Toward The Green Logistics By Developing Sustainable Transportation: A Case Study From Vietnam

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Abstract

The fact that the global economy has been thriving and gaining significant accomplishments also brings its adverse effects to the environment, which, specifically speaking, is climate change. This phenomenon has become increasingly pressing. A research carried out by World Bank has revealed that Logistics constitutes 5.5% of worldwide emissions. As a result, the Theory of sustainable development has urgently required entrepreneurs to modify the traditional model of Logistics, which consumes more energy, reduces noise, disposals, and emissions. Consequently, the Theory of Green Logistics was created to improve the situation. Technological advances play an essential role in enhancing the efficiency, reliability, and reducing the expenses for the logistics companies. Besides that, a green logistics operation that is operated will help logistics and transport services generally become more friendly to the environment. Since Vietnamese import and export market is developing, domestic trade is widening, and Logistics demand is rising, Green Logistics scheme happens to be more beneficial than tax cuts while it is also economical and increasingly improving the competitions. Vietnamese Logistics companies, however, are organized in small and medium-scales, which make the Green logistics scheme new and challenging to be constructed and applied. This paper aims to analyze the effect of Green Logistics on the sustainable development of the economy that several global Logistics enterprises have been operating, examining and evaluating into Vietnamese logistics situations in the context of integrating into the international marketplace. Also, the authors recommend several solutions to expand Green Logistics in Vietnam under global integration.

Keywords: Environmental protection, Green logistics, international integration, shipping, Vietnam

Introduction

Global warming, environmental contamination, and authority management attract the attention of academic researchers and industrial practitioners for applying and evaluating the "green" schemes into the logistics industry \cite{1}. Green Logistics (GL) cares not only about the distribution of green products or services to consumers, but the general logistics flow of items from the beginning to the end, together with reverse logistics. A few green programs have been carried out, for instance, for scheduling the production or building up the network. To enhance the efficiency of GL, it is not only the responsibility of every single logistics company on their own but also the collaboration and interaction among other parties \cite{2}. It is unable to measure the efficiency of GL economically but
sustainably by taking the environmental and social factors into consideration, which also presents the purposes of GL [3]. In simple terms, GL can be defined as the synthesis of traditional logistics and reverse logistics (RL). While traditional logistics involves the process from raw materials to completed products, RL, which is regarded as a new approach in the field is implemented based on the recycling used products to minimize waste and to raise the industry's efficiency and profits. Therefore, RL plays a vital role as it accomplishes logistics research integration while contributing to the performance improvement of GL regarding all aspects ranging from economic, environmental, and social objectives [4]. RL involves various activities and operational programs, for example, returned product collection, examination, pre-processing, recycling, remanufacturing, or disposal [5].

The global economy is continually developing and gaining many successes; however, this also adversely affects the environment by causing climate change, which becomes increasingly severe these days. It is stated that 98% of developing nations will be suffering from climate change effect, which costs up to 150 billion USD per year for dealing with these damages for 20 years of the 21st century, according to studies of World Bank [6]. Due to climate change, the number of the poor population failed to decrease in half in 2015, resulting from the fact that agriculture and food price had been affected negatively [7]. Climate change has not only adversely affected developed countries' situations but threatened to other developing nations in terms of economic, agricultural aspects, and the population's social safety. Nowadays, more and more constructed ports with a high number of ships in marine acts have increasingly worsened the problem of ocean environmental contamination. According to Davarzani et al. [8], the shipping industry is the main culprit of marine environmental pollution.

Results from scientific research worldwide illustrate that the quantity of oil released into water sources (mostly into the seas) is stemming from ship operations (73%), maritime incidents (21%), and other sources (6%) [9]. The operation of ships and oil barges contributes to the highest level of oil contamination. In oil spills, which is less than 7 tons, the majority of spilling is during the receiving, delivering, charging fuel processes, and often happens at the ports or at the receipt/delivery terminal [10]. Bektaş et al. [11] claimed that the main reasons for seaport water pollution are fuel, oil for ship supplies, minor repairs, and indiscriminate disposal of greasy waste. Besides, the fumes from aircraft contaminate the susceptible area of the atmosphere, which is the ozone layer that the poisonous exhaust released into the air leading to the increasing the impact of the greenhouse effect, contributing to global warming [12]. The Intergovernmental Panel on Climate Change (IPCC) revealed that airplanes' emissions constitute 3.5% of global warming, and these are even more in the European Community. Data collected from the European Environment Agency showed that there are up to 440,000 tons of gas emissions released by planes from 27 European nations every day. Even when volcanic eruptions are emitting 300,000 tons of carbon dioxide per day, the amount of emissions from this disaster is still smaller than these from European aircraft [12].

