

**A study on Vietnam's solid waste  
management industry and business  
environment**

Thi Thu Hien Le

Bachelor's Thesis  
April 2016

School of Business  
Degree Programme in International Business

Author(s) Le, Thi Thu Hien	Type of publication Bachelor's thesis	Date 15.04.2016
	Number of pages 64	Language of publication: English
		Permission for web publication: x
Title of publication <b>A study on Vietnam's solid waste management industry and business environment</b>		
Degree programme International Business		
Supervisor(s) Akpinar, Murat		
Assigned by Jamk Centre for Competitiveness		
Description  <p>In Vietnam, a country with a numerous population and growing economy, solid waste management has become a serious issue, attracting the attention of the local government and businesses. This study aimed at reviewing Vietnam's solid waste management industry and its overall business environment.</p> <p>Porter's diamond model and PESTEL analysis were used in this research as theoretical framework. Porter's diamond model was used to analyze the competitiveness of the Vietnam's solid waste management industry and local resources available for firms to operate. PESTEL analysis was employed to explore the external macro-economic factors of the country: political, economic, social, technological, environmental, and legal factors.</p> <p>An exploratory research approach was used in this research. Secondary data was gathered from governmental statistics, academic researches, reports of research institutions and trade associations. After the secondary data had been gathered, four semi-structured interviews were conducted with governmental officials and company representatives to collect primary data.</p> <p>The results showed that Vietnam had a weak solid waste management system, lacking skilled workforce, adequate infrastructure and technological readiness. The country was in need of efficient waste disposal solutions to deal with the growing waste generation. Despite the unclear and weak environmental legislation, the Vietnamese government had issued encouraging policies to attract private and foreign companies to enter the sector.</p> <p>The research results are useful for business executives, investors, or policy-makers for strategic decisions making. The main limitations included the quality of participants' answers through phone interview and geographical scope of the interviews. As for further research, study on energy-from-waste business opportunities, or on how social attitude can affect the solid waste management industry were recommended by the author.</p>		
Keywords ( <a href="#">subjects</a> ) Vietnam, solid waste management, Porter's diamond model, PESTEL analysis		
Miscellaneous		

# Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
1.1	Background of study.....	5
1.2	Research objectives.....	6
1.3	Structure of study.....	7
<b>2</b>	<b>VIETNAM AND ITS SOLID WASTE MANAGEMENT INDUSTRY.....</b>	<b>8</b>
2.1	Vietnam's economy.....	8
2.2	Vietnam's solid waste management industry.....	10
2.2.1	Waste generation .....	12
2.2.2	Waste collection and transport system .....	13
2.2.3	Waste disposal .....	14
<b>3</b>	<b>LITERATURE REVIEW.....</b>	<b>15</b>
3.1	Foreign market entry strategy .....	15
3.2	Porter's diamond model .....	17
3.2.1	Factor conditions .....	18
3.2.2	Demand conditions.....	20
3.2.3	Related and supporting industries .....	21
3.2.4	Firm strategy, structure and rivalry .....	22
3.2.5	The Role of Government.....	23
3.2.6	The Role of Chance .....	24
3.3	PESTEL Analysis .....	24
<b>4</b>	<b>RESEARCH METHODOLOGY.....</b>	<b>26</b>
4.1	Research approach .....	26
4.2	Data collection .....	28
4.2.1	Secondary data.....	28
4.2.2	Primary data.....	28
4.3	Data analysis process.....	30
4.4	Ethical consideration .....	30
4.5	Verifications of findings .....	31
<b>5</b>	<b>RESULTS .....</b>	<b>32</b>
5.1	An analysis of Vietnam's solid waste management industry based on Porter's Diamond model.....	32
5.1.1	Factor conditions .....	32
5.1.2	Demand conditions.....	35
5.1.3	Related and supporting industries .....	37
5.1.4	Firm strategy, structure and rivalry .....	39
5.1.5	The Role of Government.....	40
5.1.6	The Role of Chance .....	40

5.2	PESTEL Analysis .....	41
5.2.1	Political .....	41
5.2.2	Economic.....	42
5.2.3	Social.....	44
5.2.4	Technological .....	46
5.2.5	Ecological/Environmental .....	47
5.2.6	Legal.....	48
6	DISCUSSION.....	49
6.1	Answers to research questions .....	50
6.2	Managerial implications .....	51
6.3	Limitations of study.....	52
6.4	Recommendations on further research.....	53
	REFERENCES.....	55
	APPENDIX .....	62

## FIGURES

Figure 1. Vietnam's Stage of Development.....	10
Figure 2. Institution arrangement at national level of solid waste management in Vietnam .....	11
Figure 3. Waste generation by sector in 2012 .....	12
Figure 4. Waste generation by region in 2012.....	13
Figure 5. Diamond of National Competitiveness .....	18
Figure 6. Research process.....	27
Figure 7. Patterns of Market Development of Vietnam .....	36
Figure 8. Road sector diesel consumption in Vietnam .....	38
Figure 9. Vietnam's pump price of diesel.....	38
Figure 10. Vietnam's Political Risk Summary .....	42
Figure 11. Vietnam's GDP (PPP) per capita 1990-2013.....	43
Figure 12. Vietnam's FDI inflow 2000 – 2014.....	44
Figure 13. Vietnam's population structure 2014 .....	45

## TABLES

Table 1. Key macro-economic indicators in 2014 .....	9
Table 2. Major motivations for foreign market expansion .....	16
Table 3. Factors influencing choice of market entry mode .....	17
Table 4. Internationally competitive related industries.....	22
Table 5. Differences between deductive and inductive research approaches.....	27
Table 6. List of interview participants .....	29
Table 7. Overall annual employed population structure 2014 .....	33

## **Abbreviations**

ADB	Asian Development Bank
CIA	Central Intelligence Agency
FDI	Foreign Direct Investment
FIEs	Foreign Investment Enterprises
GDP	Gross Domestic Product
IT	Information Technology
NGOs	Non-government Organizations
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PPP	Purchasing Power Parity
SMEs	Small and Medium Enterprises
SOEs	State-owned Enterprises
URENCO	Urban Environment Companies
WTO	World Trade Organization

# 1 INTRODUCTION

## 1.1 Background of study

Located in South-east Asia with a population of over 90 million people (The World Factbook 2015), Vietnam was one of most populous countries and fastest-growing economies in Asia in the last decade. Along with the fast-growing population and economy, the waste generation rate has also tremendously risen and caused numerous environmental, social, as well as health issues.

From the year 2003 to 2010, the total solid waste generation in Vietnam increased by almost 200% and has been continuously rising. It was predicted that total solid waste would reach 44 million tons in 2015 (Bao cao moi truong quoc gia 2011). In the urban areas, 85% of solid waste is properly collected while the number for rural areas is less than 50%. Most of the collected waste, about 80%-90%, is taken to landfills (Van 2015). There are 91 landfills spread throughout Vietnam but only 17 of them are well-equipped and sanitary (ibid.).

This has been receiving a great deal of attention from policy-makers, NGOs, and scientific scholars, more than ever before. Many programs have been initiated with funds and grants coming from international organizations and foreign governments. While it is a big challenge for the government to deal with the negative consequences of the high waste generation rate, it could be a huge opportunity for companies and investors to start businesses in the industry.

Weak waste management is one of the most common problems in developing countries (Thanh & Matsui 2011, 1), where infrastructure development cannot catch up with the economic development. To be able to improve waste management services, it is crucial for Vietnam to establish and encourage international cooperation and partnerships (Thanh & Matsui 2011, 1). Vietnam has become an attractive destination for foreign companies and investors due to the encouraging incentive schemes of the government, especially in environmental protection

sectors. Foreign companies have recently shown their interest in entering Vietnam's market. However, many of them are hesitating due to the lack of practical knowledge about the market.

A number of researches about solid waste management system in Vietnam have been conducted lately by local authorities and foreign research institutions, such as The World Bank. The majority of studies primarily focuses on the strategic actions from the government's point of view. One purpose of this study is to help foreign businesses that are interested in doing business in Vietnam in the solid waste management industry to have a good understanding of the sector and Vietnam's overall business environment.

## **1.2 Research objectives**

This research aims at analysing the current situation of solid waste management system in Vietnam using Porter's diamond model and the PESTEL analysis. Porter's diamond analysis identifies different dimensions of microeconomic competitiveness of the industry (Porter 1998, 71). It will help companies to understand the local resources that are valuable for companies to successfully operate in the industry. The PESTEL analysis covers other external macro factors, such as political, cultural or environmental factors. The PESTEL analysis provides an overview on the macro business environment and makes it easier to conduct a further internal analysis such as the SWOT analysis. The outcomes of the study will be beneficial for companies by providing a practical, updated overview of the solid waste management industry and the overall business environment of Vietnam.

The objectives of this study are:

- i. To gain an in-depth understanding of the solid waste management system in Vietnam



- ii. To provide foreign companies with an overview of the macro-economic factors of Vietnam's business environment and a background to conduct further internal research

To achieve these objectives, the following research questions are to be answered:

- i. What is the situation of the solid waste management industry in Vietnam?
- ii. What is the situation of Vietnam's macro business environment in the framework of the PESTEL analysis?

An exploratory research approach is used in this study since it is designed for clarifying understanding of a problem or seeking new information. Besides, explanatory research gives researchers the flexibility and adaptability to change as new data appears and new insights are gained during research progress. (Saunders et al. 2009, 139-140)

The multi-source secondary data will be collected through various sources. To ensure the quality and reliability of the secondary data, the sources will be carefully evaluated. The data will be gathered from reliable magazines, official reports of government agencies and research institutions, books, interviews, and so on. Phone/email interviews will be conducted with government officials and professionals in the sector. Interviewees will be chosen using a purposive sampling method.

### **1.3 Structure of study**

This study consists of 6 chapters: Introduction, Country Overview, Literature Review, Methodology, Results and Discussion. The first chapter introduces the background and purposes of the study, including the research objectives and research questions. The next chapter gives an overview about Vietnam's geographic, demographic, economic situation, and the Vietnam's solid waste management industry.

The third chapter, Literature Review, discusses about foreign market entry strategy literature and the theoretical framework that will be used for the study; Michael Porter's Diamond model, PESTEL analysis. The fourth chapter, Methodology, explains the research approach, research design, data collecting and analysing tools. Results chapter presents findings from the analysis of the secondary and primary data collected. The last chapter discusses about the results, limitations of the study, managerial implications, and recommendations for future research.

## **2 VIETNAM AND ITS SOLID WASTE MANAGEMENT INDUSTRY**

### **2.1 Vietnam's economy**

The Socialist Republic of Vietnam is located in Southeast Asia, bordering to China to the North, Cambodia and Laos to the West, and the South China Sea to the East. Vietnam has a land area of 310,070 square km, ranked 66<sup>th</sup> in comparison to the world. Vietnam's climate is categorized as tropical in the south; monsoonal in the north. (The World Factbook 2015)

There are 58 provinces and 5 municipalities in Vietnam, spreading 3000km along the country. Hanoi, the capital, is the political and cultural centre while the economic centre is located in the South. Most of the largest industrial parks are located in the Southern part.

Vietnam has transferred from a poor country with an average income of \$100 per capita in 1986, when "Doi Moi" – an economic reform was initiated, to a lower middle income status of over \$2000 per capita in 2014 (Vietnam Overview 2015). The agriculture's share on GDP has sharply dropped from about 25% in 2000 to 18% in 2014, while the industry's share increased from 36% to 38% in the same period. Government-owned companies now make up about 40% of GDP. (The World Factbook 2015.)

Vietnam joined the World Trade Organization in January 2007 and the Trans-Pacific Partnerships free trade agreement in 2015, which has encouraged more competitive industries in the country (The World Factbook 2015). With the two new Resolutions issued in March 2014 and March 2015, the Vietnamese government has shown serious attention in improving the business environment, attempting to reduce bureaucracy when doing business in Vietnam (Vietnam Overview 2015).

Table 1. Key macro-economic indicators in 2014  
(The World Factbook 2015)

GDP (PPP)	\$510.7 billion
GDP Growth Rate	6%
FDI inflows	\$9,200 million
FDI inward stocks	\$90,991 million
Inflation Rate	4.1%
Total area	331,210 sq km
Population	94,348,835
Urbanization	33.6% of total population
Industrial Production Growth	5.5%

Vietnam's economy is currently at the first stage of development, factor-driven stage (Figure 1). That means the country competes primarily based on low-skilful labour, unprocessed natural resources and supports relatively low wage (Stages of Development 2015). Factor-driven economies usually has insufficient educational institutions, knowledge or skills to new technology. Increasing production

productivity and workforce education is the key element for factor-driven economies to move to the next stage, efficiency-driven stage (Acs & Szerb 2010, 4).

