taiwan, Vietnam, Singapore, and Thailand. Most of the investment plans come from garment industry. Investment in local processing industry, however, still remains low.

In table 3, the share of average export of paddy rice from Cambodia to Vietnam was just 5.82%, according to data recorded in BACI dataset. In reality, however, the amount of paddy rice exports would be much higher due to unofficial border exports. Around 1000 metric tons are exported to Vietnam everyday through Tinh Bien gates (D The Anh and T Van Tinh 2020, 397-405). Limitation of domestic processing and milling industry is a reason lies behind such condition. In Cambodia, there are just around 40 milling firms, while there are 404 milling factories in An Giang Province, Vietnam. High and uncompetitive production costs including gasoline, electricity, labor, and transportation are still the long-standing barriers for attracting the FDI for the industry.

As policy implication and to absorb more benefits from cassava as well as other promising commodities, foreign direct investment in domestic processing industry should be highly promoted.

b. Agri-Food Imports

As mentioned, Cambodia's economy is majorly dependent on manufacturing sector including apparel and footwear industry. The average import value of furskins in period 2014-2018 was about 147,018 thousand USD. However, the value of the commodity was excluded in Table 2 in order to keep only agri-foods. From the table, value of imported cigarettes doubled from the period 2000-2004 to 2014-2018. Raw materials for animal feeds production increased remarkably between the two periods.

Table 4: Values of top 10 agri-food imports of 2014-2018 compared with 2000-2004, in thousand USD (2015=100)

Agri-Food Imports	2000/04	2014/18
Cigarettes	153,455.45	322,578.75
Non-alcoholic beverages	19,911.16	245,648.40
Sucrose; chemically pure, not containing added flavouring or colouring matter, in solid form	56,543.18	234,276.78
Dog or cat food; (not put up for retail sale), used in animal feeding	6,519.09	99,379.65
Waters; including mineral and aerated, containing added sugar or other sweetening matter or flavoured	9,425.51	75,467.09
Food preparations	11,674.45	69,954.31
Beer	20,332.98	64,752.18
Pasta	11,786.84	60,637.61
Processed starch or flour	5,901.01	49,612.88
palm oil and its fractions, other than crude, whether or not refined, but not chemically modified	15,955.03	44,590.31
subtotal	311,504.70	1,266,897.98
Total	566,031.98	2,076,313.16
<i>Share of top 10 in agri-food imports (furskins excluded)</i>	<i>55.03%</i>	<i>61.02%</i>

Source: Author's calculation using BACI dataset at product level (2020)

c. Processed and Unprocessed Food

Classified into 2 levels of unprocessed (Chapter 01-14) and processed (Chapter 15-24) agri-food, following UN Trade Statistic classification by section, we can primarily see that Cambodia imported tremendous amount of processed food. The export share of unprocessed food in the period of 2014-2018 was 75% of total value of agri-food export, rising more than twofold from 33% in the period of 2000-2004. Unprocessed cassava in the forms of chips or sliced accounted for 42% of the total value of unprocessed food from 2014 to 2018. Rice was also exported as semi-milled for around 34% at the same period.

In contrast, Cambodia heavily depends on imported manufactured or processed food. The import share of processed food was 84% of total value of agri-food import from 2014 to 2018.

From Table 1 and 4, import substitution policies for certain commodities such as cassava, sugarcane, palm oil, and fruit and vegetable are imperative. Cigarette, however, may unlikely be substituted by domestic production due to limited production capacity.

Cassava, one of Cambodia's promising commodities, was massively produced 1,631,493 tons in 2018 (BACI 2020). However, as discussed in Section 2.1, there is still limited domestic processing capacity, so most of produced cassava has been exported primarily to Thailand and Vietnam. Cambodia, on the other hand, imported great amount of final goods from cassava including starch and flour, as showed in Table 4.

As mentioned in National Cassava Policy 2020-2025, the promotion of investments in cassava processing industry will be a source of industrial development and provide higher comparative advantage in the region. Moreover, the imports of processed products from cassava will be reduced substantially. The import substitution policy, hence, will help promote domestic processing industry for local supply and commercialization.

Similar to the case of cassava, other crops with abundant production quantity such as sugar cane, oil palm fruit, mango, and fresh banana also need higher intention from policy level for further processing domestically to extract additional economic benefits from the commodities.

Table 5: Imports of unprocessed and processed food in 2014-2018, in thousand USD

Agri-Food Imports	2000/04	2014-2018
Unprocessed food	94,615.43	300,106.96
Processed food	452,015.08	1,748,140.29
<i>Other chapters</i>	<i>19,401.47</i>	<i>28,065.92</i>
Total agri-food imports (fur skins excluded)	566,031.98	2,076,313.16
Share of unprocessed food	17%	14%
Share of processed food	80%	84%

Source: Author's calculation using BACI dataset (2020)

Table 6: Exports of unprocessed and processed food in 2014-2018, in thousand USD

Agri-Food Exports	2000/04	2014-2018
Unprocessed food	58,352.05	864,628.97
Processed food	19,051.07	139,216.79
<i>Other chapters</i>	<i>98,381.86</i>	<i>147,949.58</i>
Total agri-food Exports	175,784.99	1,151,795.33
Share of unprocessed food	33%	75%
Share of processed food	11%	12%