Moreover, in the published research, the Logistics field accounts for 5.5% of global emissions. Hence enterprises must modify their traditional Logistics models so that they can consume more energy, reduce noise, waste, and emissions in terms of the Theory of sustainable development [13]. Consequently, the Theory of Green Logistics was coined as a result of the Theory of sustainable development. Logistics categories growth must first and foremost be given the priority from environmental and efficient aspect considerations. Green logistics is the inherent strength supporting the world's environment and creating the base for sustainable development [5].
Vietnam, with its distinct physical landing features, must handle long-term environmental threats and is one of the ten most heavily affected nations by climate change. While transportation plays a crucial role in developing economic status by boosting manufacturing productivity, it also contributes to toxic emissions from fuel uses. The Ministry of Transport reported that logistics costs in Vietnam take up approximately 25% of GDP, of which transport constitutes 50 to 60% [14]. Green strategies in transportation specifically for road transport owing to the massive amount of products transported, thus reducing the redundancy in the supply chain, decreasing the exhaust from transport activities and therefore, cutting off the expenses and enhancing the quality of the flow are vital to mission for Vietnamese industrial logistics generally, and for domestic companies particularly [15]. Due to the fact that Vietnamese import and export market is developing, local trade is widening, and logistics demand is rising up, Green Logistics scheme happens to be more beneficial than tax cuts while it is also economical and increasingly improving the competitions [16]. Vietnamese Logistics companies, however, are organized in small and medium-scales, which make the Green logistics scheme new and challenging to be constructed and applied. This paper aims to analyze the effect of Green Logistics on the sustainable development of the economy that several global Logistics enterprises have been operating, analyzing and evaluating into Vietnamese logistics situations in the context of integrating into the international marketplace. In addition, the authors also recommend several solutions to expand Green Logistics in Vietnam in accordance with global integration.

2. Theoretical basis of Green Logistics

Logistics is an activity integration organized into chains that involve all manufacturing, business, and service industries in economic sectors. Besides, a green logistics scheme is the optimal choice for all processing operations to avoid adverse effects on the environment. It guarantees that the economic profits grow in harmony with the environmental values which enable the economy to develop sustainably since applying the green logistics ensures the smooth process of delivering products and services also helps to minimize the transportation distance to save costs, limits the possible harmful effect to the economic environment and community hence increasing the competitive features of the economy in an open integration context. Developing green logistics relieves the negative impacts on the environment caused by the manufacturing processes, business, and goods activities. Even though "Green Logistics" has newly been coined in Vietnam, there has already been a huge body of research on this field worldwide.

Regarding the function, essentiality and the execution of Green Logistics, there is a number of works:

While costs have always been an essential driver of supply chain management strategies, the negative energy and environmental footprint of many supply chains has been a strong incentive to improve what is known as green supply chain management. As logistics involves the whole process in which products are produced then distributed to customers as the final stage, there is a significant number of green logistics' applications, which consist of two significant dimensions, namely materials management and physical distribution (in Figure 1). In terms of materials management, products that are made in the effort of reducing environmental harms are focused during the stages of producing, sourcing, reusing, and recycling. Meanwhile, physical distribution enables final products to be mobilized in a way that is friendly to the environment. These dimensions can be put into practice separately or in cooperation all. Since they require different factors, attempts are uncommon as each element of the supply chain pursues strategies that are judged to be the most effective along their respective channels, which leads to a duality between forward and reverse logistics. The conventional
forward channel in freight distribution is well understood with raw materials, parts, and finished goods flowing from suppliers to manufacturers, distributors, and, finally, to consumers.

The concept of a sustainable or green supply chain is referred to the application of an environmentally friendly process into the traditional model of the supply chain in which suppliers’ selection in purchasing materials, designing and producing products, assembling, distributing, and final managing is all involved. Instead of relieving the negative aspects of business activities and supply chain executions, the green supply chain comprises value addition and value creation through the operations of the entire chain. The initial objective of the green supply chain is to mitigate the effects of air pollution, water pollution, and waste pollution while green executions aim to boost companies’ work in less wasting, reusing and recycling goods, reducing manufacturing expenditure, enhancing work efficiency to cultivate better company image and improving customer satisfaction. Figure 1 displays a green supply chain of the child’s crib manufacturer as an example.