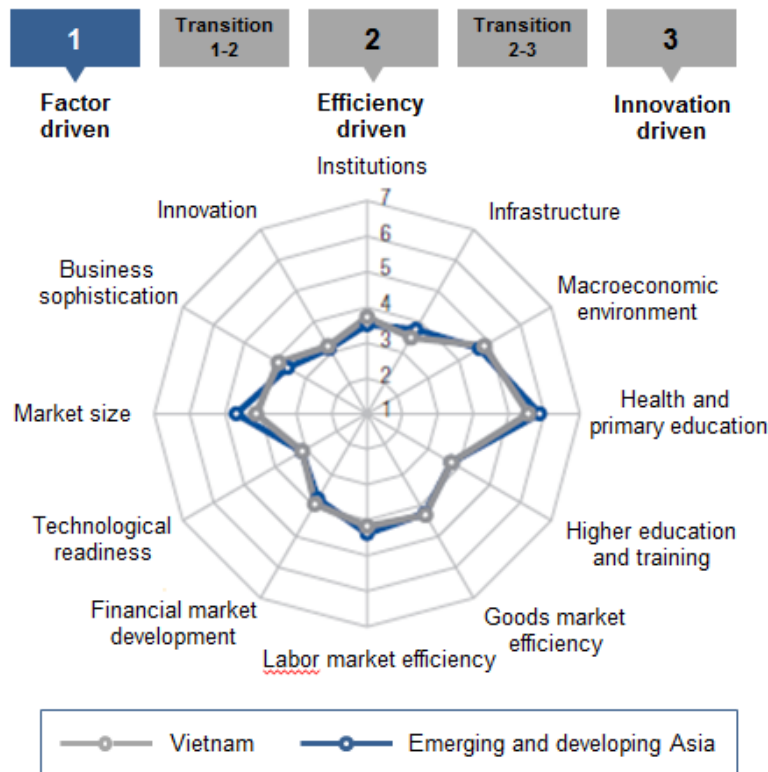


Figure 1. Vietnam's Stage of Development  
(The Global Competitiveness Report 2014)

## 2.2 Vietnam's solid waste management industry

Since 1990s, together with the national industrialization and modernization progress, business sector has been given priority to develop by the government. Industrial, agricultural and service activities have developed strongly and also generated an enormous amount of waste. Besides, the harmful level of waste has also increased. Waste management nowadays is not only limited to municipal waste but also industrial, medical, agricultural waste (Bao cao moi truong quoc gia 2011). Therefore, the system needs to be improved and developed accordingly.

To meet the current needs, the government has built detailed policies regarding waste disposal. The solid waste management system has been improved with more specific and practical regulations. The national level system is relatively complex with an involvement of different ministries and agencies, as shown in Figure 2.

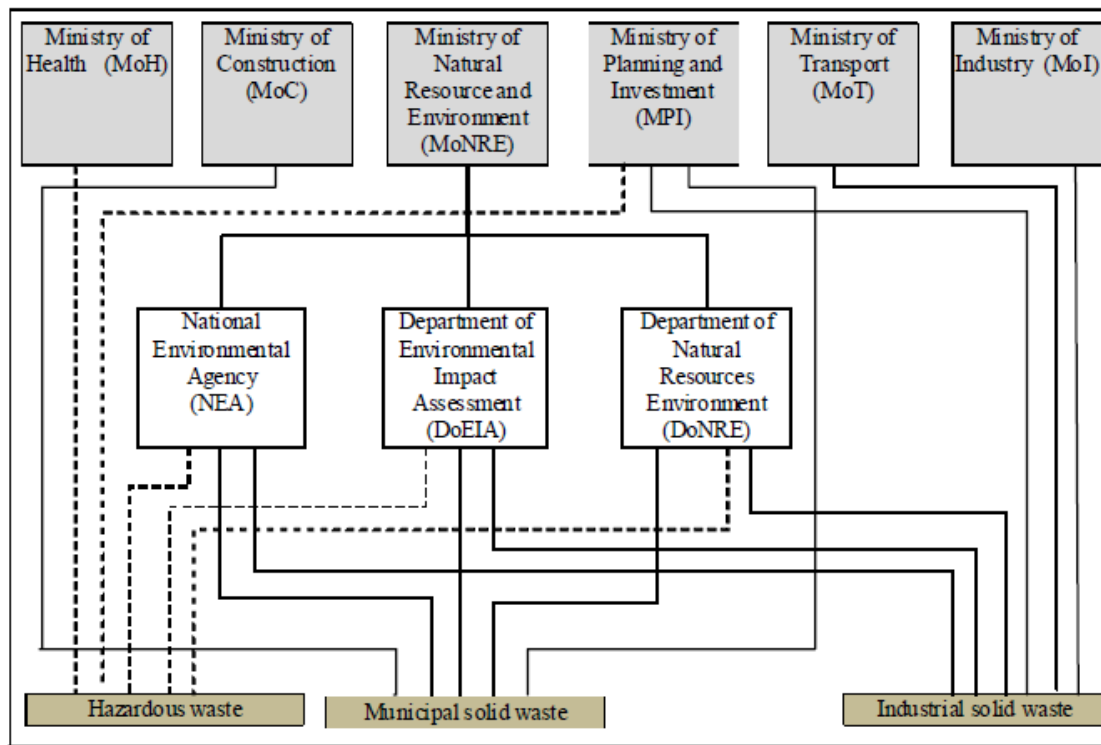


Figure 2. Institution arrangement at national level of solid waste management in Vietnam

(Thanh & Matsui 2011, 3)

At lower level, in each city, solid waste is managed by Urban Environment Companies (URENCO), which has full responsibility to collect, transport, and dispose waste generated from the residential areas, industrial parks, hospital, and so on (Thanh & Matsui 2011, 2). Nowadays, more private companies are participating in waste disposal and recycling activities in some cities. Solid waste from the municipal areas is usually temporarily stored at convenient locations, before being transported to the final landfills (ibid.).

### 2.2.1 Waste generation

The solid waste generation rate in Vietnam has been rapidly growing over the last decades. In 1996, the amount of waste produced was 5.9 million tons per years. Eight years later, in 2004, the amount was almost triple, with 12.8 million tons of municipal waste, and about 2.8 million of industrial and agricultural waste (Vietnam Environment Monitor 2004, 6).

Most data regarding waste generation are collected in the urban areas and industrial zones. Since the collection system is not complete and the collection rate is still low in the rural areas, the waste generation rate in the rural areas (agricultural waste) has not been fully calculated. In general, waste generated in the rural areas is easily degradable organic waste (Vietnam Environment Monitor 2004, 7).

In contrast, the urban areas make up only 33.6% of the total population but produce more than 50% of the country's municipal waste. Municipal solid waste from the urban areas in 2012 was about 28,446 tons (Figure 3), in which 54-79% is organic and 8-18% is recyclable waste (Nguyen 2013). At present, hazardous municipal waste and non-hazardous waste are not being collected and treated separately.

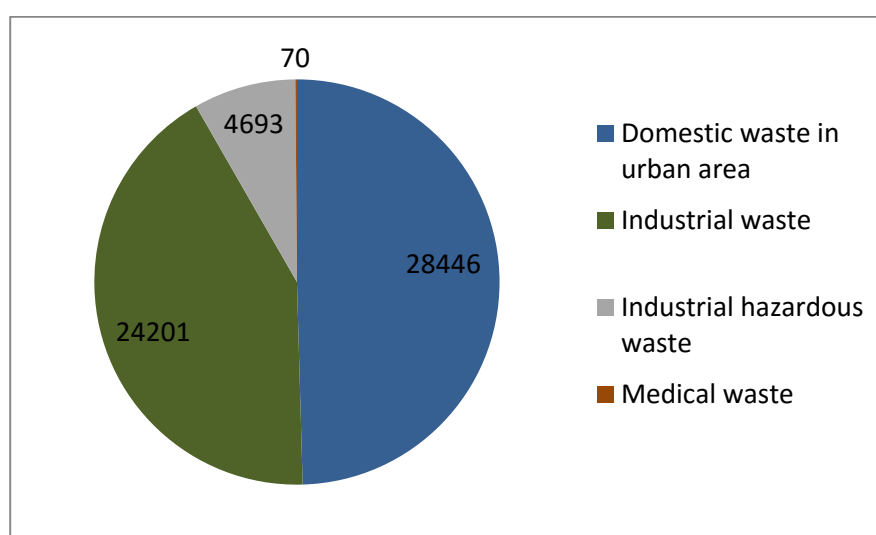


Figure 3. Waste generation by sector in 2012

(tons/day) (Nguyen 2013)

Industrial waste mainly comes from industrial parks and key economic regions. Large industrial parks in the centres of the North and South account for roughly 80% of the total industrial waste generated. There are about 1,500 trade villages in the country, producing a considerable amount of waste each year (Cleantech Market Vietnam Report 2013, 8). Figure 4 shows the amount of waste generated, including municipal, industrial and medical waste, by region in 2012.

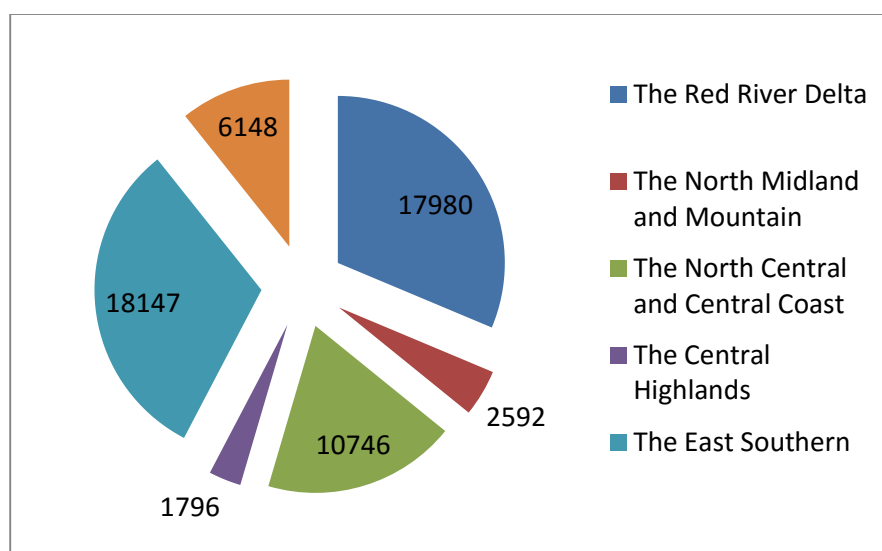


Figure 4. Waste generation by region in 2012 (tons/day) (Nguyen 2013)

### 2.2.2 Waste collection and transport system

In urban areas, solid waste collection rate is about 83-85% and the rate is higher in big cities than in smaller cities. In Hanoi, the collection rate in the inner districts is around 95% whilst it is only 60-70% in the suburban areas. Municipal solid waste is collected daily by URENCO through small-sized trolleys. Solid waste from the municipal areas is usually temporarily stored at convenient locations before being transported to the final treatment facilities or landfills (Thanh & Matsui 2011, 2).

For industrial waste, most companies have their non-hazardous waste collected by URENCO along with the municipal waste in the area. For hazardous waste, 74.2% of the enterprises sign a contract with licenced agencies to transport and dispose of waste in order to comply with the current regulations on hazardous waste disposal (Cleantech Market Vietnam Report 2013, 28). Over 90% of solid waste in the industrial parks is collected.

Medical waste is the only category of waste in which solid waste is sorted at source. Health care facilities are managed by the Ministry of Health (or its Departments), including the collection, transportation, storage and disposal of waste. However, these activities in small local health care facilities are not highlighted. Most medium or big hospitals (95.6%) have now practiced waste classification at source (Cleantech Market Vietnam Report 2013, 31).

### **2.2.3 Waste disposal**

The most popular means of municipal and non-hazardous industrial solid waste disposal in Vietnam has been burying in landfills or burning. Most of the solid waste is taken to landfills with 91 landfills spread across the country. However, of the 91 landfills, only 17 are hygienic, mostly located in Hanoi or Ho Chi Minh City and constructed using ODA funds (Cleantech market Vietnam Report 2013, 8).

Hazardous waste treatment has been improved in Vietnam and is open to a broader procedure, complying with all the hygienic and safety regulations (Bao cao moi truong quoc gia 2011). Even though incinerating waste is not a common practice, some simple incinerators, industrial steam boilers or specialized treatment facilities have been established especially for treating hazardous medical waste (Cleantech Market Vietnam Report 2013, 8). About 50% of hazardous medical waste is ensured to be treated in incinerators. However, there is a problem with having enough funding to run and maintain the incinerators.



A popular method of waste disposal in Vietnam is recycling. Hanoi has a higher recycling rate than many other Asian cities with one-fifth of the municipal waste recycled (Nguyen 2012, 7). Recycling activities are practised at the household level as people try to sell or give away recyclable metal cans or paper to iron dealers or waste-pickers. The waste-pickers play a vital role in the waste management system as they sort out waste at source, classify it and then sell it to recycling companies.

### **3 LITERATURE REVIEW**

#### **3.1 Foreign market entry strategy**

A common way a company uses to expand its business is to enter a new market. A new market does not necessarily mean a foreign market; a company can certainly expand its business domestically. A market expansion can either be a geographical or product expansion or a combination of both (Antell 2012, 16).

##### *Motives for foreign market entry*

There are many reasons urge a company to go international. Typically, the fundamental reason for most firms is ultimately to increase profits. However, it is not the only motive for international expansion (Dado et al. 2015, 136). According to Dado et al. (ibid.), Hollensen (2011) categorized motivations for internationalization into two types: proactive motivations, which focus on exploiting unique competences and reactive motivations, which are reaction to pressure in its home market. Table 2 shows some major motives for going abroad.