Source: Author's calculation using BACI dataset (2020)

3. Challenges in Agri-Food Trade

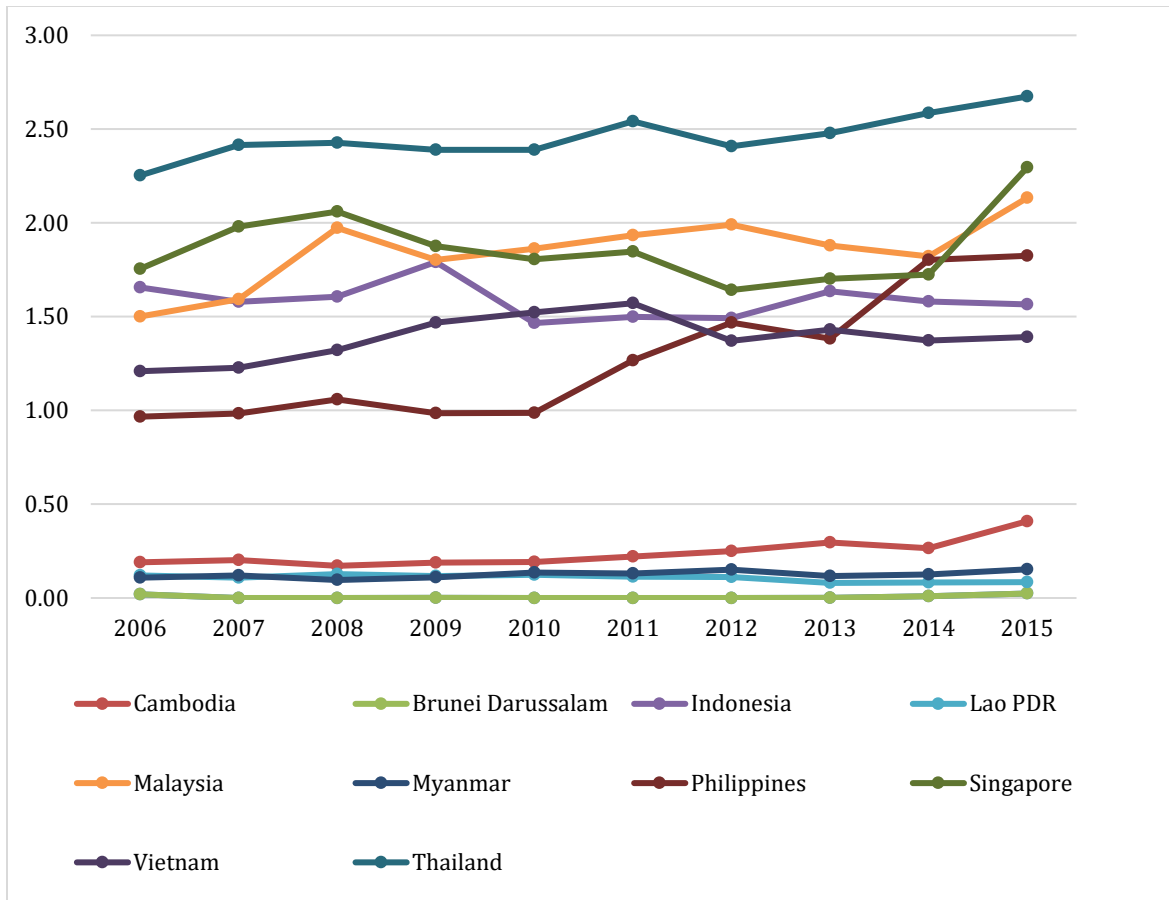
From section 2, we can observe that agri-food trade in Cambodia is facing high deficit. Most agri-food products are imported as half-processed or ready-to-use, and exports are seen as unprocessed or primary materials. After reviewing existing literature, three outstanding challenges still harm the agri-food trade balance: low value addition, non-tariff barriers, and logistics performance.

a. Low Value Addition of Agri-Food Commodities

Agriculture is one of the four economic pillars. Its share in the country's GDP is about 35% (FAO 2021), and the sector employs around 31.2% of total employment, according to the World Development Indicators 2021 (WDI) by the World Bank. However, the sector appears to be stagnated, and even declined in the recent years. Its contribution to the economic growth has shrunk (NBC 2019), and its annual growth dropped to about 1 % annually since 2013 (OECD 2018). In terms of export, the agricultural food commodities continue to increase annually, though it's comparatively smaller than that of the manufacturing sector. The diversification of export products and destinations remain limited (Ajmani, Joshi, and Roy, n.d.). The country has not been able to utilize its full export potential due to several distorting factors. Among them are the “negative price effect of regional and global agriculture commodities” and “increasing income and demand for quality food” (AUAS and SNEC 2019). Another disadvantage is the limited capacity of the agro-processing industry. According to Eurocham's assessment (2018), only 10% of the agricultural products are processed, which mean most of the export commodities are raw produces. The failure to meet rice export target in 2015 exemplifies the issue. Like other Cambodia's major crop, Cambodia's rice has suffered from structural deficits including lack of storage and processing facilities, limiting its export potential and higher value-added (Muyhong 2014). In Cambodia there are just around 39 outstanding rice processors with combined milling capacity of 750 tons per hour, according to CTIS 2019-2023. As reported in BACI dataset, the exported of paddy rice (HS100610) in 2018 was a significant portion of the raw agricultural products end up exporting under the informal trade channel unrecorded. For example, in the harvest season, about 1000 tons of rice grown in the Eastern provinces cross the border to Vietnam daily, most of which by informal channels (The Anh and Van Tinh 2020). Therefore, although Cambodia managed to have harvest surplus, it still could not reach its target figure.