In 2017, according to Blanco and Sheffi, they conducted a research in applying Green Logistics into global market environment naming Green Logistics: Global Practices and their Implementation in Emerging Markets in which he presented a summary of Green Logistics practices from all over the world of various management levels and potential difficulty when implemented in emerging market. The research explained the concepts, depicted green logistics scope and features, determined green logistics influence on the economy and society, whereas there is one review of Piecyk, Browne, Whiteing, & McKinnon of Erasmus Rotterdam University, Wageningen University, the Aristotle University of Thessaloniki on consolidating environmental aspects. In the logistics sector, summarize the present and future achievements, concentrating on design, planning, and managing in a supply
chain for transport and inventory [17]. Moreover, several sessions of environmental features are also pointed out in Logistics research activity models, named "Operations Research for green Logistics - An overview of Aspects, issues, contributions, and challenges."

Supply chains are deemed to be a part of an entire complicated material flows frame that initiates with the eradication of renewable and non-renewable resources, which then becomes a part of the resource supply structure (in Figure 2). In a forward logistics operation, these resources are processed through various producing stages to become completed products to customers. The entire process of forwarding logistics generates wastes and disposals that are components for the reverse logistics execution. Recyclable materials will enter the resource supply stage again while the remaining parts are discarded into the sink, which is known as a landfill. The idea of this economic cycle is an attempt to build up an economic strategy for sourcing, to produce, and distributing that minimize the wasted expense at any cost.

![Material flows cycle](image)

In "The Benefit of Green Logistics to Organization" written by Wijittra, it is reported that organizations which adapt Green Logistics in crucial tasks in Logistics field earn foreseen profits [19] in the way that the managing process among manufacturers and consumers is more efficient; manufacturing expense is deducted; resources are saved, and harm to the environment is more controlled. Includes procurement process that facilitates trade enhancement such as the connection of information technology in business to business (B2B business), the manufacturing process improves by improving Logistics business and managing the warehouse process such as recycling packaging, shipping, and receiving inside the warehouse, goods distribution plan.

In relation to the influence of green Logistics on the environment, the entrepreneurs’ transporting activities and the aspects influencing the employment of green Logistics at the business level are presented in these researches:
In 2008, Jacques Leonardi et al. wrote the article "Improving energy efficiency in the road freight transport sector: the application of a vehicle approach." In which the vehicle survey method is applied to evaluate the impacts of several goods operations on resource usage and efficiency. These researchers analyzed and contrasted the collected statistics on freight transportation and energy efficiency in two countries UK and France revealed freight intensity, transport use, energy use, fuel economy, and carbon dioxide intensity [20]. This methodology addressed several issues that are the roles of innovative technological advances, the goods company's decision making in logistics, and the number of effects of fuel use policy measured at the country level.

In addition, a group of researchers including Vidas Tamulis et al. [21] reported in an article "Factors influencing the use of green Logistics: theoretical implications," of the influential elements of green logistics at the company level from the theoretical viewpoint [5]. First, the article states the distinct features between two terms green Logistics and Logistics. Second, it raises the questions of the application of green Logistics and its influences on global environmental ecology. Last, the writing suggests solutions through utilizing green Logistics and components of its application via implied theories.

In addition to research on the use of green Logistics to reduce expenses, enhance managing productivity, and the effects of green Logistics, there are numerous papers on the use of it in a range of countries. Research by [22] of the Transportation Research Institute, University of California, gives examples of sustainability applications in some cities around the world. It illustrates the broad applicability of those applications, called "Studying the steps to apply Green Logistics in cities in the world."

![Figure 3. The circular economy and supply chains][23]

Figure 3 demonstrates that the circular economy and supply chains are a technical-economic database spreadsheet and simulation model that enables detailed projections of transport activity, vehicle
activity, energy demand, and well-to-wheel greenhouse gas (GHG) and pollutant emissions according to user-defined policy scenarios to 2060. The circular economy is an assessment system that attempts to reduce the intakes of resources (biologically and technically) as well as the production of wastes released into the environment. It is an extension of reverse logistics principles into a more inclusive framework that consists of two subsystems; one is related to biological products (e.g., food) and the other to industrial goods.