Table 2. Major motivations for foreign market expansion

(Dado et al. 2015, 135)

<b>Proactive motivations</b>	<b>Reactive motivations</b>
<ul style="list-style-type: none"><li>• Sales and profit aims</li><li>• Managerial urge</li><li>• Foreign market potentials</li><li>• Tax benefits</li><li>• Economies of scale</li></ul>	<ul style="list-style-type: none"><li>• Small and saturated domestic market</li><li>• Competitive pressure</li><li>• Overproduction capacity</li><li>• Unsolicited foreign order</li></ul>

Market expansion decisions are determined by a particular situation of prospective market business environment and the company's growth potential in that market (Antell 2012, 8). A good understanding of the market is required when a company decides to expand its market. A company should consider its resources and determine which entry mode is most suitable to suitable for them. There are three types of market entry mode: export, contractual and investment entry modes (Antell 2012, 16).

*Factors influencing choice of market entry mode*

There are a number of factors that can influence market entry mode of a company. Main factors can be categorized into two groups as in the Table 3.

Table 3. Factors influencing choice of market entry mode

(Koch 2001)

Internal factors	External factors
<ul style="list-style-type: none"> <li>• Company size/resources</li> <li>• Management locus of control</li> <li>• Management risk attitudes</li> <li>• Market share targets</li> <li>• Calculation methods applied</li> <li>• Profit targets</li> <li>• Sufficiency and reliability of information inputs</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of the host country business environment</li> <li>• Market barriers</li> <li>• Industry feasibility/viability</li> <li>• Market growth rates</li> <li>• Image support requirements</li> <li>• Global management efficiency requirements</li> </ul>

### 3.2 Porter's diamond model

In the 1990s, Michael Porter carried out a 4-year empirical research in different economic characteristics of 100 sectors in 10 countries (Bakan & Dogan 2012, 2). The Diamond Model (Figure 5) was developed from this research, attempting to explain why industries in some nations are more competitive than others. Porter (1998, 71) proposes four elements determining competitive advantage of a nation; Factor conditions, Demand conditions, Related and supporting industries and Firm strategy, structure and rivalry. In addition to the four broad national determinants, there are two additional elements that could affect the competitiveness of a nation's industry, namely Government and Chance.

Porter (1998, 71) states:

*"The determinants, individually and as a system, create the context in which a nation's firms are born and compete: the availability of resources and skills necessary for competitive advantage in an industry; the information that shapes*

*what opportunities are perceived and the directions in which resources and skills are deployed; the goals of the owners, managers, and employees that are involved in or carry out competition; and most importantly, the pressures on firms to invest and innovate.”*

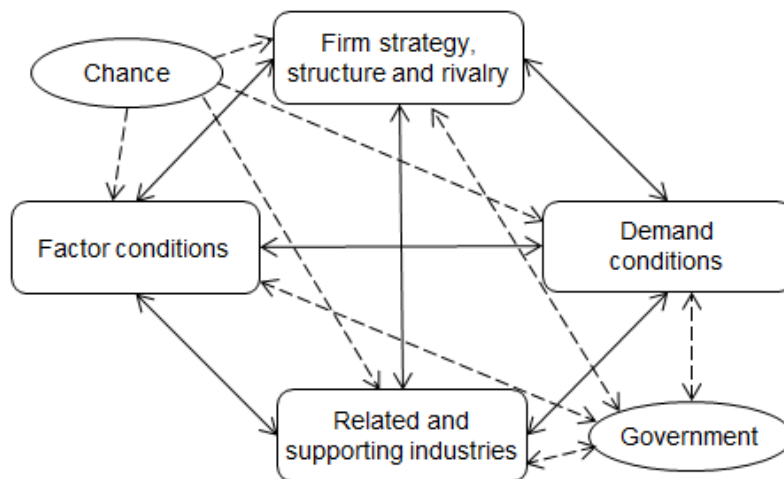


Figure 5. Diamond of National Competitiveness

(Porter 1998, 127)

According to Tasevska (2006, 10), Porter (1998) argues that a nation will attain international competitiveness in industries where they own advantages. Nevertheless, having advantages in all determinants is not essentially important. Instead, the interplay among the determinants will enforce industry competitiveness (ibid.). Moreover, under special conditions, disadvantages can also become advantages (Cho & Moon 2013, 93).

### 3.2.1 Factor conditions

Factor conditions, also referred as factors of production, represent a firm’s necessary values to compete in an industry (Bakan & Dogan 2012, 3). This is one of the most important determinants defining the competitiveness of an industry.

In standard trade theories, the factors of production regard capital, land, natural resources, infrastructure and labour; and the production factors will control the flow of trade. A country tends to export products that make most use of their competitive factors (Cho & Moon 2013, 72). However, Porter (1998, 74) considers this as too simple for more sophisticated industries. Nowadays, most of the important factors of production are created instead of inherited, such as advanced human resources (Cho & Moon 2013, 72).

In his theory, Porter (1998, 74) grouped production factors into a number of categories that cover different aspects of production as follow:

*Human resources* regard the availability of suitable workers (including management) for an industry and cost of staff, including working hours and work ethics. Human resources can be divided into different field of related professionals such as engineers, scientists, technicians, etc. (Porter 1998, 74.)

*Physical resources* involve the availability and cost of natural mineral, water, land, timber, hydroelectric power sources, etc. The location and geographic size of a nation can also be included in physical resources as it would affect, for example, the supply chain cost or business culture. (Porter 1998, 75)

*Knowledge resources* refer to the stock of scientific, technical and market knowledge relevant to goods or services. Knowledge resources include universities, research institutes, statistical database, business literature, etc. (ibid.). Market research reports conducted by non-profit organizations, such as OECD, could also be taken into account as knowledge resources.

*Capital resources* discuss about the accessibility to capital, which can be obtained through public or private funding. The development of local financial sector has a significant impact on investors and companies' decisions to invest in a market.

*Infrastructure* includes transportation system, housing availability, water and gas supply, health care system, etc. These factors define the quality of life of a nation and therefore also affect its attractiveness as a place to live, work, or study.

### **3.2.2 Demand conditions**

While it might seem as if the internationalization of competition decreased the importance of local demand, it still plays an important role in the national competitive advantage (Cho & Moon 2013, 71). Home demand is one of the most interesting factors since it directly relates to the nature of the local market (Gallagher 2005, 3). There are three broad attributes of local demand: the composition of home demand, demand size and pattern of growth, and the internationalization of domestic demand.

Porter (1998, 86) reasons that the level of the complexity of home demand plays a more important role in forming the competitive advantage than merely the size of the market. This is especially crucial for firms that consider launching a new product, or expanding their market to a new country. Provided that the market size is big and the product innovative, bringing the product to the market might still not be successful if the local demand is at a much simpler level.

*Composition of home demand* – There are three characteristics of home demand conditions: the segment structure of demand, sophisticated and demanding buyers, and anticipatory buyer needs. The most important element of home demand is the nature of the buyer needs, which forces a firm to develop to meet the buyer requirements with their products (Porter 1998, 86). The more sophisticated and demanding customers are, the more innovative and timely firms have to act to meet the customers' high standard. Therefore, they significantly affect the speed of innovation and product development in the industry.

*Demand size and pattern of growth* – Given that home market has a sophisticated composition of home demand, the demand size and pattern of growth will enhance

the competitive advantage of a nation. Early home demand helps a firm act more quickly than foreign competitors to seize the market share. However, a large home market is not always an advantage since limited local demand will force firms to export, and hence to be more visible on the global map (Porter 1998, 92). Some example of nations with a limited local demand, but successful in shaping national the competitive advantage, are Sweden, Finland, or Korea.

*Internationalization of domestic demand* – While the composition of home demand is the foundation of national competitiveness with the size and pattern of growth as complementary elements, internationalization can also help enhance the national competitive advantage. For instance, if a buyer is a multinational company, a national firm gains an advantage as in this case, a home buyer is also a foreign buyer. (Porter 1998, 98)

### **3.2.3 Related and supporting industries**

The availability of supplier or related industries that are internationally competitive is the third determinant determining a nation's competitive advantage (Porter 1998, 100). It is challenging for an industry to compete if they do not have access to an efficient supply chain management networks or access to low-cost raw materials (Barragan 2005, 6). For example, leading Swiss firms of embroidered products are also leaders in the manufacture of embroidery machines (Porter 1998, 100).

According to Porter (*ibid.*, 101), advantages in a value chain's downstream industries can be attained through the availability of an internationally competitive supplier industry. Even though local-based suppliers give firms rapid access to cost efficient inputs this benefit is not the most important one. The most important one, as Porter (1998, 103) proposes, is the process of innovation and technology transfer. By working closely with world class suppliers, firms have the opportunity to quickly access new ideas and innovations of suppliers. They will also be able to support suppliers with new technologies and methods.

Related industries, industries where firms can cooperate or deploy activities within the value chain, also help in achieving national competitive advantages (Porter 1998, 105). Table 4 below shows some examples from Porter’s case study on nations where internationally competitive related industries are common.

Table 4. Internationally competitive related industries  
(Porter 1998, 105)

Nation	Industry	Related industry
<b>Germany</b>	Chemicals	Printing ink
<b>Japan</b>	Cameras	Copiers
<b>Denmark</b>	Dairy products, brewing	Industrial enzymes

Very much like local-based suppliers industries, competitive related industries can boost the transfer of technical know-how and information (Porter 1998, 106). However, Porter (ibid.) also states that the advantages from supplier and related industries have to be in line with other determinants of the ‘diamond’. Without access to advanced factors or local demand, the advantages from supplier industries can be rather limited.

### 3.2.4 Firm strategy, structure and rivalry

Firm strategy, structure and rivalry explain domestic conditions where firms are formed, structured and managed (Porter 1998, 107). According to Porter, the home nature of rivalry also plays an important role in the international success by boosting innovation that helps firms compete in global market. The international competitiveness of an industry is affected by whether or not it is domestically competitive (Barragan 2005, 6).



Porter (1998, 108) mentions that the national context significantly affects the way firms operate and select to compete. Even though there is no absolute similarity among all firms in a nation, there is an existence of tendencies that can be observed. Success tends to be obtained in countries where management strategy well fits industries' sources of competitive advantage. For example, Italian firms, small or medium-sized firms, tend to succeed in segments where the effects of economies of scale are rather limited or can be controlled through collaboration. They compete by creating niche and customized products, and avoiding mass standardized products. (Porter 1998, 108)

There are numerous aspects that influence organizational and managerial strategies of firms. Some important examples are attitudes toward authority, attitudes of workers toward management and vice versa, norms of interpersonal interaction, and social norms of individualistic group or behaviour (Porter 1998, 109). These aspects have an indirect impact by influencing educational systems, social awareness, and other intangible conditions. The inclination of firms to expand globally is not only influenced by the pressure from a limited local demand, but also an organizational outlook such as the willingness to travel, foreign language skills and the attitude towards learning new languages.

### **3.2.5 The Role of Government**

The last determinant of national competitive advantage described by Porter is the role of Government. Despite not being one of the four main broad determinants, Government plays an important role in determining competitiveness of a nation's industry. In fact, policies and regulations made by the government form the context for demand and factor conditions, as well as affect supported industry and firm's strategy, either positively or negatively (Tasevska 2006, 13).

Government is considered as a catalyst to boost the competitive performance of companies to higher levels (Diamond Model 2015). For instance, when a government creates dismissive policies to protect local firms from foreign firms, they basically

discourage productivity and innovation in the industry (Barragan 2005, 7). On the other hand, a government with an open attitude towards attracting foreign companies will encourage entrepreneurship, technology transfer, and innovation.

### **3.2.6 The Role of Chance**

Porter (1998, 123) states that chance events have little impact to a nation's situation. Chance events represent external incidents that are out of control of government or firms but can have influences on them to some extent. Chance events are important since they can create factors that can enable shifts in competitive position. Changing conditions in the diamond is one of the influences they might cause (Porter 1998, 124-125). Below are some examples of possible chances (Tasevska 2006, 13):

- New inventions
- Political decisions from other governments
- Wars
- Changes in exchange rates or global financial market
- Changes in world or regional demand

### **3.3 PESTEL Analysis**

The PESTEL analysis, the extended variant of PEST analysis, considers external macro-economic factors that affect strategic management of a business, association or public administration (Babatunde & Adebisi 2012, 4). It comprises of 6 aspects: Political; Economic; Social; Technological; Ecological or Environmental; and Legal.

*Political* factors regard potential changes of policies and priorities from the government, or an introduction of a new government initiative (Cadle et al. 2010, 3). They include areas such as education, health, infrastructure, tax policy, labour law, etc.

*Economic* factors consist of macro-economic figures, such as GDP growth, inflation rate, exchange rates, interest rates, etc.

*Social* factors cover cultural & demographic issues such as customer behaviour trends, population growth rate. Changes in social aspects would affect local demand for a company's product and the way a company operates.

*Technological* aspects discuss about the development of technology with two major types of changes, either changes in general IT or in technology of a specific industry, for example development in the aerospace industry. IT changes can make an extensive impact on an organization and how it operates, often across industries or business areas. (Cadle et al. 2010, 4)

*Ecological/Environmental* factors arise from concerns about natural environment such as pollution, greenhouse effects, and so on.

