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NHÀ CUNG CẤP CÁC SÁNG KIẾN LOGISTICS XANH CỦA DHL VÀ MỘT SỐ HÀM Ý CHO CÁC DỊCH VỤ LOGISTICS TẠI VIỆT NAM

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Tóm tắt

Trước bối cảnh các vấn đề môi trường ngày càng trở nên cấp bách trên toàn cầu, ngành logistics buộc phải hướng tới các giải pháp bền vững. Nghiên cứu này xem xét các chiến lược logistics xanh của DHL, bao gồm vận chuyển trung hòa carbon, điện khí hóa đội xe và kho bãi thân thiện với môi trường, nhằm giảm thiểu tác động sinh thái mà vẫn đảm bảo hiệu quả vận hành. Bài viết đánh giá những thành tựu và thách thức của DHL trong quá trình triển khai các sáng kiến này, đồng thời so sánh với những nỗ lực logistics xanh đang nổi lên của các doanh nghiệp logistics tại Việt Nam. Phân tích cho thấy sự khác biệt đáng kể về nguồn lực tài chính, khung pháp lý và năng lực công nghệ giữa DHL và các doanh nghiệp Việt Nam. Để thu hẹp khoảng cách này, nghiên cứu đề xuất một số giải pháp khả thi, chẳng hạn như áp dụng xe điện cho giao

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hàng chặng cuối và cung cấp dịch vụ vận chuyển trung hòa carbon. Những phát hiện này nhấn mạnh tiềm năng của ngành logistics Việt Nam trong việc tích hợp các thực tiễn bền vững, dù còn gặp phải các thách thức như hạn chế về cơ sở hạ tầng và nguồn vốn, qua đó mở đường cho một chuỗi cung ứng xanh hơn.

Từ khoá: DHL, logistics xanh, bền vững, Việt Nam, giảm thiểu carbon

DHL'S GREEN LOGISTICS INITIATIVES AND IMPLICATIONS FOR LOGISTICS SERVICE PROVIDERS IN VIETNAM

Abstract

With environmental concerns intensifying globally, the logistics industry is increasingly compelled to embrace sustainable practices. This paper investigates DHL's green logistics strategies, such as carbon-neutral shipping, fleet electrification, and sustainable warehousing, as a leading example of reducing ecological impact while maintaining operational efficiency. It assesses DHL's achievements and obstacles in implementing these initiatives and contrasts them with the emerging green logistics efforts of Vietnamese logistics service providers. The analysis reveals disparities in financial resources, regulatory frameworks, and technological capabilities between DHL and Vietnamese firms. To address these gaps, the study proposes actionable strategies for Vietnamese providers, including adopting electric vehicles for last-mile deliveries and introducing carbon-neutral shipping options. These findings highlight the potential for Vietnam's logistics sector to integrate sustainable practices, despite challenges like limited infrastructure and funding, paving the way for a greener supply chain.

Keywords: DHL, green logistics, sustainability, Vietnam, carbon reduction

1. Introduction

In the stage of increasing environmental concerns, the logistics industry is under escalating pressure to adopt sustainable practices. As consumer demands and international trade grow, logistics service providers need to strike a balance between environmental responsibility and efficiency. A leader in green logistics, DHL, has taken a number of steps to lower carbon emissions, streamline supply chain processes, and incorporate eco-friendly technologies. These initiatives set a standard for the global logistics industry, in addition to being in line with sustainability objectives.

DHL's green logistics strategy includes a wide range of initiatives, such as the use of alternative fuel vehicles, carbon-neutral shipping options, and advanced digitalization to optimize delivery routes. One of its key commitments is the adoption of sustainable aviation fuel (SAF), with plans to procure SAF from Cosmo Energy Holdings in Japan starting in April 2025. This move aligns with DHL's broader goal of increasing its SAF consumption to at least 30% by 2030 (Reuters, 2025).

Like other nations in Southeast Asia, Vietnam is experiencing rapid industrialization and urbanization, which has resulted in serious environmental problems. The need for sustainable solutions is highlighted by the logistics industry's significant contribution to pollution and habitat destruction. These difficulties are best shown by the nation's battle with plastic waste management, as recycling systems are overburdened by both imported and indigenous plastic waste (Guarascio and Vu, 2024). Furthermore, environmental issues have been brought up by infrastructure projects like the Long Thanh International Airport because of pollution and deforestation that have an impact on local agriculture (Eji Atlas, 2023). Logistics service companies in Vietnam looking to implement eco-friendly practices might take inspiration from DHL's initiatives, such as carbon-neutral transportation and green warehousing.

This report analyzes DHL's green logistics efforts in depth and assesses how they might affect logistics service providers in Vietnam. This study looks at the company's green logistics efforts in an effort to provide insights on how Vietnamese logistics companies may move toward more environmentally friendly supply chain procedures while tackling operational and environmental issues.

2. Overview of Green Logistics

2.1 Definition

Any efforts to provide and store goods with an eye toward sustainable development are referred to as "green logistics." Depending on the company and sector, initiatives can take many forms. In basic terms, businesses aim to reduce their carbon dioxide emissions, transition to entirely renewable energy, and fund initiatives that minimize the greenhouse effect (Gogilidze and Gogilidze, 2024). Moreover, it refers to the set of policies and measures designed to reduce the environmental impacts generated by activities in the logistics sector (Cesar et al., 2024).

For businesses, green logistics is a move towards more environmentally friendly ways of doing business. Historically, logistics operations have focused on things like customers, sales, revenue, and financial security. However, traditional logistics procedures have never

considered the environmental impact of their practices. This used to be the case, but today, thanks to green logistics strategies, they have begun to change for the better (Gogilidze and Gogilidze, 2024). The idea of green logistics not only helps protect the environment, but also helps to increase corporate sales in the logistics sector.

When green logistics solutions are used effectively, there will be a clear symmetry between the economy and the environment. As a result, businesses are increasingly adopting greener logistics practices and adjusting their corporate stance on environmental issues (Gogilidze and Gogilidze, 2024).

