STUDY ON

Vietnamese Fruits overcome barriers to accessing EU market, takes advantage of opportunities brought under the EVFTA

WTO CENTER VCCI TRUNGTAMWTO
TRUNG TÂM WTO
PHÒNG THƯƠNG MẠI VÀ CÔNG NGHIỆP VIỆT NAM

Friedrich Naumann STIFTUNG FÜR DIE FREIHEIT

WTO CENTER
VIETNAM CHAMBER OF COMMERCE AND INDUSTRY

Friedrich Naumann STIFTUNG FÜR DIE FREIHEIT

Study on

Vietnamese Fruits overcome barriers to accessing EU market, takes advantage of opportunities brought under the EVFTA

Hanoi, March 2019

EXECUTIVE SUMMARY

This study investigates the non-tariff measures of the European Union (EU) applied on Vietnamese fruit exports. The purpose of this research is to investigate how Vietnam can possess an advantage in producing a wide variety of fruits, while still having only limited export values to the EU market. From that, this study makes recommendations for the Vietnamese government and fruit businesses on how to increase access for Vietnamese fruits to the EU market. To achieve this, the study applies various methods, from analyzing statistics and data to reviewing legal documents and exploring case studies. The two chief information sources for analysis are the United Nations Comtrade Database (UN Comtrade) and the European Commission's Trade Helpdesk website.

This study finds that Vietnam is one of only a few countries in the world to have large production volumes for a wide range of tropical fruits. However, up to 85-90% of fruit production is for domestic consumption. Though fruit export has increased significantly in recent years, the annual export value was still less than USD$1 billion, which is incommensurate with the sector's true potential. The main export market for Vietnamese fruits is China, which accounted for up to 75% of total fruit export value in 2015. To reduce over-reliance on the Chinese market, Vietnamese fruit exporters are now attempting to access other markets, especially developed and high-income markets that have a more stable demand and better prices than China.

This report finds that the EU is a potential export market for Vietnamese fruits. The EU was the world's largest fruit importer in 2015, and demand for tropical fruits (both fresh and processed) has been increasing considerably over the past 15 years. In 2015, many of the EU's top imported tropical fruits were also the top produced and exported fruits of Vietnam. Of these, 9 fruit commodities (both fresh and processed) have been identified as possessing the highest potential for export to the EU market. Although these 9 fruits currently face strong competition from other exporters in the EU market, they are going to receive an advantage of tariff elimination under the new Free Trade Agreement between the EU and Vietnam (EVFTA), which is expected to come into effect in 2019.

However, rather than the EU's tariffs, it is the non-tariff measures that currently inhibit Vietnamese fruits exports to this market. Non-tariff measures (NTMs), according to the

definition by the United Nations Conference on Trade and Development (2012), are measures other than customs tariffs that can have an economic effect on trade in goods among countries. Globally, NTMs are replacing tariffs to become the most significant barriers to trade in goods. The EU is one of the most frequent users of NTMs, particularly in the agricultural sector. Currently, it applies 34 NTMs on fruits imported from Vietnam, including 26 Sanitary and Phytosanitary (SPS) measures and 8 Technical Barriers to Trade (TBT) measures. Of these, this study focuses mainly on the most stringent measures that the EU imposes on the 9 potential fruit exports of Vietnam.

The EU's SPS measures that have the biggest impact on Vietnam's 9 potential fruit exports are related to food hygiene requirements, pesticide residue and contaminant rules, plant health control, and conformity assessment. The EU's food hygiene regulations are applied to processed fruits, requiring food operators to implement food safety management procedures that are based on the Hazard Analysis and Critical Control Point (HACCP) principles. Meanwhile, for fresh fruits, EU importers frequently require Global Good Agricultural Practices (GLOBALG.A.P) and other private food safety certifications. Both fresh and processed fruits are subject to the EU's rules on pesticide residues and contaminants, which are generally stricter than those of the Codex and other countries. Adding to the difficulty of adhering to these standards, they are frequently updated by the EU. Fresh fruits that are plant products are also subject to the EU's plant health controls. Fresh fruits imported into the EU, and even their wooden packing materials, must be free from harmful organisms. Unlike some other developed countries, the EU does not require an import permit for fresh fruits. Instead, it required importers to be included in an official register of an EU member. Some fruit imports also need to be accompanied by a phytosanitary certificate. Four of the 9 potential fruit exports of Vietnam are subject to this requirement. Finally, to ensure fruit imports comply with all of the above requirements, the EU applies very strict conformity assessment and penalty measures that are based on its "precautionary principle". Products found to be in violation of EU's regulations are subject to increased checks, special conditions, or import suspension – which can include suspension of all such imports from the exporting country.

Regarding TBT measures, the EU's labeling rules and marketing standards are the most relevant to the 9 potential fruit exports of Vietnam. The EU's labeling regulations are

complex and detailed. Both fresh fruits that are stored in cartons and processed fruits that are packed in packages need to adhere to a list of standards for labeling. Of these, the cartons used to pack fresh fruits must display the product's lot number for the purpose of food traceability, and packaging for processed fruits is required to cover all mandatory information in the format (font, color, and size) as regulated. Although fresh fruits are subject to fewer labeling requirements than processed fruits, unlike processed fruits they must adhere to the EU's marketing standards. The EU has two kinds of marketing standards for fresh fruits: specific marketing standards (SMS) and general marketing standards (GMS). Both SMS and GMS products must meet the EU's minimum quality and maturity standards, which are basically in line with the Codex standards. However, the SMS products must be accompanied with a certificate of conformity. Among Vietnam's 9 potential fresh fruits exports, only one product is covered by SMS, while the others are subject to GMS.

The above SPS and TBT measures of the EU create many challenges for Vietnamese fruit producers seeking to increase their export value to this market. First, there is a lack of information and guidance on the EU's regulations while these regulations are changed frequently. Second, most Vietnamese fruit operators operate at a small scale, with limited human and financial resources, and thus find it difficult to comply with the EU's demanding requirements for the quality and food safety of fruits. Finally, there currently exists inadequate infrastructure in Vietnam, such as transportation, technology and testing laboratories, to facilitate the export of Vietnamese fruits to the EU market.

After discussing these challenges, this study then makes some recommendations for the Vietnamese government and fruit businesses on how to overcome EU's NTMs. This study recommends that the Vietnamese government increase its dissemination of information and guidance on the EU's regulations, either through its own portals or by utilizing business and farmers' associations. The government should also invest more in fruit export-related infrastructure and production technology to support fruit operators increase the quality and food safety of fruit exports. In addition, the government can exploit some advantageous SPS commitments by the EU under the new EVTFTA to facilitate Vietnamese fruit exports to this market. For Vietnamese businesses seeking to comply with the EU's regulations, this study recommends that a

thorough knowledge and understanding of these regulations is, first and foremost, critical. Fruit producing and exporting businesses then need to improve the quality and food safety for their products to meet the EU's high requirements. This improvement can be achieved by investing in quality management systems such as HACCP and GLOBALG.A.P. In order to effectively implement these systems, it is crucial to have close cooperation with other participants in the fruit supply chain; especially with fruit growers and EU importers.

TABLE OF CONTENTS

TABLES AND FIGURES

TABLES

FIGURES

ABBREVIATION

CBI	Centre for the Promotion of Imports from developing countries
Codex	Codex Alimentarius Commission
EC	European Commission
EU	European Union
EVFTA	EU - Vietnam Free Trade Agreement
FAO	Food and Agriculture Organization of the United Nations
FTA	Free Trade Agreement
GDP	Gross Domestic Products
GLOBALG.A.P	Global Good Agricultural Practices
GSP	Generalized Scheme of Preferences
HACCP	Hazard Analysis and Critical Control Point
ITC	International Trade Center
NTMs	Non-tariff Measures
OECD	Organization for Economic Co-operation and Development
SPS	Sanitary and Phytosanitary
TBT	Technical Barrier to Trade
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
US	United States
US FDA	United States
USDA	United States Department of Agriculture
USTR	United States Trade Representative
VCCI	Vietnam Chamber of Commerce and Industry
WTO	World Trade Organization

INTRODUCTION

As a tropical country with favorable land and climate conditions, Vietnam has an advantage in producing many varieties of fruits. Currently, about 40 kinds of tropical fruits are grown in Vietnam; of these, about 27 have commercial value (Nguyen, 2015). Many Vietnamese fruits have a large production volume that ranked in the top 10 of global fruit production in 2014, such as lychees, dragon fruits, longans, coconuts, and passion fruits. However, the vast majority of Vietnamese-grown fruit is consumed locally, with domestic consumption accounting for up to 85-90% of total fruit production (Financial Newspaper, 2016). Although fruit exports have increased considerably in recent years, total export value remains modest and is disproportionate to the true potential of the fruit sector.

China has for many years been the chief export market for Vietnamese fruits. In 2015, China occupied up to 75% of the total Vietnamese fruit export value (UN Comtrade, 2017). Over-reliance on a single market has, however, led to negative consequences for Vietnam's fruit sector. Chinese traders have on multiple occasions stopped or reduced their import levels, causing serious losses for Vietnamese fruit exporters. Moreover, as the dominant buyers, Chinese merchants often pressure Vietnamese fruit sellers into offloading their products for very low prices, particularly during bumper crops (Hai Luan, 2017). Therefore, Vietnam's fruit sector has sought to expand exports to developed countries, in order to reduce the reliance on the Chinese market and increase profits for fruit exporters.

One of the markets with the most potential for Vietnamese fruit exports is the EU. This region was the world's largest fruit importer in 2015, and has shown increasing demand for the tropical fruits that Vietnam has strength in producing. Moreover, Vietnam and the EU have recently finished negotiations on a new Free Trade Agreement, the EVFTA, which is expected to reduce tariffs and create more favorable trade conditions for Vietnamese fruit exports to the EU. Nevertheless, according to Vietnam's Fruit Association and most fruit exporters, the chief obstacle encountered by Vietnamese fruit exports to the EU market are non-tariff measures (NTMs), such as sanitary and phytosanitary measures (SPS) and technical barriers to trade. However, these barriers are largely not resolved under the EVFTA.

Unlike tariffs, which are simply a specific amount of customs tax applied on imported products, NTMs are comprised of a wide range of rules and procedures. NTMs are therefore generally more complicated and difficult for exporters to understand and comply with than tariffs. At the same time, the EU's NTMs are infamous for being quite restrictive on trade, especially in the agricultural sector. When the EVFTA comes into

effect, it is anticipated that the EU's NTMs on Vietnamese products will increase, in order to "compensate" for tariff reductions and protect domestic industries (Uyen, 2015). As the majority of fruit operators in Vietnam are small households and enterprises who lack information and knowledge on foreign market regulations, it is already difficult for them to comply with the EU's NTMs (Pham at el., 2014). Meanwhile, the Vietnamese government's support for the fruit sector is limited, because this is not a major exporting sector for Vietnam. Consequently, the EU's NTMs are likely to remain the biggest challenge for Vietnamese fruit exports to the EU market for some time to come.

This study aims to assist the Vietnamese fruit sector in enhancing its exports to the EU market, by analyzing the EU's NTMs, how restrictive they are, what challenges they pose for Vietnamese fruit exports, and potential solutions for Vietnamese exporters to overcome these challenges. This is the first study to comprehensively investigate the EU's NTMs applied on Vietnamese fruits. To date, the fruit sector has received little attention from researchers, as it has not been considered to be one of Vietnam's major exporting sectors. This study therefore represents a resource for growers and producers in the Vietnamese fruit industry, most of whom are small farmers and enterprises located mostly in rural areas, who have inadequate resources to implement research on foreign market regulations.

This research is divided into three sections. The first section examines the current state of Vietnamese fruit production and export, and explores the potential of the EU market for Vietnamese fruits, especially in the context of the new EVFTA. The second section reviews the application of NTMs around the world, and then investigates of the content, application, and restrictiveness of the EU's NTMs imposed on the potential Vietnamese fruit exports. Finally, the third section discusses the challenges faced by Vietnamese fruit producers and exporters in complying with the EU's NTMs, and then makes recommendations for both the Vietnamese government and businesses on the ways to overcome these challenges and better promote the export of Vietnamese fruits to the EU market.

This study was implemented under the framework of the cooperation program between the Vietnam Chamber of Commerce and Industry (the WTO and International Trade Center) and the Friedrich Naumann Foundation for Freedom (FNF). We hope that this study will serve as a useful material for the businesses as well as researchers in researching and meeting EU's requirements on fruits to increase export values to this market in the context of the forthcoming Free Trade Agreement between Vietnam and the EU.

I. OVERVIEW OF VIETNAM'S FRUIT SECTOR AND EXPORT POTENTIAL TO THE EU

This section provides an overview on Vietnam's fruit sector through looking at its current production and export states in order to find out the reasons why Vietnam has strength in producing fruits but its fruit export performance is still poor. It then explores the potential of the EU market for Vietnamese fruit exports by analyzing the EU's market demand for tropical fruits from the world and Vietnam. The section also identifies the most potential Vietnamese fruit exports to the EU, and reviews their opportunities from the new Vietnam – EU Free Trade Agreement as well as their challenges from current competitors in the EU market.

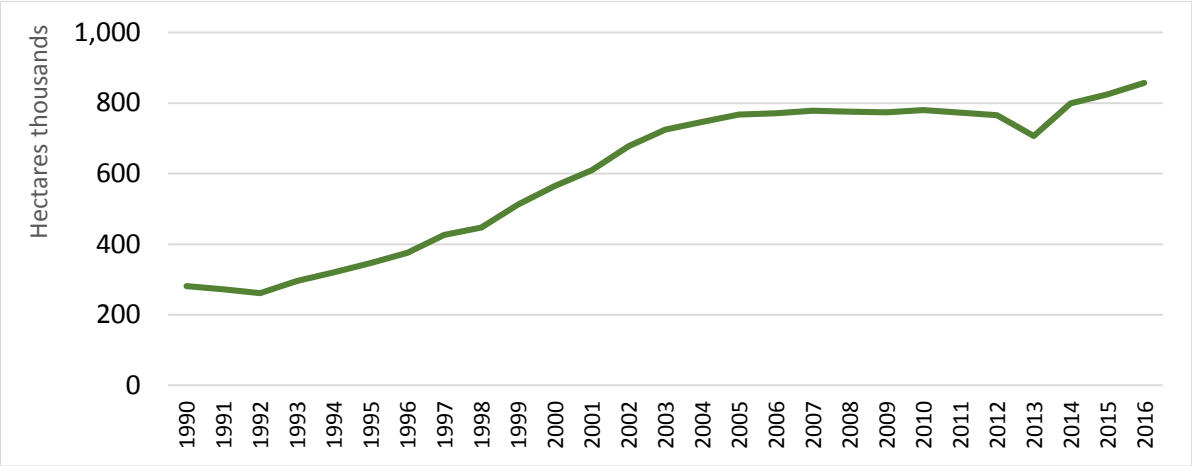
1. Vietnam's fruit production and export

1.1. Production

Vietnam is a developing country with one of the fastest-growing economies in the world. The main driving forces for economic growth are the industrial and service sectors. By contrast, the agricultural sector plays only a relatively small role in Vietnam's economy, accounting for just 18.1% of total Gross Domestic Product (GDP) of Vietnam in 2016. Despite this, agriculture remains an important industry for the country, with agricultural labor making up 42% of the total labor force in 2016 (GSO, 2017). Importantly, this sector provides employment for a large amount of low-skilled workers in the rural and mountainous areas of Vietnam (MOLISA, 2013).

Within the agricultural sector, the fruit industry has great potential in terms of both production and export, since Vietnam is a tropical country with favorable land and climate conditions for growing many varieties of fruits. Over the last 16 years, the total fruit growing area in Vietnam has tripled, from about 300 thousand hectares in 1990 to nearly 900 thousand hectares in 2016 (Figure 1). Fruit production has also increased considerably, reaching 7.5 million tons in 2016 (MARD, 2016).

Figure 1. Fruit growing area in Vietnam (1990 – 2016)



Source: General Statistics Office (GSO) of Vietnam, 2017

Currently, there are about 40 kinds of fruit grown in Vietnam, of which 27 kinds have commercial value (Nguyen, 2015). Table 1 shows the top 12 fruits grown in Vietnam in 2015, which accounted for up to 90% of the total land cultivated for fruit. In that year, the leading fruits produced in Vietnam were bananas, dragon fruit, and mangoes. While rambutan, lychees, and passion fruit were produced at a much smaller volume, the productivity of these fruits has increased impressively in recent years (Vietrade, 2016).

Table 1. Top Vietnamese fruits grown in 2015

No	Fruit	Area (hectare thousand)	Yield (ton thousand)
1	**Banana**	133	1,943
2	**Watermelon**	54	1,163
3	**Dragon fruit**	42	708
4	**Mango**	84	703
5	**Pineapple**	40	578
6	**Longan**	73	513
7	**Coconut**	158	374[1]
8	**Rambutan**	26	359
9	**Lemon**	47	358
10	**Lychee**	65	357
11	**Passion fruit**	10	295

Source: Fruit Department, MARD, 2016

[1] This is the production of desiccated coconut

Vietnam is one of only a few countries in the world to have large production volumes for such a wide range of tropical fruits. In 2014, the country had six varieties of fruit that were ranked among the top 10 of global fruit production (Table 2).

Table 2. Ranks of some Vietnamese fruits in the world production in 2014

No.	Kind of Fruits	Rank
1	Lychee	**3rd**
2	Dragon fruit	**5th**
3	Longan	**6th**
4	Coconut	**6th**
5	Passion fruit	**10th**
6	Watermelon	**10th**

Source: Worldatlas and various sources, 2017

However, Vietnamese fruit producers are still small and scattered. Only 5% of farms possess the planted area of higher than 2 hectares while up to 60% of farms have the planted area of below 0.2 ha in 2011 (Nguyen, 2016). Most fruit producers in Vietnam are households and small enterprises scattered in various areas. There are just a few specialized zones for fruits, largely in the southern part of Vietnam. Of which the biggest fruit zones are in the Mekong Delta where most of Vietnam's best tropical fruits are grown, such as dragon fruits, mangoes and passion fruits.