In the case of cassava, data reported in BACI data, the quantity of cassava in forms of chips and half processed (HS071410) cassava was 2,199,869 metric tons, 2,529,429 metric tons, and 1,631,393 metric tons in 2016, 2017, and 2018, respectively. Mass export of such raw materials due to limited processing factories in the country. Most of the export went to Thailand, as Thailand's import of cassava was 1,587,211 tons in 2018. The outflows of cassava were due to high processing capacity of the importing partner. Figure 4 represents the indicator for Economic Fitness of 10 countries in ASEAN. The indicator tells quality of a country's industrial system, and how a country is capable of diversifying and producing complex products for export competence on a global basis. Economic fitness of Thailand was at the highest level compared to other member countries in the region. It can be assumed that industrial system in Thailand is very strong and competitive.

Figure 4: Economic Fitness raking among ASEAN countries



Source: World Development Indicators, World Bank

Non-Tariff Barriers

Non-tariff Barriers measures pose another daunting challenge for Cambodian trade. Cambodia’s agricultural products are subject to Sanitary and Phytosanitary (SPS), Non-technical Barriers to Trade (NBT) and Technical Barriers to Trade (TBTs) regulations. An analysis using gravity model by Ven (2015) concluded that Cambodia was capable of meeting SPS and TBT, yet NBT is likely to be hurdle; a 10% increase of NBT can cause 2.7% contraction in agricultural export, according to the model. However, the Ministry of Agriculture still warned that unless Cambodia can improve its compliance with the SPS standard, it would be difficult to compete for overseas markets. The EBA’s partial withdrawal will have implications for the agricultural sector as the EU is a major export market and investor in the sector (Pouget 2020).

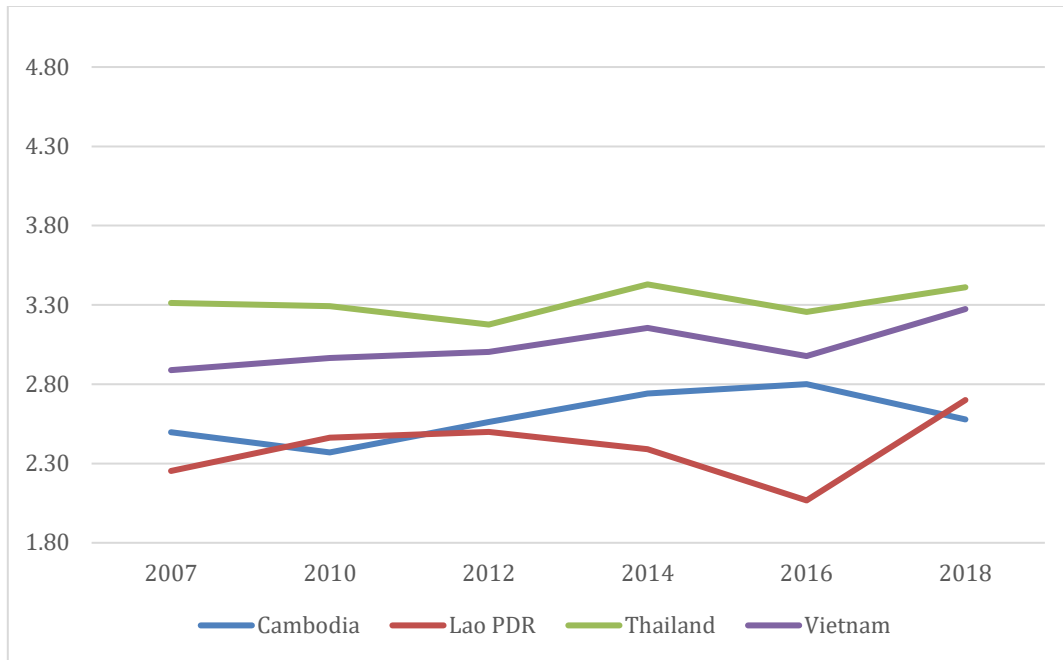
Despite increase of export in key commodities, Cambodia still has not achieved self-sufficiency in terms of agricultural production yet. Annually, the country imports vegetable and meats worth 1\$ billion, primarily from Vietnam and Thailand. (Phuong 2020). The import suffices domestic demand but hurts domestic producers because of its cheaper price. Coupled g with the perceived over-

reliance of agriculture on neighboring countries, protectionist sentiment has been on the rise. In the recent years, Cambodia's Ministry of Agriculture has repeatedly encouraged the purchase of locally produced agricultural products in substitute of imported products, for example, it has temporarily halted fish import from Vietnam and reduced import of live pigs by up to 70% from neighboring countries (Hul 2021; Phuong 2020; Ou 2020). The informality of importing activities is also problematic. There is lack of border trade's regulation results in inflow of non-certified or low-quality chemical products, which are harmful to Cambodian farmers who unknowingly use it (USAID 2019). The chemical substance could be contained in some imported fishes from Vietnam as well (Ou and Phuong 2021).