3. Analysis of the status of green Logistics development in Vietnam in the context of international economic integration

3.1. Regarding green logistics development policy

Circular No. 16/2010 / TT-BGTVT specifies that projects on designing and financing in the construction of airports and airfields must be prepared for the EIA report and be examined and administered the execution of environmental safety solutions[24]. Simultaneously, all project tasks need abiding by the legislation on environmental security, laws on national aviation, Vietnam's environmental standards, and international penalties to which Vietnam is an associate.

On June 6, 2011, the Prime Minister declared Decision No. 855 / QD-TTg was authorizing the proposal on controlling of environmental contamination in transportation in order to manage, avoid and limit increasingly environmental deterioration, towards setting up a sustainable, environmentally-friendly transportation system. This decision was made, as a result of the fact that in 2017, about a quarter of railway passenger cars were newly built, 30% of global seaports were facilitated with infrastructures to gather and handle waste and oil disposal from ships.; noise map is finished for half of the airports, airports[25]. The aim of the plan is that by 2020, the quantity of newly built railway passenger cars will be up to 80%, the noise map must be installed for all airports, retaining the operation of emission criterion for road motor vehicles, 70% of international seaports, 50% of domestic waterway ports of type 1 are facilitated with means and equipment for collecting waste and oil disposal from ships. By 2030, Vietnam will emphasize on enhancing environmentally-friendly transportation systems, primarily, manage pollutants causing environmental pollution in all fields of road, railway, inland waterway, maritime, and aviation[25].

On September 25, 2012, the Prime Minister announced Decision No. 1393 / QD-TTg on the National Scheme on Green Development [3]. It relates to the financing in improving transport infrastructure towards sustainability, minimizing greenhouse gas exhaust, and encouraging the use of clean and renewable energy [26]. Accordingly, the Government promotes more investment in renovating and upgrading existing transport facility systems such as roads, railways and maritime towards energy efficiency and environmentally friendliness, in response to climate change, and complying with the needs of manufacturing and business.

Deploying Resolution No. 02 / NQ-CP dated January 1, 2019, of the Government on maintaining to carry out critical activities and solutions to develop the business environment, enhance national combativeness in 2019, and oriented to 2021. On March 26, 2019, the Minister of Industry and Trade issued Decision No. 708 / QD-BCT approving Vietnam's Logistics Performance Improvement Plan. The plan sets out the goal of improving Vietnam's ranking in the Logistics Performance Index (referred to as LPI) by the World Bank from now to 2025 to 5-10 levels (in 2018, Vietnam Male ranks 39th in the world in LPI ranking)[27], making a positive contribution to improving the business environment, cutting costs, improving the competitiveness in Vietnam's logistics service supply,
enhancing the capacity for innovation, ...contribute to successfully implementing the Government’s Resolution on socio-economic growth.

3.2. Transport infrastructure

Over 30 years of economic innovation, Vietnam’s transport facility system has witnessed many revolutions, from an inefficient and measurable infrastructure system up to date. The story has earned significant accomplishments. For instance, there is about 256,684 km of roads, of which the national highway is approximately 17,385 km; more than 2,600 km of railways, 41,900 km of waterways, 265 seaports[28], and 40 airstrips. The clearance competency of domestic seaports is 99 million tons, of seaports is about 384 million tons and of airport is about 72 million tons. Despite that, Vietnam’s transport facility is still ranked as unstable in quality, behind in terms of technology and technology compared to growth requirements and compared to other nations in the region.

Regarding the sustainable development of transportation infrastructure, the level of traffic jams in the transporting of freights is influencing 81.8% of companies attending the survey. Also, the network of transport facility foundation also affects 63.6% of respondents, the position and level of resource distribution place an impact on 54.5% of businesses[29]

Figure 4. Potential impacts of high energy prices on transportation in Vietnam [29]