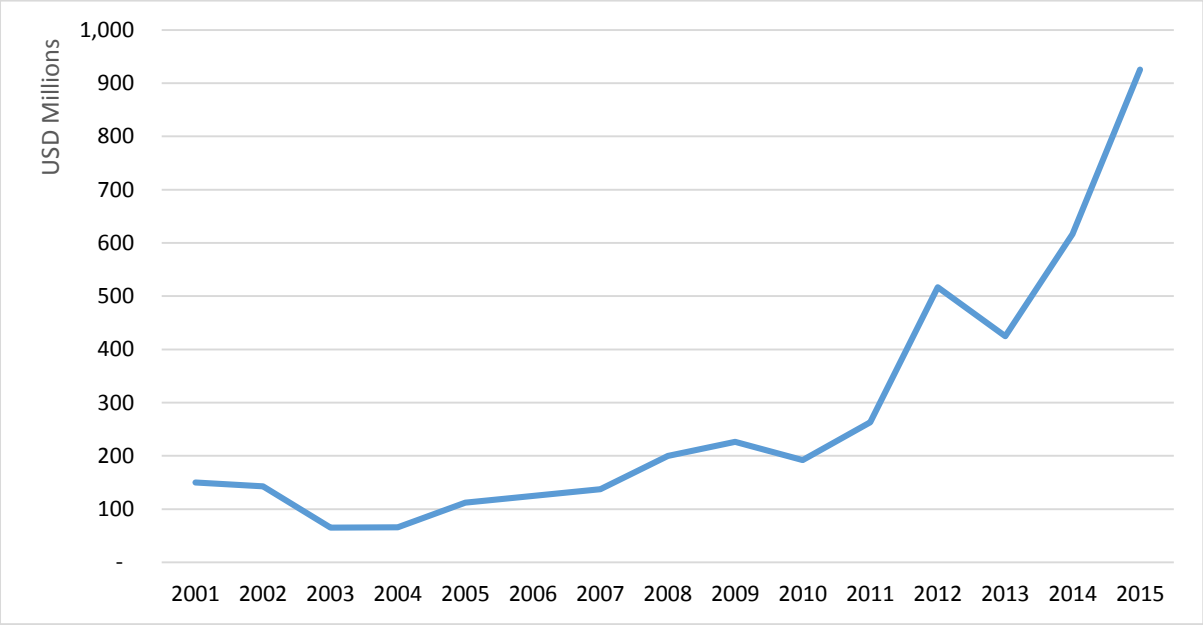
Beside fresh fruits, over the past decade Vietnam has been developing its processed fruit industry. This industry now accounts for about 10% of the country's total fruit production (Nguyen, 2016). This development stems from the desire to store fruits longer after harvesting, for consumption and export. Moreover, there has been an increasing demand in both domestic and foreign markets for processed fruits that are convenient and ready-to-use (but still contain the same nutritional value as the fresh product). Thousands of fruit processing manufacturers have therefore been set up in Vietnam over the past 10 years. However, of these manufacturers, only about a hundred have high-tech processing and the capacity for large-scale production. The remaining manufacturers are typically very small, with a capacity of lower than 300,000 tons of product per year (Vietrade, 2016). The relatively-weak capacity of the processed fruit

manufacturing sector means that the main types of processed fruits in Vietnam are dried and frozen; fruit juice production is still limited as it requires more advanced processing techniques.

1.2. Export

The export value of Vietnam's fruit industry has grown rapidly over the last 15 years, from about USD$150 million in 2001 to more than USD$900 million in 2015 (Figure 2). The highest growth period was from 2010-2015, with an average annual growth rate of 53%. However, an export value below USD$1 billion is incommensurate with the sector's true potential. Fruit for domestic consumption accounts for up to 85-90% of total fruit production (Financial Newspaper, 2016). This results in a common occurrence of fruits' domestic market prices dropping dramatically during bumper crops (Vietnamnet, 2017).

Figure 2. Vietnam's fruit export value (2001 – 2015)

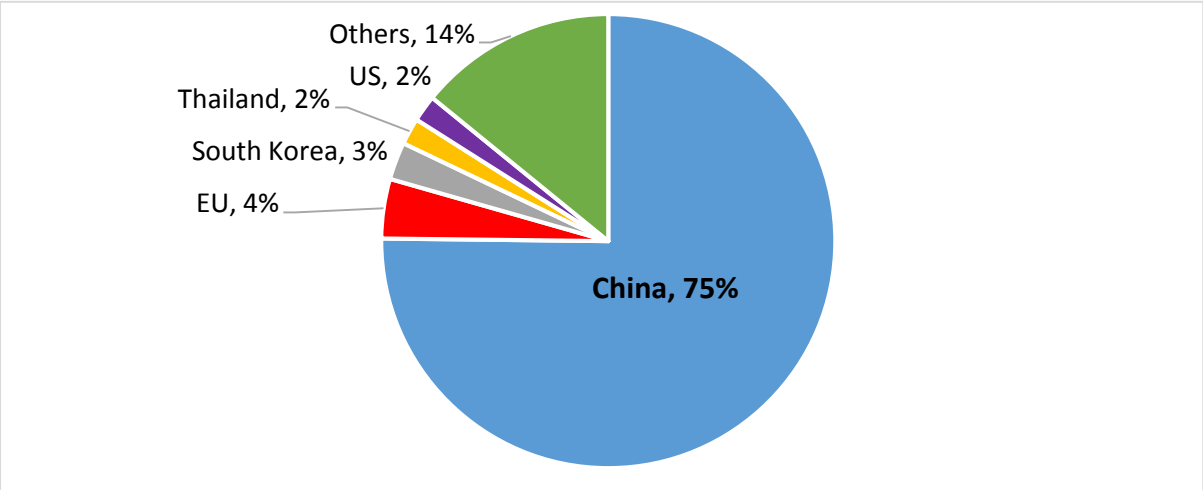


Source: UN Comtrade, 2017

Although Vietnam-grown fruits have been exported to more than 40 countries, Vietnam still depends overwhelmingly on the Chinese market. Figure 3 shows the top five export markets for Vietnamese fruits in 2015. From this chart, it is apparent that China occupied a very large slice of the market (75%), while the EU, US, and South Korea together shared only 11% of Vietnam's total fruit export value. Moreover, during the

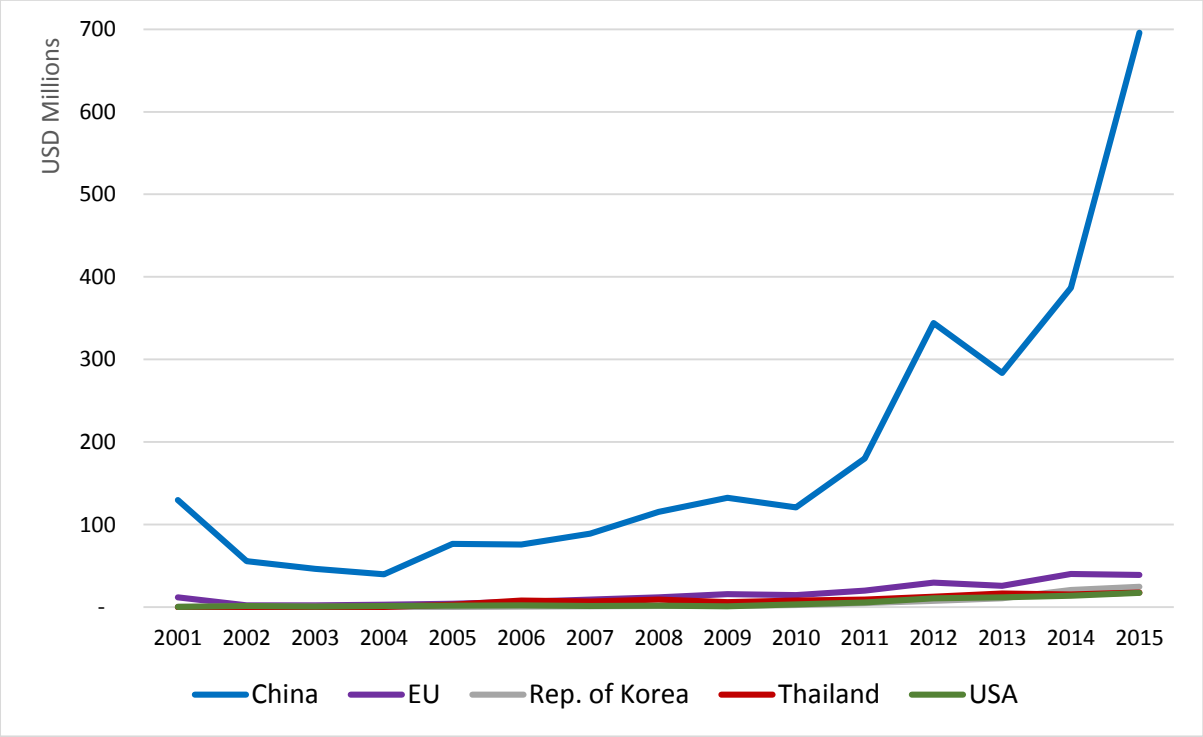
2001-2015 period, Vietnam's fruit export to China increased dramatically, while export to the other four countries grew at a much slower pace (Figure 4).

Figure 3. The 2015 top 5 export markets of Vietnam's fruits



Source: UN Comtrade, 2017

Figure 4. Vietnamese export value to the 2015 top five export markets (2001 – 2015)



Source: UN Comtrade, 2017

Tropical fruits are the main fruit exports of Vietnam. Table 3 demonstrates the top 10 Vietnamese fruit exports in 2015 (HS 6-digit), which includes both fresh and

minimally-processed (dried and frozen) fruits. The product group including fresh tamarinds, jackfruit, lychees, and passion fruit (HS 080190) represented the top fruit export at 59%, followed by dried fruits (HS 081340) with 10%, and all remaining products with less than 10% each. Together, these 10 products represented 99% of Vietnam's total fruit export in 2015.

Table 3. The 2015 top 10 fruit exports of Vietnam

HS code	Product Description	Export value in 2015 (USD million)	Share in 2015 total fruit export value
081090	Fresh tamarinds, jackfruit, lychees, passion fruit, . . .	546	59%
081340	Dried fruits, others	95	10%
080450	Fresh or dried guavas, mangoes and mangosteens	75	8%
080111	Desiccated coconuts	59	6%
081190	Frozen fruits….	39	4%
080119	Coconuts, fresh, shelled	28	3%
081060	Fresh Durian	25	3%
080550	Fresh or dried lemons	17	2%
080711	Fresh Watermelons	15	2%
080390	Fresh or dried bananas	14	2%
	SUM	**913**	**99%**

Source: UN Comtrade, 2017

1.3. Reasons for the low export value of Vietnamese fruits

There are many reasons why, despite possessing a high competitive advantage in the production of many kinds of fruits, Vietnam's export values remain modest. One such reason may be Vietnamese companies' weaknesses in doing business and building trademarks, and the high cost of preservation and transportation. However, according to the Vietnamese Fruit Association and most fruit exporters, the main reason for low export values lies in fruit importing countries' high quality standards and strict food safety requirements (Thu Huong, 2016). These requirements increase when tariffs are gradually reduced over the time, in line with importing countries' commitments under the World Trade Organization (WTO) and other trade agreements with Vietnam.

Table 4 shows the tariffs imposed by the world's top 10 fruit importers on Vietnam's top five fruit exports in 2015. Some fruits had high tariffs applied by some countries, especially India and South Korea. However, most fruits enjoyed duty-free or low tariffs, even in high-agriculture-protection markets like the EU or US. This implies that tariffs are not the major obstacle limiting Vietnam's fruit exports.

Table 4. Tariffs applied on the 2015 top 5 export fruits of Vietnam by biggest fruit importers

No	Top 10 fruit importers of the world in 2015	Ad valorem equivalents tariff applied on top 5 Vietnamese fruit exports in 2015				
		HS 081090	**HS 081340**	**HS 080450**	**HS 080111**	**HS 081190**
1	EU	8.8%	4.1%	0%	0%	8.22%
2	US	1%	2.33%	2.98%	0%	5.74%
3	China	0%	0%	0%	0%	0%
4	Canada	0%	0%	0%	0%	7.67%
5	Russia	0%	0%	0%	0%	3.05%
6	Hong Kong	0%	0%	0%	0%	0%
7	India	0%	30%	30%	70%	0%
8	Japan	0.34%	1%	0%	0%	5.19%
9	UAE	0%	5%	0%	5%	5%
10	South Korea	64.60%	235.50%	30%	0%	30%

Source: ITC Macmap, 2017

Meanwhile, Vietnamese fruit exporters often complained about the difficulties involved in dealing with import requirements, especially food safety standards, of the big importers (Vietnamnet, 2017). Some importers, such as the US, Australia, Japan, New Zealand, and Japan require fruits to have import permits in order to access their markets. It often takes 4 to 5 years (and sometimes even up to 10 years) for Vietnamese fruit exporters to receive such a permit (Dieu Thuy, 2016). Currently, there are only some kinds of fruits that have approval for export to the above big markets, as shown in Table 5.

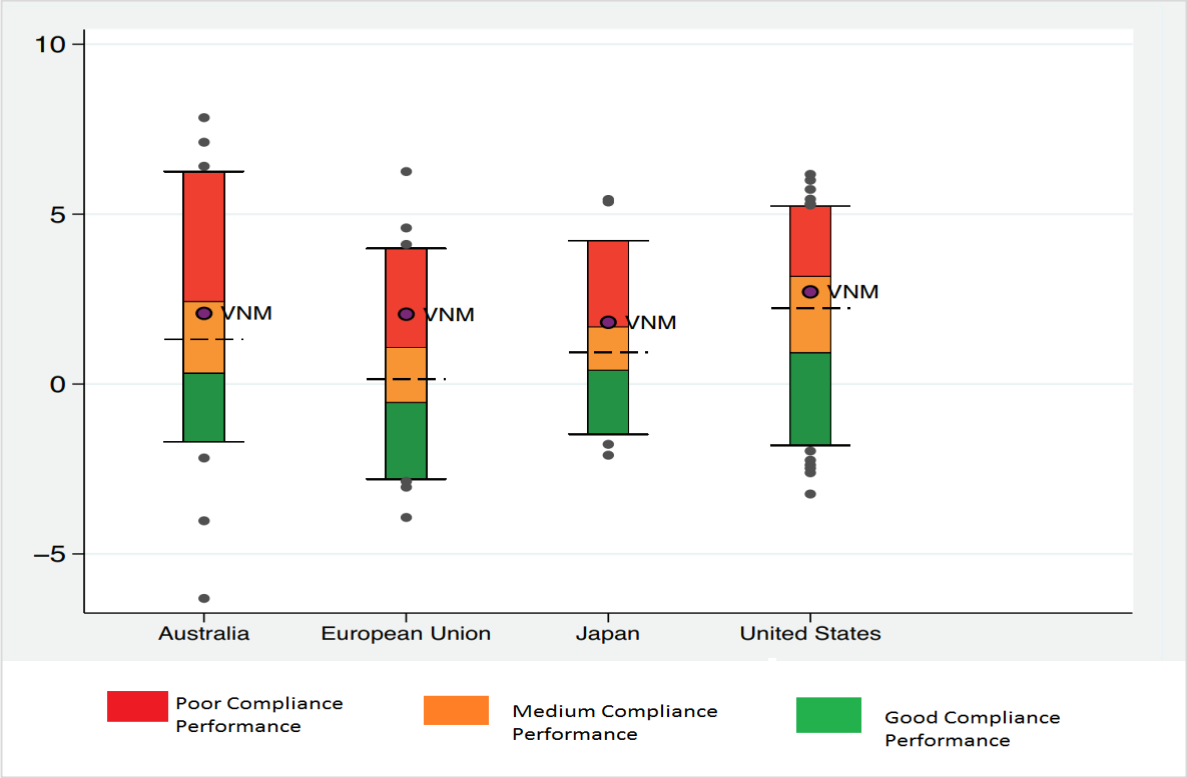
Table 5: Vietnamese fruit exports approved to export to selected countries

Importing countries	Approved Vietnamese fruits
US	Coconut, Dragon fruit, Lychee, Longan, Rambutan, Star apple
Australia	Mango, Lychees, Dragon fruit
New Zealand	Dragon fruit
Japan	Dragon fruit, Mango
Korea	Dragon fruit, Mango

Source: Infonet, 2016

Even products that have an import permit can still be rejected if they do not meet all requirements set by the importing countries. Between 2006 and 2011, Vietnamese fruit and vegetable exports were subject to 160 rejections by the US, 34 rejections by Japan, 34 rejections by the EU, and 23 rejections by Australia (UNIDO, 2017). These rejections are a consequence of the relatively low ability of Vietnamese producers to comply with import regulations such as quality standards, quarantine, and food safety requirements. Figure 5 shows that during the period from 2002 to 2010, Vietnamese fruits and vegetables had poor compliance performance in the EU and Japan markets, and a medium compliance performance with the US and Australia markets.

Figure 5. Compliance performance of Vietnamese fruits and vegetables exporting to selected countries (2002 - 2010)



Source: UNIDO, 2017

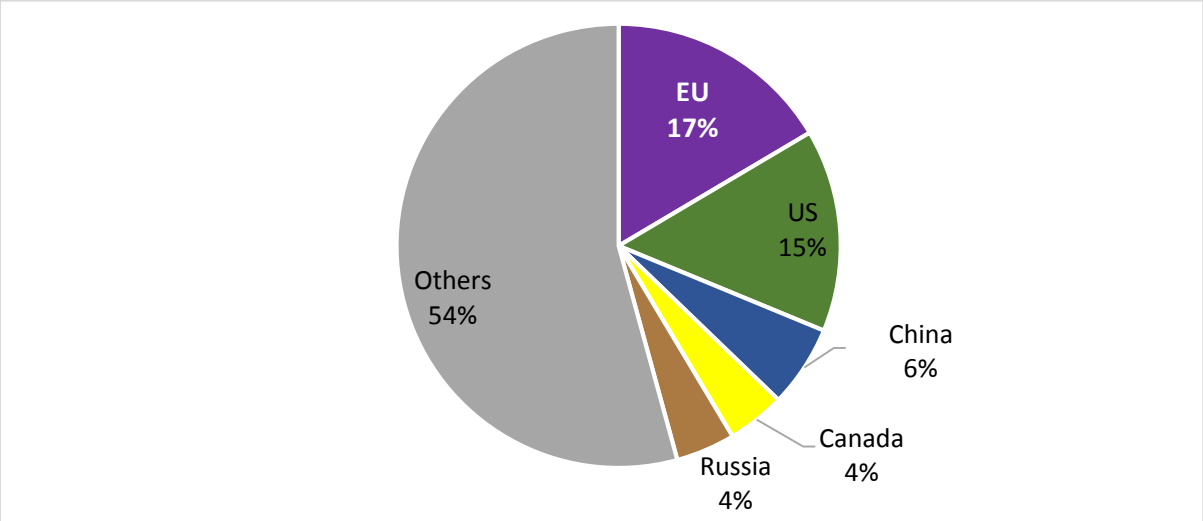
China has therefore remained the major market for Vietnamese fruits for many years, as it is a country with a great demand for fruit, low tariffs, and – most importantly – has low food quality and safety requirements (An Nhien, 2014). However, over-reliance on one market can lead to negative consequences whenever there is any change in demand from that market. This occurs regularly in the case of Vietnamese fruit exports to China, when Chinese traders stop or reduce their import levels, thereby causing serious losses for Vietnamese farmers (Vietnamnet, 2017). Furthermore, as the dominant buyers, Chinese merchants often pressure Vietnamese fruit sellers for very low prices, particularly during bumper crops (Hai Luan, 2017). This over-reliance is why Vietnamese fruit exporters are now trying to increase exports to other countries to diversify markets and gain more profits.

2. Vietnam's fruit export potential to the EU[2]

2.1. The EU's demand for tropical fruit imports

Fruit consumption has been rising significantly in the EU, due to an increased consumer demand for healthy and natural products (CBI, 2016a). Since domestic production cannot meet this demand, the EU has for many years faced a huge trade deficit in the fruit sector. In 2015, the EU was the world's largest fruit importer, representing 17% of the world's total fruit imports (Figure 6).