2.2 Scope

Green logistics includes management initiatives that contribute to the improvement of the environment during the course of logistics operations and activities. Some fundamental aspects are:

- **Use of eco-friendly modes of transportation**: Use of alternative fuels and fuel saving vehicles assists to reduction of carbon emission and hence contributes towards promoting green logistics practices.
- **Energy-saving measures for warehousing**: Saving measures for energy during energy utilization like overhead and heating systems optimization can give a more sustainable usage of storage spaces (Nagy and Szentesi, 2024).
- **Environmentally friendly packaging practices**: Use of packaging materials and practices that are friendly to the environment is essential in the reduction of the logistics materials wastages and facilitates the recyclability of the materials (Nagy and Szentesi, 2024).
- **Academic tools of logistics like telematics and data analytics**: Trends such as the adoption of these tools for optimization of logistics routes contributes more towards economy and sustainability by improving fuel efficiency and shortening delivery duration (Reynolds, 2024).

Finally, all these strategies work together to ensure that the logistics processes and activities are not only economically viable but also do not compromise on the long-term prospects of enhancement and preservation of the physical environment within which the industry operates.

2.3 Goals

The development of green logistics techniques and strategies are reviewed with a view to enhancing economic efficiency and sustainability. This includes:

- **Mitigating the amounts of greenhouse gas emissions and limiting carbon footprints**: One of the aims is that logistics activities should not cause a high release of greenhouse gas emissions and carbon footprints by practicing the adoption of sustainable practices and technologies (Gogilidze and Gogilidze, 2024).
- **Enhancing operational efficiency and effective resource application**: Improving efficiency in logistics processes enables the better utilization of resources including fuel, labor and time which not only boosts productivity but also sustainability by reducing waste and improving overall cost.
- **Ensuring environmental and other legal standards are met**: Integration and linkages of logistics across borders itself is a permit requirement to every country. This is precisely to ensure that the country meets its legal responsibilities as well as contributes to sustaining the world (Gogilidze and Gogilidze, 2024).

2.4 Current Status and Future Outlook of Green Logistic

2.4.1 Current Status in The World

Major corporations have made large investments and innovated as a result of the global adoption of green logistics. Initially, top logistics companies like DHL, UPS, and Maersk implemented green solutions including incorporating alternative fuel-powered ships and electric trucks into their operations. By lowering carbon emissions while preserving efficiency, these programs seek to establish industry norms for environmental stewardship.

Green logistics techniques are also greatly aided by digital revolution. Logistics firms can increase supply chain transparency by streamlining warehouse operations and optimizing routes through the development of technology like artificial intelligence (AI), the Internet of Things (IoT), and data analytics. These developments reduce environmental effects in addition to energy consumption. For example, real-time tracking systems facilitate improved freight coordination, which cuts down on idle time and fuel consumption.

2.4.2 Current Status in Vietnam

The concept of green logistics in Vietnam remains relatively new but has gained recognition as a prominent trend in the logistics industry. An increasing number of enterprises are adopting green solutions in their operations, reflecting a growing awareness of the need for sustainability. For instance, some companies have begun integrating renewable energy sources into warehouse operations, optimizing transportation routes, and reducing carbon footprints

through eco-friendly packaging and alternative fuel vehicles (Ministry of Industry and Trade, 2022).

However, significant challenges hinder the broader implementation of green logistics in Vietnam. The country's transportation infrastructure remains underdeveloped, with inefficiencies in road networks, seaports, and intermodal systems. These limitations obstruct the seamless integration of green technologies and processes. Additionally, the high cost of investment in green infrastructure and technologies poses a substantial barrier, particularly for small and medium-sized enterprises (SMEs) that dominate the logistics landscape in Vietnam.

2.4.3 Future Outlook

Up to now, Vietnam's integration into global supply chains has necessitated the adoption of green standards, presenting significant opportunities for the development of green logistics. This integration aligns with international environmental expectations, offering businesses a competitive edge in global markets. Furthermore, proactive government policies play a critical role in this transition. By implementing incentives for green technology investments, improving infrastructure, and raising awareness about the benefits of sustainable practices, the government can create a favorable environment for green logistics to flourish (Ministry of Industry and Trade, 2024).

International collaboration is another vital strategy. Learning from developed nations and engaging with global organizations can provide Vietnam with access to advanced technologies, best practices, and financial support. Partnerships with international logistics providers can also facilitate knowledge transfer and capacity building (Báo Nhân Dân, 2023).

In conclusion, by leveraging global integration, supportive policies, and international cooperation, Vietnam can address existing challenges and accelerate the adoption of green logistics, contributing to sustainable economic growth and environmental preservation.

3. DHL's Green Logistics Strategies Analysis

3.1 Overview of DHL

3.1.1 History of DHL

DHL (originally Dalsey, Hillblom, and Lynn) was founded in 1969 by three entrepreneurs: Adrian Dalsey, Larry Hillblom, and Robert Lynn. The company's inception coincided with the era of globalization and increasing international trade. DHL began as a pioneering international express mail service, initially transporting documents between San

Francisco and Honolulu. This innovative model bypassed traditional postal services, providing faster delivery and reducing customs clearance delays.

Figure 1: Official Logo of DHL Group

Source: DHL Official Website

3.1.2 Development Process

3.1.2.1 1970s: Early Expansion

DHL quickly expanded its operations to the Pacific Rim, including the Philippines, Hong Kong, and Japan. By the mid-1970s, the company had established a global footprint, serving countries across Asia, Europe, and the Middle East. DHL distinguished itself by focusing on international shipments, a niche that differentiated the company from competitors like FedEx, which prioritized exploiting domestic markets in the U.S.

3.1.2.2 1980s: Growth and Diversification

In the 1980s, DHL began investing in logistics infrastructure, including hubs and fleets, to strengthen its delivery network. The company introduced electronic tracking systems, becoming one of the first logistics firms to allow customers to track shipments in real-time. DHL expanded its service offerings to include parcel delivery, cargo shipping, and supply chain management.

3.1.2.3 1990s: Integration into Deutsche Post

Deutsche Post, Germany's national postal service, started acquiring shares in DHL in 1998, as part of its strategy to become a global logistics leader. By 2002, Deutsche Post had

acquired full ownership of DHL, integrating it into its operations as the flagship brand for international express, parcel, and logistics services.