*Legal* is an extra factor added to the original PEST analysis. It is important to take changes in law into consideration as legal regulations have significant effects on the way an organization operates especially when a business decides to expand their market to a new country, where the laws might be significantly different from their original country. (Cadle et al. 2010, 4)

While the SWOT analysis is a practical instrument in matching organization's resources and capabilities with the environment where it operates, the PESTEL analysis is helpful for examining external business environment before conducting the SWOT analysis. It is very important to bear in mind when using the PESTEL analysis that all the factors must fit two criteria: They are out of control of an organization, and they will have some impacts on it (Cadle et al. 2010, 5). Therefore, the PESTEL analysis should just be about identifying the factors, not about strategic actions needed to do with them.

## **4 RESEARCH METHODOLOGY**

### **4.1 Research approach**

This research employed an exploratory research approach, which is often the first step in a research process and essential to getting proper definition of the problem at hand (Sontakki 2010, 68). An exploratory study focuses on the discovery of situations and is primarily based on secondary data (ibid. 2010, 68). According to Saunders et al. (2009, 140), exploratory research is often conducted using literature search, interviewing an 'expert' of the subject and focus group interviews. These methods are well suited to this research due to the amount of literature review, secondary data collected and interview conducted with representatives of the industry. The results of exploratory research usually leave room for further research, which is also an aim of the study.

A research approach is divided into two categories: deduction and induction. The deductive approach, or top-down approach, is to test a hypothesis by attempting to explain causal connections between variables (Saunders et al. 2009, 125). In contrast, the inductive approach tries to develop a new theory based on collecting data and on the results of the data analysis. Table 5 shows the main differences between the deductive and inductive approaches.

Table 5. Differences between deductive and inductive research approaches  
(Saunders et al. 2009, 127)

Deductive approach	Inductive approach
<ul style="list-style-type: none"> <li>• Scientific principles</li> <li>• Moving from theory to data</li> <li>• The need to explain causal connections between variables</li> <li>• The collection of quantitative data</li> <li>• Highly structured approach</li> <li>• The necessity of selection of sufficient samples size to generalize conclusion</li> </ul>	<ul style="list-style-type: none"> <li>• Gaining an understanding of the meanings humans attach to events</li> <li>• The collection of qualitative data</li> <li>• More flexible structure to permit changes of research emphasis as the research progresses</li> <li>• Less concern with the need to generalize</li> </ul>

Based on the characteristics of the approaches above, an inductive approach is used in this study because it is most appropriate for the purposes of the research, exploratory research, and it gives the author the flexibility of restructuring as the research progresses. Figure 6 describes the main steps in this research.

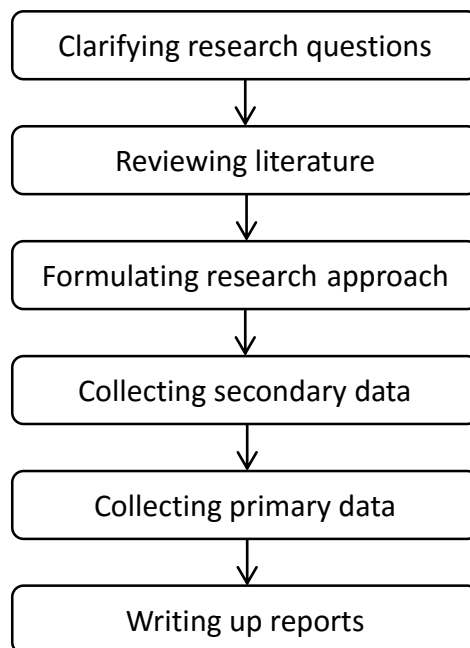


Figure 6. Research process

## **4.2 Data collection**

Once the research problem and approaches have been defined, the next step is getting the type and sources of data that yields expected results (Sontakki 2010, 137). There are generally two types of data indicating where the data comes from: secondary data and primary data. The secondary data is data that had previously been collected by individuals or organizations, either published or unpublished (Sontakki 2010, 137). The primary data is the one collected by researchers, fully regarding their research problems (ibid. 2010, 142).

In this study, the author used both data types. Firstly, the secondary data was collected from available sources and after that, the interviews was conducted to seek additional information. The data was gathered around the research theme and the theoretical framework in order to answer the defined research questions.

### **4.2.1 Secondary data**

There are two basic sources of secondary data: Internal and external. Internal data is compiled by the researcher's organization from regular operations (Sontakki 2010, 139). External data, on opposite, come from the outside of the organization. External data was the main source of this research and it was collected from governmental statistics, research institutions' reports & statistics, trade associations, internet, and so on. The most important sources that the author used are: Vietnam's General Statistics Office, World Economic Forum reports, reports from Foreign Embassies in Vietnam.

### **4.2.2 Primary data**

Primary data in this research was collected using interviews. Saunders et al. (2009, 320) categorise interviews into three types: structured, semi-structured, and unstructured interviews. In this research, semi-structured interview was adopted to accommodate the exploratory approach of the study. According to Saunders et al.

(2009, 320), although in semi-structured interview, a list of questions and themes needs to be covered, they can be different from interview to interview, depending on the organizational context and also the needs of the author. This method helps the author to keep focus on the topic during the interview; whilst it still gives her the opportunity to be open to new information and enrich gathered data.

Interviews in this study were conducted on the phone with local governmental officials and waste disposal companies' representatives. Four interviews were conducted with participants listed on table 6.

Table 6. List of interview participants

Name of Participant	Type of Organization	Position
	District's People Committee	Vice Chairman
	District's Department of Natural Resources and Environment	Head of Department
	Waste disposal company	Company Representative
	Environment Joint Stock company	CEO

The list of questions was generated based on the themes, research questions, theoretical framework, and the primary findings from the secondary data collection. Depending on the answers of interviewees and the context, the author could remove/add more questions during the interview. The process of conducting interview was proceeded as follow: Interview --> Analysis --> Interview. The process ended when the author received no new information from the participants. This allowed the author to be wiser about what to ask and what not to ask in the next interview.

### **4.3 Data analysis process**

Data analysis process aims to draw conclusions from data collected. Semi-structured interviews were used in this research and collected data is categorised as qualitative data. In order to analyse data thoroughly, when permitted by participants, interviews were recorded and transcribed. In case recording was not allowed, the author took notes main ideas during the interview.

Construction of themes is a common way to analyse qualitative data. In some cases, themes are already constructed when designing the research (Approaches to data analysis 2016). In this research, data analysing process was based on the pre-constructed theme and theoretical framework, which are Porter's diamond model and PESTEL analysis. Data analysing process in this research followed the steps below:

- i. Prepare interview notes and transcripts
- ii. Summarize and categorise data based on theoretical framework
- iii. Draw conclusions from the data
- iv. Summarize findings and write report

### **4.4 Ethical consideration**

Research ethics is important and may not be neglected in the research procedures. Saunders et al. (2009, 183) refers research ethics as the researcher's appropriate behaviour towards those who are subject of his work or are affected by it. Complying with research ethics is essential to avoid causing harm to the research participants (Duong 2015, 31). Before interviews, all participants were fully informed about the purposes of the study and had the full right to decide to participate or not. They also had the right to disclose their names or keep it anonymous in the research. The author only recorded the interview if she was given permission by the participants. During the interview, they had the right to refuse to answer any questions if they felt uncomfortable; and they could stop the interview any time.



## 4.5 Verifications of findings

Verification of findings is a crucial step to ensure the reliability and validity of the research findings. In this study, the author used the following criteria to validate the results.

*Credibility* – Internal validity regards to what extent the results reflect research problems and answer the research question (Akpinar 2009, 81). The author chose Porter's diamond model and PESTEL analysis as theoretical framework and collected data based on that.

*Transferability* – Transferability assesses to which degree the research results can be generalized or transferred to other contexts (Qualitative Validity 2016). Researcher can improve transferability by describing thoroughly the research context and hypotheses regarding the research (ibid.).

*Dependability* – Dependability concerns with whether findings remain the same if investigated by different researchers (Qualitative Validity 2016). As the author was highly concerned about reliability of the research, most data was collected from official trustworthy sources such as The World Bank, CIA, Governments' websites, and General Statistics Office of Vietnam. When possible, the author tried to collect information from two or more sources to compare the findings. Interview participants' bias was also concerned. The author minimized participant bias by giving participants a full right to stay anonymous as well as to not answer a question when they felt uncomfortable, instead of answering with wrong information.

*Confirmability* – Confirmability concerns about whether same results can be obtained by other researchers from the same data sets (Akpinar 2009, 82). Research results may not be objective due to researcher' bias based on his or her own experiences (ibid.). The author took this issue into consideration when analysing data and increased the research objectivity by drawing conclusion solely based on collected information.

## **5 RESULTS**

### **5.1 An analysis of Vietnam's solid waste management industry based on Porter's Diamond model**

#### **5.1.1 Factor conditions**

##### *Human resources*

Vietnam has a young population with most people are at working age. In 2014, the labour force was 53.7 million people, 14.1% of which is youth labour force (Report on labour force survey 2014, 1). Vietnam's labor force is not so educated with more than 80% having no technical training or qualification; only 7.8% have university-level education. The workforce in the waste management industry has remained stable in the last five years, with over 100,000 workers occupying 0.2% of the total employed population (Table 7).

Table 7. Overall annual employed population structure 2014

(Report on labour force survey 2014, 117-120)

Occupation	Number of workers (thousand persons)	Percentage (%)
Agriculture, forestry and fishing	24408.7	46.3
Mining and quarrying	253.2	0.5
Manufacturing	7414.8	14.1
Electricity, gas, steam and air conditioning supply	138.6	0.3
<b>Water supply, sewerage, waste management and remediation activities</b>	<b>109.1</b>	<b>0.2</b>
Construction	3313.4	6.3
Wholesale and retail trade; repair of motor vehicles and motorcycles	6651.6	12.6
Transportation and storage	1535.5	2.9
Accommodation and food services	2301.1	4.4
Information and communication	317.9	0.6
Finance, banking and insurance	352.1	0.7
Real estate activities	158.1	0.3
Professional, scientific and technical activities	250.6	0.5
Administrative and support services	262.1	0.5
Activities of Communist Party	1697.2	3.2
Education and training	1860.4	3.5
Human health and social work	492.7	0.9
Arts, entertainment and recreation	285.7	0.5
Other services activities	764.4	1.4
Employment in small family businesses	175.0	0.3
International organizations and bodies	2.4	0.0
<b>Total</b>	<b>52744.6</b>	<b>100</b>

In Vietnam, there is currently a lack of institutional capacity and high-skilled human resources, resulting in low collection rates and poor disposal facilities (Nguyen 2005). One of the challenges that companies are facing is that it is difficult to find sufficiently skillful employees to run modern foreign made machines.

#### *Physical resources*

Vietnam is located in the center of Southeast Asia, with 3,260km of coastline. That makes the country an attractive destination for tourism, international trade and economic development (Geography, climate, natural resources 2008). The three biggest and most important sea ports of Vietnam are Hai Phong, Da Nang and Sai Gon sea ports. Vietnam is rich in natural resources such as oil & gas, coal resources, hydropower, etc.

#### *Knowledge resources*

Vietnam has a number of universities and research institutes involved in the waste disposal research. The country has 234 universities and 185 colleges with over 2 million students; of which at least 34 universities have Environmental Science or Environmental Engineering majors (Statistical Yearbook of Vietnam 2014, 652; Higher Education in Vietnam 2014). With the funding from the World Bank and ADB, 17 universities were chosen to establish partnerships with foreign universities across 23 subjects in the field of science and technology (Higher Education in Vietnam 2010). International partnerships promise an improvement in the teaching quality, as well as an enhancement of students' competency in terms of specialized knowledge and language skills (ibid.). Environmental studies have become more popular among students, and many of them continue to study on higher levels (Msc, PhD levels) abroad.

#### *Capital resources*

Both public and private funding is available in Vietnam. Vietnam is a big beneficiary of the Official Development Assistance (ODA), a type of aid coming from the

governments of developed countries with no or a very low interest rate. Japan is the largest ODA donor of Vietnam. ODA is allocated by the Vietnamese government and prioritized in the transportation, energy, water and environment, education, health, and agriculture sectors.

Access to capital, however, differs greatly between the SOEs and private enterprises. The SOEs have a huge advantage in accessing public loans/aids compared to the private companies (Sustaining Vietnam's growth: The productivity challenge 2012). Access to loans is difficult while it is easier to finance through a local equity market.

### *Infrastructure*

Despite the high achievements in the economic development, the physical infrastructure in Vietnam is still inadequate. It is one of the biggest weaknesses of Vietnam's business environment (Nguyen & Dapice 2016, 1). The communication infrastructure, on the other hand, is relatively sound due to the market liberalization and competition (Vietnam Competitiveness Report 2010, 97). Recently, Vietnam has received a significant amount of investment and aid for the infrastructure development. The private sector is now more involved in the progress through public-private partnerships, which promises a better infrastructure in the near future.