Figure 6: The 2015 top 5 fruit importers of the world

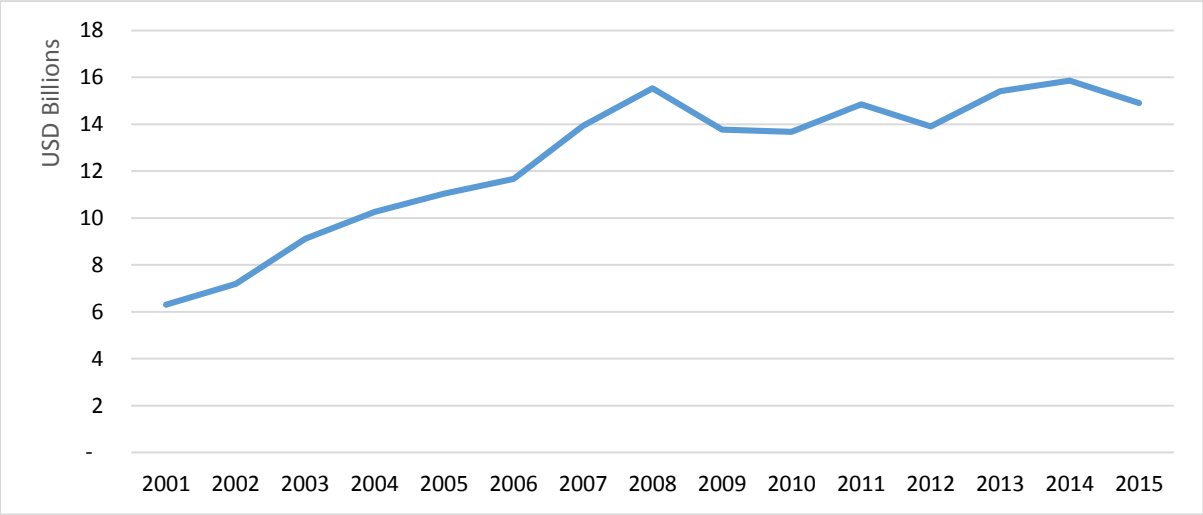


Source: UN Cometrade, 2017

During the 2001-2015 period, the EU's fruit import value rose considerably, more than doubling in value from USD$6.3 billion in 2001 to USD$15 billion in 2015. Since the highest growth period from 2001-2008, however, import growth has slowed as a result of the global financial crisis. From that, the import value has fluctuated around USD$15 billion (Figure 7).

[2] All trade statistics related to the EU in this section will not include intra-EU trade. For example, the value of fruits EU imports from the world will not include the values of fruits imported from EU members.

Figure 7. Fruit import values of the EU (2001 – 2015)



Source: UN Comtrade, 2017

The chief fruit imports to the EU are bananas and out-of-season traditional fruits, such as grapes, oranges, and apples (ITC Trademap, 2017). Another significant import are popular tropical fruits that are not grown in the EU, such as avocados, pineapples, mangoes, and lemons (Table 6). Moreover, as increasing numbers of EU consumers travel around the world, they develop new tastes for exotic tropical fruits like lychees, passion fruits, jackfruits (Vietrade, 2017). Such fruit varieties (nearly all included in HS 081090) have increased their proportion of total EU fruit import value, representing about 2% in 2015 (Table 6).

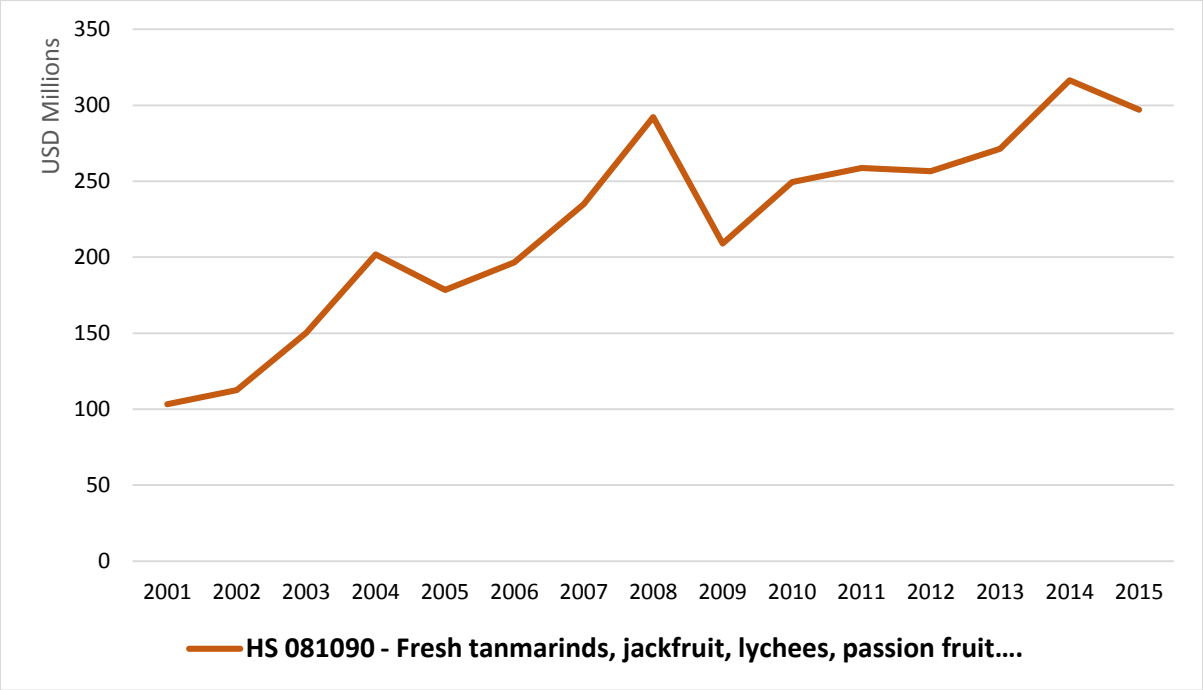
Table 6. Top 10 tropical fruits imported into the EU in 2015.

HS code	Product description	EU import value in 2015 (USD million)	Proportion in the EU total fruit import value in 2015
080390	Fresh or dried bananas	3,684	25%
080440	Avocados	746	5%
080430	Pineapples	713	5%
080450	Guavas, mangoes and mangosteens	580	4%
080550	Lemons and limes	545	4%
081190	Frozen fruits, others	439	3%
081090	Fresh tamarinds, jackfruit, lychees, passion fruit, . . .	297	2%
080111	Desiccated coconuts	188	1%
080711	Watermelons	153	1%
081340	Dried fruits, others	143	1%

Source: UN Comtrade, 2017

Figure 8 shows the increase in the EU import of fresh exotic tropical fruits in HS 081090 over a 15-year period. Their total import value has tripled from about USD$100 million in 2001 to nearly USD$300 million in 2015. While the overall fruit import value of the EU did not change much from 2009 to 2015 (Figure 7), that of exotic tropical fruits has grown considerably over this period (Figure 8).

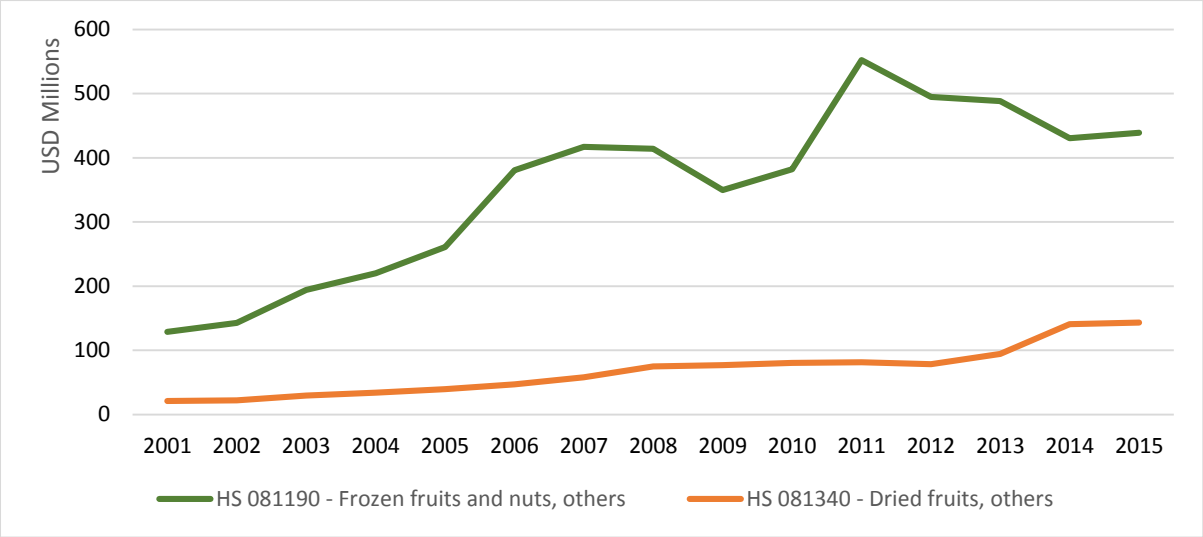
Figure 8. EU's import value of fresh exotic tropical fruits in HS 081090 (2001 – 2015)



Source: UN Comtrade, 2017

Import demand for minimally-processed (frozen and dried) tropical fruits is also on the rise, as EU consumers increase their demand for convenient snack foods that are easily prepared (CBI, 2017). Figure 9 illustrates the import growth of some frozen tropical fruits in HS 081190 and dried tropical fruits in HS 081340 from 2001 to 2015. Both HS products have an overall rising trend in import value over the period, though the import of HS 081190 has slightly decreased in recent years.

Figure 9. EU's import values of selected frozen and dried tropical fruits (2001 – 2015)

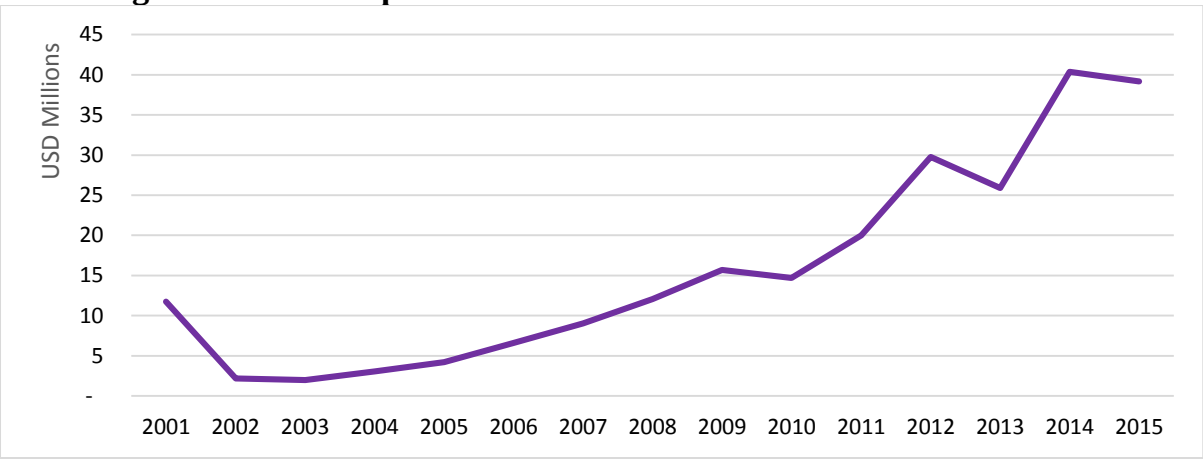


Source: UN Comtrade, 2017

2.2. EU imports of Vietnamese fruits

EU imports of Vietnamese fruits grew significantly during the 2001-2015 period (Figure 10). From 2009 to 2015, while the EU's total fruit import remained quite stable (Figure 7), its fruit imports from Vietnam steadily rose. It is important, however, to note that the share of Vietnamese fruit in the EU market is still very small (0.26%), especially when considering the huge demand of the EU and the fruit export potential of Vietnam. In 2015, there were only 5 Vietnamese fruit commodities (HS 6-digit) possessing an import value of more than USD$1 million, and their share in the total import value of the EU was very limited (Table 7). Although these figures indicate a poor performance of Vietnamese fruit exports in the EU market, they also suggest that Vietnam still has a plenty of opportunities to expand its share in this market.

Figure 10. EU's import value of Vietnamese fruit from 2001 to 2015



Source: UN Comtrade, 2017

Table 7. Vietnamese fruits with export value of more than USD$1 million to the EU market

Product HS	Product description	EU's import value from Vietnam (USD million)	Proportion of Vietnam in the EU's total import value
081090	Fresh tamarinds, jackfruit, lychees, passion fruit, . . .	12.7	4.29%
080111	Desiccated coconuts	6.6	3.51%
081190	Frozen fruit and nuts, others	9.1	2.08%
080550	Fresh or dried lemons	5.2	0.96%
080450	Fresh or dried guavas, mangoes and mangos teens	1.6	0.27%

Source: UN Comtrade, 2017

2.3. Vietnamese fruits with high export potential and current competition in the EU

From the above discussion, it can be concluded that there is a significant demand in the EU for a wide range of tropical fruits (Table 6), of which Vietnam possesses strength in growing and producing (Table 1,2). Therefore, although Vietnam hasn't exploited effectively this market, there are still great opportunities there. Table 8 contains a list of fruit commodities (HS 6-digit), representing the top 10 produced and exported fruits of Vietnam and the top 10 imported tropical fruits by the EU. From this table, 9 fruit commodities (highlighted in orange) are identified as fruit exports with the most potential for Vietnam to export to the EU. This identification is based on the two criteria:

i. *The commodity must be among the top 10 produced or exported fruits of Vietnam, and*

ii. *The commodity must be among the top 10 imported tropical fruits of the EU.*

Table 8. Vietnam's potential fruit exports to the EU market

No.	HS Code	Product description	VIETNAM		EU
			Top produced fruits in 2014	Top 10 fruits exported to the world in 2015	Top 10 tropical fruits imported from the world in 2015 (USD million)
1	080111	Desiccated coconuts	√	√	√
	080119	Coconuts, fresh, shelled	√	√	
2	080390	Fresh or dried bananas	√	√	√
3	080430	Fresh or dried pineapples	√		√
	080440	Fresh or dried avocados			√
4	080450	Fresh or dried Guavas, mangoes and mangosteens	√	√	√
5	080550	Fresh or dried lemons	√	√	√
6	080711	Fresh Watermelons	√	√	√
	081060	Fresh durian		√	
7	081090	Fresh tamarinds, jackfruit, lychees, passion fruit, . . .	√	√	√
8	081190	Frozen fruits, others	√	√	√
9	081340	Dried fruits, others	√	√	√

However, the current competition in the EU market for the above potential products is quite high. Table 9 lists the 5 biggest competitors in the EU market for each of the 9 potential products in 2015. There are a wide range of exporters, most of which are developing countries from Africa, South Asia, and Central and South America. Vietnam appears in this list for only two products: HS 080111 – desiccated coconut, and HS 081090 – a group of selected exotic tropical fruits. This is because exotic tropical fruits are niche products, thus they face less competition than other products (CBI, 2017).

Table 9. Five biggest exporters for each of the 9 potential fruit exports of Vietnam in the EU

No.	HS code	5 biggest exporters to the EU in 2015
1	080111	Philippines, Indonesia, Sri Lanka, Vietnam, Malaysia
2	080390	Colombia, Ecuador, Costa Rica, Dominican Republic, Cameroon
3	080430	Costa Rica, Ecuador, Côte d'Ivoire, Ghana, Panama
4	080450	Brazil, Peru, Côte d'Ivoire, Dominican Republic, Ghana
5	080550	Brazil, South Africa, Turkey, Mexico, Chile
6	080711	Morocco, Brazil, Costa Rica, Panama, Turkey
7	081090	Colombia, Madagascar, South Africa, Peru, Vietnam
8	081190	Poland, Canada, Serbia, Ukraine, Sweden
9	081340	Turkey, Chile, China, US, South Africa

Source: ITC Trademap, 2017

2.4. Opportunities from the EU-Vietnam Free Trade Agreement

Most of Vietnam's biggest competitors in the EU fruit market are Free Trade Agreement (FTA) partners of the EU, or countries that have been granted Generalized Scheme of Preferences (GSP) status. These countries can therefore enjoy free access or preferential tariffs to this market. On the other hand, countries without an FTA or GSP status with the EU incur MFN tariffs, which are relatively high, as indicated in Table 10. Vietnam enjoys GSP tariff rates for fruits, which are lower than MFN tariffs. Despite that, for some products such as HS 080390, HS 090450, and HS 081090, the GSP rates are still high – 12.5%, 8.95, and 6.93% respectively. This places Vietnam at a disadvantage compared to the EU's FTA partners.

However, Vietnam and the EU have recently finished negotiations of an EU – Vietnam Free Trade Agreement (EVFTA), which is expected to be signed in 2018 and come into force in 2019. Under the EVFTA, all of the above-listed 9 potential Vietnamese fruits will have tariffs eliminated directly after the FTA takes effect (Table 10). Moreover,

the EU has committed to recognizing 39 Geographical Indications (GIs)[3] of Vietnam (of which, 17 GIs are fruit products), and allowing these GIs to be protected automatically in the EU upon entry into force of EVFTA[4]. The EVFTA therefore represents an excellent opportunity for Vietnam to compete with FTA partners of the EU, and to gain an advantage over the other big fruit exporters that do not have an FTA with the EU – such as Brazil, the Philippines, and Indonesia.

Table 10. The EU's average MF tariff applied in 2015 and EVFTA tariff

HS code	EU's average MFN tariff applied in 2015	EU preferential tariff for FTA partners in 2015	EU's average GSP tariffs	EVFTA average tariff (at the date of enforcement)
080111	0%	0% for all FTA partners	0%	0%
080390	16%	0% for all FTA partners	12.5%	0%
080430	5.8%	0% for all FTA partners	2.3%	0%
080450	0%	0% for all FTA partners	0%	0%
080550	12.8%	0% for all FTA partners	8.9%	0%
080711	8.8%	0% for all FTA partners	5.3%	0%
081090	8.8%	0% for all FTA partners	5.3%	0%
081190	8.22%	0% for all FTA partners	6.93%	0%
081340	4.1%	0% for all FTA partners	1.25%	0%

[3] GIs are "a distinctive sign used to identify a product as originating in a territory of a particular country, region or locality where its quality, reputation or other characteristic are linked to its geographical origin" (EC, 2016, p. 43).

[4] The list agreed is not final and can be extended to cover more products under negotiation of Vietnam and the EU in the future.

Source: WTO TAO, 2017 and European Commission, 2016

However, the EVFTA does not contain many new commitments on technical measures such as sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT). These measures are considered to be the most difficult barriers to Vietnamese fruit and vegetable exports to the EU market (Nguyen and Dang, 2014). Most EVFTA's SPS and TBT commitments just reaffirm obligations under the SPS and TBT Agreements of the WTO. Therefore, the EVFTA will not help to reduce EU's technical measures on Vietnamese fruits. Instead, it is expected that the EU may increase these non-tariff measures after tariffs being eliminated under the EVFTA (Uyen Huong, 2015).