3.1.2.4 2000s: Global Leadership and Challenges

DHL expanded aggressively into emerging markets, such as China, India, and Latin America. In 2008, the company decided to exit the domestic U.S. market for express services due to fierce competition and financial losses, refocusing on international markets and logistics.

3.1.2.5 Digital Transformation

DHL embraced digital technologies to enhance operational efficiency. This included the use of advanced data analytics, robotics, and automation in sorting facilities, as well as innovative delivery solutions like drones and smart lockers.

3.1.3 Current Status

Today, DHL is one of the world's leading logistics and courier companies. It operates under the umbrella of Deutsche Post DHL Group, which is divided into five main divisions:

- **DHL Express**: Specializes in international courier and parcel services.
- **DHL Documents and Parcel Shipping**: Focuses on parcel delivery in European markets.
- **DHL eCommerce Solutions**: Supports cross-border e-commerce logistics.
- **DHL Supply Chain**: Provides contract logistics and supply chain management services.
- **DHL Global Forwarding & Freight**: Handling air, ocean, and road freight logistics.

3.1.4 Global Reach

DHL has expanded its operation in over 220 countries and territories, with approximately 600,000 professional and well-trained employees worldwide. The company manages a robust logistics network, including more than 300 dedicated aircraft with 18 partner airlines on over 2,400 daily flights, across 220 countries and territories, thousands of delivery vehicles, and strategically located hubs worldwide.

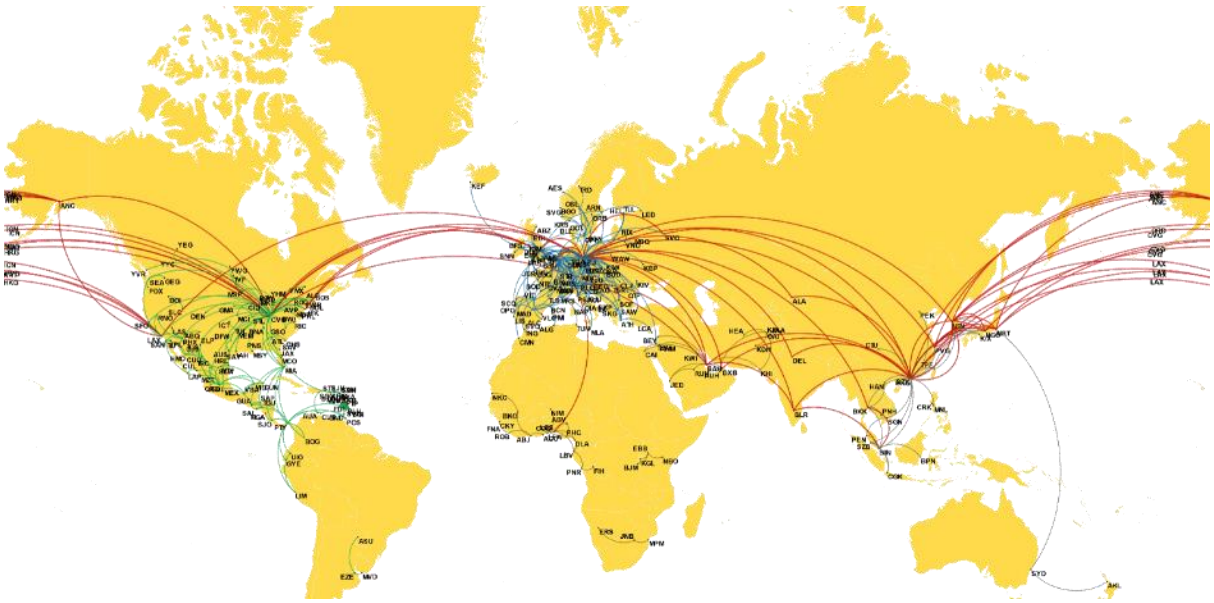

Figure 2: DHL Express Global Coverage

Source: DHL Official Website

Figure 3: DHL System of Vehicles

Source: Authors' Compilation

3.2 Green Logistics Operation of DHL

DHL has been at the front line of implementing green logistics practices as part of its broader commitment to sustainability. Through its "GoGreen" and "GoGreenPlus" programs, DHL aims to reduce carbon emissions and minimize environmental impact across its

operations, from transportation to supply chain management. Here's an overview of their green logistics initiatives.

3.2.1 Carbon-Neutral Shipping Options

Carbon neutrality is a critical component of environmental sustainability efforts, aiming to achieve a balance between emitting carbon dioxide (CO2) and offsetting it through various solutions to reduce carbon footprint, thereby contributing to the mitigation of the effects of pollution on the environment. DHL offers carbon-neutral shipping services by offsetting emissions through investments in certified climate protection projects. Customers can opt for these services to make their supply chains more sustainable.

3.2.2 Electrification of Fleet

DHL is incorporating electric vehicles (EVs) into its fleet, with a target to deploy over 80,000 EVs by 2030. By 2030, Deutsche Post DHL Group aims to have more than 80,000 electric vehicles on the road and will have invested US$8 billion over the following ten years. It is collaborating with Penske and Daimler Trucks North America to make this a reality. For its long-distance and freight operations, it also investigates alternative fuels including hydrogen and biofuels. For short-distance and last-mile services, EVs made up 18% of DHL's fleet in 2020. But by 2030, it intends to raise that percentage to 60% of delivery vehicles globally.

3.2.3 Sustainable Facilities

DHL builds and operates green warehouses equipped with energy-efficient technologies like solar panels and LED lighting. These facilities are designed to meet certifications such as LEED and BREEAM for environmental performance. For instance, DHL Supply Chain started putting basic solar panel systems on the rooftops of its warehouses in Australia as early as 2017. With the installation of the Urban Power Station at its HP 8 facility in Sydney, the team has now advanced that. Over €180,000 is saved annually since the electricity produced is far less expensive than the typical coal-fired electricity that is sold in Australia. DHL Supply Chain has set aside more than $1 million to install solar panels on the roofs of four warehouses in Thailand in an effort to improve energy efficiency. These panels, which cover around 11,000 square meters, or almost three football fields, generate enough energy to meet 38% of the facility' electrical requirements. The entire amount of energy used has also decreased by 20% per year as a result of this endeavor. In addition to giving other local consumers more clean power, the extra electricity that is put back into the grid helps the general public reduce their consumption of coal-fired electricity. In the meantime, a waste management program is using

the "reduction, reuse, and recycling" concepts to push clients' businesses toward zero-waste.