### **5.1.2 Demand conditions**

Vietnam has a large population of over 90 million people and a high municipal waste growth rate. To respond to the increasing waste generation and the fact that most of the current landfills are insanitary, more investments have been initiated by the local government as well as foreign organizations to improve the system. The demand for efficient waste management solutions and waste treatments in Vietnam is high as the current system is not effective. There are 95 waste organizations, of which only two are private, working in municipal waste disposal, serving 82 cities and towns (Nguyen 2005). Large industrial parks and key economic regions have also been

increasing, generating a high amount of industrial waste. Companies are constantly looking for an effective and cost-efficient way for waste treatments, especially for industrial hazardous waste.

*Composition of home demand* – Local requirements are not sophisticated in Vietnam and the customers' standard is relatively low in most sectors (Figure 7). The requirements for technology providers in solid waste management industry are not demanding mainly focus on the easiness of running and maintenance. Regulations are also weak in term of the quality standard and enforcement (Vietnam Competitiveness Report 2010, 97).

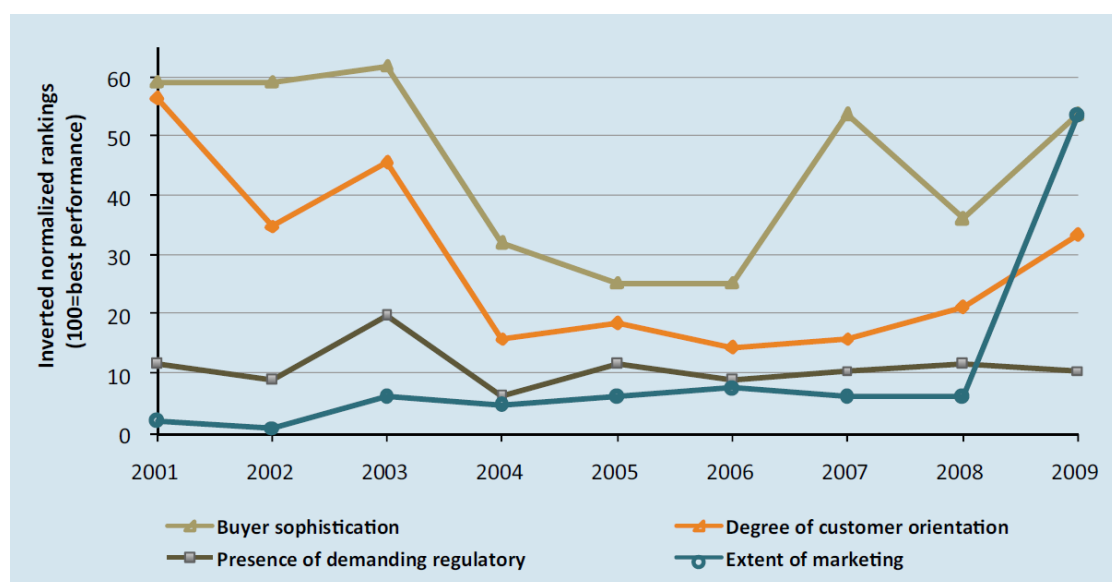


Figure 7. Patterns of Market Development of Vietnam  
(ibid., 90)

*Demand size and pattern of growth* – Many projects have been started recently in response to the growth of waste generation. For example, between the year 2013-2015 in Hanoi, 12 municipal waste disposal facilities and landfills were started with the funding from state-owned institutions. Local waste management companies are

constantly looking for waste disposal technologies from abroad. Most of the technology providers are from Singapore, China, USA, and European countries.

*Internationalization of domestic demand* – Up to now, the majority of companies in Vietnam's solid waste management industry are state-owned with technologies provided by foreign companies; some of them are big multinational companies and have subsidiaries in Vietnam.

### **5.1.3 Related and supporting industries**

Institutional arrangement of solid waste management in Vietnam is complex and involved many Ministries in the system. Consequently, there are an existent conflicts between the Ministries and policies are generally ineffective. Clusters are low in term of sophistication and dynamics with weak connections between participants (Vietnam Competitiveness Report 2010, 90). There are several big industrial parks and economic zones in Vietnam, offering companies adequate infrastructure and simplified paperwork procedures. However, there has been no significant effort on forming cluster linkages of supporting and related industries (ibid., 91).

Solid waste management industry in Vietnam is connected to several other players; among them, energy-from-waste is currently one of the most connected and attractive sectors to investors. Energy can be in the form of gas, fuel and electricity. Organic waste is a potential input for the production of biogas, biodiesel or electricity, which will generate income for companies.

Together with the economic growth, the demand for energy is also increasing. Vietnam is a major exporter of crude oil but also a big importer of oil products (Vietnam Overview 2014). Diesel – the most common fuel for road transportation – is frequently imported from neighbour countries such as China or Singapore. The consumption of diesel in road sector has increased considerably (Figure 8), which means demand for production has also increased. Retail price of diesel has also

increased by almost 400% in the past decades (Figure 9). Therefore, being able to turn organic waste into diesel will be a potential source of income.

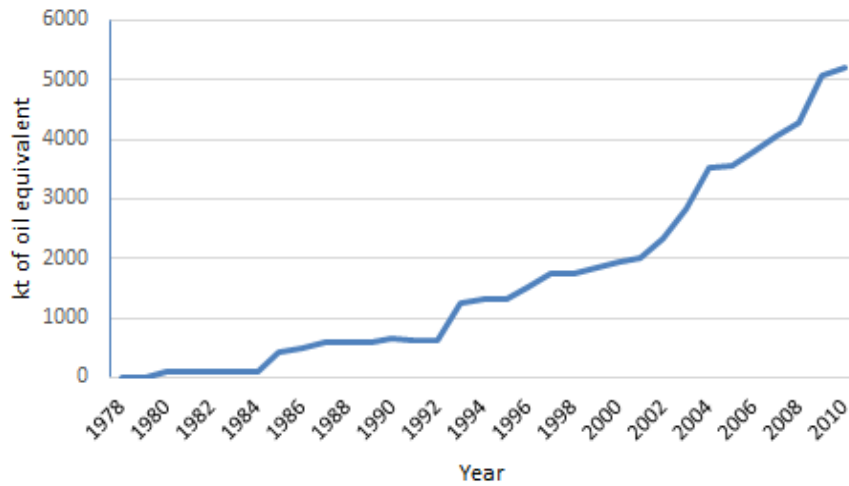


Figure 8. Road sector diesel consumption in Vietnam  
(World Development Indicators 2014)

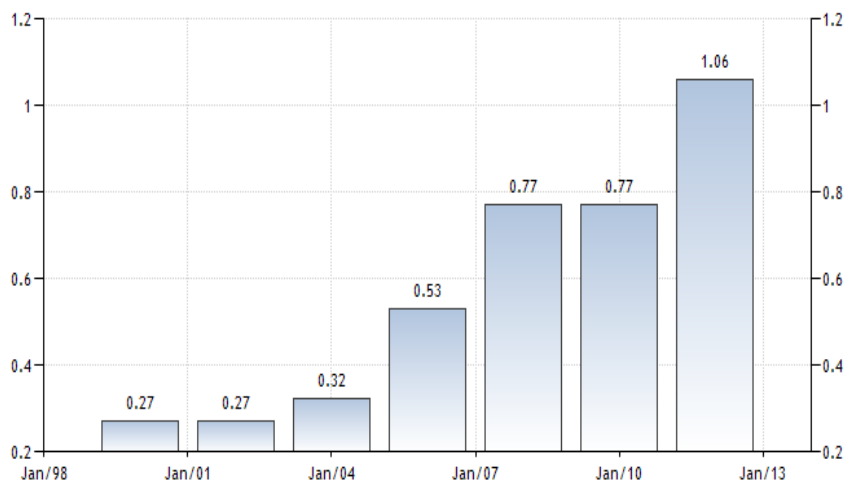


Figure 9. Vietnam's pump price of diesel  
(US\$/liter) (Pump price for diesel fuel in Vietnam 2014)



Just as important as diesel, ensuring sufficient electricity for industrial activities is very crucial for economic development of Vietnam. In a developing country where 49% of GDP is from industrial activities like Vietnam, one hour of electricity blackouts can cause a loss of up to \$45 million for the economy (Thiet hai do thieu dien: Thong ke khong ke xiet 2005). The consumption of electricity in Vietnam has grown 400% in the period 2000-2012. Vietnam Electricity, a state-owned company, holds the monopoly in transportation and distribution of electricity.

With support from the Vietnamese government, electricity price in Vietnam is generally low compared to neighbour countries. As of March 2015, for family use, electricity costs \$7 cents/kWh for the first 50 kWh in a month and goes up to \$12 cents/kWh (Bieu gia ban le dien 2016). For manufacturing & business use, electricity prices vary from \$4 cents/kWh to \$18 cents/kWh, depending on peak & off-peak hours and the amount used per month (ibid.).

#### **5.1.4 Firm strategy, structure and rivalry**

According to Porter (1998, 108), there is existence of similarity among all firms in a nation. In Vietnam, the competition in most industries, including solid waste management, tends to focus on price and not on quality (Vietnam Competitiveness Report 2010, 88). Vietnamese companies also appreciate short-term return on investment instead of sustainable long-term returns. This attitude is slowly changing but not yet significant.

Vietnamese companies have recognized the important of international cooperation. According to a survey of Vietnam Chamber of Commerce and Industry (ibid., 96), 65.1% of companies put export as a priority for business growth.

Despite weak corporate governance management, SOEs still play an important role in Vietnamese economy (Porter 2008, 27), especially in waste management industries, where it is not so attractive to private investors in term of return on investment. In most key related or supporting industries to solid waste management, SOEs hold the

monopoly or dominant positions (Vietnam Competitiveness Report 2010, 88). The competition for private, especially foreign firms, is fierce since SOEs hold the monopoly in most key industries.

### **5.1.5 The Role of Government**

Vietnam has removed most of its trade and investment barriers and technically put all the enterprises (FIEs, SMEs and SOEs) under the same legal framework (Vietnam Competitiveness Report 2010, 86). Recently, the government has issued new incentive schemes to encourage private investments and reduce the role of state-owned companies. The incentives from the government for environmental protection activities come in many forms: tax exemption, land lease, import tax exemption for equipment, etc. Each province and city also has their own special subsidies to encourage investments in the sector. Policy-makers expect more productivity and efficiency from foreign companies since state-owned companies are not so driven to striving for excellence.

Despite the new incentive schemes towards the private sector, the role of the government, however, is still unclear in Vietnam's economy. SOEs are still receiving special treatments and have strong connections with the regulators, which gives them special advantages in the competition (ibid., 89). Besides, in many cases, the law is confusing and not consistent between different ministries making it difficult for companies to operate while having to comply with all the regulations.

### **5.1.6 The Role of Chance**

Chance events that are most likely to affect the competition in Vietnam, and should be considered by companies, include "Changes in global financial market" and "Changes in global oil or gas prices". These external factors cannot be controlled by a particular firm but can have effects on firms to some extent. Chances of political decisions, new inventions, or wars are least likely to happen.

## **5.2 PESTEL Analysis**

### **5.2.1 Political**

Vietnam is a one-party country governed by the Vietnam Communist Party. Since the economic reform “Doi Moi” was launched in 1986, Vietnam has issued welcoming policies toward international trade relations. Vietnam has good international relations and is a member of important organizations in the region and in the world such as the Association of Southeast Asian Nations (ASEAN). Recently, however, the dispute between Vietnam and China in the South China Sea has created tension between the two countries.

Under the control of the Communist Party, there are restrictions on freedom, which can affect the access to social media, personal blog or some specific websites (Overseas Business Risk – Vietnam 2015).

Despite governmental stability, Vietnam has a relatively high level of political risk, with most risk indicators being above the World Average (Figure 10). The International Transaction and Regional Stability are the riskiest scoring a four. The Social Stability and Legal Systems come next with scoring 3.6 and 3.8 respectively. In addition, corruption and inefficient governmental bureaucracy are listed as some of the most problematic factors for doing business in Vietnam (The Global Competitiveness Report 2014, 384).