II. THE EU'S NON-TARIFF MEASURES ON VIETNAMESE FRUITS

This section investigates the non-tariff measures (NTMs) of the EU that affect the 9 identified potential fruit exports of Vietnam. Before going into detail on each NTM, this section provides an overview of what NTMs are, how countries use them, and what impacts they have on trade. Following this is an examination of the EU's application of NTMs on imported products in general, and on Vietnamese fruits in particular. Finally, the section analyzes the major NTMs of the EU that are applied on the potential Vietnamese fruits. To illustrate the restrictiveness of the EU's NTMs compared to other export markets of Vietnam, comparisons and case studies are provided throughout the analysis.

1. Overview of Non-Tariff Measures

1.1. Definition and classification of non-tariff measures

Currently there exists no official definition of non-tariff measures (NTMs). According to the United Nations Conference on Trade and Development - UNCTAD (2012), NTMs are measures other than customs tariffs that can "potentially have an economic effect on international trade" (p. 1). This is a relatively broad definition, which defines NTMs as any measures having either positive or negative impacts on trade. However, there are some narrower definitions of NTMs that focus only on the negative aspect of NTMs. For example, the OECD (2017) defines NTMs as measures other than normal tariffs that have "the effect of restricting trade". This definition refers to NTMs as barriers rather than measures. Indeed, many NTMs do create barriers to trade and are sometimes referred to as non-tariff barriers (NTBs). However, not all NTMs are trade restrictive, and some even help to increase trade among countries[5] (Kareem, 2014). Furthermore, many NTMs are imposed purely for non-trade purposes (such as protecting human and animal health or the environment), and are allowed by the WTO and many regional trade agreements. The above UNCTAD definition therefore provides a more objective view and greater scope for identifying NTMs.

[5] This is because, when importing countries require high standards for imported products, exporting companies need to upgrade their production. As a result, their products will be of better quality and be able to access to more markets and produce more profits.

Though there exist many types of NTMs, UNCTAD classifies them into two groups: i) Technical measures and ii) Non-technical measures. Each group is then further differentiated into subgroups, as shown in Table 11. It should be noted, however, that such a classification is not based on the restrictiveness, legitimacy, or discrimination of any NTMs (UNCTAD, 2012).

Table 11. Classification of NTMs applied on imports

Technical measures	Sanitary and Phytosanitary measures (SPS) Technical Barriers to Trade (TBT) Pre-shipment inspection and other formalities
Non-technical measures	Contingent trade-protective measures Non-automatic licensing, quotas, prohibitions and quantity-control measures other than for SPS or TBT reasons Price-control measures, including additional taxes and charges Finance measures Measures affecting competition Trade-related investment measures Distribution restrictions Restrictions on post-sales services Subsidies (excluding export subsidies) Government procurement restrictions Intellectual property Rules of origin

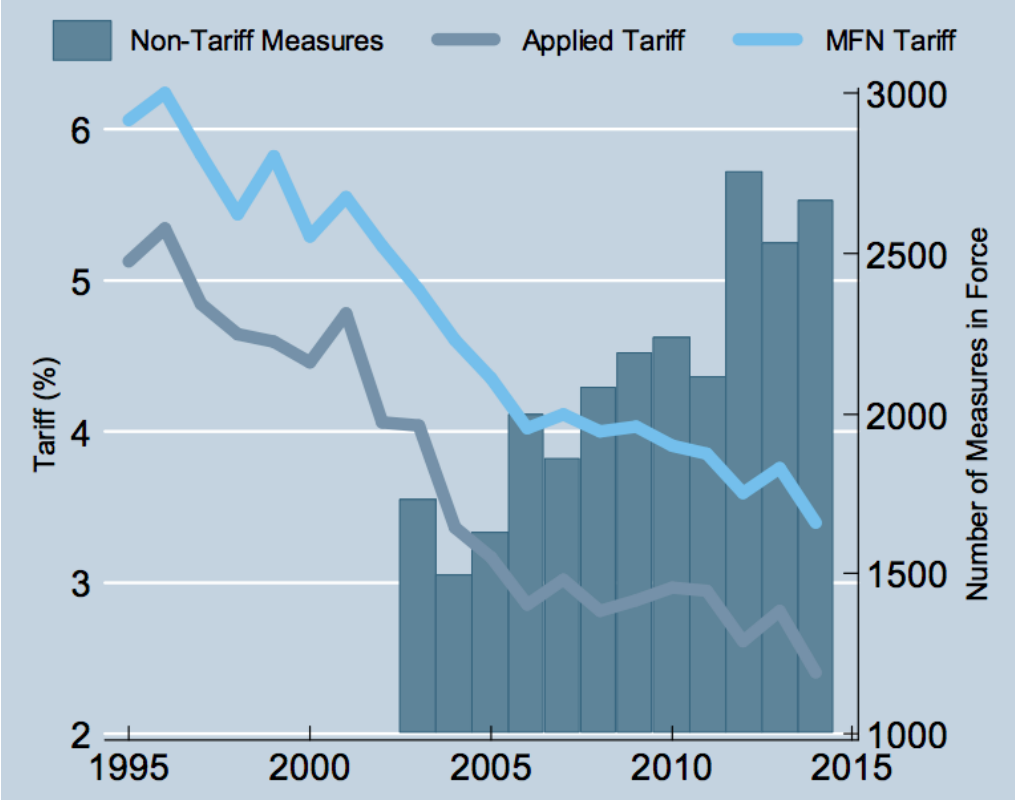
Source: UNCTAD, 2012

1.2. Trends and impacts of NTMs

NTMs are replacing tariffs to become the most significant barriers to trade in goods. Figure 11 demonstrates the rapid decrease of tariffs and the emergence of NTMs over the last 20 years. Average applied tariffs dropped by half over this 20-year period, from more than 5% in 1995 to about 2.5% in 2015. Meanwhile, in just 10 years, the number of NTMs nearly doubled: from about 1,600 measures in 2005 to around 2,700 measures

in 2015. This is because, under WTO and other trade agreements among countries, tariffs have been gradually liberalized. Nevertheless, many countries have increased NTMs as safeguard measures to keep control over imports and protect domestic industries.

Figure 11. Trends of tariff and non-tariff measures

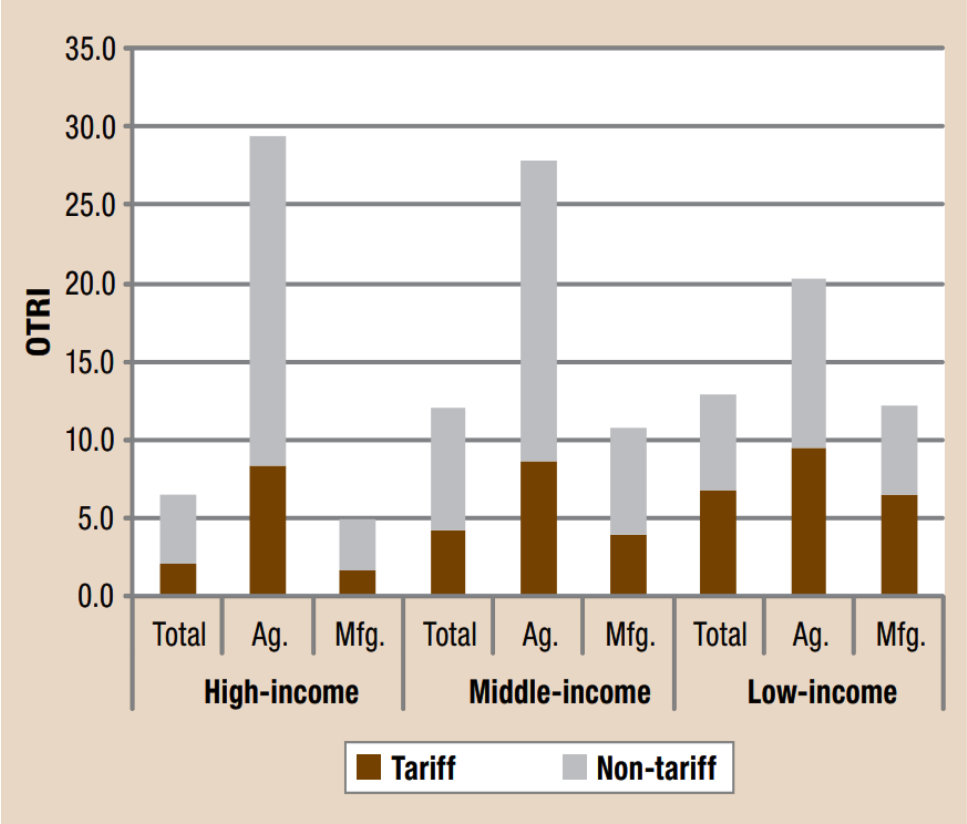


Source: UNCTAD, 2015

The emergence of NTMs has had effects on trade, although such effects are complex and difficult to measure. In 2010, UNCTAD developed an indicator to quantify the impacts of NTMs on import products called the 'overall trade restrictiveness index' (OTRI)[6] . The indicator shows that NTMs have a greater overall trade restrictiveness than tariffs (Figure 12). Within this, the impact of NTMs on agricultural products is shown to be far higher than on manufactured products, across all country income levels. Moreover, NTMs on agricultural products are more restrictive in high-income economies than in middle and, especially, low-income economies.

[6] OTRI was first developed by Kee, Nicita and Olarreaga in 2009, and was implemented by the World Bank. This OTRI was then updated by the UCTAD based on the UNCTAD Trade Analysis Information System (TRAINS) database.

Figure 12. Overall trade restrictiveness index (OTRI)



Source: UNCTAD, 2013

2. The EU's application of NTMs

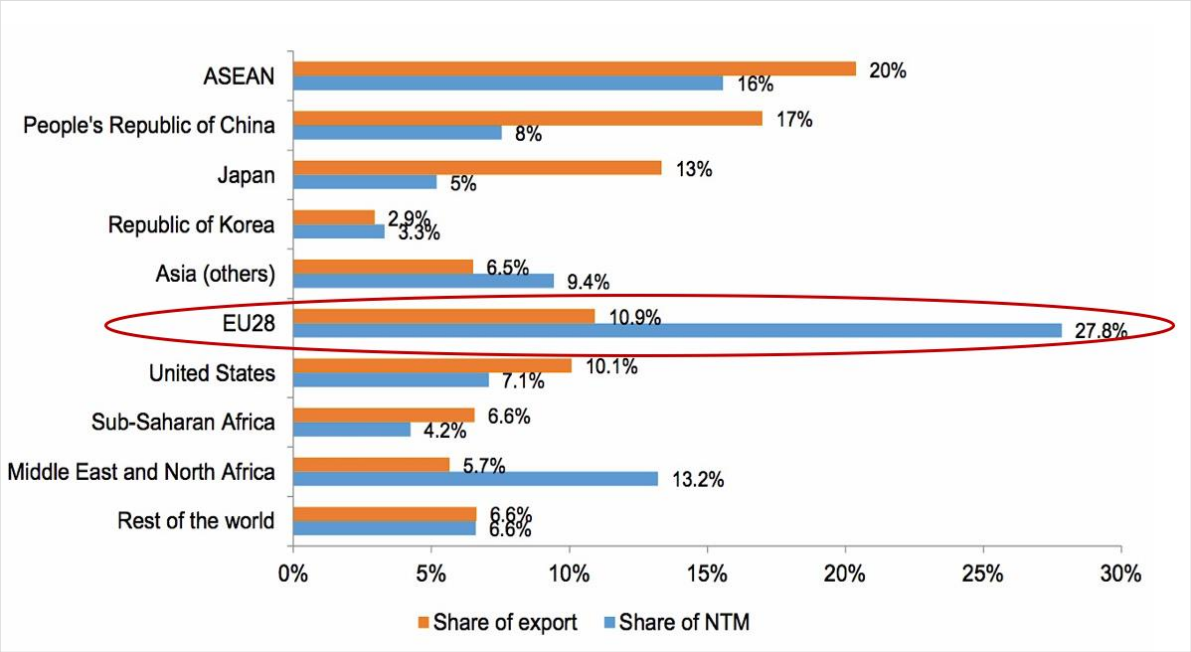
2.1. The EU's application of NTMs on imports in general

According to a 2013 UNCTAD study, the EU was among the countries with the highest frequency index[7] and coverage ratio[8] of NTMs imposed on imported products. In the agriculture and food sectors, specifically, the EU is often accused of maintaining highly protectionist trade policies (Vietrade, 2016). Such policies affect developing countries in particular, as most of their comparative advantage is in the agricultural sector (Dublin University, 2010). On its official website, the EU states clearly that it maintains "one of the highest food safety standards in the world" (EC, 2017, p.1). Although the alleged purpose is to protect human and animal health, such high standards are impeding agricultural imports. For example, a recent report by the International Trade Center (ITC) on the NTMs faced by Thai exporters in foreign markets shows that, although the

[7] The percentage of products which have one or more NTM applied (UNCTAD, 2013)
[8] The percentage of trade subject to NTMs for the importing country (UCTAD, 2013)

EU market accounted for only a small share of Thailand's agricultural exports in 2013, it had the highest share of NTMs on these exports.

Figure 13. Share of Thailand's agricultural exports and share of NTMs applied by partner countries, 2013



Source: ITC, 2014

2.2. The EU's application of NTMs on Vietnamese fruits

According to the UNCTAD TRAINS database[9], the EU is currently imposing 34 NTMs on Vietnamese fruits (Chapter 08), including 26 SPS and 08 TBT measures[10]. The EU is one of the import markets that have the highest number of SPS ad TBT measures imposed on Vietnamese fruits. From Figure 14, it can be observed that China and some other ASEAN countries have fewer TBT and SPS measures on Vietnamese fruits than the US, Australia, and the EU. Although the effect of such measures on imports depends also on their restrictiveness, the number of measures alone implies the complexity of the import regulatory system of a given market.

[9] The UNCTAD's Trade Analysis and Information System (TRAINS) database is currently the biggest database on NTMs, and was developed by the UNCTAD since 1994. This database is updated regularly.

[10] There are 02 more NTMs (non-technical measures) that the EU applied on fruits in chapter 08. However, these measures are related to fruit products that Vietnam does not export. Thus, they are not mentioned in this section.

Figure 14. Number of SPS and TBT measures applied by export markets on Vietnamese fruits in 2015

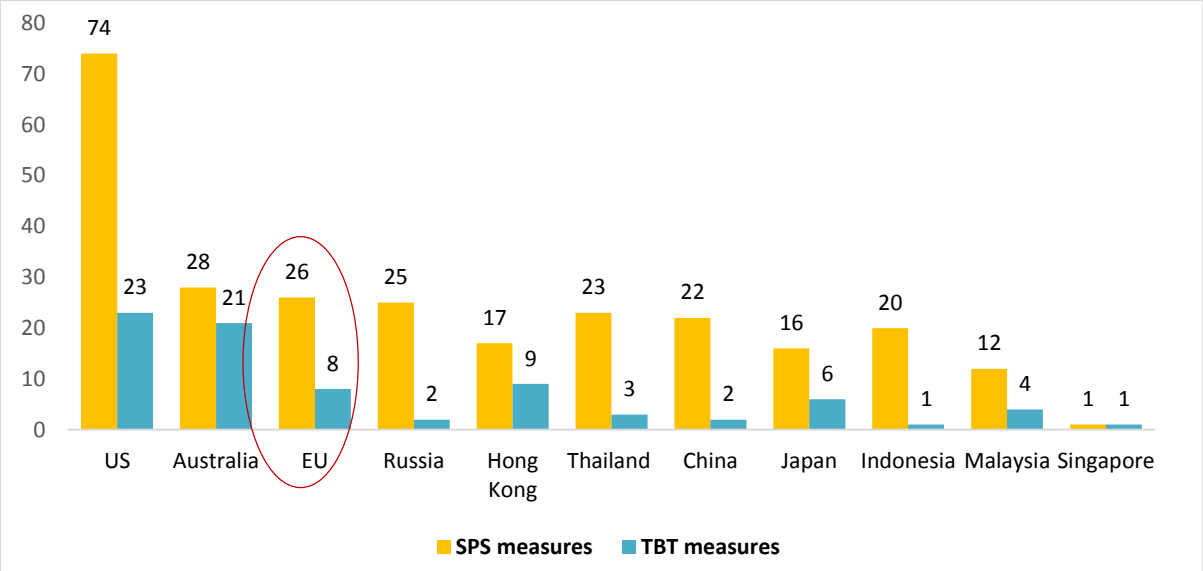


Table 12 provides details of the EU's SPS and TBT measures applied on Vietnam's fruit exports. From this data, it can be seen that the highest number of these measures lies in the category "Conformity assessment". This is a prominent feature of the EU market, where exporters face not only high requirements, but also strict assessment and punishment.

Table 12. EU's NTMs applied on the 9 potential fruit exports of Vietnam

Detailed measure	Number of measures
SPS measures	**26**
Hygienic requirements	3
Tolerance limits for residues and restricted use of substances	4
Prohibitions/Restrictions of imports for SPS reasons	6
Labelling, marking and packaging requirements	4
Conformity assessment	9
TBT measures	**8**
Labelling, marking and packaging requirements	4
Product quality or performance requirement	2
Prohibitions/restrictions of imports for TBT reasons	1
Conformity assessment	1

Source: UNCTAD TRAIN database, 2017.

As there are many of these NTMs, and some are not particularly related to the nine potential fruit export products of Vietnam, this study will examine only the most relevant measures. Specifically, the following measures have the biggest impacts on Vietnamese fruit exports:

- **SPS measures**: Hygiene requirements; Regulations on pesticide residues and contaminants; Plant health controls; and Conformity assessment.
- **TBT measures:** Labelling requirements; and Marketing standards.

3. The EU's major SPS measures on Vietnam's potential fruit exports

SPS measures, as defined by the UNCTAD (2012), are measures applied to protect human, animal and plant health or life. These measures are allowed by the WTO if they are based on science, are non-discriminative, and are not more restrictive to trade than required. The WTO also encourages members to use international standards and recommendations, if they exist.

For the EU, about 98% of its SPS measures have been harmonized and regulated at the regional level (USDA, 2016), with only a few other measures being taken by individual member states for some specific products. The EU regulations follow the SPS Agreement of the WTO, and are based on international standards and recommendations (WTO, 2016). The EU and its member states are members of the Codex Alimentarius Commission (Codex) and the World Organization for Animal Health, and are contracting parties to the International Plant Protection Convention (IPPC) (WTO, 2016).

However, findings from a series of ITC's survey on NTMs applied by selected countries show that the EU often applies higher standards than are recommended by the above international organizations, and it is also more demanding than other countries in food safety requirements. Furthermore, in addition to the legal SPS measures set by the European Commission (EC) (and in some cases by EU member states), fruit exporters must also comply with additional requirements of the EU importers or buyers. Together, these requirements make the EU's SPS measures one of the most difficult barriers for foreign fruit exporters, and particularly for those from developing countries.

The following are the major SPS measures of the EU on the 9 Vietnamese potential fruit exports[11].