Figure 4: DHL Installs Solar Panel on Its Warehousing System

Source: DHL Official Website

3.2.4 Green Aviation

The company invests in sustainable aviation fuel (SAF) and is actively working toward reducing emissions from its air freight operations. DHL also participates in research to develop electric and hybrid aircraft. DHL has partnered with many companies and organizations to continue the application of SAF with the purpose to reach reasonable costs but efficient outcomes. For examples, DHL has partnered with companies and organizations in the deviation chain to purchase SAF with a lower cost, ramp up production, and decarbonize air transport.

- DHL Express and Shell sign a one-year deal for delivery of 31.2 million liters of SAF (2024).
- DHL Express and Standard Chartered Bank form a strategic partnership to co-invest in SAF (2024).
- DHL Express and World Energy sign a seven-year agreement to purchase 667 million liters of SAF (2024).
- DHL Global Forwarding partners with IAG Cargo to buy 11.5 million liters of SAF in 2023, adding another 60 million liters in 2024.
- DHL Express collaborates with bp and Neste to buy more than 800 million liters, two of the largest SAF deals to date (2022).

– DHL Global Forwarding starts a three-year cooperation with Air France KLM Martinair Cargo to purchase 33 million liters of SAF (2022).

In addition to these commitments, DHL is a partner of Airports of Tomorrow, led by the World Economic Forum (WEF), which aims to address the energy, infrastructure, and financing needs of the aviation industry's transition to net zero carbon emissions by 2050.

3.2.5 Partnerships for Decarbonization

In order to create sustainable logistics solutions, DHL works with clients, business partners, and governments. For instance, on July 22, 2024, DHL and green technology company Envision Group formally announced a new collaboration to promote sustainability technologies in energy and logistics, with an emphasis on sustainable aviation fuel. Additionally, the collaboration allows DHL to investigate technical pathways and renewable feedstock sources to promote decarbonization in the aviation industry. Additionally, DHL and Envision want to construct a "Net Zero Industrial Park." According to the statement, the industrial park will be built to support new forms of electric power networks, create "green industrial ecosystems," and hasten the global green transition in sectors like battery and electric car manufacture.

3.2.6 Insetting and Offsetting

With insetting, DHL put efforts to generate as few shipping emissions as possible. To cut emissions, they are making internal investments in structural modifications. This includes, for instance, the use of biogas, electric vehicles, and investments in sustainable building infrastructure (such as the use of solar or green electricity). Additionally, DHL allows its clients to participate in the insetting process. In particular, as a customer, you select the extent of the insetting (shipping weight, trade lane) and obtain an annual certificate (in PDF format) attesting to the precise quantity of CO_2 that was cut. To do this, Société Générale de Surveillance (SGS), an impartial third-party organization, confirms that the pledged emission reductions were achieved.

With offsetting, the main aim is to significantly reduce CO2 emissions. Where this is not yet possible, DHL invest in global climate projects to offset the CO2 emissions generated during transport. This compensation of CO2, known as offsetting, ensures that pioneering climate protection projects are supported. The following projects all have the Gold Standard seal of approval for emissions credits and are examples of many others like the firewood stoves

for family in Africa, Prony and Kafeate wind farms in the South Pacific, Solar Energy for Rural Households in China, etc.

3.3 Evaluation of Green Logistics Operation of DHL

DHL's green logistics operations have demonstrated significant successes and some ongoing challenges as the company works towards its sustainability goals.

3.3.1 Successes in Green Logistics

- **Carbon Reduction and Investments**: DHL has offset over 2 million tons of CO_2 in 2022 using programs like GoGreen Plus, which incorporates Sustainable Aviation Fuel (SAF), and investments in climate protection projects such as reforestation and renewable energy. They have added over 28,000 electric vehicles to their fleet to reduce emissions further. For example, from 2018 to 2019, logistical transport activity increased significantly but carbon efficiency remained the same, due to the increased use of renewable energy. The Carbon Efficiency Index (CEX) in 2019, was 35% for DHL. Their goal is to get to 50% by 2025.

		2019	2020 adjusted	2021	2022 adjusted	2023
ESG figures						
Logistics-related[12] GHG emissions	million t CO_2e[18]	33.20	33.64	39.36	36.59	33.27
Realized Decarbonization Effects[12]	thousand t CO_2e[18]	–	–	728	1,004	1,335
Energy consumption (Scopes 1 and 2)	million kWh	26,199	27,427	30,486	34,493	35,056
of which from renewable sources[13]	million kWh	–	–	1,826	2,267	3,062
Number of employees[14]	headcount	546,924	571,974	592,263	600,278	594,396
Staff costs	€m	21,610	22,234	23,879	26,035	26,977
Employee Engagement[15]	%	77	83	84	83	83
Share of women in middle and upper management	%	22.2	23.2	25.1	26.3	27.2
Lost time injury frequency rate (LTIFR)[16]		4.2	3.9	3.9	3.4	3.1
Share of valid compliance training certificates[17]	%	–	–	96.5	98.1	98.6
Cybersecurity rating	points	–	–	–	700	750

Figure 5: DHL Environmental, Social and Governance (ESG) Report

Source: DHL Official Website

- **Sustainable Warehousing**: The company leverages renewable energy sources, such as solar panels, and energy-efficient technologies in its warehouses in many countries such as Thailand and Australia, reducing reliance on fossil fuels notably.
- **Customer Impact**: DHL's initiatives resonate with customer preferences, as 70% of surveyed consumers prioritize sustainability in their shopping and shipping decisions. Services like carbon-neutral shipping are increasingly valued.