Figure 4 illustrates that transportation leans on the use of power. As most transportation channels are dependent on the use of petroleum, an increase in oil costs can make a particular impact on various dimensions of the transport system. Six interdependent categories of influences can be predicted: Usage level. Users of a specific transportation mode generally respond to higher costs by preventing or justifying (e.g., speed) their usage level. Transport entrepreneurs, such as airline firms, adapt to such modifications by decreasing the density of their services. It is a matter of cost flexibility where a rise of price P will lead to a usage level fluctuation of Q. Modal shift. In relation to a decrease in use
level for a mode, a part of the traffic could turn to a more energy-efficient model by a modal shift. This mechanism is usually not limited, and a modal balance (A/B) can change quickly once a cost point is gained. Thus, a rise of price P may lead to a considerable change, Q(A/B), in the modal balance. The service area modifies. Under a specific cost level, each mode has an ideal service region, a length at which it supplies transporting in an expense-effective style. As each method has distinct flexibility, a development in expenditures will make various impacts on the price/distance operation. For two modes, A and B, the similar growth in energy expense will form a particular change of the price/distance operation where the range of mode B would be declined by R(B). Thus, mode A achieves market share. Gateway / Hub choice. A gateway is a junction between two systems of distribution. Since these systems reflect different flexibility, a climb in energy costs can eventually alternate their connections, especially the positions where intermodal transportation occurs. A shipping service using gateway port A and taking benefit of faster (but more energy-intensive) hinterland networks may instead alternate to entry port B, which is less distant to consumers. **Network configuration.** Encountering high energy costs seems to create changes in the configuration of transportation networks in terms of gateways, hubs, routing, and corridors. **Supply chain propagation.** A supply chain consists of a wide range of inputs and outputs, having a complicated geographical and functional system. Increasing energy costs involves a wide variety of changes in the cost structure within a supply chain, namely a propagation of those costs. Obtainment, production, and circulation costs are all affected by various rates.

Vietnam's cargo transportation, common transport infrastructure, transporting goods between warehouses and ports uses road transport means, particularly container trucks. This is also the reason why many inter-provincial roads in Vietnam often face with local traffic jams, affecting transport efficiency, in addition to the emissions of these vehicles. Even though rail and sea transportation are regarded as the two least polluting transport sectors, generally, Vietnam's seaport and rail structures are still improving slowly. This is a barrier to the process of greening logistics in Vietnam. Roadway transporting still plays a pivotal role in the transportation industry of Vietnam's goods. Despite the leading position in the total volume of goods transport, road transport has not met the growing demand for cargo transport activities owing to the poor road networking in Vietnam. The deviation in the transport network in terms of quantity, congestion volume, and facility quality is one of the most crucial aspects of logistics service entrepreneurship in Vietnam. Energy utilization by a containership is mainly a function of ship size and cruising speed, which follows an expanding function above 14 knots. For example, while a containership of around 8,000 TEU would burn about 225 tons of bunker fuel per day at 24 knots. At 21 knots, this consumption decreases to about 150 tons per day, a 33% fall. While shipping lines would prefer burning the least supply of fuel by switching to slower speeds, this benefit must be alleviated with longer shipping times as well as allowing more ships on a pendulum service to remain the same port call regularity. The main ship speed levels are Normal (20-25 knots; 37.0 – 46.3 km/hr). Illustrates the best cruising speed a containership and its engine have been proposed to run. It also reflects the hydrodynamic limits of the hull to perform within acceptable fuel consumption levels[30]. Most containerships are designed to travel at speeds around 24 knots. Slow steaming (18-20 knots; 33.3 – 37.0 km/hr). Running ship engines below capacity to save fuel consumption but at the expense an additional travel time, particularly over long distances (compounding effect). This is likely to become the dominant operational speed as more than 50% of the global container shipping capacity was operating under such conditions as of 2018. Extra slow steaming (15-18 knots; 27.8 – 33.3 km/hr). Also known as super slow steaming or economical speed. A considerable fall in speed for the purpose of achieving a minimal level of fuel consumption
while still maintaining a commercial service. It can be applied on specific short-distance routes. Minimal cost (12-15 knots; 22.2 – 27.8 km/hr). The smallest speed technically possible since lower speeds do not lead to any significant additional fuel economy. The level of service is, however commercially unacceptable, so it is unlikely that maritime shipping companies would adopt such speeds.

3.3. Warehousing

Warehouse network of logistics companies in Vietnam is mostly focused on state-owned enterprises, while in private enterprises often small in size and limited. These warehouses mainly are concentrated in big seaports, whereas the others are located domestically. Warehouse system located mostly in large ports such as in Ho Chi Minh City, Da Nang, Hai Phong, and QuangNinh. Currently, most of the warehouse network of seaports in Vietnam poorly equip with deficient facility and equipment, obsolete technical qualifications, and degraded warehouse quality, mainly basing on manual labor[31][32]. The warehouses being employed are of small size, low mechanism, incomplete, lack of long-term planning, and weak management system.