3.1. Hygienic requirements

The EU's rules on food hygiene relating to non-animal origin products are set down in Regulations No. 178/2002[12] (the General Food Law) and No. 852/2004[13] (on food hygiene), in addition to a number of implementing and delegated acts. Under these regulations, food business operators must bear primary responsibility for food safety and follow basic common hygiene requirements to ensure food safety throughout the food chain. Although these regulations apply to EU's food business operators only, exporters from third countries also need to follow such regulations in order to export products to this market.

One important requirement that directly affects foreign exporters is the implementation of food safety management procedures that are based on the Hazard Analysis and Critical Control Point (HACCP)[14] principles. EU members are required to ensure that foreign food businesses follow HACCP priciples in producing foodstuffs for export to the EU. HACCP requirements do not apply to primary production, meaning that the growing of fresh fruits is itself not subject to this requirement. However, all production processes after harvesting need to follow HACCP principles.

Although it is not compulsory to show HACCP certification at the border, foreign exporters still need to keep all records[15] and evidence to demonstrate upon request their

[11] The EU has extremely stringent regulations on genetically modified (GM) foods. However, Vietnam has no GM fruits, so the EU's measures on GM fruits will not be discussed in this section.

[12] EU Regulation No. 178/2002 of the European Parliament and of the Council of 28/1/2002 lays down "general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety" (Document 32002R0178, EUR-Lex)

[13] EC Regulation No 852/2004 of the European Parliament and of the Council of 29/4/2004 on "the hygiene of foodstuffs" (Document 32004R0852, EUR-Lex)

[14] HACCP is a food safety management system which has been existed since 1960s (CFIA, 2012)[14]. HACCP set out 7 principles that need to be used and implemented to prevent hazards throughout food production process from raw materials to finished products. HACCP is recommended by the Codex Alimentarius Commission and the United Nations International Standards Organization for Food Safety. It has also been used by many countries in the world (CFIA, 2012).

[15] Fruit producers must keep records of measures taken to control food safety and at least 6 months and make available for inspection. The records include documents of pesticides used, presence of any

implementation of HACCP principles. Moreover, as a precaution, EU importers often require processed fruit imports to be accompanied by a HACCP certification (CBI, 2016b). For fresh fruits, EU buyers also request some kinds of food safety certification; the most common being GLOBALG.A.P[16] (CBI, 2016a). Though some other food export markets of Vietnam do also require HACCP certification, it is only necessary for some products, none of which are fruits (see Table 13)

Table 13. Comparing HACCP requirements of some export markets of Vietnamese fruits

Countries	EU	US	Canada	China	Russia
Food products required HACCP application	All food products	Juice and seafood	Meat and poultry	None	None

Source: UNCTAD TRAINS database, 2017

Although HACCP, GLOBALG.A.P, and other food safety management systems, are becoming increasingly popular, their users are chiefly big enterprises. For small and medium enterprises, in particular those from least-developed and developing countries, following all principles and requirements of these systems is still a challenge (Taylor and Kane, 2005). This is because the implementation of an effective HACCP system requires companies to invest in both human and financial resources to develop and operate the system (Marques, Matias, Teixira & Brojo, 2012). In Vietnam, HACCP and GLOBALG.A.P are still new to most food operators. These systems have been used in recent years primarily by big companies that export products to markets requiring such kinds of certifications, such as the EU (WB, 2017).

pests/diseases affecting food safety, analysist results related to impacts on human health (Graffham, 2006).

[16] GLOBALG.A.P is the worldwide standard for Good Agricultural Practices. This system was initiated in 1997 by the Euro-Retailer Produce Working Group with the original name EUREGAP. GLOBALG.A.P sets out standards and procedures for good agricultural practice to ensure food safety, sustainable food production, worker welfare, etc. This system has been used by more than 120 countries in the world. For more information on GLOBALG.A.P see http://www.globalgap.org/uk_en/

Case study 1:

Mauritian – Weakness of the competent authority in issuing HACCP certification

The EU is one of the main export markets for Mauritius's agricultural products. However, Mauritian exporters often complain about the EU's requirement of HACCP applications to ensure food hygiene and safety. Moreover, the EU's importers also require various kinds of private standards, most notably GLOBALG.A.P. These numerous regulatory requirements represent a burden for Mauritian exporters, because it costs businesses time and money to meet the standards. More importantly, the Mauritian Standards Bureau (MSB), which is in charge of examining and issuing HACCP and other related certifications for agricultural exports, has a shortage of experienced officials and a lack of accredited laboratories (as well as other necessary infrastructure) to implement their duties. This results in complex application procedures, arbitrary decisions of officials, and long delays in the issuance of certificates. Together, these factors negatively affect Mauritian export to the EU.

Source: ITC. Series on NTMs – Mauritian: Company perspectives, 2014

3.2. Regulations on pesticide residues and contaminants

The production of fruits involves multiple activities such as growing, harvesting, preserving, and processing. Each of these activities may contain hazards affecting the safety of fruits and posing a risk to consumer health. These hazards can include pesticide residues left over from the growing process, and contaminants (biological, chemical or physical hazards) unintentionally entering production during processing activities.

i) Pesticide residues

Most countries have rules on maximum residue levels (MRLs) for pesticides in or on food products, to protect consumer health and the environment. Imported products must also meet pesticide requirements in order to gain access and be sold in the importing markets. However, as currently there are no internationally harmonized MRL standards,

different countries may apply different MRLs on the same product. Although the Codex has developed Codex MRLs for pesticides with the aim to provide international MRL standards for countries to reference, there is no "international acceptance" of the Codex MRLs by importing countries. Most developed countries maintain their own MRL standards (Table 13). New Zealand is one of the few developed countries that accepts Codex MRLs automatically (MPI, 2017).

The EU has its own set of MRLs, which are followed by many countries that maintain large exports to the EU market (Neff et al., 2012). In 2008, the EU harmonized all members' regulations on pesticide residues, and set common MRLs in the EC Regulation No. 396/2005[17] (and its amendments). All food products, including imported products, will be expelled from the EU market if they have illegal pesticides or an amount of pesticide that is higher than the limit set by the Regulation. The EU's MRLs on pesticides are applied to both fresh and processed food products. On processed products, MRLs are set based on MRLs of fresh ingredients and taking into account the concentration or dilution of the product during processing.

For pesticides that are not specified by the above Regulation, a low default MRL of 0.01 mg/kg is applied as a precautionary measure. This is particularly relevant to imported products that are grown outside the EU and used non-specified pesticides. The issue is that the EU's default MRL is very low, while the number of pesticides approved by the EU is much lower than other countries, such as the China and the US (Table 14). New Zealand and Canada also set a default MRL; however, the default level is ten times higher than that of the EU (Table 14). In theory, an exporting country can request for MRLs on pesticides that are not listed in the EU Regulation but registered in the exporting country. In practice, however, this request can be difficult to realize, because the processes of application and approval are complicated and costly (USTR, 2014).

[17] Regulation No 396/2005 of the European Parliament and of the Council dated 23/02/2005, came into force from 09/2008 (Document 32005R0396, EUR-Lex)

Table 14. Comparing regulations on pesticide residues of some export markets of Vietnamese fruits

Countries	Automatically recognize Codex MRLs	Default MRL set for pesticides/MRLs not listed in regulations	No. of approved pesticides[18]
EU	No	Yes – 0.01 mg/kg	1,100
Japan	No	Yes – 0.01 mg/kg	600
New Zealand	Yes	Yes – 0.1 mg/kg	-
Canada	No	Yes – 0.1 mg/kg	-
Australia	No	No	11,000
US	No	No	16,000
China	No	No	25,000

(Note: "-" indicates that data is not found)

Source: Author collected from various sources

The EU's legislation on pesticide residues is further complicated as it is updated regularly. The Regulation 396/2005, mentioned above, has dozens of amendments each year. Some pesticides have MRLs that are revised very frequently, making them difficult to follow for foreign exporters. In addition, the EU's MRLs on a particular product may be very different to that of the Codex and other countries. As export products are normally exported to many countries, and not just to the EU, this variation in standards may confuse exporters and make it more difficult for them to comply with. For example, Vietnamese mangos exporting to the EU, the US, and Japan will face different MRLs for some kinds of pesticides, within which most of the EU's MRLs are stricter than those of other countries (highlighted in red in Table 15).

[18] As the data are taken from various sources, they may be different in the year updated. Therefore the comparison is only relative

Table 15. Compare Mango MRLs on some pesticides by EU, US, Japan, China and Codex

No.	Pesticide name	EU	US	Japan	China	Codex
1	Azoxystrobin	0.7	2	1	1	0.7
2	Buprofezin	0.1	0.9	0.9	-	0.1
3	Cyromazine	0.05	0.3	0.5	-	0.5
4	Difenoconazole	0.1	0.07	0.07	0.07	0.07
5	Fludioxonil	2	5	-	-	2
6	Imidacloprid	0.2	1	1	-	0.2
7	Pyraclostrobin	0.05	0.6	0.05	0.05	0.05
8	Spirotetramat	0.3	0.6	0.3	0.3	0.3
9	Tebuconazole	0.1	0.15	0.1	0.05	0.05
10	Thiabendazole	5	10	3	5	5
11	Thiamethoxam	0.2	0.4	0.2	-	0.2

Note:

MRL unit: mg/kg,

"-" means "not set"

Source: Author collected from governmental or private MRLs websites of the Codex, EU, US and Japan, and from USDA Report for (MRLs of China)

While the EU's legislation on pesticide MRLs has been significantly more restrictive than the international standards (Stoll, Douma, & Abel), some EU buyers require imported products to have MRLs even lower than the legally set levels (CBI, 2016a). These private MRL standards are sometimes not based on scientific analysis, and simply set out to attract consumers and increase profits for sellers. However, they pose a further challenge for foreign exporters.

ii) Contaminants

Contaminants are substances that exist unintentionally in food products, introduced at some stage of the food production process – for example, during growing, processing, packaging, or storage. Though the levels of contaminants in foods are often low and harmless to consumers, most countries implement regulations on food contaminants as

a precaution. The EU's principles for food contaminant control are detailed in the Council Regulation No. 35/93/EEC[19], and it sets maximum levels for selected food contaminants in Commission Regulation No. 1881/2006[20] (EC, 2017a). As with pesticide MRLs, limits for food contaminants are also updated frequently. Beside the limits for general foods, there are also limits for some other specific products. For fruit products (fresh, dried, and frozen), the most frequent contaminants are mycotoxins (aflatoxins, ochratoxin A, patulin), heavy metals (lead, tin, cadmium) and microbiological contaminants (salmonella, norovirus, hepatitis A viruses) (CBI, 2016b).

The maximum level for one kind of contaminant in the same product can vary greatly among countries. Levels set by the EU are often lower than those of the Codex and other importers; for example, as seen in the maximum levels for aflatoxins and lead in fruits in Table 16. This low level of contaminant tolerance renders it difficult for foreign exporters to adhere to EU regulations.

Table 16. Comparing maximum levels[21] for some contaminants on fruits among EU, US, China and Codex

Contaminants	EU	US	China	Codex
Aflatoxins (total[22])	0.004 mg/kg	0.02 mg/kg	0.002-0.005 [23] mg/kg	0.01 – 0.015 mg/kg
Lead	0.1 mg/kg	7 µg/ml leaching solution	Fresh fruits: 0.1 mg/kg Fruit products: 1 mg/kg	Fresh fruits: 0.1 mg/kg Fruit products: 1 mg/kg

Source: Author collected from EC, Codex, US FDA, USDA offical websites

[19] Council Regulation No 315/93/EEC of 08/02/1993 on "Community procedures for contaminants in food" (Document 01993R0315-20090807, EUR-Lex)

[20] Commission Regulation No. 1881/2006 of 19/12/2006 on "maximum levels for certain contaminants in foodstuffs". (Document 02006R1881-20150731, EUR-Lex)

[21] General limits for adults, not for infants or young children

[22] There are 4 types of Aflatoxins: B1, B2, G1, G2)

[23] This limit is for Aflatoxin B1 only

In addition, irradiation is a popular method of treating microbiological contaminants, and has been proved safe for consumers and so allowed by more than 50 countries, including strict states such as the US, Australia, and New Zealand (Food Standards Australia New Zealand, 2017). Nonetheless, the EU does not allow this method to be used for processed fruits and vegetables. For fresh products, the EU accepts only imported products that have been treated by an irradiation facility approved by the EU[24]. Currently, Vietnam has no approved facility, and so is forced to use heat treatment when exporting fruits to the EU. However, this method can make fruits rotten faster, especially as distances between Vietnam and EU countries are very far and transportation takes a long time.

Case study 2: **Difficulties in implementing EU's regulations on pesticide residues and contaminants by exporting countries**

Kenya – Lack of information on EU regulations

Kenya is a low-income country in Sub-Saharan Africa. Horticultural products are its major exports, and its biggest exporting market is the EU. According to a survey made by the ITC in 2014, the main obstacle to Kenyan fruit and vegetable export to the EU is the EU's strict requirements on food safety, especially on limits for pesticide residues and other food contaminants. Some Kenyan exporters' shipments have been rejected by the EU because they did not meet the EU's limit levels. For example, in 2011 the EU reduced the MRL of a pesticide name Dimenthoate[25] from 0.2 mg/kg to 0.02 mg/kg. This reduced MRL led to a loss of about USD$192 million for Kenyan exporters. There are two reasons for this loss. First, 0.02 mg/kg is a very low residue level for Dimenthoate, and consequently was extremely difficult to meet. Second, most Kenyans were not informed about the change in the EU's regulation. Thus, they still exported their products to the EU and were eventually denied because of failing to meet the new MRL.

Source: ITC. Series on NTMs – Kenya: Company perspectives, 2014

Palestine – Lack of testing infrastructure

[24] Non-EU irradiation facilities are approved by the EU only after EU's inspections.

[25] This is a pesticide used widely in Kenya because it is effective and cheap.

To check the levels of contaminants in foodstuffs, exporting countries need to possess laboratories that have the ability to analyze thousands of kinds of pesticides and contaminants, and are updated regularly. However, most Palestinian laboratories do not have modern equipment and adequate measurement conditions for testing a wide range of pesticides and contaminants at low concentrations. No Palestinian laboratories are accredited internationally, and their tests are not recognized by some tough countries like the EU and the US. As a result, Palestinian exporters have to send their products to other countries such as Israel and Jordan to check contaminant levels. This takes time and increases the cost of Palestinian export products.

Source: The National Export Strategy of the State of Palestine, 2014

US – Many concerns over the EU's pesticide regulations

The US often expresses concern over the EU's MRL system. Its farmers cannot use newly-developed pesticides because they are not listed in the current pesticide regulations of the EU and so will be subject to the very-low default MRLs. US exporters can request for a tolerance of the new pesticide, however, the costs associated with the application process are very high. Moreover, though the EU revises its MRLs regularly, US stakeholders are not provided an opportunity to comment. This is because when a new MRL proposal of the EU is announced to the WTO, the deadline for making comments is already expired.

Source: US Trade Representative. 2014 Reports on SPS measures, 2014

3.3. Plant health controls

Like many other importing countries, the EU has regulations on the import of plants and plant products (including fruits) from outside the EU, in order to protect its crops and environment from harmful organisms such as pests and diseases. The EC Directive 2000/29/EC[26] sets out a single set of plant health conditions applied to all of the EU's

[26] Council Directive 2000/29/EC of 8/5/2000 on "protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community" dated 8 May 2000, came into effect in 30 July 2000 (EUR-Lex)

trade partners. Imported plants and plant products must be free from the dangerous harmful organisms specified in this Directive.

The Directive also lists products that are prohibited from import into the EU, as well as products that are subject to inspection at EU borders and are required to have a phytosanitary certificate confirming compliance with EU regulations. Once in the EU, imported products are issued a plant passport and can be circulated freely to all EU members. For the 9 groups of Vietnam's potential fruit exports, no commodity is prohibited and just 4 commodities (Mango, Lemon, Passionfruit and Guava – fresh only) must be accompanied by a phytosanitary certificate. Phytosanitary certificates are issued by the National Plant Protection Organization (NPPO)[27] of the exporting country, but must follow the model set by the EU. The EU has only one model of phytosanitary certificate applied to all plants and plant products, in line with International Plant Protection Convention (IPPC)[28] regulations.

Besides these measures, packing materials of plants or plant products that are made from wood also need to be free from pests and diseases. The EU has a regulation on wood packing and dunnage (Directive 2005/15/EC[29]) that is based on the ISPM15[30] of the IPPC. The Directive requires all wood packing materials to be either treated by heat or fumigated with methyl bromide, and marked with an ISPM15 stamp[31]. Most of other

[27] Every contracting party of the International Plant Protection Convention is required to set up a NPPO to inspect and control pests and diseases on plants and plant products. Vietnam is also a contracting party of the IPPC, and its NPPO is the Plant Protection Department of the Ministry of Agriculture and Rural Development.

[28] IPPC is a multilateral treaty of the Food and Agriculture Organization of the United Nations established in 1951 with the aim to coordinate effective actions to prevent and control the introduction and spread of harmful organisms to plants and plant products. For more information on IPPC see: https://www.ippc.int

[29] Council Directive 2005/15/EC of 28/02/2005 on "Protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community" (Document 32005L0015, EUR-Lex)

[30] ISPM15 is the abbreviation of International Standards for Phytosanitary Measures Publication No. 15 (2009) on "Regulation of Wood Packaging Material in International Trade"

[31] ISPM15 mark is an internationally recognized mark developed by the IPPC to help certify wood packaging material without a further requirement of a phytosanitary certificate. The ISPM15 mark can be obtained by the NPPO of the exporting countries.

export markets of Vietnam also impose regulations on wood packing that follow the IPPC, including the US, Australia, Japan, and China.

It should be noted that – unlike other developed countries such as the US, Australia, and Japan – the EU does not require an import permit for the import of foreign plants and plant products[32]. Instead, in order to obtain the right to import plants and plant products, the EU requires that importers be included in an official register of an EU member under an official number of registration. In addition, importers must declare the customs office at the entry point before the arrival of each consignment. Although this process may require more of an administrative burden for the import process overall, the obligation is borne by importers, not exporters. Moreover, the imports register process costs less time and money than acquiring an import permit, which is often associated with a long and complicated risk analysis procedure.

The current plant health regulation of the EU seems to be less stringent than some other highly developed countries. However, the EU's new 2016 Plant Health Law[33], which will replace the Directive 2000/29/EC and become fully in effect from 13/12/2019, will establish more controlling measures on the import of plants and plant products to the EU. One of the prominent changes that will affect imported fruits is that, under the new law, all living plant materials (not just some, as in the current regulation) will be required a phytosanitary certificate. In addition, the EU may impose temporary restrictions or prohibitions on the import of plants and plant products with which there is "little phytosanitary experience" and where "related pest risks are still unknown" until more scientific analysis is available (EC Regulation 2016/2031, p. 2). Therefore, under the new EU Law, all Vietnamese fruits exported to the region will be subject to a phytosanitary certificate requirement and more restrictive plant pest rules.