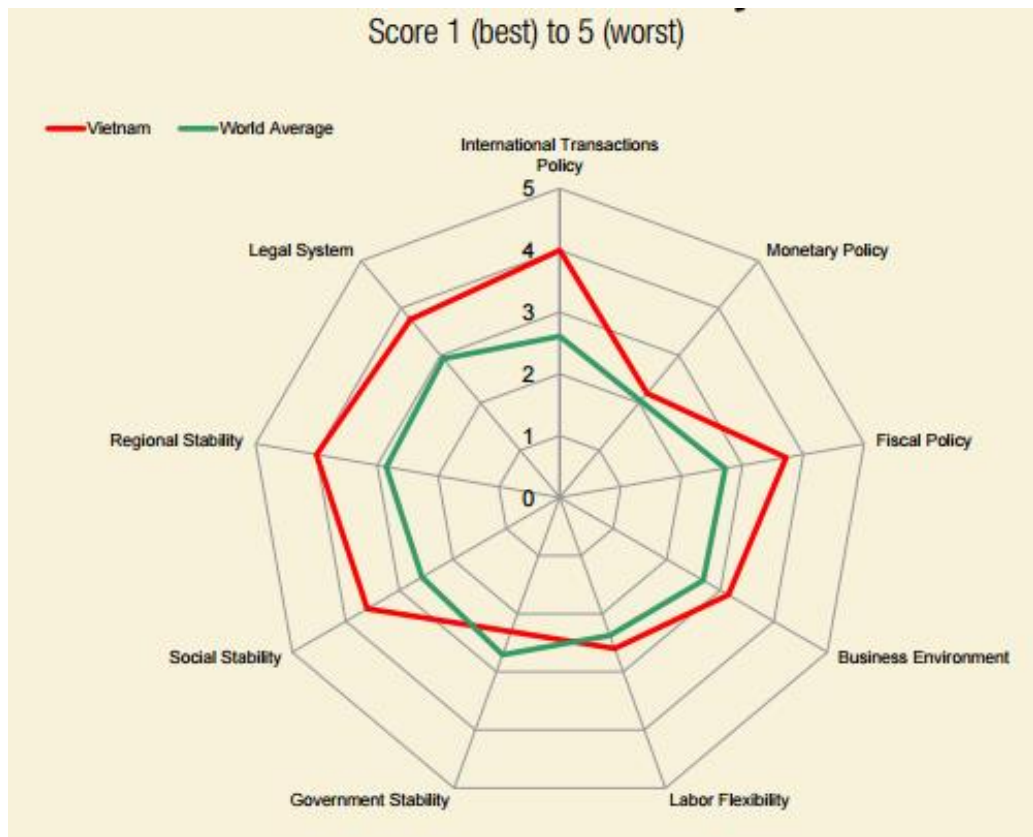


Figure 10. Vietnam's Political Risk Summary  
(Country Risk Report – Vietnam 2015, 3)

### 5.2.2 Economic

After the economic reform in 1986, Vietnam has seen high economic growth and GDP per capita (Figure 11); GDP per capita has grown by 400% since the 1990s (The Global Competitiveness Report 2014, 384). Since 1986, average annual GDP growth of Vietnam has remained stable at around 6%. Vietnam is now one of the fastest-growing countries in South East Asia (Overseas Business Risk – Vietnam 2015).

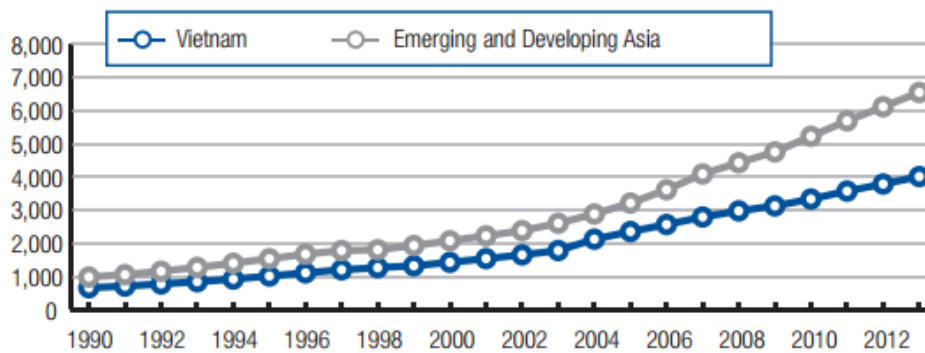


Figure 11. Vietnam's GDP (PPP) per capita 1990-2013  
(The Global Competitiveness Report 2014, 384)

FDI inflow to Vietnam has grown considerably, in both number of projects and amount of capital (Figure 12). Total registered FDI capital averaged 16.525 billion USD from 2000 until 2014 (Investment 2016). FDI plays an important role in economic development of the country, counting for 8% of total GDP. In the fourth quarter of 2015, FDI in Vietnam increased by 2.62 billion USD. Manufacturing & processing sector is the most attractive sector of FDI inflows, reserving more than half of the FDI stock. Japan and South Korea have been the top FDI partners of Vietnam; as of April 2014, each country has registered a capital of more than 30 billion USD (Nguyen 2014). Most of the manufacturing products in Vietnam are exported (Overseas Business Risk – Vietnam 2015).

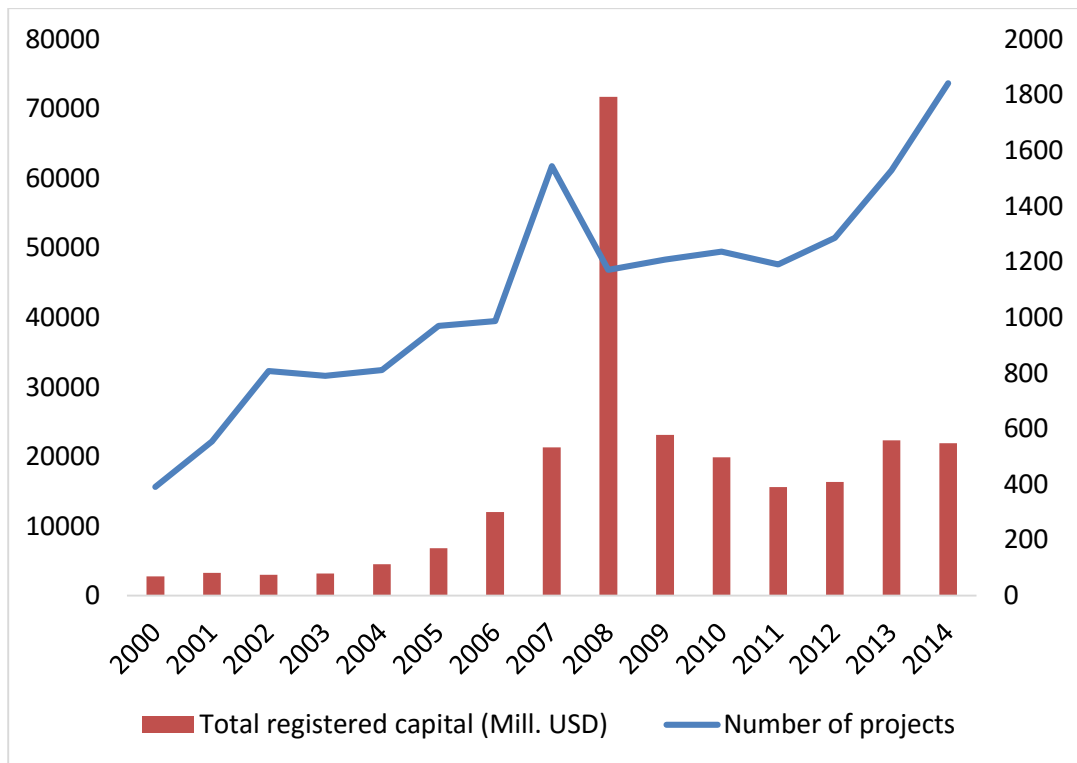


Figure 12. Vietnam's FDI inflow 2000 – 2014

(Investment 2016)

Financial sector and banking system in Vietnam is still volatile. Vietnam’s banking system has experienced high percentage of non-performing loan and under-capitalisation (Mapping current incentives and investment in Viet Nam's water and sanitation sector: informing private climate finance 2015, 9). Soundness of banks scores 3.5 on the Global Competitiveness Report 2015, ranks 132<sup>nd</sup> out of 144 countries. High inflation rate is ranked as one of the most problematic factors of doing business in Vietnam (The Global Competitiveness Report 2014, 384).

### 5.2.3 Social

Vietnam has a young population structure, with more than 40% of the population is under age of 25 (Figure 13). This guarantees a stable workforce for the economic development in the coming years. Although Vietnam is a low-income country,

education is considered extremely important and received a large amount of investment. Children are encouraged to go for college/university-level education after graduating from high school to acquire necessary knowledge and skills for the job market.

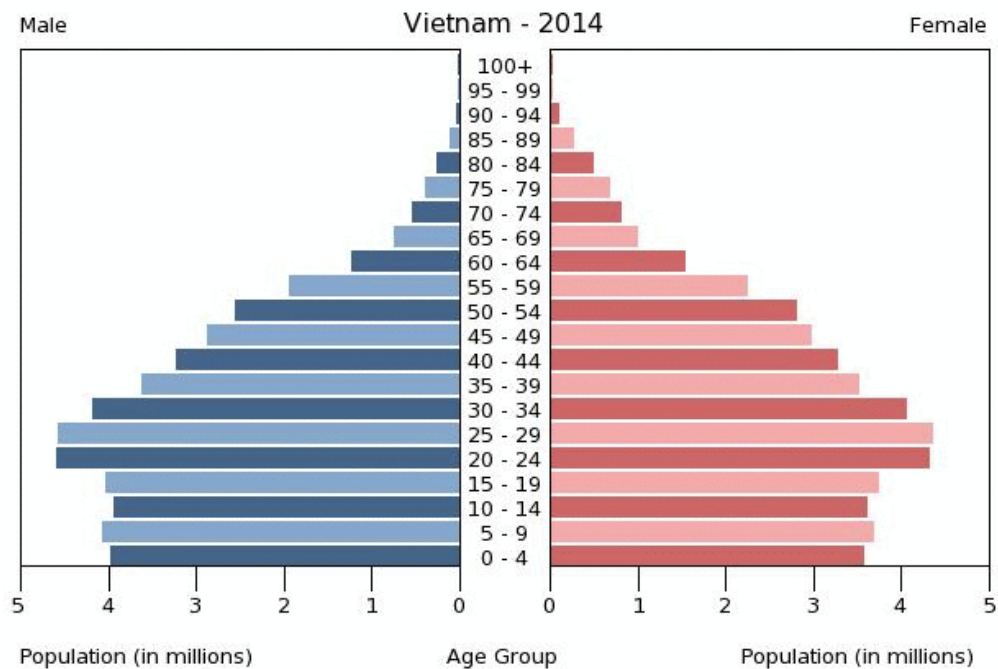


Figure 13. Vietnam's population structure 2014  
(Vietnam Age Structure 2015)

Environmental awareness and attitude toward green products of Vietnamese at household level is generally low. Vietnamese people tend not to pay much attention on the amount of waste generation or environmental effects of their lifestyle. In 2012, Vietnam initiated selling bio-gasoline E5 in seven big cities; bio-gasoline price was lower than fossil gasoline due to aid from Government to encourage environmental-friendly products (Nguyen 2012). However, consumers preferred to use fossil gasoline and refused to change to bio product. Eventually, the bio-gasoline sale has remained poor and a large amount has been exported at a low price.

The Vietnamese government and foreign organizations have been initiating many program to raise awareness of Vietnamese people on negative environmental effects and climate change. Among young population, awareness on negative environmental issues has been improved, promises more sustainable living behaviours in the next years.

#### **5.2.4 Technological**

Vietnam has improved significantly in the IT sector with a growing number of programmers, engineers, tech entrepreneurs, students enrolled in engineering studies, and especially in the number of IT businesses (Marvin 2015). The Vietnamese government has foreseen the importance of the tech sector in the economic development: they have invested in proper IT infrastructure and adopted appropriate policies to encourage the IT development (ibid.).

With a large pool of talent, low-cost advantages and encouraging policies from the government, Vietnam has become attractive to many big tech multinational companies such as Samsung, Nokia, IBM, Microsoft, HP, Sony, etc. The total export value of the hardware electronics industry in 2013 reached \$34.76 billion, increased by 51.7% compared to 2012 (Vietnam IT Market Overview 2015). The revenue from telecommunication has also increased due to the increase in the number of Internet and mobile phone users. In 2013, the number of broadband subscribers and telephone subscribers was 22.4 million and 130 million respectively (Vietnam IT Market Overview 2015).

The development of the IT industry in Vietnam has mainly focused on hardware products than software services. Despite the growth in the IT sector, the technological readiness in Vietnam is still low, and the Vietnamese companies are generally slow in following the latest technology (The Global Competitiveness Report 2014, 30). Vietnam ranked 123<sup>rd</sup> out of 144 countries in the availability of latest technologies (ibid., 385). Except for certain sectors such as IT, banking, and aviation, most Vietnamese companies are still using outdated technologies, even in the



manufacturing industry that accounts for one-third of the companies in Vietnam (Minh 2014). In the solid waste management industry, for example, the main waste disposal method is burying in landfills. Technological investments in the Vietnamese enterprises are also scarce (Minh 2014).

### **5.2.5 Ecological/Environmental**

The rapid economic development, urbanization and population growth have had a strong negative impact on Vietnam's environment. They have led to water, air and noise pollution especially in the big cities such as Hanoi and Ho Chi Minh City (Vietnam - Environment 2016). Deforestation and the improper use of land have caused serious environmental problems in Vietnam, including soil erosion, flood, typhoons, droughts, river sedimentation, and so on (ibid.).

The regulations regarding environmental protection are weak and not well enforced. When it comes to the legal framework on waste management, the Law requires waste to be properly managed in all stages, including collection, transportation and disposal (Revised Law on Environmental Protection 2015). Although Vietnam has signed different international treaties regarding environmental protection and climate change, its level of commitment is still inadequate (The Global Competitiveness Report 2014, 72).

Some of the most important and newest legislative documents on environmental protection are shown below:

*Law on Environmental Protection 55/2014/QH13* – The Law was published on 23 June 2014, being effective from 1 January 2015. The Law on Environmental Protection includes regulations on environmental protection activities: governmental strategy, solutions and resources on environmental protection; rights and obligations of organizations, companies, households in supporting environmental protection. The Law also specifies the requirements on waste management to decrease the level of harm it can do to the environment.