b. Logistics Performance

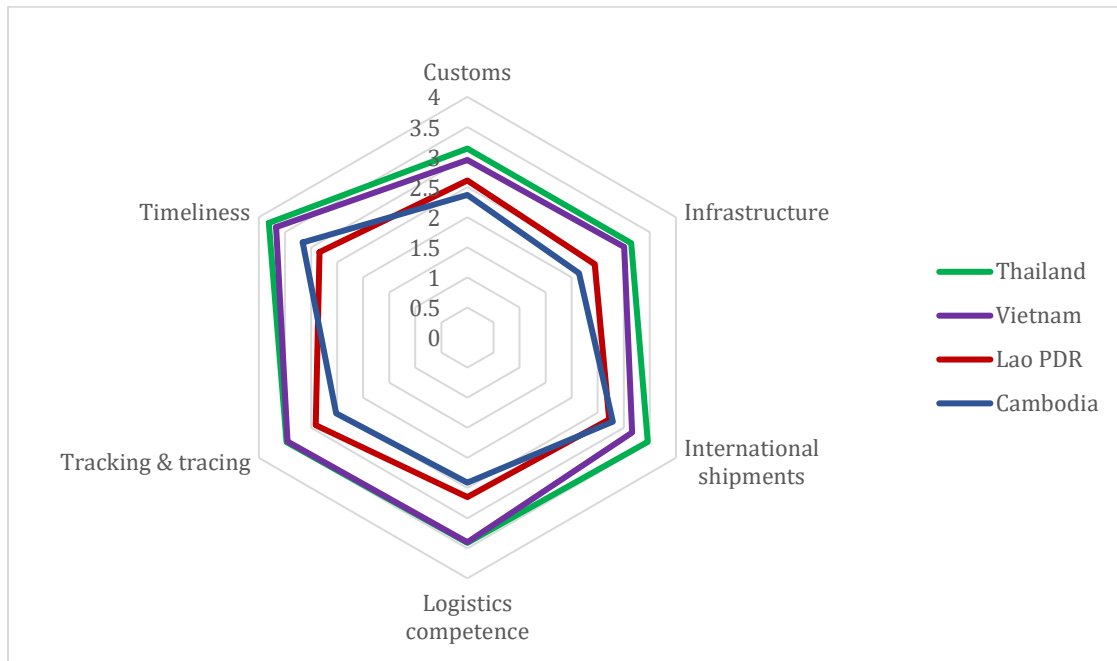
World Bank computed the Logistics Performance Index (LPI) across 1,600 countries to illustrate challenges and opportunities those countries face in terms of logistic trade performance. The score range is 0 to 5, which means that the higher score, the better a country's trade performance is. Among ASEAN-10 countries, Cambodia was at 9th rank in 2018 in terms of overall LPI score card and regarded as *logistics unfriendly* (RGC, 2021). Breaking down to the six indicators of LPI in 2018, Cambodia score's the lowest for indicators of customs, tracking and tracing, logistics competence, and infrastructure, compared to 3 neighboring countries including Thailand, Vietnam, and Lao PDR (Figure 5). This could imply that at the quality of infrastructure, documentation and customs procedures at the borders still harm agricultural and non-agricultural trade activities. Studies by Liapis (2011) highlight that 10% reduction in number of days to export is likely to increase 9.6% of aggregate agricultural trade flows. Perishable agricultural products including fruits and vegetable are the most concerning issue for exports. The delay for export would cause the products fail to meet importers' requirements. Evidence from 146 countries in studies by Djankov, Freund and Pham (2006, 2010) revealed 3.5% increase in exports when there was 10% reduced in number of days to export. Martinez-Zarzoso and Marquez-Ramos (2008) also found that for the case of coffee, tea, and spices, the 10% reduction in number of days to export would increase 3.3% in bilateral trade.