[32] To export fresh fruits and vegetables to the US, for example, the NPPO of exporting countries needs to request a US plant health import permit. The Animal and Plant Health Inspection Service (APHIS) of the US Department of Agriculture will undertake a pest analysis together with an environmental review to determine whether or not to allow the requested commodity to be imported into the US (APHIS, 2016). This process may take a long time and money for exporters.

[33] EC Regulation 2016/2031 of 26 October 2016 on "protective measures against pests of plants" (Document 32016R2031, EUR-Lex)

Case study 3:

India – the EU's ban on Alphonso mangoes because of pests

In April 2014, the EU imposed a temporary ban on the import of India's Alphonso mangoes, which are considered to be the "king of fruits" in India. Together with mangoes, four vegetables were also subject to the ban. The decision followed the discovery of pests in 207 consignments from India that were imported into the EU in 2013. Although the contaminated consignments represented less than 5% of the total Indian fresh produce exported to the EU, and no risk to consumer health was found, the EU stated that the pests could pose a threat to its crops and environment.

India businesses strongly opposed the ban. They claimed that Indian mangoes had been exported to the EU for decades without any harm to EU crops, and that the ban would cause them huge losses. A British Member of Parliament of Indian origin, Keith Vaz, commented that the EU should have engaged in consultation with the Indian government and businesses before imposing the ban. Even EU importers were not happy with the ban: Since Alphonso mangoes are one of favorite fruits of European consumers, EU traders feared a loss in profits if they could no longer import the fruit.

As mangoes are one of India's important export products, the country intended to take the EU to the WTO because of the ban. India's Minister of Commerce and Industry stated that the Indian government had developed a great number of world-class laboratories throughout the country to test and certify products that are acceptable to the EU and other countries, and that the EU ban was an arbitrary action that was applied without any consultation.

Eventually, the EU had to lift the ban in January 2015, following a vote in the EC committee. The stated reason for the lift was that there had been "significant improvements" in the mango export system of India.

Source: Various articles from TheHindu website and BBC website

3.4. Conformity assessment and penalty measures

To ensure that imported products comply with the EU's regulations on food safety and plant health, the EU conducts checks not only at entry points but also at any stage of

the food chain. The checks may be in forms of a documentary check, a random identify check, or a physical check (EC, 2013). This requires imported foods to be traceable throughout the supply chain[34] so that foods that have been found unsafe can be quickly withdrawn or recalled. If there is a violation of EU regulations or a problem that is likely to pose a risk to human or plant health, the EU will take protective measures based on the "precautionary principle"[35]. This principle has long been challenged by other countries[36] as a protectionism policy, because it allows the EU and its member states to disregard scientific evidence when taking temporary "precautionary" measures against imported products.

The EU's punishments for food products that violate its regulations can be very strict. *If the violation is related to food safety risk,* the EU's online Rapid Alert System for Food and Feed (RASFF)[37] may be activated to circulate a notification to all EU members. From there, member authorities will take appropriate measures, which can be constituted by, in the extreme form, a suspension of imports (all or a part) from the violating country (EC, 2017b). *If the violation is associated with plant health risk*, the consignment may be destroyed or removed from the EU. Only in a few circumstances, where the EU member's competent authority finds that appropriate treatments can eliminate the risk of harmful pest, can the consignment then continue to access the EU market (EC, 2017c). In case of repeated non-compliance, the concerned imports and countries will be put onto the EU's alert list, and henceforth be subject to increased

[34] To meet this obligation, import products must be accompanied with a proof of origin together with a Bill of Lading, phytosanitary certificate (if required), packing list, and customs documents (CBI, 2016a).

[35] "Precautionary principle" is one of the key principles of the EU's General Food Law Regulation (EC Regulation N 178/2002). This principle follows Article 5.7 of the WTO's SPS Agreement that allows WTO members to "take provisional measures when sufficient evidence does not exist to permit a final decision on the safety of a product or process"

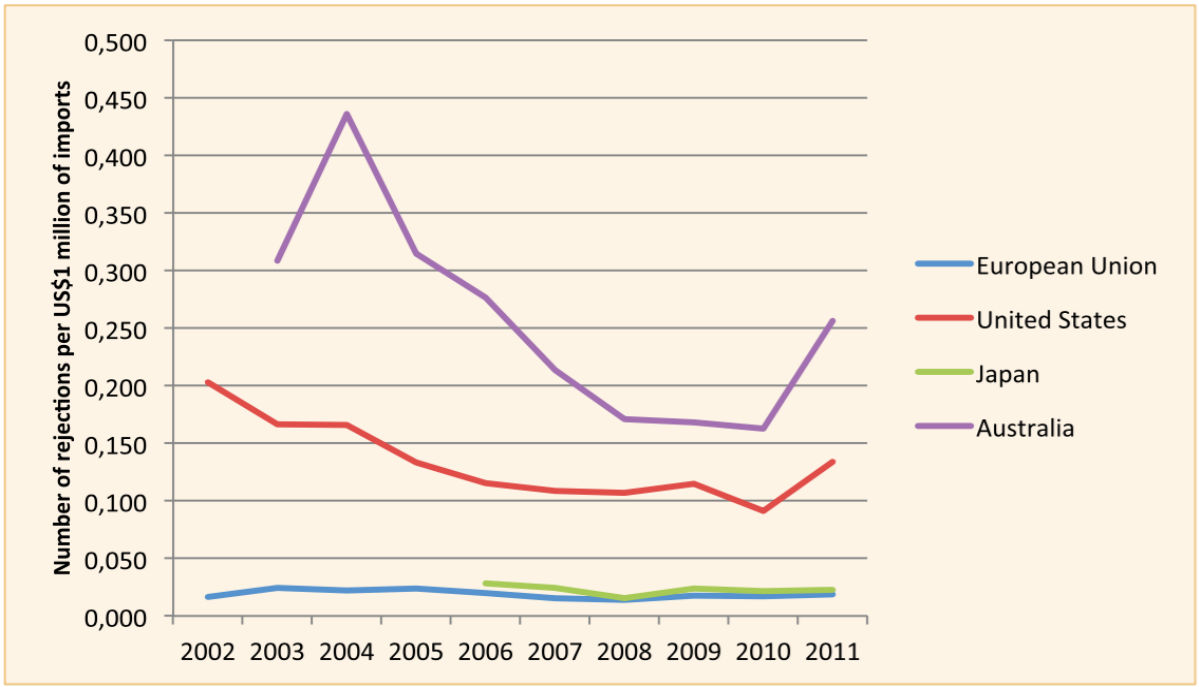
[36] The EU's precautionary principles and related measures have been complained about at WTO agendas and were also taken to WTO Dispute Settlement Mechanism in some cases, of which the two Hormones cases (DS26 and DS 48) brought by the US and Canada are the most well-known.

[37] RASFF is an alerting system established in 1979 to enable EU members to share information on any potential risks to consumer health and to take necessary actions afterwards. For more information on RASFF see: https://ec.europa.eu/food/safety/rasff_en

controls or stricter conditions (for example, requirements for a health certificate and/or risk analysis report) (CBI, 2016a).

However, the rate of agrifood product rejections by the EU is still lower than some other high-income countries. Figure 15 shows the number of rejections per USD$1 million of agrifood imports of the EU, US, Australia, and Japan over the 2002-2010 period. These are also the four partners with the highest number of import rejections of Vietnamese agricultural products (Phi Hung, 2016). It is noteworthy that the rejection number for the EU was always the lowest throughout the period, and remained relatively stable.

Figure 15. Number of agrifood product rejections per unit of imports by value, 2002–2011



Source: UNIDO, 2015

Among the four trade partners, Vietnamese fruits and vegetables faced the lowest rate of rejection per USD$1 million of exports in the EU market during the 2002-2010 period (Figure 16). However, while the unit rejection rate of Vietnam in the US, Japan, and Australia had a decreasing trend, in the EU market it had an increasing trend over the period. Moreover, Vietnam also fell into the top five of the EU's partners with the highest unit rejection rate of agrifood products in the same period (UNIDO, 2015). The

main two reasons for Vietnamese fruit and vegetable rejections in this market are the violation of pesticide residue and contamination limits (UNIDO, 2012).

Figure 16. Number of rejection per USD$1 million of Vietnamese fruit and vegetable exports (2002-2010)

Source: United Nations Industrial Development Organization (UNIDO), 2012

Case study 4:

Vietnam – Complaints that the EU penalty rule is severe and unfair

In October 2014, Vietnam's Ministry of Agriculture decided to suspend temporarily the export of five plant products to the EU, until February 2015. This decision was made because, since February 2014, three shipments of Vietnamese bitter melon and basil had been found to contain harmful bacteria. The EU warned that if there were two more violated shipments, taking the total number of violations within one year up to five, the EU would ban all fresh produce (both fruits and vegetables) from Vietnam. Therefore, the five fresh produce which were considered to have a high risk of bacterial infection were stopped exporting to the EU to prevent the case happening. However, the suspension caused a huge loss to related producers and exporters.

Some Vietnamese exporters complained that the EU penalty rule is unfair because it blocks exports of plant products altogether, while the infringements are caused by the particular products of some producers. Dang Hoang Hai, the head of the European Market Department of Vietnam's Ministry of Trade also said in an interview that Vietnam exported about 15,000 consignments to the EU each year, but the EU tolerates only 5 breached consignments (meaning 0.03%). He commented that the EU's punishment for non-compliance is too severe.

Source: Tran and Cam, 2014

4. The EU's major TBT measures on Vietnam's potential export fruits

Under the definition of the UNCTAD (2012), TBT measures are technical regulations, standards, or procedures for assessing the compliance with technical regulations and standards. The difference between SPS and TBT measures lies in the purposes of application. While SPS measures deal with matters related to human, animal, and plant health or life, TBT measures address a wider range of policies (WTO, 2014). Like SPS measures, TBT measures are allowed by the WTO provided that they are applied on a non-discriminatory basis, do not create unnecessary barriers to trade, and follow international standards.

For fruit products, the majority of requirements are related to food safety and phytosanitary matters, and thereby fall into SPS measures. Nevertheless, there are still some technical regulations and compulsory standards (TBT measures) affecting their access to the EU market. Of these, the most prominent measures are labelling rules, and marketing standards.

4.1. Labelling rules

Fruits sold in the EU market, whether fresh or processed, must meet EU requirements on food labelling. EU Regulation No 1169/2011[38] lays down general rules on labelling applied to all food products. Detailed requirements are then set by EU Regulation No

[38] EU Regulation No 1169/2011 of 25/10/2011 on "the provision of food information to consumers" (Document 32011R1169, EUR-Lex).

543/2011[39] for fruits and vegetables, with more labelling rules for processed than fresh fruits.

For fresh fruits that are mostly unpacked and stored in cartons, these cartons must display the following information*: i) both the name and address of the packer and dispatchers; ii) the name of the products; iii) the country of origin; iv) the size and class of products; and v) the lot number, for traceability* (CBI, 2016a). Most import countries require cartons display items i) to iv), and so fruit exporters are familiar with these requirements. However, the EU market's requirement to display lot number information is not as common. For Vietnam's other export markets such as the US, Canada, and China, lot-marking on fruit cartons is not a legal obligation for fruit producers. The EU's requirement originated from its high demand for food traceability, to ensure the ability to track foods though all stages from production to distribution. A 2014 survey of 21 OECD countries showed that the EU ranked highest for global food traceability requirements[40] (Charlebois, Sterling, Haratifar, & Naing, 2014).

For processed fruits, which are normally packed in small packages, there are a number of compulsory details that need to appear on packaging. Importantly, these details must follow specific formats set out by the EU, including the font, color, and size of the text. Beside general information about the name of the product and producer, country of origin, and expiry date, processed food labelling must also contain information regarding: *i) Nutrition declaration (energy value and quantities of fat, sugars, salts, protein, etc.) ii) Allergen information (such as soya, gluten, lactose, nuts)* (EC, 2017d). In addition to these "horizontal" rules, there are specific rules of certain types of fruits. For example, frozen fruit packaging is required to state whether the produce was "frozen" or "quick frozen", and a "frozen on" date must be specified. Packaging for dried fruits must indicate if the fruits were dried naturally or with added sugar, and

[39] Commission Implementing Regulation No 543/2011 of 7/6/2011 on "detailed rules for the application of Council Regulation (EC) No 1234/2007 in respect of the fruit and vegetables and processed fruit and vegetables sectors" (Document 32011R0543, EUR-Lex).

[40] EU was scored as "superior" for its food traceability regulations while the US, Australia, Canada, and Japan received a ranking score of "average", and China was only "poor". Russia was even rated as "insufficient" (Charlebois, Sterling, Haratifar, & Naing, 2014).

specific treatments such as “concentrated” and “powdered” must also be added to the name of the product (EC, 2017d).

In general, EU regulations on labelling are rather complex and detailed. Fruit producers must know and understand all requirements to avoid missing any mandatory information, and follow specific rules on the format and appearance of each piece of information included. It should be noted that all of these information must be provided in the official language of the EU Member where the fruits are marketed. And while the regulations themselves are complicated, the EU’s tolerance for mistakes and non-compliance is also low (USDA, 2012). Consequently, labelling requirements represent one of barriers to foreign fruit exports to the EU market.

Case Study 5

Philippines – Agri-exporters faced difficulties in meeting the labelling requirements of the EU

A 2017 survey by the International Trade Center (ITC) on NTMs imposed on Philippine exporters has shown that labelling requirements are among the most frequent barriers to its agro-products. It was reported that 9.5% of the total NTMs cases faced by Philippine exporters are related to labelling impositions. Markets like the EU and US are very demanding on labelling and translation requirements. Although labelling information is often provided by clients, Philippine producers still need to design, produce, and translate this information. This can cause an additional burden for producers, especially for small companies in the agri-food sector. One exporter surveyed by the ITC stated that the EU has a wide range of food labelling requirements such as font, format, product nutrition, ingredients used, etc., and all of this information must be translated into the local language. “My entire package is covered in sticker labels”, the exporter commented.

Source: ITC. Series on NTMs – Philippines: Company perspectives, 2017

4.2. Marketing standards

The EU sets marketing standards for the quality and maturity of fresh fruits[41] and vegetables under the EU Regulation 543/2011[42]. There are two kinds of marketing standards: i) Specific marketing standards (SMS) applied to 10 types of fresh produce,[43] and ii) General marketing standards (GMS)[44] applied to other fresh produce. Both SMS and GMS products must meet the EU's minimum quality and maturity standards, which are relatively in line with Codex standards for fresh fruits and vegetables (Codex, 2007). SMS products need to satisfy additional SMS requirements laid down specifically for them, in which products are classified into three classes (from highest to lowest quaility), and are required to meet at least the lowest quality class to be sold in the EU market. In addition, SMS products must be accompanied with a certificate of conformity. Products destined for processing or animal feed will be exempted from marketing standards if they are clearly labelled "products intended for processing" or "for animal feed".

It should be noted that most importing countries have their own national marketing standards (e.g. the US), or follow international standards developed by international organizations (e.g the United Nations Economic Commission for Europe – UNECE[45]) for fruit products. However, these standards are applied on a voluntary basis, and are not a compulsory requirement. For example, the US has legal rules on the grade and size of just a few fruit commodities (prunes, raisins, filberts, dates), while Australia and China have no legal requirements for fruits (UNCTAD TRAINS, 2017).

[41] Processed fruits are not subject to marketing standard requirements.

[42] EU Regulation No 543/2011 of of 7/6/2011 on "detailed rules for the application of Council Regulation (EC) No 1234/2007 in respect of the fruit and vegetables and processed fruit and vegetables sectors" (Document 32011R0543, EUR-Lex)

[43] The 10 produce products that have specific marketing standards applied are: apples, citrus fruit, kiwifruit, lettuces, curled-leaved and broad-leaved endives, peaches and nectarines, pears, strawberries, sweet peppers, table grapes, and tomatoes

[44] Although the EU sets out its own general marketing standards, it also accepts the recommended standards of the United Nations Economic Commission for Europe (UNCE). UNECE, which is one of five regional commissions of the UN, acts as a multilateral platform to facilitate economic integration among its members. One of its tools is developing regulations and standards, including quality standards for agricultural products. Exporters can choose ENECE standards that are sometimes less strict than EU standards (CBI, 2016a)

[45] See footnote 44

However, for the EU market, compliance with marketing standards for fresh fruits is compulsory. Imported fresh fruits are checked at EU borders by competent authorities of member states. If the products have been checked in their country of origin, that country can request an EU conformity check certificate so that the concerned products will not be subject to further checks at EU borders. Such an approval may be granted if the EU finds that the exporting country's checks meet the EU's marketing standards. The approval may be applied to all or just some fresh fruits and vegetables. If there are a significant number of imports found not correspondent with the information stated in the conformity certification issued by the approved exporting country, the EU may suspend the approval for that country. Currently there are just 9 countries granted conformity check approval by the EU[46].

Among the potential fresh fruits exports of Vietnam to the EU market, only lemons are covered by SMS, the other is subject to GMS. No Vietnamese fruit is granted "approved" status for conformity checks by the EU.

[46] The 9 countries are: Switzerland, Morocco, South Africa, Israel, India, New Zealand, Senegal, Kenya, Turkey (EU Regulation 543/2011)

Case study 6

Vietnam – Mangoes fail to meet quality standards of the EU

Mangoes are one of Vietnam's most produced fruits, and are also one of its major export products. However, the main markets for Vietnamese mangoes are still China and some ASEAN nations, because these countries are located near Vietnam and have low quality standard requirements on mango imports. Most Vietnamese mangoes are grown by small farms in scattered locations and, although they have a unique taste, they are usually small sized and are not attractive in appearance. Additionally, as mangoes are quite sensitive to pressure, export to far away markets can cause them to lose quality during transportation. Vietnamese mango exporters have long sought to enter markets with better profits, such as the EU and US, but export values are still limited. The EU market, in particular, has great potential as it has a huge demand for mangoes and zero tariff[47]. However, this market is particularly strict on the marketing standards of mangoes. Under EU law, to be imported into the EU market, mangoes must be intact, fresh, firm, and free from black stains or trails. In addtion, EU consumers often prefer large-sized mangoes (500–650 grams) with an even colour and appealing appearance. Such demanding requirements mean that it is difficult for Vietnamese mangoes to enter the EU market.

Source: CBI (2016c) and Vietrade (2015)

.

[47] Vietnam is granted GSP by the EU and the currently GSP tariffs on mangoes are 0%.

III. CHALLENGES POSED BY THE EU'S NON-TARIFF MEASURES AND RECOMMENDATIONS FOR THE VIETNAMESE GOVERNMENT AND FRUIT EXPORTERS

The above sections have provided a contrasting picture. On the one hand, Vietnam has a strength in producing a wide variety of tropical fruits, but the value of their exports is still limited and depends largely on the neighboring market. On the other hand, the EU has a huge import demand for tropical fruits, but also imposes very strict non-tariff measures on fruit imports. This section will find solutions to resolve the problem of the above picture. It first analyzes the challenges faced by Vietnamese fruit producers and exporters in meeting the EU's non-tariff measures. Drawing on this analysis, recommendations will then be made for how the Vietnamese government and fruit businesses can overcome these challenges to increase export to the EU market.