*Law on Natural Disaster Prevention 33/2013/QH13* – The Law was published on 19 June 2013, being effective from 1 May 2014. The Law specifies the rights and obligations of organizations, companies and households of taking actions on natural disaster prevention and control. The Law also states the actions and resources of the government in natural disaster prevention.

### **5.2.6 Legal**

When it comes to the legal framework on doing business, Vietnam does not offer a clear and favourable environment for foreign investors. Regulations are managed by a complex institutional system. The Vietnamese government, however, has planned to improve the legal system to create an encouraging investment environment (Vietnam targets more FDI with new legal framework 2014). The “National Strategy for Integrated Management of Solid Waste up to 2025 and vision towards 2050” (2009) was improved by the government in 2009, with following main objectives:

- To build an efficient integrated solid waste management systems at all stages; to well manage and treat hazardous waste
- Increase solid waste management effectiveness in order improve environmental issues, community health and reach sustainable development
- To raise awareness among community about integrated solid waste management and support environmental sustainably lifestyle
- To prepare better infrastructure, human and financial resources

In order to successfully implement the Strategy, the Vietnamese government stated that having a complete and supportive legal documents & policies in the sector is necessary (Decision: Approving the national strategy for integrated management of solid waste up to 2025, with a vision to 2050, 2009). Below are some main current legal documents on solid waste management (Nguyen 2014):

- Law 55/2014/QH13 dated 23/6/2014 on Environmental Protection
- Decree No.59/2007/ND-CP dated 09/04/2007 on solid waste management

- Decree No.174/2007/ND-CP dated 29/11/2007 on environmental protection fee of solid waste
- Decree No.04/2009/ND-CP dated 14/1/2009 on Government's incentives and supports on environmental protection activities
- Circular No.121/2008/TT-BTC dated 12/12/2008 on financial supports for investment in solid waste management sector
- Decree No.117/2009/ND-CP dated 31/12/2009 on guidance on executing violations in environmental protection sector
- Decree No.69/2008/ND-CP dated 30/5/2008 on incentives for educational, healthcare, cultural, vocational, sports and environmental activities

Waste management is considered as environmental protection activities and therefore receives extensive tax and finance incentives as other environmental related sectors. Incentives in this segment includes land lease; value added tax, corporate income tax & import tax exemption/reduction; priority access to loans/aids (Nguyen 2014). Depending on location of the project, companies may also receive additional subsidies from local municipality council.

## **6 DISCUSSION**

This research aimed at reviewing current status of Vietnam's solid waste management industry and its overall business environment. Porter's diamond model and PESTEL analysis were used as theoretical framework to explore the two research objectives:

- To have an in-depth understanding on Vietnam's solid waste management industry and its overall business environment
- To provide foreign companies with an overview of macro-economic factors of Vietnam's business environment and a background to conduct further internal research

## 6.1 Answers to research questions

*What is the situation of solid waste management industry in Vietnam?*

Porter's diamond model was used to review the industry. Regarding factor conditions, Vietnam has a weak skilled labour force with only 7.8% of labour population has university-level education (2014). The country has an extensive network of universities and colleges, hosting over 2 million students. With more students enrolled in environmental-related studies, labour force quality in waste management industry is expected to improve in the coming years. Geographically, Vietnam is located in a strategic location with 3,260km of coastline and is an attractive tourism location. Infrastructure situation in Vietnam is inadequate and is one of the biggest problems of doing business in Vietnam. The country is a large recipient of ODA and other kinds of development aids. Access to capital and aid, however, differs greatly between SOEs and private enterprises.

With regards to demand conditions, solid waste management system in Vietnam needs major improvement in order to deal with the high rate of waste growth. Vietnam has a big population and is in need of efficient waste disposal solutions. Customer sophistication in Vietnam is relatively low.

Vietnam has a complex waste management system with the involvement of different Ministries at national level. Clusters linkages between related participants are weak and ineffective. When it comes to firm strategy and rivalry, competition in most industries in Vietnam tends to focus more on prices than quality (Vietnam Competitiveness Report 2010, 88) and short-term profits are more appreciated. In most key industries, SOEs hold the monopoly and the competition for private firms is fierce.

Regarding the Role of Government, the Vietnamese government has recently issued new incentive schemes to encourage private investments and to create a more equal competition for all enterprises (FIEs, SMEs, and SOEs). For environmental protection

activities, incentives come in different forms: Tax exemption, land lease, etc. The role of government, however, is unclear and SOEs are receiving special advantages over private enterprises. Changes in global financial market and oil & gas prices are the chance events that most likely to happen and have effects on firms.

*What is the situation of Vietnam's macro business environment in the framework of PESTEL analysis?*

Vietnam is a single-party country with stable political situation. Vietnam has good international relations and is a member of most important trade organizations. International Transaction and Regional Stability are the riskiest factors of Vietnam. Vietnam's economy has been growing steadily since the economic reform in 1986. FDI inflow to the country has increased considerably, in both number of projects and amount of capital. FDI plays a vital role in Vietnam's economy, accounting for 8% of total GDP. Volatile banking system and high inflation rate remains one of the biggest problems of doing business in Vietnam.

Regarding social aspect, Vietnam has a young population and is an education-focused society. Social awareness regarding environmental protection activities, however, is generally low with not much attention is paid on green development. Technological readiness is low and development of IT industry has mainly focused on hardware products. When it comes to legal framework regarding environmental protection, regulations are still weak and not well enforced in Vietnam. The Vietnamese government has issued different incentive schemes for environmental protection activities.

## **6.2 Managerial implications**

To improve the weak solid waste management system in Vietnam, strategic actions are urgently needed. First of all, more clear and supportive regulations and policies are required to create a more favourable business environment. Currently, the SOEs holds the monopoly in the sector and have almost no competitors. Involvement from

private companies and public-private partnerships should be encouraged to ensure the efficiency and productivity of companies working in the sector. Besides, environmental education is needed to improve the low skilful workforce. Awareness of the community toward sustainable development and environmental friendly living style should also be promoted.

With a high demand of waste management solutions, upcoming investments on environmental protection activities; encouraging policies and financial incentives from the government, Vietnam's solid waste management sector is a promising market for foreign companies.

Due to the existing disadvantages such as unclear legislation, monopoly of SOEs in the sector; exporting technology/service is recommended instead of investing in the industry. A direct sale in Vietnam is rather difficult and complex due to the involvement of multiple parties in the buying process, especially in the solid waste management industry where most of the stakeholders are state-owned. In Vietnam, a political relationship is the key to winning public contracts and one of the most important key success factors when doing business. Therefore, it is strongly recommended that new entrants should look for a good local partner.

### **6.3 Limitations of study**

This research was conducted to analyse Vietnam's solid waste management industry. There are still limitations that need to be taken into account.

First of all, at the moment, Vietnam has 58 provinces and 5 municipalities functioning on an equal level with the provinces. They are located in an area stretching 3000km from the north to south. The author only had access to stakeholders from Hanoi to do the interviews. Although the figures from the secondary sources represent the whole country, it might not be the case when it comes to the information from the interviews. Secondly, since the author was not physically in Vietnam, the interviews

were conducted over the phone. That might lower the confidence and quality of the participants' answers.

Despite the limitations mentioned above, however, the research can still provide solid and up-to-date information that would be beneficial for those who want to understand Vietnam's solid waste management and its business environment. The research method used in this study suited the primary objectives and helped answer the research questions. The gathered information aligned with the theoretical framework. As the author is concerned about the reliability of the research, most of the data was collected from official reliable sources. Since Vietnam is the author's home country, it was possible for the author to gather the secondary data and to conduct the interviews with Vietnamese authorities.

#### **6.4 Recommendations on further research**

The outcome of this research is recommended for companies, investors, or researchers to have an understanding on Vietnam's solid waste management sector and its business environment. Results of the research can also be useful for further studies such as a research on energy-from-waste business opportunities; a study on business opportunity in recyclable waste; or a research on how social/cultural attitude towards environmental friendly lifestyle can affect the industry.

A study on energy-from-waste business opportunities is useful for technology providers or investors to have more in-depth information about this specific segment of the solid waste management system in Vietnam. Organic waste, which accounts for 54-79% of municipal solid waste in urban areas, can be a potential source to produce on-demand energy such as diesel or electricity.

Secondly, recycling activities are very active in Vietnam with a high recycling rate. However, recycling businesses are mostly either informal family businesses or small-scale enterprises. It could be interesting to investigate more on the subject to see if there is possibility to have formal services in this segment.

Finally, social/cultural awareness towards environmental sustainability plays an important role in waste management industry. Some kinds of waste treatment require waste to be sorted at source. However, if trash sorting is not a common practice, it would not be possible to exercise these kinds of treatment. It would be interesting to know the latest status of this issue since social attitude tends to change quickly in developing countries like Vietnam.



## REFERENCES

Antell, F. 2012. Foreign Market Entry: The Strategic Decision of Foreign Market Entry by Service Firms. Bachelor's thesis. Linnaeus University. School of Business and Economics, Bachelor in Marketing. Accessed on 23 December 2015. Retrieved from <https://www.diva-portal.org/smash/get/diva2:530210/FULLTEXT01.pdf>

Akpinar, M. 2009. Understanding primary stakeholders of a firm in response to market integration in the European Union: Volkswagen, 1960-2005. *Turun kauppakorkeakoulun julkaisu, Sarja A 2:2009*

*Approaches to data analysis*. 2016. Page on London School of Economics and Political Science's website. Accessed on 28 February 2016. Retrieved from <http://www.lse.ac.uk/media@lse/research/EUKidsOnline/BestPracticeGuide/Home.aspx>

Acs, Z. J., & Szerb, L. 2010. The Global Entrepreneurship and Development Index (GEDI). Paper on Druid Conference's website. Accessed on 31 March 2016. Retrieved from <http://www2.druid.dk/conferences/viewpaper.php?id=502261&cf=43>

Babatunde, B. O., & Adebisi, A.O. 2012. Strategic Environmental Scanning and Organization Performance in a Competitive Business Environment. *Economic Insights – Trends and Challenges*, 64, 24-34.

Bao cao moi truoc quoc gia 2011. 2011. Pdf document on Centre for Environmental Monitoring's website. Accessed on 10 November 2015. Retrieved from <http://quantracmoitruong.gov.vn/Portals/0/Bao%20cao/SOE%202011/Baocaomoitruongquocgia2011.pdf>

Bieu gia ban le dien. 2016. Page on Vietnam Electricity's website. Accessed on 20 January 2016. Retrieved from <http://www.evn.com.vn/EVN-khach-hang/EVN-khach-hang/Gia-dien/Bieu-gia-ban-dien/Bieu-gia-ban-le-dien/Index.aspx>

Bakan, I., & Dogan, I.F. 2012. Competitiveness of the industries based on The Porter's Diamond Model: An empirical study. *International Journal of Research and Reviews in Applied Sciences*, 11, 441-455.

Barragan, S. 2005. Assessing The Power of Porter's Diamond Model in The Automobile Industry in Mexico after Ten Years of Nafta. Master's thesis. University of Lethbridge. Faculty of Management, Master of Science in Management. Accessed on 8 November 2015. Retrieved from <https://www.uleth.ca/dspace/bitstream/handle/10133/586/barragan,%20salvador.pdf?sequence=1>

Cho, D. S., & Moon, H. C. 2013. *From Adam Smith to Michael Porter: Evolution of Competitiveness Theory*. Extended ed., World Scientific.

Cadle, J., Paul, D., & Turner, P. 2010. *Business Analysis Techniques: 72 Essential Tools for Success*. BCS The Chartered Institute for IT.

*Cleantech Market Vietnam Report*. 2013. Pdf document on Switzerland Global Enterprises' website. Accessed on 3 December 2015. Retrieved from [http://www.s-ge.com/sites/default/files/private\\_files/BBK\\_Vietnam\\_Cleantech\\_Market\\_Report\\_08\\_13.pdf](http://www.s-ge.com/sites/default/files/private_files/BBK_Vietnam_Cleantech_Market_Report_08_13.pdf)

*Country Risk Report – Vietnam*. 2015. Pdf document on A.M.Best's website. Accessed on 24 February 2016. Retrieved from <http://www3.ambest.com/ratings/cr/reports/Vietnam.pdf>

Duong, A.H. 2015. The effect of employee empowerment on service quality in food service firms. Bachelor's thesis. JAMK University of Applied Sciences. School of Business and Service Management, Degree Program in Facility Management. Accessed on 19 January 2016. Retrieved from <https://www.theseus.fi/bitstream/handle/10024/92927/Hong%20Anh%20Duong%20F5269%20THESIS%20final.pdf?sequence=1>

Decision: Approving the national strategy for integrated management of solid waste up to 2025, with a vision to 2050. 2009. Page on Ministry of Construction's website. Accessed on 3 March 2016. Retrieved from [http://www.xaydung.gov.vn/web/guest/legal-documents/-/legal/TB4r/en\\_US/18/55968/55213](http://www.xaydung.gov.vn/web/guest/legal-documents/-/legal/TB4r/en_US/18/55968/55213)

Dado, J., Wiktor, J.W., & Zbikowska, A. 2015. Foreign Markets Entry Motives and Strategies of Polish Exporters. *Marketing & Trade*, 18, 135-150.