- **Operational Efficiency**: Advanced technologies such as AI-enabled route optimization and OiT have reduced delivery times and emissions, while telematics systems for fleet management have improved fuel efficiency by 4-7%.

3.3.2 Challenges in Implementation

- **High Initial Costs**: Adopting green technologies like electric vehicles or renewable energy systems requires significant upfront investments, which can pose financial challenges.
- **Supply Chain Complexity**: Tracking and mitigating the environmental impact across the supply chain involves numerous moving parts and can be resource-intensive.
- **Global Coordination**: Sustainability requires collaboration across multiple stakeholders, including suppliers and customers, which is not always easy to align on a global scale.
- **Data and Technology Limitations**: Accurate environmental impact measurement and implementing cutting-edge technologies like hydrogen fuel systems are areas requiring further innovation and development.

4. Logistics Service Providers in Vietnam's Green Logistics Strategies Analysis

4.1 Current Status of Logistics Service Providers in Vietnam's Green Logistics Practices

4.1.1 General Situation

The logistics sector in Vietnam has been expanding swiftly and steadily. According to Vietnam Freight Logistics Market Report by Mordor Intelligence, the Vietnam Freight and Logistics Market is projected to reach 71.88 billion USD by 2030, with a compound annual growth rate (CAGR) of 6.67% from 2025 to 2030. The market is valued at 52.06 billion USD in 2025. In this ever-evolving context, when Vietnam has set to reduce methane levels by 30 per cent by 2030, achieve Net Zero by 2050 and more than 72 percent of all nations around the world has proposed to achieve Net Zero, applying green logistics and supply chain to approach a sustainable development of the nation and to be part of the global supply chain must be the optimal foreseeable goal of Vietnamese government, businesses and consumers.

A January 2024 report from the Ministry of Natural Resources and Environment states that 38% of businesses have invested in eco-friendly energy sources like natural gas and electricity for transportation, and 53% of medium and large logistics providers have added energy-saving solutions to their transportation and warehousing operations. Compared to 2020, logistics-related CO2 emissions dropped by 12%.

A 2023 survey conducted by the Vietnam Logistics Association (VLA) found that 47% of logistics companies have implemented ISO 14001 standards for environmental management, and 65% of corporate clients gave preference to logistics service providers with environmental certification.

In general, we have recorded the following key observations:

- **Carbon Emissions**: According to the Ministry of Transport (MoT), the transport sector contributes about 18 per cent of Vietnam's total GHG emissions. Without any intervention, these emissions are projected to rise to around 64.3 million tonnes of CO2 in 2025 and 88.1 million tonnes by 2030. Additionally, according to the World Bank, transportation activities in Vietnam emit more than 50 million tonnes of CO2 each year, with road transportation accounting for 85% of the total emissions. The figure is expected to increase by an average of 6-7% per year, hitting up to 90 million tonnes of CO2 per year by 2030.
- **Regulatory Environment**: Logistics services are one of 18 major focus areas in the National Action Plan on Green Growth, which was released by the Vietnamese Prime Minister for the 2021–2030 timeframe. Furthermore, the development of logistics in relation to sustainable supply chains has been identified in Government Resolution No. 163/NQ-CP, which promotes the coordinated implementation of important tasks and solutions to improve competitiveness and develop Vietnam's logistics services. Additionally, Vietnam is a party to a number of free trade agreements (FTAs), particularly newer ones like the CPTPP, EVFTA, and UKVFTA, which impose stringent requirements on manufacturing processes with a focus on clean materials and green energy. These agreements present opportunities as well as challenges for Vietnamese businesses, particularly when it comes to innovation in production methods and guaranteeing adherence to global sustainability standards.
- **Adoption of Green Technologies**: A limited number of LSPs have invested in electric vehicles, route optimization software, and warehouse energy efficiency improvements.

4.1.2 Key activities

4.1.2.1 Eco-friendly Transportation

Companies such as Ahamove, Lazada, DHL and Viettel Post have integrated electric delivery vehicles into their fleet. Viettel Post has reported a 15% reduction in fuel costs after deploying electric motorcycles for last-mile deliveries. On November 28, 2022, Ahamove Instant Services Joint Stock Company launched AhaRide, an electric motorbike ride-hailing service, in Da Nang. Earlier, Ahamove was also a pioneer in Vietnam by introducing AhaFast, the country's first technology-based electric motorbike delivery service. In the initial phase, the service was deployed in Da Nang with 100 vehicles, with plans to expand to other major cities such as Hanoi, Ho Chi Minh City, Hai Phong, and Nha Trang. More noticeably, Lazada Logistics has partnered with Selex Motors, a startup in the smart electric vehicle sector, to design electric motorbikes tailored for urban delivery services.

Table 1: Efficiency Comparison Between Fuel Vehicles and Electric Vehicles in Logistics Service

COMPARISON DETAIL	GASOLINE CAR	ELECTRIC CAR
Fuel consumption	2.5 liters of gasoline	3.5 kWh of electricity
Unit price (VND)	23,000	3,000
Cost (VND)	57,500	10,500
Daily vehicle rental cost (VND)	–	30,000
Battery rental cost	–	Free
Total cost (VND)	57,500	40,500
Cost savings	29.57%	

Source: Ahamove.com

Moreover, some logistics providers have experimented with biofuels and liquefied natural gas (LNG) to reduce emissions. For example, Gemadept's pilot biofuel project has resulted in a 10% drop in CO2 emissions per trip. Additionally, firms like VNPost and Giao Hang Tiet Kiem have implemented eco-driving training programs, leading to an 8% decrease in fuel consumption across their fleets. The 2022 training program, which was conducted at GHTK's Tan Binh office and involved around 50 drivers and operational supervision of the business, is a prime example. Theory Training of Safety & Eco-Drive Seminar; Practice Training for Eco-Drive Seminar; Maintenance & Vehicles Checking Training; Practice Training for Maintenance & Vehicles Checking were the main topics of the seminar, which was conducted directly by the technical experts of Isuzu Vietnam and i-TRUCKS Tay Bac Sai Gon Dealer.