1. Challenges for Vietnamese fruits in meeting the EU's non-tariff measures

1.1. Lack of information and guidance on EU regulations

Vietnam's fruit sector is comprised mostly of small farms and enterprises that have a lack of information and knowledge about foreign markets' regulations. Normally, these farms and enterprises do not have a legal unit in charge of researching foreign markets. They also do not possess the "habit" of renting lawyers to assist with such matters, as legal fees are often very high (VCCI, 2017). Meanwhile, supports from the Vietnamese government and business associations are also very limited. Since the fruit sector is not a major exporting sector for Vietnam, it receives little attention and investment from the government. In addition, most Vietnamese fruit associations are small and lack both human and financial resources (VCCI, 2017). Consequently, these associations are unable to meet the needs of their member enterprises.

Currently, the only source of information regarding the technical measures of foreign countries on agricultural products is the Vietnam's Ministry of Agriculture and Rural Development (MARD); in particular, the SPS and TBT Notification Authority and Enquiry Points of MARD. These two info points were set up after Vietnam's accession to the WTO, with the goal of providing information for Vietnamese businesses on any changes in the regulations of foreign markets related to SPS and TBT measures.

However, these organizations' main channel of disseminating information is through online portals, where the new measures of foreign countries are published without any guidance and translation (even when the documents are not in English). It is therefore difficult for businesses to read – let alone to understand and to follow – measures published in such a fashion. Though there also exist some workshops and seminars conducted to guide businesses on significant changes in the import requirements of major markets, the majority of these events are hold in big cities for a limited number of (larger) enterprises (VCCI, 2017). As most fruit growers and producers are located in rural and mountainous areas, they are therefore hardly able to access any of this information or training.

Another factor constraining the dissemination of the EU's regulations is poor cooperation in the supply chain of fruit exports. Most Vietnamese fruit growers are households with small farms. Fruit processing companies or fresh fruit exporters normally collect fruit materials from various farms without any long-term contract. The relationship between processors/exporters and growers is consequently very informal and unstable, which makes it difficult for the former to inform and guide the latter on the standards necessary to meet the EU's requirements. For example, the EU's regulations on the kinds of pesticides permitted and their residue limits are very strict. Nevertheless, without having a contract with fruit growers from the beginning of the growing process, the exporter cannot notify farmers to use the correct pesticides in the correct way. Many fruit growers simply buy cheap pesticides imported from China, many of which are extremely toxic and are banned in most exporting countries (Pham, Vo & Pham, 2016). Even permitted pesticides are often overused by farmers, which leads to a high level of residue.

The above-outlined state of affairs has resulted in a serious lack of information about foreign markets' regulations on the whole or at certain stages of the fruit export value chain. Meanwhile the EU's rules and standards applied on fruit imports are huge in number, complicated in content, and changed frequently. Failing to know, understand, and update these requirements means failing to access the EU market. More importantly, if exporters send non-complying products to the EU, they will be rejected and destroyed or returned home, thereby causing a great loss for those exporters.

Moreover, as the EU's penalty measures are very strict, just a few of violations can cause an overall ban on all fruits imported from Vietnam. Failure to know and comply with the EU's regulations is therefore dangerous not only for the violated exporters themselves, but also for the fruit sector as a whole.

1.2. Constraints in capacity and resources to follow the EU's high standards

As shown in part II, the EU's standards for food quality and safety are among the highest in the world. Meeting these standards requires great care at every step in production, from growing to processing. One way to approach this task is by implementing quality management systems such as GLOBALG.A.P (for fresh fruits) and HACCP (for processed fruits). Although the application of these systems is not a mandatory obligation of Vietnamese fruit operators, HACCP implementation in food production is a compulsory requirement of the EU market, and a GLOBALG.A.P certificate is normally required by EU importers. However, adhering to such systems requires fruit producers to make long-term investments, in both human resources and technology. Though this long-term commitment can be made by larger producers, it is difficult – if not impossible – for smaller enterprises, due to a lack of resources.

According to a 2014 survey conducted by the Food and Agriculture Organization (FAO) of the United Nations, there are numerous barriers preventing Vietnamese enterprises from implementing HACCP procedures. These difficulties include limited money and manpower to follow HACCP principles, a lack of guidance and training for enterprises on how to apply HACCP, difficulties in the management of raw materials' origins, and the high cost of testing and acquiring certification (Bhat, 2014). HACCP procedures are currently applied mostly in the seafood sector of Vietnam, because it has a large export volume to markets requiring this certification. In the fruit processing sector, the application of HACCP is still limited to some larger fruit export companies (Vietrade, 2016).

Similarly, the adoption of GLOBALG.A.P in Vietnam also faces many obstacles. Farmers still plant by habit or experience, and find difficult to follow the GLOBALG.A.P system. On one hand, GLOBALG.A.P principles and procedures are complicated and difficult for farmers to understand and implement properly. On the

other hand, farmers may not possess the infrastructure necessary to implement GLOBALG.A.P (such as a storage area, laboratory, frozen or heating treatment equipment, etc). A GlobalG.A.P certification costs farmers around USD$3 to 5 thousand, and is only valid for one year. For these reasons, only 465 hectares of the total, almost 900 thounsand hectare, fruit cultivation land applied GLOBALG.A.P in 2016 (Pham, Vo & Pham, 2016).

It should also be noted that many fruit operators simply do not realize the importance of applying quality management systems like HACCP or GLOBALG.A.P. They still see the application of these systems as an obligation to satisfy foreign markets' requirements, rather than a good practice for themselves to upgrade the quality of their products (Pham, Vo & Pham, 2016). This is because implementing measures such as HACCP or GLOBALG.A.P often requires a large and long-term investment, and the benefits cannot be seen immediately. Therefore, unless the exporting market has overwhelming potential, Vietnamese fruit producers may not have the motivation to apply the above management systems. Instead, they choose to keep their current production process and continue exporting to traditionally low-requirement markets such as China.

1.3. Inadequate infrastructure to facilitate exports to the EU market

As the fruit sector is not one of Vietnam's strong export sectors, and the state budget is limited, investment in the infrastructure necessary to develop this sector remains modest. Most investments focus on irrigation and land, accounting for up to 65% of total rural infrastructure in 2012 (Pham, Vo & Pham, 2016). Other important factors, such as improving transportation and upgrading technology, receive little attention from the government. Meanwhile, fruits are often grown in rural and mountainous areas that are far away from processing factories. A poor transportation system can increase the time of transport, affect the quality of products, and increase production costs. In addition, the low investment in science and technology for harvesting, storage, and processing results in fruit products of a low quality and short shelf-life, causing them to fail to meet the high quality standards of strict markets such as the EU.

Another infrastructure development that is crucial for the export of fruits to the EU

market is food safety laboratories, to test pesticide residues and other contaminants on and in fruits. Many Vietnamese fruit exports have been rejected and returned home because of a violation of pesticides and contaminants standards. To combat this, Vietnam has set up a network of food safety laboratories throughout the country, with four large-scale regional laboratories in four major cities, and at least one provincial laboratory in each province (World Bank, 2017). Nonetheless, most provincial laboratories do not regularly perform tests for pesticide residues and contaminants. Meanwhile, the four regional laboratories can only analyze certain types of pesticides and contaminants, due to a lack of capacity and sophisticated and modern testing equipment (World Bank, 2017). In recent years, as Vietnamese agri-food exporters have attempted to expand exports into new markets that are stricter but more profitable than traditional markets, there has been an increasing parallel demand for qualified and accredited laboratories. This has resulted in a proliferation of private laboratories in big cities like Hanoi and Ho Chi Minh City that have better testing facilities than the government-funded laboratories. Nevertheless, the cost for using these private laboratories' services is still too high, especially for smaller enterprises with a small quantity of fruit exports (UNIDO, 2014).

2. Recommendations for Vietnamese government and businesses

2.1. Recommendations for the Vietnamese government

i) Increasing information dissemination and guidance on the EU's regulations

As many problems faced by Vietnamese fruit exporters to the EU stem from a lack of information on the EU's regulations, it is of crucial importance that methods of providing information to fruit exporters are improved. Currently, the content appearing on the two portals on SPS and TBT measures of MARD is of poor quality, with regulations simply posted without any translation or guidance. Meanwhile the EU's regulations are complicated, difficult to understand, and are changing constantly. Therefore, it would be beneficial for exporters to have access to at least a summary of the key contents of each regulation. Furthermore, the implementation of interactive tools, such as online forum for Questions and Answers (Q&A), and an automatic email notification of any new regulations, would help exporters to be better guided and informed about changes in regulations of foreign markets in general and the EU in

particular.

In addition to online information, physical workshops and seminars should also be conducted for more intensive training on how to follow EU regulations. Besides simply targeting fruit processors and exporters, these workshops should also be directed at fruit growers. This is because growers oversee an important stage in the fruit production cycle, which can create hazards such as unsafe levels of pesticide residues and harmful organisms. It is these kinds of hazards that are most likely to be encountered by growers exporting fruits to the EU market. Fruit growers, however, are typically small farmers in rural areas. They thus currently have only a very limited awareness of foreign market regulations, paired with a lack of opportunity to access training provided by the government and other organizations.

Another effective way to disseminate information and guidance on EU regulations is through fruit businesses and farmer associations. Unlike the government, fruit associations can tailor their services to meet the specific demand of each enterprise or farmer. Funds for such associations generally come from donors and, more importantly, from member fees. Nevertheless, businesses and farmers in the fruit sector normally do not join associations, because they do not believe such associations can offer worthwhile or effective support for them (VCCI, 2015). This lack of interest leads to a shortage of member fees, which in turn limits associations' support activities. In this case, the government should therefore play an initial role in backing these associations. This support can be in the form of capacity building for association officials, or cooperation on projects to help fruit operators. When fruit associations become stronger and more supportive, more businesses or farmers may want to join them. As a result, they can collect more member fees and offer better services to their members.

ii) Investing in fruit export-related infrastructures and production technology

Most of the constraints encountered by fruit exporters can be addressed by improving the quality of export-related infrastructure and production technology. The most pressing demand of the fruit sector is probably the upgrading of the testing facilities of public laboratories, because pesticide residue and contaminant infringements are among the most serious problems of Vietnamese fruit exports. In particular, the EU's regulations on these violations are extremely stringent. The government should invest

in more testing equipment that can perform tests for a variety of pesticides and contaminants at low concentrations. Moreover, it is necessary to establish internationally-recognized national laboratories so that they can be accredited by stricter markets like the EU.

Moreover, due to the long distance between fresh fruit sources and processing factories, it is also necessary to improve transportation conditions for the fruit sector. At present, domestic transportation for fruit production is carried out primarily by road. Most roads, however, are of degraded quality; especially roads in rural and mountainous areas. As fruits are perishable goods, the poor condition of roads can greatly affect the quality of fruits. The Vietnamese government should therefore upgrade current road networks to reduce the time and cost of transportation for fruit producers. Although such investment may require a significant portion of the state budget, it would prove beneficial not only for the fruit sector but also for the economy as a whole.

Finally, more investment in research and development (R&D) to improve fruit production technology would help immensely. Technological innovation plays a central role in increasing agricultural production and food safety (Babu, Huang, Venkatesh and Zhang, 2015). However, the Vietnamese government has to date paid little attention to R&D investment in the agricultural sector. There exists a strong demand for new types of fruits that can be better resistant to pests and diseases, in order to reduce the amount of pesticides used in fruit production. In addition, better harvesting methods need to be developed to reduce the current high rate of fruit waste left after harvesting. It is also necessary to have more effective preservation technology to keep fruit fresh longer so that it can be exported to distant markets such as the EU. All of these needs could be met with the help of advanced science and technology.

iii) Exploiting commitments under the new FTA between Vietnam and the EU

Although under the SPS and TBT chapters of the new FTA between Vietnam and the EU (the EVFTA) the EU makes no commitment on eliminating or reducing any SPS or TBT measures, there are some commitments in the SPS chapter related to mutual recognition, technical assistance, and special treatment that may benefit Vietnam.

Under Article 10 – Equivalence of the EVFTA's SPS Chapter, Vietnam can request the

EU's recognition of the equivalence of its SPS measures on certain products. The EU, after receipt of such a request, will initiate a consultation and conduct assessment to determine equivalence. If phytosanitary certificates issued by competent authorities of Vietnam can be accepted by the EU without any additional conformity assessment at its borders, then this can save a lot of time and money for Vietnamese exporters. This is of great significance for fruit products, in particular, as they are time-sensitive products. Moreover, it would reduce the risk of consignments being rejected because of failure to pass EU's checks at its borders (even despite already passing checks at home). Therefore, if Vietnam increases the quality of its testing laboratories and inspection and certification bodies, it will be in a position to request the EU's equivalent recognition of Vietnam's SPS measures on fruit products.

In addition, the EU also makes commitments in the SPS chapter of the EVFTA to provide technical assistance and special treatment for Vietnam. In particular, the EU commits to support Vietnam in addressing the specific issues required to comply with the EU's SPS measures. Besides this, the EU also reaffirms its obligation under the SPS Agreement of the WTO to provide special and differential treatment for Vietnam as a developing country. For example, in the case that an SPS measure of the EU negatively affects the export of Vietnamese fruits, Vietnam can request the EU to consider a longer timeframe for compliance, or alternative import conditions or technical assistance.

2.2. Recommendations for Vietnamese fruit businesses

i) Knowing and understanding the EU's regulations

To successfully export fruits to the EU market, the first step that fruit producers and exporters must take is finding and understanding the EU's import requirements; in particular, the technical measures on fruits. Failure to know and adhere to any of these regulations may result in the EU's rejection of export consignments, which can lead to huge losses for exporters. Moreover, having a clear understanding of what the EU requires can help fruit businesses find the most cost-effective methods for adjusting production to comply with EU regulations.

There exist some useful resources detailing the technical measures of the EU. The two portals for SPS and TBT of Notification Authority and Enquiry Points of MARD are a

good starting point – however, as these portals simply provide information on EU regulations in English without any translation, they are of little use to non-English speakers. Moreover, these sites include not only the EU's measures but also those of other countries, and thus it may be difficult for exporters to locate a specific EU measure. Another potentially useful source is the EC Portal (https://ec.europa.eu), which has a special Trade Help Desk (http://trade.ec.europa.eu/tradehelp/) for foreign exporters. This Portal provides detailed information and guidance on each of the EU's measures for import products. In addition, the EU Trade Help Desk allows exporters to search for regulations imposed on a specific import product from a specific country.

However, to understand EU's regulations, exporters must possess not only good English skills but also specific legal knowledge. These two characteristics are often weak points of Vietnamese fruit businesses, as the majority of them are SMEs and do not have personnel capable of researching legal regulations of foreign markets (VCCI, 2015). To resolve this problem, fruit companies need to enhance the capacity of their staff, or utilize the legal services of law firms. Although this may increase production costs, the longer-term benefits of reducing rejections and thus increasing export value make investment in these areas worthwhile.

ii) Investing in quality management systems

The application of quality management systems such as HACCP and GLOBALG.A.P has demonstrated positive effects on the quality of fruits, the capacity to meet foreign markets' requirements, consumers' overall satisfaction, and the credibility of Vietnamese fruits in the international market ((Pham, Vo & Pham, 2016). Following the principles and procedures of quality management systems can hence help Vietnamese fruit producers increase export not only to the EU but also to other strict markets. The application of such systems can also promote sustainable development for fruit enterprises and for Vietnam's fruit sector as a whole

For fresh fruit, GLOBALG.A.P has become the minimum standard to access most EU supermarkets. It is a common practice that EU importers request GLOBALG.A.P certification for imported fruits. This standard covers the whole fruit production process, from soil preparation and planting to harvesting, packaging, and storage

(though it does not include processing). To effectively implement GLOBALG.A.P, fruit producers must follow a series of principles and procedures that are applied at each stage of production. This requires investment not only in human resources (i.e., hiring specialized staff) but also in facilities and technology such as water purification equipment and record keeping technology (Watts, 2012). Although GLOBALG.A.P is costly, it is an internationally accepted farm standard that has been recognized by more than 100 countries (Intertek, 2017).

Similarly, the application of HACCP is a prerequisite for Vietnamese processed fruits to enter the EU market. This system addresses food safety through the analysis and control of hazards (biological, chemical, and physical) from raw material production and processing, to distribution and consumption. To successfully implement HACCP procedures, fruit processing companies must have a firm commitment to the HACCP concept, from top management to the employee level. Moreover, processing companies must work closely with fruit growers to ensure the proper use of fertilizers, pesticides, and other chemicals.

It should be noted that EU importers may also request other food safety control certifications beside HACCP or GLOBALG.A.P. For example, most buyers in north-western European countries will require foreign exporters to comply with the British Retail Consortium (BRC) global standards, while European mainland buyers can ask for compliance with the International Feature Standards (IFS) or Safe Quality Food (SQF) Program (CBI, 2016a). Therefore, Vietnamese fruit exporters should confirm in advance the EU buyer's preferred food safety and quality management certifications to follow.

iii) Cooperating with other participants in the fruit supply chain

From the above discussion, it is apparent that the EU's technical measures relate to all stages of fruit production, from growing plants to selling fruits to consumers. To fully comply with such measures, fruit businesses therefore need to work closely with other participants throughout the fruit supply chain.

The most important, but weakest, link in Vietnam's fruit supply chain are probably the fruit growers. Most fruit growers are small farmers in rural areas who have limited

knowledge of foreign market requirements. Consequently, they often grow fruits based on experience and follow barely any modern growing methods. To avoid the overuse of pesticides and other chemicals on fruits, fruit companies need to cooperate with farmers from the begining of the fruit growing process. An effective way to do this is through the establishment of long-term contracts with farmers. With such contracts in place, farmers would gain the security of a guarantee for their ouputs, and so would be encouraged to adhere to the fruit companies' instructions and guidance. This model has already been applied by some fruit exporters, and has produced good results (Loi, 2017).

Another important link in the fruit supply chain is the EU fruit importers, who are likely to have the best understanding of EU fruit import requirements. These importers could serve as a useful source of information on the EU's regulations for Vietnamese fruit exporters. Moreover, as these regulations are frequently revised, establishing regular communicaiton with EU importers could help Vietnamese exporters to keep abreast of all changes. In addition to the general regulations, many EU importers also apply their own standards, some of which are very difficult to comply with. However, by working closely with importers and making them aware of the difficulties in implementing such standards in Vietnam, fruit exporters may be able to negotiate a mutual solution with the importer that will satisfy both parties.

In addition to the above links, fruit exporters should also engage in close cooperation with other links in the fruit value chain. For example, transportation service providers are also important because transportation costs account for a significant part of the fruit export cost to the EU; and fruit preservation and storage services are necessary because fruits are perishable products. If fruit exporters can establish effective coordination with all other elements of the fruit export value chain, they can not only fulfil all requirements of the EU market, but also reduce production costs and increase their profits.