Logistics service contracts increasingly gain popularity in Vietnam's logistics industry. Among the activities chosen under the 3PL method, warehousing and delivery services are reported to meet the underlying productivity of this type of service contract. Particularly in Vietnam, quite a regular network of cold warehouses, varieties of warehouses to fit the degree, and moisture conditions appropriate for goods are food products, frozen goods, medicines. Therefore, to join the 3PL model, local companies are prone to finance in a logistics facility. Especially warehousing or logistics distribution centers like the way of operation of crucial businesses in the field of warehousing in Vietnam such as Gemadept, Vinafco, DHL, ITL, Damco ...

Warehouse administration has not adopted state-of-the-art science and technology, especially information technology (IT), to collaboration and administration. Secured warehouses are not able to link information systems with customers to serve the supervision, storage, and tracking of each shipment.

The warehouse is an element contributing to greening logistics. However, the fact that the locations of warehouses are not studied scientifically, which reveals the lack of warehouses near important roads, airports, and seaports resulting in becoming an obstacle for collecting goods before delivering to customers. This leads to rising shipping costs, increasing transporting time, increasing emissions into the environment, and directly influences the greening scheme of logistics. Another problem goes with warehousing is that several Vietnamese companies locate a high number of products in warehouses adjacent to one another, which puts the roads connecting warehouses to ports under pressure, especially on National Roads 1 and 5. Moreover, the inappropriate arrangement of products in the warehouse also makes it hard to unload, transport, therefore, this extends the shipping time, disturbing the whole supply chain. The research data also revealed that [4], the scale of using small-sized warehouses and grounds is the most considerable constraint for warehouse executives (taking up for 62.3%), followed by the lack of modernization limitations and modernization (59.42%), lack of long-term planning (49.7%), poor management (32.29%), lack of professionalism (10.3%)[27]. It is worth noting that at the international seaports in Vietnam, there are no competent logistics centers for pre- and post-port services.

3.4. The IT system
As the same as several aspects of the industry, the logistics industry generally and warehouse services, particularly, are searching for ways to employ technology and the Internet of Things (IoT) to enhance service competency. Producers and suppliers of logistics services around the world aim to equip machines, self-propelled supplies, technologies to classify and inform location, the condition of the products, and the condition of the supply process.

A study by Vietnam Logistics Service Enterprise Association VLA on IT infrastructure in logistics enterprises in 2018 revealed the following six features: 1) IT has enhanced to help vary sales and delivery modes to customers in a more convenient way; 2) EDI method to give and collect information data between logistics companies and customs has just been utilized and has not been as efficient as required; 3) The issue of spotting vehicle position through GPS has not gained optimal effectiveness in the execution of road transport means; 4) IT facility is crucial, but attention is inadequately paid to, there is no interaction, lack of important function and nonparallel; 5) IT facility has been developed but not as required; 6) IT facility is steady but small-scaled and impossible to keep abreast of the growth of electronic commerce. Though most companies are attentive to the vital role of IT application to the logistics industry, due to the great financing rate leading to their IT items such as delivery management system, transportation management system, warehouse management system, resource management is implemented entirely disintegrated. It is not efficient, so the investment outcomes are not highly appreciated. The number of professional logistics IT solution suppliers in the country is small, small-scaled. Moreover, cloud computing applications are still newly applied to logistics service enterprises, and most local IT application schemes are not applicable to link with international IT systems as well as enable network security in global service provisions.

3.5. National capacity index on logistics

It is reported that in 2018, developed countries were still leading the globe in the field of trade logistics. Revealed in the published data charts, the majority of these countries have made significant renovations in terms of logistics and facility construction investment, equipping transportation and trade or improving services upon modernism. Logistics services are the power of global trade activities if having practical capability will help minimize trade expenditure. For low-income countries, logistics capacity will be most developed from achieving equipment and acquiring local standards, skills, and cultures that every nation is employing into their own logistics aspects.