4.1.2.2 Energy-efficient Warehousing

DHL and FM Logistics have incorporated solar panels in their warehouse facilities, cutting down electricity consumption by 30% in their largest distribution centers. Automated climate control systems and motion-sensing LED lighting in ALS Logistics' warehouses have reduced energy use by 25% annually. Vela Logistics is also an outstanding firm which applies smart warehouse design to facilitate its "Greening" process. VELA's green warehouses are

designed strategically, optimizing storage space, reducing wasted room, and maximizing the capacity to store goods. Space optimization not only saves rental costs but also enhances inventory management efficiency. TBS Logistics and BW Industrial are pursuing LEED-certified warehouses, which adhere to international energy efficiency and sustainability standards.

4.1.2.3 Reverse Logistics and Recycling

TBS Logistics has implemented a closed-loop recycling system where 70% of returned packaging materials are reused, reducing landfill waste. Companies such as Shopee and Lazada Logistics have partnered with recycling firms to handle end-of-life electronics and returned goods, ensuring responsible disposal and reuse. Some logistics firms are collaborating with manufacturers and retailers to implement a circular economy approach, where used products are collected, refurbished, and resold.

4.1.2.4 Digitalization and Route Optimization

Companies such as Lazada Logistics and VNPost leverage AI-driven route planning, cutting delivery times by 20% and fuel consumption by 10-15%. GrabExpress and AhaMove use real-time traffic data analytics to dynamically adjust delivery routes, reducing congestion-related delays. Gemadept and Saigon Newport Corporation use IoT and data analytics to optimize container loading, increasing transport efficiency and reducing empty miles.

4.1.2.5 Sustainable Packaging Solutions

Logistics firms such as ALS Logistics and DHL Express Vietnam are replacing traditional plastic packaging with biodegradable alternatives, reducing plastic waste by 40% in selected operations. Companies are adopting lightweight materials to reduce shipping weight, leading to 5-10% fuel savings per shipment. Many LSPs have partnered with packaging companies specializing in compostable and recyclable materials to ensure sustainability throughout the supply chain.

4.1.2.6 Green Ports and Inland Waterways

Saigon Newport Corporation has introduced onshore power supply systems at key ports, allowing vessels to turn off diesel engines while docked, cutting emissions by 30% per vessel per port call.

By using hybrid container handlers and automated cranes, Gemadept's green port system utilizes 25% less energy. A Memorandum of Understanding (MoU) has been struck by

Vietnamese conglomerate Hateco Group and Danish shipping behemoth Maersk to work together on improving terminal operations in northern Hai Phong. The alliance will prioritize the use of cutting-edge port automation technologies and the promotion of sustainable "green" logistics solutions.

Companies are increasingly shifting freight transport from roads to inland waterways to reduce emissions, with a projected 20% increase in water-based transport by 2030. Typically, Gemadept has been steadfastly affirming its pioneering role in fostering Vietnam's inland waterway transport sector. Boasting a formidable fleet of over 30 container river vessels, Gemadept is effectively harnessing both domestic and Vietnam-Cambodia inland waterways, thereby contributing to alleviating road traffic congestion and minimizing environmental pollution.

4.2 Assessment of Vietnamese Logistics Service Providers Green Logistic Operation

Implementing green logistics offers several key benefits for Vietnamese logistics service providers. Firstly, it helps reduce costs by using energy-efficient transportation and warehouses, which lower expenses over time. Tools like route optimization and AI-driven logistics management also cut fuel use and improve efficiency. Secondly, meeting global sustainability standards, such as ISO 14001, strengthens Vietnam's export opportunities and gives logistics companies an advantage when working with eco-friendly international partners. Thirdly, green practices boost a company's reputation and show commitment to corporate social responsibility (CSR), helping to gain trust from consumers and attract investors who value environmental care. Lastly, investing in green technologies encourages innovation and prepares firms for future environmental rules and changing customer needs.

However, adopting green logistics comes with significant challenges for Vietnamese providers. The biggest problem is the high upfront cost of things like electric vehicles, renewable energy systems, and efficient warehouses, which many small and medium-sized companies find hard to afford. This problem grows due to limited government support; while some green policies exist, there aren't enough subsidies, tax breaks, or funding programs to push broader adoption. Additionally, Vietnam's logistics infrastructure is still lacking, with few charging stations for electric trucks or green port facilities, and many firms don't have the skills to use advanced tools like AI, IoT, or automation effectively. Finally, some companies resist change because they worry about profits and returns, while low awareness among businesses and consumers—tied to Vietnam's long-standing fuel-use habits—keeps demand for sustainable services seems impossible to process.

5. Implications for Vietnamese Logistics Service Providers

5.1 Gaps Between DHL and Vietnamese Logistics Service Providers

Green logistics involves adopting environmentally sustainable practices within transportation, warehousing, and supply chain operations to minimize carbon footprints and enhance ecological responsibility. DHL, a global logistics leader, has pioneered numerous green initiatives, setting a benchmark for the industry worldwide. However, Vietnamese logistics service providers encounter unique challenges that prevent them from fully following DHL's approaches. These gaps consist of financial ability, political characteristics, market potential, technology adoption, and regulatory environments. Understanding these differences is vital for assessing how Vietnamese providers can adapt DHL's green strategies to their local context and contribute to a greener logistics sector.

DHL's financial ability to invest in green logistics is a significant advantage, given its global revenue and scale. For example, DHL has committed to procuring over 800 million liters of SAF (Sustainable Aviation Fuel) by 2026, a costly endeavor that reflects its robust financial standing (DHL Group, 2022). In contrast, many Vietnamese logistics providers are SMEs (small to medium-sized enterprises) with limited budgets, making it challenging to fund large-scale green projects like electric vehicle fleets or energy-efficient warehouses. The high initial costs and lack of affordable financing options in Vietnam exacerbate this gap, highlighting why DHL's resource-intensive solutions are not directly applicable to local firms.