CONCLUSION

This study has analyzed in detail the European Union's non-tariff measures that are applied to the potential fruit exports of Vietnam. It has been found that, although Vietnam has strength in producing a wide range of tropical fruits, its access to the EU market remains hampered by these NTMs. The EU's NTMs, especially its SPS measures, are among the world's most stringent, even when compared to other markets with strict import standards. Thus, though the EU market shows significant potential – with high demand and high prices – complying with its strict regulations costs Vietnamese growers and businesses a substantial amount of time and money. However, to ensure sustainable development, it is important that the Vietnamese fruit sector improve the quality and food safety standards of its fruits so that they can be exported to the EU (or other markets), and reduce over-reliance on the Chinese market.

Although this study has investigated the most important and relevant NTMs of the EU that are imposed on potential Vietnamese fruit exports, there exist other NTMs that are less stringent but cannot be neglected. Additionally, even the examined NTMs are likely to be changed or revised frequently by the EU. Therefore, it is necessary to conduct further research on this issue; not only to ensure up-to-date knowledge of the EU's regulations, but also to present a more comprehensive analysis and exhaustive list of recommendations for the Vietnamese government and fruit businesses to increase exports to the EU market.

REFERENCES

An Nhien. (2014). *Vietnamese fruits and Chinese market*. Retrieved from http://www.rfa.org/vietnamese/in_depth/vn-fruit-n-cn-market-07272014093044.html

Animal and Plant Health Inspection Service (APHIS) of the US. (2016). *Plant Health Import Permits.* Retrieved from https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits

Australia Pesticides and Veterinary Medicines. (2016). *Submission to the Productivity Commission inquiry into Regulation of Australian Agriculture*. Retrieved from https://www.pc.gov.au/__data/assets/pdf_file/0007/195856/sub021-agriculture.pdf

Babu S. C., Huang J., Venkatesh P., and Zhang Y. (2015). A comparative analysis of agricultural research and extension reforms in China and India. *China Agricultural Economic Review*, vol. 7, no. 4, pp. 541–572. Retrieved from http://www.fao.org/family-farming/detail/en/c/416090/

BBC News. (2015). *Ban on Indian mango imports to EU to be lifted*. Retrieved from http://www.bbc.com/news/business-30898966

Bhat R.V. (2014). *Summary of status of countries in implementing GMP/HACCP*. Retrieved from http://www.fao.org/fileadmin/templates/rap/files/meetings/2014/140623-haccp-summary.pdf

Bryant Christine Inc. (2017). *Pesticide MRLs database*. Retrieved from http://bcglobalportal.com/

Canadian Food Inspection Agency (CFIA). (2012). *Hazard Analysis Critical Control Point (HACCP)*. http://www.inspection.gc.ca/about-the-cfia/newsroom/food-safety-system/haccp/eng/1346306502207/1346306685922

Centre for the Promotion of Imports from developing countries (CBI), Netherlands Enterprise Agency. (2016a*). Exporting fresh exotic tropical fruit to Europe*. Retrieved from https://www.cbi.eu/market-information/fresh-fruit-vegetables/exotic-tropical-fruit/europe/

Centre for the Promotion of Imports from developing countries (CBI), Netherlands Enterprise Agency. (2016b). *Buyer requirements: Processed fruit and vegetables and edible nuts in Europe.* Retrieved from https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/buyer-requirements/

Centre for the Promotion of Imports from developing countries (CBI), Netherlands Enterprise Agency. (2016c). *Exporting mangoes to Europe*. Retrieved from https://www.cbi.eu/market-information/fresh-fruit-vegetables/mangoes/europe/

Centre for the Promotion of Imports from developing countries (CBI), Netherlands Enterprise Agency. (2017). *Exporting frozen fruit and vegetables to Europe*. Retrieved from https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/frozen-fruit-vegetables/europe/

Charlebois S., Sterling B., Haratifar S., Naing S. K. (2014). Comparison of Global Food Traceability Regulations and Requirements. *Comprehensive Reviews in Food Science and Food Safety*, 13(5),1104-1123.

Codex Alimentarius. *Fresh Fruits and Vegetables. First edition 2007*. Retrieved from ftp://ftp.fao.org/docrep/fao/010/a1389e/a1389e00.pdf

Crossley S. J. (2015). Regional Initiatives on MRLs: Ongoing work in OECD, APEC and EAC. *Presentation at APEC Import MRL Guideline for Pesticides - Enhancing trade, regulatory convergence and consumer protection*. Retrieved https://www.wto.org/english/tratop_e/sps_e/wkshop_oct16_e/s3_1_trevor_webb.pdf

Dieu Thuy. (2016). *Overcoming many barriers, Vietnamese fruits has been exported to more than 40 countries.* Retrieved from http://infonet.vn/vuot-nhieu-cua-ai-trai-cay-viet-chinh-phuc-hon-40-quoc-gia-post200863.info

Dublin University. (2010). *Exploring links between EU agricultural policy and world poverty.* Retrieved from https://www.tcd.ie/iiis/policycoherence/eu-agricultural-policy/protection-measures.php

EC Directorate - General for Health & Consumers. (2008). *Factsheet: New Rules on Pesticide residues in Food.* Retrieved from https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_mrl_legis_factsheet_en.pdf

EC. (2013). *Health control of foodstuffs of non-animal origin.* Retrieved from http://exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/requirements&reporterId1=EU&file1=ehir_eu14_01v001/eu/main/req_heanahc_eu_010_0612.htm&reporterLabel1=EU&reporterId2=SE&file2=ehir_se14_01v001/se/main/req_heanahc_se_010_0612.htm&reporterLabel2=Sweden&label=Health+control+of+foodstuffs+of+non-animal+origin&languageId=en&status=PROD

EC. (2016). *EU-Vietnam Free Trade Agreement: Agreed text as of January 2016*. Retrieved from http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437

EC. (2017*). EU - Pesticides Database*. Retrieved from http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&language=EN

EC. (2017a). *Contaminant Legislation*. Retrieved from https://ec.europa.eu/food/safety/chemical_safety/contaminants/legislation_en

EC. (2017b). *Policy areas of product legislation.* Retrieved from http://trade.ec.europa.eu/tradehelp/policy-areas-product-legislation

EC. (2017c). *Trade in plants & plant products from non-EU countries*. Retrieved from https://ec.europa.eu/food/plant/plant_health_biosecurity/non_eu_trade_en

EC. (2017d). *Food information to consumers – legislation*. Retrieved from: https://ec.europa.eu/food/safety/labelling_nutrition/labelling_legislation_en

FAO. (2017). *Codex Pesticides Residues in Food Online Database*. Retrieved from http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Financial Newspaper. (2016). *Fruit domestic consumption and export made new progress.* Retrieved from http://thoibaotaichinhvietnam.vn/pages/kinh-doanh/2016-08-14/tieu-thu-va-xuat-khau-trai-cay-co-nhieu-tin-hieu-tich-cuc-34570.aspx

Food Standards Australia New Zealand. (2017). *Food Irradiation*. Retrieved from http://www.foodstandards.gov.au/consumer/foodtech/irradiation/Pages/default.aspx

General Statistics Office of Vietnam (GSO). (2017). *Vietnam socio-economic situation in 2016.* Retrieved from http://www.gso.gov.vn/default.aspx?tabid=621&ItemID=16174

Graffham A. (2006). *EU legal requirements for imports of fruits and vegetables*. Retrieved from http://www.envirobase.info/PDF/60506EU_REGULATIONS_GUIDE_2006.pdf

Hai Luan. (2017). *The road of Vietnam's fruit exports to Chinese market*. Retrieved from http://www.bienphong.com.vn/con-duong-nong-san-sang-thi-truong-trung-quoc/

Infonet. (2016). *Overcoming many barriers, Vietnamese fruits have been exported to more than 40 countries.* Retrieved from http://infonet.vn/vuot-nhieu-cua-ai-trai-cay-viet-chinh-phuc-hon-40-quoc-gia-post200863.info

Intertek. (2017). *GLOBALG.A.P Certification.* Retrieved from http://www.intertek.com/food/auditing/globalgap/

ITC. (2014). *Keynia: Company perspectives*. Retrieved from http://www.intracen.org/publications/ntm/Kenya/

ITC. (2016). *Thailand: Company Perspectives – An ITC Series on Non-Tariff Measures*. Retrieved from http://www.intracen.org/publication/NTM-Thailand/

ITC. (2017). *Philippines: Company perspectives – An ITC Series on non-tariff measures*. Retrieved from http://www.intracen.org/publication/NTM-Philippines/

Kareem O. I. (2014). *The European Union Sanitary and Phytosanitary Measures and Africa's Export*. European University Institute's Working Papers RSCAS 2014/98. Retrieved from http://cadmus.eui.eu/bitstream/handle/1814/33311/RSCAS_WP_2014_98.pdf?sequence=1

Loi H.. (2017). *Cooperation in exporting fruits.* Retrieved from http://www.sggp.org.vn/lien-ket-xuat-khau-trai-cay-443658.html

Marques N. R. P., Matias J. C. O., Teixeira R. R. B., Brojo F. M. R. P. (2012). Implementation of Hazard Analysis Critical Control Points (HACCP) in a SME: Case Study of a Bakery. *Polish Journal of Food and Nutrition Sciences*, 62(4), 215-227. Retrieved from http://journal.pan.olsztyn.pl

Ministry of Agriculture and Rural Development (MARD) of Vietnam. (2016). *Annual Report on Vietnam Vegetable and Fruits.*

Ministry of Labor, Invalids and Social Affairs (MOLISA) of Vietnam. 2013. *Labor Issues – Employment for the youth in rural areas: Current situation and Solutions*. Retrieved from: http://www.molisa.gov.vn/vi/Pages/chitiettin.aspx?IDNews=21016

Neff R. A, Hartle J. C, Laestadius L. I, Dolan K., Rosenthal A. C, and Nachman K. E. (2012). *A comparative study of allowable pesticide residue levels on produce in the United States.* Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3297498/

New Zealand's Ministry for Primary Industries. (2017). *Pesticide Maximum Residue Limits (MRLs) for plant products.* Retrieved from http://www.foodsafety.govt.nz/industry/sectors/plant-products/pesticide-mrl/

Nguyen A. T. and Dang T. P. (2014). *Study on sanitary and phytosanitary measures (SPS) and technical barriers to trade (TBT) faced by Vietnamese exporters in major export markets.* MUTRAP Activity code ICB-8.

Nguyen Q. H. (2015). *Overview of fruit production, marketing, and research and development system in Vietnam*. Retrieved from http://www.fftc.agnet.org/library.php?func=view&id=20150804112243&type_id=4

Nguyen T. T. H. (2016). *Enhanced value-added products of fruits and vegetables in Vietnam.* Retrieved from: http://vnuf.edu.vn/documents/454250/1808141/15.pdf

OECD. (2017). *Non-tariff measures*. Retrieved from http://www.oecd.org/tad/ntm/

Pham C. T., Vo P. T., Pham X. T. (2016). *Vietnamese Fruits Production and Exports Based on The Global Gap & ISO 22000 Standard - Towards Faster and Sustainable Development.* Retrieved from http://www.vietnamquality.org.vn/uploads/phocadownload/vien-kiem-dinh-va-phat-trien-chat-luong/cac-bao-cao-khoa-hoc-da-cong-bo-quoc-te/13.Fullpaper_P0285_Oral_VQAH.pdf

Phi Hung. (2016). *Using unauthorized chemicals, Vietnamese fruits face strict penalties.* Retrieved from http://baophapluat.vn/tieng-noi-da-chieu/su-dung-hoa-chat-cam-nong-san-viet-dang-tra-gia-dat-307577.html

Stoll P. T. , Douma W. T., Sadeleer N. D. and Abel P. (2016). *CETA, TTIP and the EU precautionary principle.* Retrieved from https://www.foodwatch.org/fileadmin/Themen/TTIP_Freihandel/Dokumente/2016-06-21_foodwatch-study_precautionary-principle.pdf

Taylor E., and Kane K. (2005). Reducing the burden of HACCP on SMEs. *Food Control,* 16(10), 833-839. Retrieved from https://doi.org/10.1016/j.foodcont.2004.06.025

The Japan Food Chemical Research Foundation. (2016*). Maximum Residue Limits (MRLs) List of Agricultural Chemicals in Foods*. Retrieved from http://www.m5.ws001.squarestart.ne.jp/foundation/search.html

The National Export Strategy of the State of Palestine. (2014). *State of Palestine, National Export Strategy 2014–2018*. Retrieved from https://www.paltrade.org/upload/multimedia/admin/2014/10/5448e728e1bd3.pdf

TheHindu. (2014a). *EU bans Indian Alphonso mangoes, 4 vegetables from May 1.* Retrieved from http://www.thehindu.com/news/international/world/eu-bans-indian-alphonso-mangoes-4-vegetables-from-may-1/article5956482.ece

TheHindu. (2014b). *Mango ban: India threatens to drag EU to WTO.* Retrieved from http://www.thehindu.com/news/mango-ban-india-threatens-to-drag-eu-to-wto/article5970369.ece

Thermoscientific. (2016). *An Overview of Regulation and Control of Pesticide Residues in Food*. Retrieved from http://tools.thermofisher.com/content/sfs/brochures/WP-71711-Regulatory-Pesticide-Residue-WP71711-EN.pdf

Thu Huong. (2016). *Challenges to fruit exports*. Retrieved from http://thoibaokinhdoanh.vn/Lang-kinh-8/Thach-thuc-doi-voi-trai-cay-xuat-khau-26363.html

Tran M. and Cam V. K. (2014). *Vietnamese plant products contain harmful organism: non-violator affected*. Retrieved from https://tuoitre.vn/quyt-lam-cam-chiu-655555.htm

UNCTAD. (2012). *International Classification of Non-tariff Measures*. Retrieved from http://unctad.org/en/PublicationsLibrary/ditctab20122_en.pdf

UNCTAD. (2013). *Non-tariff measures to Trade: Economic and Policy Issues for Developing Countries*. Retrieved from http://unctad.org/en/PublicationsLibrary/ditctab20121_en.pdf

UNCTAD. (2015). *Key Statistics and Trends in International Trade.* Retrieved from http://unctad.org/en/PublicationsLibrary/ditctab2015d1_en.pdf

UNIDO. (2012). *Trade Standards Compliance Footprint – 2012: Vietnam*. Retrieved from http://www.unido.org/fileadmin/user_media_upgrade/What_we_do/Topics/Quality_and_compliance/TSC_Footprint_Viet_Nam.pdf

UNIDO. (2014). *Viet Nam in post WTO Current situation and future challenges for the agro-industry sector.* Retrieved from

https://www.unido.org/sites/default/files/2014-11/VN_2014_-_Vietnam_in_WTO__Report_FINAL_PAPER__2__0.pdf

UNIDO. (2015). *Meeting Standards, Winning Markets - Trade Standards Compliance 2015*. Retrieved from https://www.unido.org/fileadmin/user_media_upgrade/Resources/Publications/TCB_Resource_Guide/TSCR_2015_final.pdf

UNIDO. (2017). *Trade Standards Compliance Footprints: Import Rejection Analysis – Country Footprints.* Retrieved from https://www.unido.org/tscfootprints.html

United States Trade Representative (USTR). (2014). *2014 Report on Sanitary and Phytosanitary Measures*. Retrieved from https://ustr.gov/sites/default/files/FINAL-2014-SPS-Report-Compiled.pdf

US Department of Agriculture (USDA). (2000). *Guidance for Industry: Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed*. Retrieved from https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ChemicalContaminantsMetalsNaturalToxinsPesticides/ucm077969.htm#afla

US Department of Agriculture (USDA). (2012). *New EU food labelling rules published.* Retrieved from https://gain.fas.usda.gov/Recent%20GAIN%20Publications/NEW%20EU%20FOOD%20LABELING%20RULES%20PUBLISHED_Brussels%20USEU_EU-27_1-12-2012.pdf

US Department of Agriculture (USDA). (2014). *China: Maximum Residue Limits for Pesticides in Food.* Retrieved from https://www.fas.usda.gov/data/china-maximum-residue-limits-pesticides-food

US Department of Agriculture (USDA). (2014*). China's Maximum Levels for Contaminants in Foods.* Retrieved from https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Maximum%20Levels%20of%20Contaminants%20in%20Foods%20_Beijing_China%20-%20Peoples%20Republic%20of_12-11-2014.pdf

US Department of Agriculture (USDA). (2015). *China: China's Maximum Levels for Mycotoxins in Foods*. Retrieved from https://www.fas.usda.gov/data/china-china-s-maximum-levels-mycotoxins-foods

US Department of Agriculture (USDA). (2016). *EU-28: Food and Agricultural Import Regulations and Standards – Narrative. FAIRS country Report.* Retrieved from https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20and%20Agricultural%20Import%20Regulations%20and%20Standards%20-%20Narrative_Brussels%20USEU_EU-28_12-9-2016.pdf

Uyen Huong. (2015). *Paying attention to the EU's technical barriers after the EVFTA coming into effect.* Retrieved from http://bnews.vn/sau-evfta-can-can-trong-voi-cac-rao-can-ky-thuat/5082.html

Vietnam Chamber of Commerce and Industry (VCCI). (2015). *Survey report on the strength and weakness of business associations.*

Vietnam Chamber of Commerce and Industry (VCCI). (2017). *Survey Report on Information dissemination for Vietnamese businesses.*

Vietnamnet e-newspaper. (2017). *Vietnam fruit producers struggle to enter export markets.* Retrieved from http://english.vietnamnet.vn/fms/business/180722/vietnam-fruit-producers-struggle-to-enter-export-markets.html

Vietnamnet. (2017). *As Chinese stop importing fruit, farmers look to domestic market.* Retrieved from http://english.vietnamnet.vn/fms/business/179365/as-chinese-stop-importing-fruit--farmers-look-to-domestic-market.html

Vietrade. (2015). *Exporting fresh mangoes to the EU: Things need to be noticed*. Retrieved from http://old.vietrade.gov.vn/nghiep-vu-xttm/5202-xuat-khau-trai-xoai-tuoi-vao-eu-mot-so-dieu-can-luu-y-phan-1.html

Watts C. (2012). *Good agricultural practices and GAP certification*. Retrieved from https://gillingsproject.wordpress.com/good-agricultural-practices-and-gap-certification/

World Bank (WB). (2017). *Food Safety Management in Vietnam – Challenges and Opportunities*. Retrieved from http://www.worldbank.org/vi/country/vietnam/publication/food-safety-risk-management-in-vietnam-challenges-and-opportunities

WTO. (2014). *The WTO Agreements Series Technical Barriers to Trade*. Retrieved from https://www.wto.org/english/res_e/publications_e/tbttotrade_e.pdf

And the following websites and online tools/databases:

- EC official website: https://ec.europa.eu
- EC Trade Helpdesk: http://trade.ec.europa.eu/tradehelp/
- Access to European Law: http://eur-lex.europa.eu/
- UN Comtrade Database: https://comtrade.un.org/
- ITC Trade Map: https://trademap.org/Index.aspx
- ITC Macket Access Map: https://trademap.org/Index.aspx
- UNCTAD Trade Analysis Information System (TRAINS): http://unctad.org/en/Pages/DITC/Trade-Analysis/Non-Tariff-Measures/NTMs-trains.aspx
- WTO Website: https://www.wto.org/
- FAO Codex Website: http://www.fao.org/fao-who-codexalimentarius/en/