Figure 5: Logistics Performance Index (LPI) among Cambodian's neighboring countries



Source: Logistic Performance Index (2018), World Bank

Figure 6: Six indicators of LPI of Cambodia, compared with 3 neighboring countries



Source: Logistic Performance Index (2018), World Bank

4. New Emerging Potentials

A review of current structure and outstanding challenges of agri-food trade in Cambodia helps guide researchers as well as policy makers to scrutinize untapped potentials and opportunities for agri-food commodities. From government's perspective, national-level policies have been made to support and promote domestic processing industries and commercialization of the commodities. Another significant potential is free trade agreements with long-term and dynamic trading partners including China, South Korea, and others. Recently, China has welcomed 340 Cambodian's agri-food commodities including fresh banana and mango.

a. Commercialization of Agricultural Commodities

The government has adopted many policy frameworks to drive the agricultural modernization in the medium and long-term. The Ministry of Agriculture, Forestry and Fisheries (MAFF) has adopted the "Master Plan for Agriculture Sector Development 2030" and the "Agriculture Strategic Development Plan 2019-2023" to develop for improvement of productivity, quality, commercialization, diversification and the expansion of the agro-processing industry. MAFF also has sub-sector-specific policies such as "Strategic Planning Framework for Fisheries 2015-2024", "National Cassava Policy 2020-2025" and the "Strategic Planning Framework for Livestock Development 2016-2025". Other overall policy frameworks to ensure the socio-economic and environmental sustainability include "the National Forest Program 2010-2029", the "Cambodia Climate Change Strategic Plan 2014-2023", the "National Strategic Plan on Green Growth 2013-2030", and the "Cambodia Sustainable Development Goals". In general, these policies will guide the future direction of the agricultural sector in a holistic approach. Cambodia aims to move from the relatively backward and subsistence agriculture towards the commercialize and sustainable one.

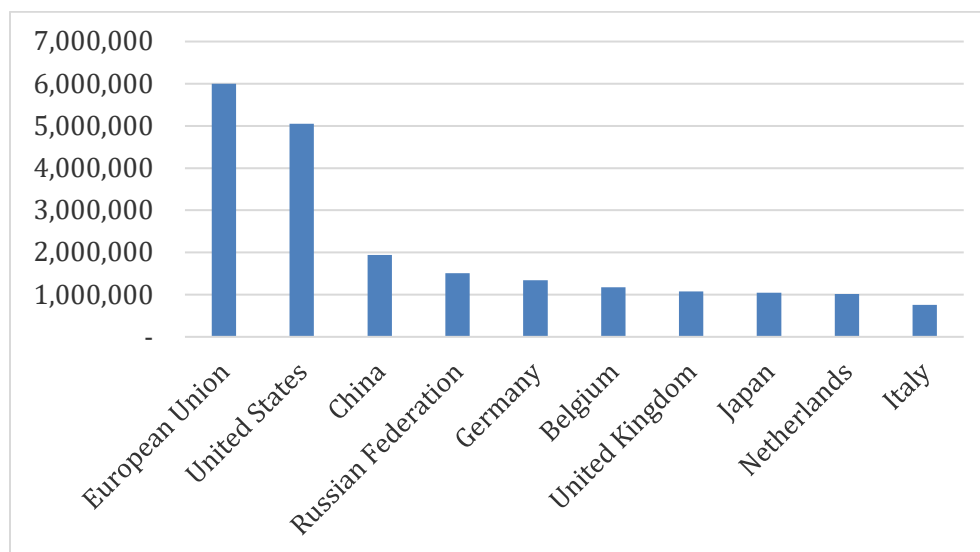
b. Recent Shift of Trade Agreement: CCFTA

Cambodia aims to move beyond the subsistence to the commercialized and export-oriented agricultural sector. (MAFF 2019). That's why the government has actively sought market opportunities in the region. New trade deals aiming to boost agricultural exports have been introduced. The most notable of them is the Cambodia-China Free Trade Agreement (CCFTA). CCFTA will enable a duty-free access to the Chinese market, one of the world largest markets, for 340 agricultural products (Stegano and Pramila 2020). At the same time, commercializing agricultural products is among top priorities to be achieved by the Royal Government of Cambodia (RGC). Major agri-food produces like cassava and mangoes are gaining export momentum toward markets such as South Korea, China and Cambodia's neighbors (Vireak 2021; Mao and Nguon 2020). In addition, Free Trade Agreement (FTA) negotiations with South Korea and the Eurasian Economic Union are undergoing, while the government planned to initiate talks with the United Kingdom, Mongolia, Japan and the United States (Siow 2020; Khmer Times 2020).

Banana

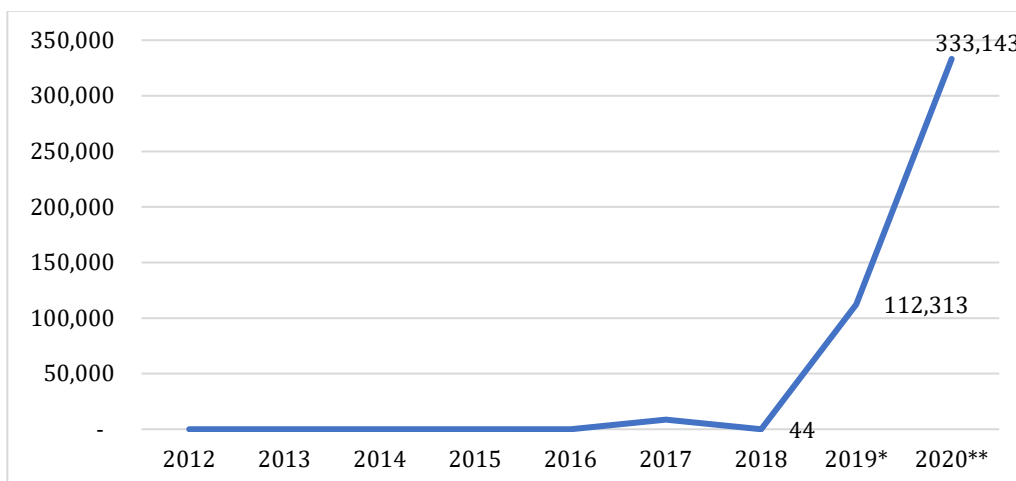
China is the 3rd biggest banana importers in the world after EU and the U.S. (Figure 7). Fresh banana from Cambodia has become marketable mostly in China, followed by Vietnam and Japan. The first shipment of yellow banana to China was in the mid-2019. Demand for fresh banana increased rapidly; Cambodia exported 267,743 tons of fresh banana to China in 2020 (MAFF 2020). Globally, the export of banana from Cambodia has increased significantly from 2018 with the export quantity of 43.87 metric tons to 333,142.75 metric tons in 2020, according to annual report by MAFF (Figure 7).