The political characteristics, particularly the regulatory environment, create another gap. DHL operates in countries with strict environmental regulations, such as the European Union's Green Deal, which require emissions reductions and sustainability reporting (European Commission, 2024). These regulations force DHL to prioritize green logistics. In Vietnam, while there are policies supporting green logistics, such as tax incentives for eco-friendly practices, enforcement is often inconsistent, and the regulatory framework is less mature (Ministry of Industry and Trade, 2024) that reduces the pressure on Vietnamese providers to adopt green practices,

Market potential, or customer demand for green logistics services, is another critical gap. In developed markets, customers are increasingly willing to pay premiums for environmentally friendly services, encouraging DHL to invest in and promote its green offerings. In Vietnam, however, the logistics market is price-sensitive, with cost often taking priority over sustainability. While there is growing awareness, as noted by industry experts, customer demand for green services is not yet strong enough to drive significant investments from local

providers (Ministry of Industry and Trade, 2024). This gap means that DHL's market-driven green strategies are less relevant in Vietnam's current economic context.

5.2 Strategic Recommendations for Vietnamese Logistics Service Providers

5.2.1 Transition to Electric Vehicles (EVs) for Last-Mile Deliveries

As DHL's commitment to deploying 80,000 EVs by 2030 in order to underscore the long-term cost savings and emission reductions possible through fleet electrification, transition to EVs seems to be the most possible solution for Vietnamese Logistics Service Providers.

In specific, urban last-mile delivery would offer an ideal starting point for them, as EVs are most efficient for short-distance routes with high delivery density. They can mitigate initial capital costs by collaborating with local EV manufacturers and local electricity suppliers, especially VinFast and EVN. Partnering with VinFast can provide affordable, locally adapted EVs, while collaboration with Vietnam Electricity (EVN) can address infrastructure challenges by installing charging stations at strategic locations. These partnerships leverage local expertise and reduce costs, aligning with Vietnam's green energy policies. This initiative would not only reduce the company's carbon footprint but also align with Vietnam's national strategies on reducing greenhouse gas emissions, boosting that firm's reputation as a sustainability leader.

However, transitioning to EVs also raises numerous challenges for both enterprises and government. The production process of key components of a car, such as engines, battery systems, devices, parts, and painting, generates heat, emissions, and wastewater. No factory can guarantee 100% treatment of emissions and waste; instead, advanced treatment systems are applied to minimize emissions to the lowest possible level. Secondly, the issue of recycling electric vehicle batteries is a challenge for nations in general and for each electric vehicle manufacturer in particular. While many countries have established technologies and effectively recycle lead-acid batteries from gasoline and diesel vehicles, millions of lithium batteries are left in warehouses and storage facilities, awaiting processing. If traditional methods such as melting or landfill disposal are applied, these compounds can cause air pollution, soil contamination, and groundwater pollution.

5.2.2 Offer Carbon-Neutral Shipping Services

DHL's GoGreen program has been widely successful, meeting the rising demand for eco-friendly shipping solutions. By offering similar services, Vietnamese enterprises can attract environmentally conscious consumers and businesses, building customer loyalty and differentiating itself from competitors.

Firms would enable customers to offset emissions through participation in certified climate protection projects. For example, orders are now optionally with surcharges, which are fees applied to shipping costs to help cover expenses associated with implementing environmentally sustainable practices. In order to implement this, they have to establish collaborations with internationally renowned offset providers such as South Pole or Gold Standard, who validate the environmental impact and ensure the transparency as well as credibility of emission reduction efforts, therefore fostering trust among both corporate and individual clients. Furthermore, integrating partnerships with local initiatives focused on reforestation or renewable energy development within Vietnam would not only amplify the direct environmental benefits but also strengthen the company's connection to its domestic market.

However, establishing these partnerships can involve substantial costs and administrative complexity, particularly in maintaining transparency and compliance with global standards. Additionally, we must address the potential challenge of customer skepticism regarding the effectiveness of offsetting, which can be mitigated by providing detailed documentation, such as verified certificates, and contributing to local projects to build trust and demonstrate tangible impact. Furthermore, implementing carbon-neutral shipping may require redesigning pricing structures to account for the additional costs of offsets, posing a risk of losing price-sensitive customers if not communicated effectively. Balancing these costs while maintaining competitiveness requires leveraging economies of scale and exploring financial incentives from government programs or international environmental funds.

5.2.3 Invest in Green Warehousing and Renewable Energy

DHL's green warehouses, equipped with solar panels and certified by LEED, demonstrate significant reductions in operational costs and carbon emissions. Vietnamese Big Logistics Services Firms like Viettel Post can implement similar initiatives to reduce reliance on traditional energy sources.

Utilizing their own parent company brand - Viettel Construction, for solar installations and international energy efficiency consultants can ensure adherence to global standards like LEED or BREEAM to utilize both cost-effectiveness and high environmental performance. Viettel Construction has experience in implementing solar energy projects in Vietnam and offers cost-effective solutions tailored to the local climate while international consultants bring expertise in designing energy-efficient facilities that reduce operating costs and environmental

impact. These initiatives not only leverage Vietnam's abundant solar potential but also align with national energy goals and reduce dependence on traditional power sources.

On the other hand, even big logistics services providers in Vietnam would face high initial capital expenditure, which may strain financial resources, especially if they simultaneously pursue other sustainability initiatives. Additionally, complexities in meeting international certifications like LEED or BREEAM may require significant expertise and prolonged timelines, delaying project completion. Moreover, operational integration of renewable energy systems into existing warehouses could face technical barriers, particularly in regions with underdeveloped grid infrastructure or inconsistent solar energy availability.

6. Conclusion

Green logistics is becoming a crucial component in determining the direction of the logistics sector as global supply chains place a greater emphasis on sustainability. From the use of sustainable aviation fuel to carbon-neutral transportation options, DHL's proactive efforts show how logistics firms can incorporate environmental responsibility into their operations while preserving productivity and competitiveness. These initiatives set the standard for other logistics service providers globally and are in line with global climate goals.

Adopting sustainable methods presents both a problem and an opportunity for Vietnam, where the logistics industry is essential to economic growth. High emissions, ineffective transit, and a shortage of green infrastructure are still some of the nation's environmental issues. Vietnamese logistics companies can shift to a more sustainable model by taking inspiration from DHL's tactics, which will lower their carbon footprint and increase operational effectiveness.