Diamond Model. 2015. Page on Value Based Management's website. Accessed on 3 November 2015. Retrieved from [http://www.valuebasedmanagement.net/methods\\_porter\\_diamond\\_model.html](http://www.valuebasedmanagement.net/methods_porter_diamond_model.html)

Fernandez, A., Masum, M.I. 2008. Internationalization process of SMEs: Strategies and Methods. Master's thesis. Mälardalen University. School of Sustainable Development of Society and Technology, Master in International Business and Entrepreneurship. Accessed on 19 January 2016. Retrieved from <http://www.diva-portal.org/smash/get/diva2:121500/FULLTEXT01.pdf>

*Geography, climate, natural resources*. 2008. Page on Vietnam Trade Office in the USA's website. Accessed on 21 January 2016. Retrieved from <http://www.vietnam-ustrade.org/index.php?f=news&do=detail&id=37&lang=english>

Gallagher, S. 2005. Why Does Firm Performance Differ?. Pdf document on James Madison University's website. Accessed on 30 October 2015. Retrieved from <http://educ.jmu.edu/~gallagsr/WDFPD-Global.pdf>

*Higher Education in Vietnam*. 2014. Page on World Education News & Reviews' website. Accessed on 24 January 2016. Retrieved from <http://wenr.wes.org/2014/05/higher-education-in-vietnam/>

*Higher Education in Vietnam: Student Growth, Faculty Shortages and International Partnerships*. 2010. Page on World Education News and Reviews' website. Accessed on 24 January 2016. Retrieved from <http://wenr.wes.org/2010/08/wenr-julyaugust-2010-practical-information/>

*Investment*. 2016. Page on General Statistics Office of Vietnam's website. Accessed on 28 February 2016. Retrieved from [https://www.gso.gov.vn/default\\_en.aspx?tabid=776](https://www.gso.gov.vn/default_en.aspx?tabid=776)

Koch, A.J. 2001. Factors influencing market and entry mode selection: developing the MEMS model. *Marketing Intelligence & Planning*, 19, 351-361

*Law on Environmental Protection 55/2014/QH13*. 2014. Page on Ministry of Justice's website. Accessed on 2 March 2016. Retrieved from [http://moj.gov.vn/vbpg/Lists/Vn%20bn%20php%20lut/View\\_Detail.aspx?ItemID=29068](http://moj.gov.vn/vbpg/Lists/Vn%20bn%20php%20lut/View_Detail.aspx?ItemID=29068)

*Law on Natural Disaster Prevention 33/2013/QH13*. 2013. Page on Ministry of Justice's website. Accessed on 2 March 2016. Retrieved from [http://www.moj.gov.vn/vbpg/Lists/Vn%20bn%20php%20lut/View\\_Detail.aspx?ItemID=28721](http://www.moj.gov.vn/vbpg/Lists/Vn%20bn%20php%20lut/View_Detail.aspx?ItemID=28721)

*Mapping current incentives and investment in Viet Nam's water and sanitation sector: informing private climate finance*. 2015. Pdf document on Overseas Development Institute's website. Accessed on 1 March 2016. Retrieved from <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9642.pdf>

Marvin, R. 2015. *Vietnam's Tech Boom: A look inside Southeast Asia's Silicon Valley*. Page on PCMag's website. Accessed on 3 March 2016. Retrieved from <http://www.pcmag.com/article2/0,2817,2490579,00.asp>

Minh, T. 2014. *Technological readiness a problem*. Page on Vietnam Economic Times' website. Accessed on 3 March 2016. Retrieved from <http://www.vneconomicstimes.com/article/vietnam-today/technological-readiness-a-problem>

Nguyen, A.T. 2013. Policies and regulatory framework promoting the application of biomass and biogas for power generation in Vietnam. Pdf document on Deutsche

Gesellschaft fur Internationale Zusammenarbeit GmbH website. Accessed on 19 January 2016. Retrieved from <https://www.giz.de/fachexpertise/downloads/giz2013-en-nguyen-anh-tuan-pep-infoworkshop-bio-vietnam.pdf>

Nguyen, P. 2012. *Ra mat san pham xang sinh hoc E5 cho dong co*. Page on PetroVietnam Oil Corporation's website. Accessed on 25 February 2016. Retrieved from <https://www.pvoil.com.vn/vi-VN/cac-bai-viet-ve-xang-sinh-hoc-e5/ra-mat-san-pham-xang-sinh-hoc-e5-cho-dong-co/284/434>

Nguyen, T. 2012. *Solid Waste Management in Vietnam*. Pdf document on Columbia University's website. Accessed on 10 November 2015. Retrieved from [http://www.seas.columbia.edu/earth/wtert/sofos/Nguyen\\_Vietnam\\_Waste\\_management.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/Nguyen_Vietnam_Waste_management.pdf)

Nguyen, T.L. 2014. Waste management in Vietnam: Potential for power generation. Pdf document on Deutsche Gesellschaft fur Internationale Zusammenarbeit GmbH website. Accessed on 3 March 2016. Retrieved from <https://www.giz.de/fachexpertise/downloads/2014-en-nguyenthanhnam-pep-informationsveranstaltung-vietnam-bioenergie.pdf>

Nguyen, T.T.M. 2014. *Investment in Vietnam*. Pdf document on Singapore's Building and Construction Authority's website. Accessed on 1 March 2016. Retrieved from [https://www.bca.gov.sg/ExportServices/others/Presentation-Viet\\_Nam\\_Embassy.pdf](https://www.bca.gov.sg/ExportServices/others/Presentation-Viet_Nam_Embassy.pdf)

Nguyen, X.T., Dapice, D. *Vietnam's Infrastructure Constraints*. Pdf document on Harvard Kennedy School's website. Accessed on 23 January 2016. Retrieved from [http://ash.harvard.edu/files/vietnams\\_infrastructure\\_constraints.pdf](http://ash.harvard.edu/files/vietnams_infrastructure_constraints.pdf)

*Overseas Business Risk – Vietnam*. 2015. Page on UK Trade & Investment's website. Accessed on 22 February 2016. Retrieved from <https://www.gov.uk/government/publications/overseas-business-risk-vietnam/overseas-business-risk-vietnam>

Porter, M. E. 1998. *The Competitive Advantage of Nations*. 5<sup>th</sup> ed. Palgrave Macmillan.

Porter, M. E. 2008. *Vietnam's Competitiveness and the Role of the Private Sector*. Pdf document on Viet-studies' website. Accessed on 22 February 2016. Retrieved from [http://www.viet-studies.info/kinhte/MichaelPorter\\_VN\\_Dec\\_08.pdf](http://www.viet-studies.info/kinhte/MichaelPorter_VN_Dec_08.pdf)

*Pump Price for Diesel Fuel in Vietnam*. 2014. Page on Trading Economics' website. Access on 5 November 2015. Retrieved from <http://www.tradingeconomics.com/vietnam/pump-price-for-diesel-fuel-us-dollar-per-liter-wb-data.html>

*Qualitative Validity*. 2016. Page on Social Research Methods' website. Accessed on 4 April 2016. Retrieved from <http://www.socialresearchmethods.net/kb/qualval.php>

*Revised Law on Environmental Protection*. 2015. Page on Vietnam Law and Legal Forum's website. Accessed on 2 March 2016. Retrieved from <http://vietnamlawmagazine.vn/revised-law-on-environmental-protection-4074.html>

*Report on labour force survey*. 2014. PDF document on General Statistics Office of Vietnam's website. Accessed on 21 January 2016. Retrieved from [http://www.gso.gov.vn/default\\_en.aspx?tabid=515&idmid=5&ItemID=15115](http://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=15115)

Sontakki, C. N. 2010. *Marketing Research*. Rev ed., Himalaya Publishing House.

Saunders, M., Lewis, P., & Thornhill, A. 2009. *Research Methods for Business Students*. 5<sup>th</sup>. ed., Pearson Education.

*Stages of Development*. Page on Harvard Business School's website. Accessed on 7 December 2015. Retrieved from <http://www.isc.hbs.edu/competitiveness-economic-development/frameworks-and-key-concepts/Pages/shapes-of-development.aspx>

*Sustaining Vietnam's growth: The productivity challenge*. 2012. Pdf document on Mckinsey & Company's website. Accessed on 15 February 2016. Retrieved from <http://www.mckinsey.com/global-themes/asia-pacific/sustaining-growth-in-vietnam>

Sharma, V.M., & Erramilli, M.K. 2004. Resource-based explanation of entry mode choice. *Journal of Marketing Theory and Practice*, 12, 1-18.

*Statistical Yearbook of Vietnam*. 2014. Page on General Statistics Office of Vietnam's website. Accessed on 18 February 2016. Retrieved from [http://www.gso.gov.vn/default\\_en.aspx?tabid=515&idmid=5&ItemID=15197](http://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=15197)

*Thong bao gia ban dien ap dung tu ngay 16/3/2015*. 2015. Page on Electricity Vietnam's website. Accessed on 22 February 2016. Retrieved from <http://cskh.hcmptc.vn/chitiettin/36>

*The Global Competitiveness Report*. 2014. PDF document on World Economic Forum's website. Accessed on 4 November 2015. Retrieved from <http://www.weforum.org/reports/global-competitiveness-report-2014-2015>

Tasevska, G.M. 2006. An Economic Analysis of the Macedonian Viticulture – A Competitiveness View of the Grape and Wine Sectors. Master's thesis. Swedish University of Agricultural Sciences. Department of Economics, Degree Program in Business Administration. Accessed on 8 November 2015. Retrieved from [http://ex-epsilon.slu.se/1261/1/Msc thesis by Gordana Manevska Taveska.pdf](http://ex-epsilon.slu.se/1261/1/Msc%20thesis%20by%20Gordana%20Manevska%20Taveska.pdf)

*Thiet hai do thieu dien: Thong ke khong ke xiet. 2005.* Page on Vietbao's website. Accessed on 28 February 2016. Retrieved from <http://vietbao.vn/Kinh-te/Thiet-hai-do-thieu-dien-thong-ke-khong-ke-xiet/20453929/47/>

Thanh, N.P., & Matsui, Y. 2011. Municipal Solid Waste Management in Vietnam: Status and the Strategic Actions. *International Journal of Environmental Research*, 5, 285-296.

*The World Factbook.* 2015. Pdf document on CIA's website. Accessed on 4 November 2015. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/vm.html>

*Vietnam Age Structure.* 2015. Page on Index Mundi's website. Accessed on 29 February 2016. Retrieved from [http://www.indexmundi.com/vietnam/age\\_structure.html](http://www.indexmundi.com/vietnam/age_structure.html)

*Vietnam Competitiveness Report. 2010.* Pdf document on Lee Kuan Yew School of Public Policy's website. Accessed on 23 February 2016. Retrieved from [http://lkyspp.nus.edu.sg/wp-content/uploads/2013/06/ACI\\_Vietnam\\_Competitiveness\\_Report\\_2010.pdf](http://lkyspp.nus.edu.sg/wp-content/uploads/2013/06/ACI_Vietnam_Competitiveness_Report_2010.pdf)

*Vietnam – Environment.* 2016. Page on Global Security's website. Accessed on 2 March 2016. Retrieved from <http://www.globalsecurity.org/military/world/vietnam/enviro.htm>

*Vietnam Environment Monitor.* 2004. Pdf document on The World Bank's website. Accessed on 3 November 2015. Retrieved from <http://siteresources.worldbank.org/INTVIETNAM/Data%20and%20Reference/20533187/VEMeng.pdf>

Van, H. T. 2015. Chon lap rac thai o Vietnam. Page on Vietnam Environment website. Accessed on 3 November 2015. Retrieved from <http://moitruongviet.edu.vn/chon-lap-rac-thai-o-viet-nam/>

*Vietnam IT Market Overview.* 2015. Page on TechUK website. Accessed on 2 March 2016. Retrieved from <http://www.techuk.org/insights/news/item/3540-vietnam-it-market-overview>

*Vietnam Overview.* 2014. Page on US Energy Information Administration website. Accessed on 22 February 2016. Retrieved from <https://www.eia.gov/beta/international/analysis.cfm?iso=VNM>

*Vietnam Overview.* 2015. Page on The World Bank's website. Accessed on 5 November 2015. Retrieved from <http://www.worldbank.org/en/country/vietnam/overview>

*Vietnam targets more FDI with new legal framework.* 2014. Page on Vietnam News' website. Accessed on 3 March 2016. Retrieved from [vietnamnews.vn/economy/254990/viet-nam-targets-more-fdi-with-new-legal-framework.html](http://vietnamnews.vn/economy/254990/viet-nam-targets-more-fdi-with-new-legal-framework.html)

*World Development Indicators.* 2014. Data on the World Bank's website. Accessed on 10 November 2014. Retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators>

## **APPENDIX**

### **Interview questions**

For companies' representatives:

1. What services are you offering? What kind of technology are you using and its capabilities?
2. How is talent pool in the industry? Do you find difficulty hiring capable employees?
3. What are the challenges you are facing? What are opportunities? How do you position yourself in the market?
4. From where do you get financing? How difficult is it to access to finance?
5. What kind of support do you want form the government?

For governmental officials:

1. What is the role of your department in solid waste management industry?
2. What are the key current challenges in solid waste management in your areas?
3. What kinds of support/incentives do you have for public/private companies?
4. In what areas do you think most suitable for foreign companies to enter?
5. What do you expect from foreign companies?