Figure 7: Major banana importers (2019), in metric tons



Source: WITS, World Bank

Figure 8: Quantity of exported banana from Cambodia, in metric tons



Source: Author's Calculation from BACI 2020

*Data reported by World Integration Trade Solution (WITS), World Bank 2020

** Data reported by MAFF 2020

Mango

Fresh mango is another strategic and potential agricultural product for export. Remarkably, the first shipment of 80 tons of fresh mangoes to China was made in May 2021 after the CCFTA came into effect.

Beside fresh banana and mango, other key agri-food commodities from Cambodia also generates huge market shares in China such as milled rice (23.65%), cane sugar (41.58%), residues of starch (99.54%), crustaceans (99.64%), and cocoa powder (100%), as presented in Table 3.

Table 7: Top 10 agri-food commodities exported to China, average value 2014-2018, in thousand USD (2015=100)

Agri-Food Commodities	2014-2018	Value of total export of each commodity (2014-2018)	Percentage
Rice	70,668.88	298,833.24	23.65%
Cassava	14,759.52	369,205.65	4.00%
Natural rubber (smoked sheets excluded)	8,721.65	98,634.91	8.84%
Cane sugar	5,666.44	13,627.83	41.58%
Residues of starch	2,726.30	2,739.00	99.54%
Rubber in smoked sheets	2,618.61	27,918.39	9.38%
Crustaceans (shrimps, crabs, ...)	1,667.24	1,673.30	99.64%
Broken rice	1,286.41	10,258.44	12.54%
Cigarettes	1,260.11	14,157.20	8.90%
Cocoa powder	768.41	768.41	100.00%

Source: Author's calculation using BACI datasets (2020)

Based on the discussion in Section 3, we can understand how quality of products is vital for export and competition with neighboring countries, as non-tariff barriers have been placed substantially higher to ensure quality standard and safety of consumers in imported countries. Therefore, to maintain market access and achieve higher market shares of the potential agri-food commodities from Cambodia, government interventions and supports should be thoroughly made jointly with relevant stakeholders such as domestic producer associations, development partners, and academia to enhance product quality refinement, value chain management, logistics quality, and trade facilitation measures.

COVID-19

The pandemic has disrupted agricultural trade flows around the world and raised concerns about food security. Some exporting countries resorted to protectionist policies to prevent domestic shortage, particularly in agricultural products. Even Cambodia banned export of white rice and paddy rice, allowing only fragrant rice supply (Reuters 2020). Table 6 below shows substantial increase of the premium rice exports in the 4 quarters of 2020. Statistically, among key agri-food

products exports, only fresh manioc declined sharply around 55% in 2020 compared to exported amount in 2019 (Figure 9).

Nonetheless, Cambodian agricultural exports performed very well. The agricultural sector in Cambodia seems to be one of the least affected because of the pandemic (UNDP 2020). Export of other agricultural commodities also surged. The total export value of the 7 main crops¹ is about \$ 3.8 billion (May 2020). Milled rice export still increased by 11.11%, partially owed to panic buying and stockpiling (Haffner 2020; May 2020). Regarding impact on local farmers, a joint study by Future Forum and Angkor Research and Consulting (2020) found that farmers of major produces, excepts paddy rice and animal raising, experienced declining income. Restricted travels and farmers' lack of own transportation means prevented agricultural goods from the countryside from reaching the market (Sok 2020). Meanwhile, the border restrictions disrupted food import, and gave the domestic producers an opportunity to increase their market share (Phuong 2020). According to Minister of Agriculture, during the pandemic, the costs of transportation also increased sharply, causing trouble for agricultural exports.