Moving forward, collaboration between companies, legislators, and industry stakeholders will be necessary for Vietnam to adopt green logistics. This change shall be powered by investments in cleaner technology, better infrastructure, and tax breaks. In order to stay relevant in a changing sector, logistics companies in Vietnam must embrace innovation and eco-friendly solutions as sustainability becomes a competitive advantage in international trade.

Since this is the first time we have done such a deep research about DHL and Vietnamese Logistics Services Providers as well as proposed recommendations for them based on lessons learned from DHL’s green logistic operation on our own, we are looking forward to receiving comments and suggestions to further improve our report. We sincerely appreciate PhD. Nguyen Thi Yen and MSc. Nguyen Thi Van Trang for your assistance during the course that helped us complete our report to the fullest.

REFERENCES

Báo Nhân Dân (2023). *Logistics xanh hướng tới các mục tiêu bền vững*. [online] Available at: https://nhandan.vn/logistics-xanh-huong-toi-cac-muc-tieu-ben-vung-post742969.html [Accessed 16 Mar. 2025].

DHL Group (2022). *Green Logistics Strategies for Small Businesses*. [online] Dhl.com. Available at: https://www.dhl.com/discover/en-global/logistics-advice/sustainability-and-green-logistics/dhl-green-logistics-toolkit [Accessed 16 Mar. 2025].

Ej Atlas (2025). *Dust pollution from Long Thanh Airport construction, Vietnam*. [online] Available at: https://ejatlas.org/print/dust-pollution-from-long-thanh-airport-construction-vietnam [Accessed 10 Mar. 2025].

European Commission (2024). *The European Green Deal*. [online] Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en [Accessed 15 Mar. 2025].

Gemadept (2024). *Developing Inland Waterway Transport in the Mekong Delta - A Green Choice for Vietnam's Logistics*. [online] Available at: https://www.gemadept.com.vn/developing-inland-waterway-transport-in-the-mekong-delta-a-green-choice-for-vietnams-logistics-8544/index.html [Accessed 15 Mar. 2025].

Gogilidze, E. and Gogilidze, N. (2024). The role of green logistics in the sustainable development of the economy. *Georgian Scientists*. doi:https://doi.org/10.52340/gs.2024.06.03.17.

Guarascio, F. and Vu, K. (2024). Top importer Vietnam struggles to recycle plastic waste, exposing limits of multibillion dollar trade. *Reuters*. [online] 26 Nov. Available at: https://www.reuters.com/sustainability/top-importer-vietnam-struggles-recycle-plastic-waste-2024-11-26/ [Accessed 14 Mar. 2025].

Isuzu Vietnam (2022). *Isuzu Vietnam Organized Successfully Eco-Drive Seminar for Giao Hang Tiet Kiem*. [online] Available at: https://isuzulongbien.vn/news/truck/news/isuzu-vietnam-organized-sucessfully-eco-drive-seminar-for-giao-hang-tiet-kiem/ [Accessed 14 Mar. 2025].

Kim, N. (2024). *Transport segments face up to GHG requirements*. [online] Vietnam Investment Review - VIR. Available at: https://vir.com.vn/transport-segments-face-up-to-ghg-requirements-114349.html [Accessed 15 Mar. 2025].

Linh, N. (2022). *Ngành logistics đẩy mạnh sử dụng xe điện để giao hàng*. [online] Mekong ASEAN. Available at: https://mekongasean.vn/nganh-logistics-day-manh-su-dung-xe-dien-de-giao-hang-140.html [Accessed 13 Mar. 2025].

Loan, N. (2023). *Lazada Logistics sẽ đưa 100 xe máy điện vào hoạt động giao vận trong năm 2023*. [online] Báo Tài chính - Đầu tư. Available at: https://baodautu.vn/lazada-logistics-se-dua-100-xe-may-dien-vao-hoat-dong-giao-van-trong-nam-2023-d179036.html [Accessed 13 Mar. 2025].

Ministry of Industry and Trade (2024). *Vietnam promotes green logistics*. [online] logistics.gov.vn. Available at: https://logistics.gov.vn/vietnam-promotes-green-logistics [Accessed 13 Mar. 2025].

Mordor Intelligence (2025). *Vietnam Freight and Logistics Market Size & Share Analysis - Growth Trends & Forecasts up to 2030*. [online] Available at: https://www.mordorintelligence.com/industry-reports/vietnam-freight-logistics-market [Accessed 13 Mar. 2025].

Nagy, G. and Szentesi, S. (2024). Green logistics: Transforming Supply Chains for a Sustainable Future. *Advanced Logistic Systems - Theory and Practice*, 18(3), pp.29–42. doi:https://doi.org/10.32971/als.2024.026.

Phuong Hoa (2024). *Maersk and Hateco Partner for Green Logistics and Port Automation in Vietnam*. [online] Nhịp sống kinh tế Việt Nam & Thế giới. Available at: https://vneconomy.vn/maersk-and-hateco-partner-for-green-logistics-and-port-automation-in-vietnam.htm [Accessed 15 Mar. 2025].

Reuters (2025). DHL Express to buy sustainable aviation fuel from Japan's Cosmo starting April. *Reuters*. [online] 28 Jan. Available at: https://www.reuters.com/sustainability/climate-energy/dhl-express-buy-sustainable-aviation-fuel-japans-cosmo-starting-april-2025-01-28/ [Accessed 12 Mar. 2025].

Reynolds, S. (2024). Sustainable Supply Chain Practices- A Qualitative Investigation of Green Logistics Strategies. doi:https://doi.org/10.20944/preprints202406.1089.v1.

Thu, L. and Phuong, T. (2024). *Logistics service businesses in Vietnam transform digitally to reduce costs*. [online] Available at: https://english.haiquanonline.com.vn/logistics-service-businesses-transform-digitally-to-reduce-costs-32464.html [Accessed 13 Mar. 2025].

Việt Nam News (2024). *Vietnamese enterprises adapt to green logistics trend*. [online] Available at: https://vietnamnews.vn/economy/1689682/vietnamese-enterprises-adapt-to-green-logistics-trend.html [Accessed 13 Mar. 2025].

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