According to the 2018 National Capacity Index for Logistics report, Vietnam has grown by 25 places, from the 64th position in 2016 to the 39th position by 2018. Among ASEAN countries, Vietnam rose from fifth place in 2016 to the 3rd place this year, behind only Singapore (ranked 7) and Thailand (ranked 32). Among low-middle-income economies, Vietnam is the leading country, followed by India, Indonesia, Côte d'Ivoire, Philippines, and Ukraine. Among LPI’s six evaluation criteria, the ability to track and locate shipments and the logistics potential index increased dramatically, increasing by 41 and 29 places in the ranking, respectively. The customs and infrastructure indices also increased by 23 steps, while the due-time index also increased by 16 steps. However, the number of international shipments increased by only one rank on the LPI rankings in 2018. Also, the World Bank has revealed a report on the quality and ability to provide logistics services in Vietnam, examined by experts and managers of this service sector in Vietnam. From the available data, the logistics service industry in Vietnam is considered to be accomplishing more and more successes. Especially taking full benefits of the geographical features and local manufacture capability, gradually claiming a status to commit to the international supply chain [33].
4. Orientation and propose some solutions to develop the green Logistics in Vietnam

In order for Vietnam to build up a green logistics platform to establish sustainable development and unification of the economy, it is imperative to follow these issues:

First of all, improving logistics agencies and regulations in order to form a beneficial legal platform for logistics activities in the market. To enhance and improve logistics-related content in the Commercial Law, not only to logistic services but also to raise the full attention of the characteristics, function, and status of logistics. Revising and improving mechanisms and principles on logistics management, especially policies on fees, eliminating barriers to products mobilizing in the market.

Secondly, finance is improving current and up-to-date logistics facilities. To prioritize the establishment of transport network facilities along with the guidance of multimodal transport in order to utilize the contemporary transportation and trade infrastructure system efficiently. It is boosting the investment in constructing international-class first-class logistics centers at trade and transport intersections of central economic regions and economic corridors in order to link channels of transportation, carrying out economic links, boosting production, and consumption of goods for localities and businesses.

Thirdly, complement, and finalize logistics growth policies through the improvement and implementation of mechanisms and procedures to enable the growth of various categories of businesses with a wide range of transportation means. Vietnam also needs to have favored policies for companies to invest in renovating means of transport, especially those of road vehicles, railways, and waterways that are old-fashioned.

Fourthly, in terms of the completion of planning, constructing logistics centers in accordance with international standards, the State and local governments must have policies to attract national and international logistics companies to invest. Notably, we are concentrating on logistics industrial parks (transport villages, or large-scale logistics centers) in localities with growth advantages, leaning to a green, civilized and modern logistics platform.

Fifthly, enhancing the logistics service market in the guidance of competency, clarity so that customers appreciate high-quality logistics services at acceptable costs. Only by this means can the formation of the outsourcer of logistics services, assisting companies emphasize achieving fundamental and primary duties. That scheme will help to advance the management competency and efficiency of manufacturing and entrepreneurship in the context of more deeply integrated into the area and global economy.

Finally, upgrading quality training for logistics human resource not only at the tertiary level but also in the aspect of logistics vocation in terms of modernization and professionalization, adapting to the growing conditions of the industrial revolution 4.0. "Solutions for training and raising awareness and quality of human resources" in Decision No. 200 / TTg of February 14, 2017, on an action plan to raise competitiveness and advances of Vietnam's logistics service to 2025 should be soon carried out in life more efficiently.

5. Conclusion

Since the Vietnamese logistics industry has recently entered the developing stage, its performance is still inadequate compared to others'. If Vietnam's logistics industry is supposed to incorporate and
improve in a short time, besides the concerted attempts of companies and authorities, industries and localities cannot be highlighted. More attention and assistance are required to urgently perform both medium and long-term synchronized solutions to boost a green logistics structure in the Vietnamese context, first and foremost, to establish a plan for constructing logistics centers. At international ports, highways to bridge the essential modes of transportation in the delivery and operation of freight. Reviewing packaging, waste disposal, fuel consumption, and relevant features at the multi-steps of merchandise manufacture and transition processes will be crucial to the achievements in these attempts. Balancing the environment and ecology is vitally crucial in making an effort to developing the economy while evaluating sustainable development. Hence, it is urgently imperative for not only Vietnam but other regional and international nations to minimize the gas exhausts into the atmosphere by supporting critical transport and logistics development plans.

While it is incredibly challenging for urban centers in freight transportation in terms of environmental contamination, noise pollution, and traffic jams, significant advances in technology have proved beneficial in reducing expenses, increasing efficiency, and trustworthiness of logistics companies. The establishment of a green logistics structure will help make the logistics field generally and especially more friendly to the environment.

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