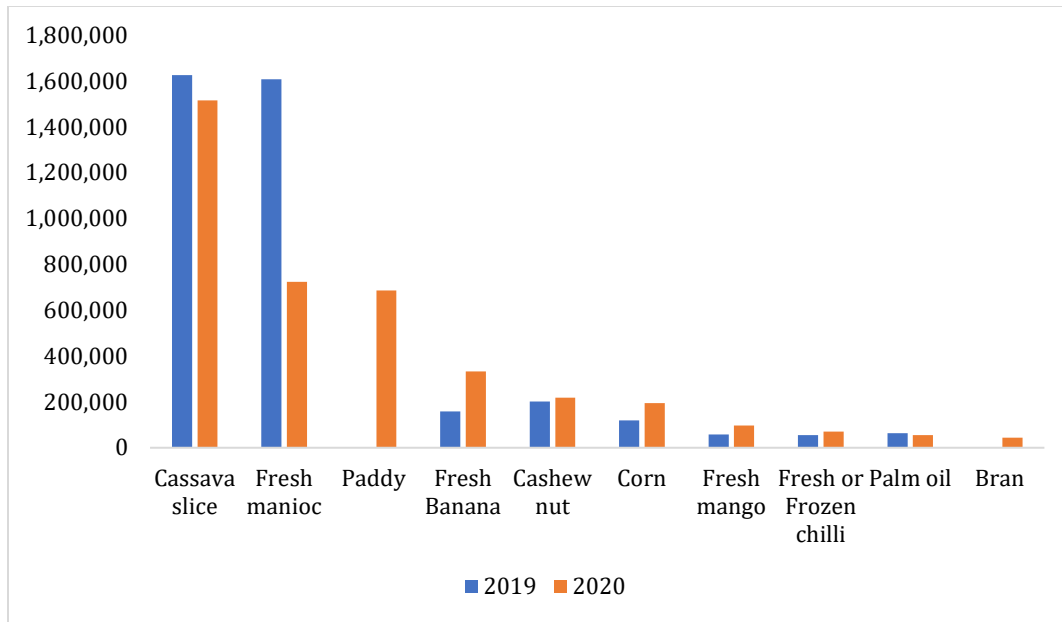
Table 8: Export of jasmine rice in 2020

Type of Rice	1	2	3	4	MT	%
	QUARTER	QUARTER	QUARTER	QUARTER		
Jasmine/ Fragrant Rice						
1 Phka Rumduol/ Malis	108,877	106,282	33,759	126,778	375,696	66.32%
2 Senkraob	56,670	32,473	20,329	47,925	157,397	27.78%
3 Glutinous	4,056	3,675	5,744	4,309	17,784	3.14%
4 Organic	2,839	3,795	2,049	2,534	11,217	1.98%
5 Neang Malis	414	688	158	1,076	2,336	0.41%
6 Somaly	1,073	309	46	634	2,062	0.36%
Total	173,929	147,222	62,085	183,256	566,492	100.00%

Source: Report by General Department of Agriculture (GDA), MAFF (2020)

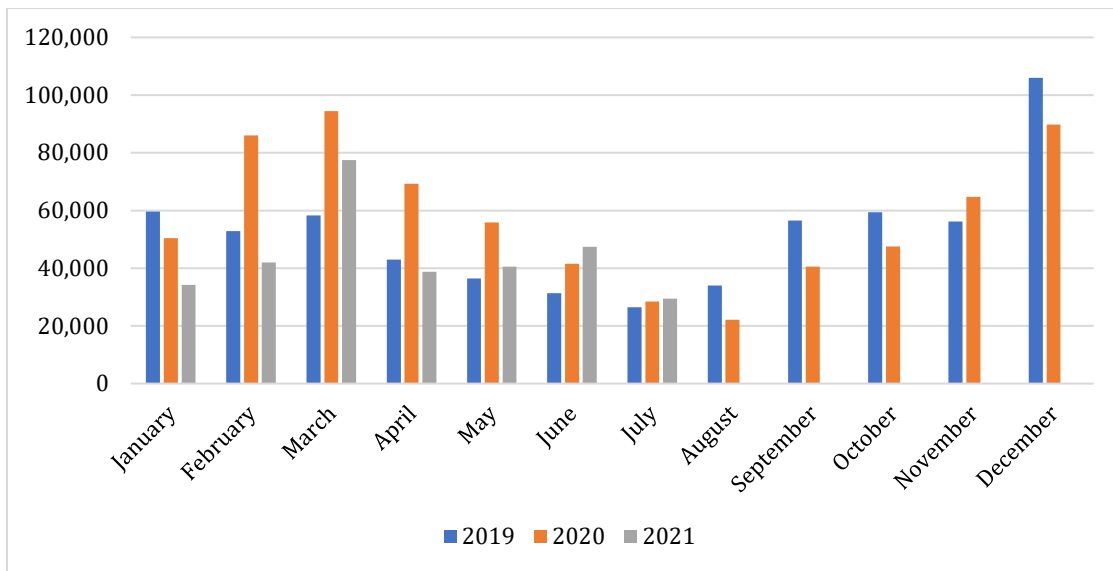
¹ Milled rice, cassava, cashew nuts, mango, yellow bananas, Pailin longan and peppercorn.

Figure 9: Export quantity of top agri-food commodities in 2020 and 2019, in metric tons



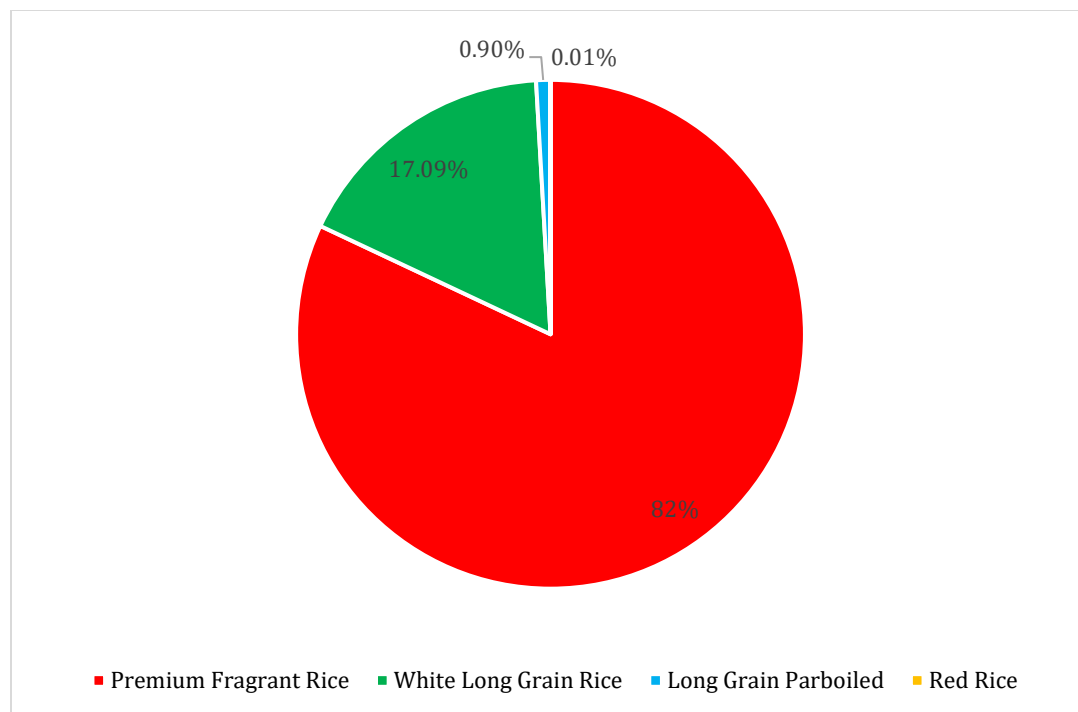
Source: Report by GDA, MAFF (2020)

Figure 10: Quantity of Cambodian milled Rice Export, metric tons



Source: Report by GDA and Cambodian Rice Federation (2020)

Figure 11: Types of Cambodian Milled Rice Export in 2020, % of total exports



Source: GDA (2020)

Conclusion

Over the years, the country's agri-food trade has shown a clear pattern of export diversification. The agri-food export destination, in particular, has shifted from Asia predominantly to cover more potential markets in Europe. Cassava has become the most important commodity for agri-food export. Other export commodities include rice, rubber, nuts, and tobacco. However, recent developments and trends in Cambodia's trade policies and international trade will present a new prospect for the country's agri-food trade structure. The Industry 4.0, EBA withdrawal, enactment of Regional Comprehensive Economic Partnership (RCEP) and Cambodia-China free trade agreement, and COVID-19 pandemic are a few examples of relevance. These current happenings underscore the resilience of the agriculture sector and needs for Cambodia to further industrialize the sector, strengthen the competitiveness of its agricultural produce, and improve its agricultural value-chain.

Although the industry and service sectors have grown in importance for Cambodia's economic development, this does not mean that the agriculture sector has become less important. In fact, the sector continues to play a vital role pertinent to the country's resilient economic growth and food security. The COVID-19 pandemic has made such a role even more visible for scholars and policy makers alike as the country's agriculture sector and agri-food trade flows are only minimally impacted by the pandemic, and the consequent government's re-emphasis of prioritizing the agriculture sector is explanatory in that sense. Therefore, Cambodia should take considerate actions to strengthen the sector in order for a fast-post-pandemic economic recovery and adaptation to the presently arising agri-food trade circumstances. Empowering domestic agricultural production and processing capacity is a resilient source for growth and sustainability.

Cambodia should explore import substitution in processed foods to diversify its export structure that heavily depends on garments and primary agriculture. Consequently, promoting more investments (both local and FDI) in domestic processing industry of the primary agricultural products and enhancing current processing capacity are the foremost step to increase value-addition of agricultural sector. Cost of production including electricity, gas or oil, water, and quality transportation should be considered by relevant government ministries to achieve better efficiency of each stage of value chains. Information and communication technology and internet of things in agriculture such as AI, drone, and farm-based technology is immensely needed to improve agri-food value chain management (Zhao et al. 2019) and productivity and quality assurance of the products for commercialization. Farmer organizations or associations should be more practical in terms of collecting small-holder farmers, providing technical extension services, and providing relevant and up-to-date information regarding marketable agricultural commodities in both domestic and international markets. At a broader perspective, not solely depending on regional or free trade agreements, Cambodia should explore further potential and dynamic markets around the globe to expand its exports of agricultural food products.

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