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Background study on Two-wheeler Last-Mile Delivery Services toward Inclusive, Low-carbon Transport Transformation in Vietnam

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Definitions of LMD

Last-mile delivery (LMD) is the final stage in the entire delivery chain from the manufacturer to the end consumer. Many parties have provided definitions of LMD:

> "Last-mile delivery refers to the transportation of goods from a retailer's shipping origin to the final delivery point - the end customer, with the primary objective of achieving the fastest possible delivery time." (Datex, a company in supply chain software)

> "In the entire logistics distribution process chain from supplier to consumer (Figure 1), the last step in the supply chain operation is defined as the last-mile logistics. The last-mile logistics delivery mainly refers to activities that directly meet the customers' needs in the last section of logistics distribution." (Deloitte, 2023. Global Smart Last-mile delivery)

> "Last Mile Delivery refers to the final leg of the delivery process, where a parcel is retrieved from a transportation hub and delivered to its final destination - this could be the end customer, a pickup point such as a retail store, convenience store, or parcel locker." (Bambooship)

LMD segments in Vietnam

There are many ways to categorize LMD services. According to Deloitte, LMD can be categorized according to application, delivery time, and delivery model (Figure 1).

Last-mile logistics is the **final step** in the delivery process, starting at the distribution center and ending when a delivery is completed.

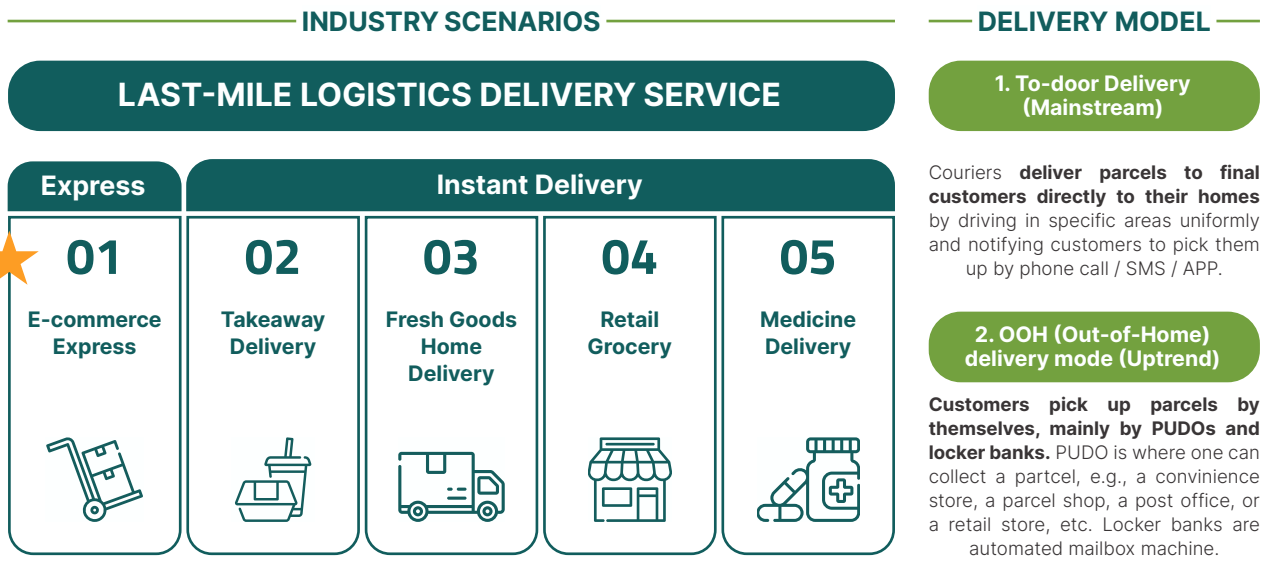


Figure 1: Overview of global last-mile logistics distribution.
Source: Deloitte, 2024. Global last-mile logistics.

The Vietnam Last Mile Delivery Market Report by Allied Market Research groups LMD in Vietnam by aspects, namely, delivery mode, application, destination, service type, vehicle type, and mode of operation (Figure 2). Furthermore, LMD can be categorized based on delivery methods (home delivery/ pickup point) and delivery workforce (contracted employees/ crowdsourced delivery). LMD providers can be either a subsidiary of a parent company (in-house team/department), such as e-commerce platforms, or third-party logistics (3PL) providers that fulfill orders for retailers and businesses.

Vietnam Last Mile Delivery Market Report Highlights

By Delivery Mode:
Regular delivery, same-day delivery or express delivery

By Application:
E-commerce, retail and FMCG, healthcare, mails and packages, etc.

By Destination:
Domestic, international

By Service Type:
Business-to-business (B2B), Business-to-consumer (B2C), Customer-To Customer (C2C)

By Vehicle Type:
Motorcycle, LCV, HCV, drones

By Mode of Operation:
Non-autonomous and Autonomous

Figure 2: LMD categorization by aspects.
Source: Allied Market Research

A study by Loan et al.[1] found that attended home delivery (AHD) is the most popular LMD mode in Vietnam, accounting for 99% of all e-commerce orders. Out-of-home (OTH) mode, which includes customer delivery points and parcel lockers, is a less common option.

In terms of LMD market share by aspect in the country's logistics service supply chain in 2021, business-to-consumer (B2C) LMD made up over 60% of the express delivery market. E-commerce platforms dominated the LMD segment, accounting for nearly 80% of the total market share. While the domestic segment held the largest market share, the international segment experienced the highest growth rate at 25.7% from 2022 to 2030.[2]

LMD Business models

LMD services in Vietnam, as aforementioned, are mostly **AHDs** conducted by **in-house teams/ departments/subsidiaries** or **3PL providers** for other commercial and trading businesses.

The in-house teams/departments/subsidiaries often operate under e-commerce business-to-business-to-consumer (B2B2C) companies or big B2C trading companies.

- **Typical B2B2C companies** are like e-commerce platforms such as Tiki, Sendo Lazada, Shopee, and TikTok, which establish their own fulfillment processes, including warehousing, packaging, and shipping. They are responsible for picking products from sellers, storing, repacking, and delivering the parcels to buyers.

- **Big B2C e-commerce merchandise** (such as thegioididong, dienmayxanh, FPTshop, and Nguyen Kim) do fulfillment on their own. In most cases, B2C companies have their own chain of brick-and-mortar (B&M) stores in many provinces or even nationwide. Thus, once an order is placed, the products are sent to their retail stores to be picked up directly by customers, or the retailer's delivery team delivers the parcels directly to the customers.

Meanwhile, the 3PL providers of other commercial and trading businesses operate via either **on-demand delivery** or **order fulfillment**.

- **B2B2C websites (such as Sendo) and customer-to-customer (C2C) platforms (such as Vatgia)** have their shipping partners carry out delivery services. They only serve as an intermediate marketplace and supervise the fulfillment process.

- **Unofficial e-commerce businesses in Vietnam, known as online shopping stores and sellers**, mainly utilize social media platforms such as Facebook, Zalo, and Instagram instead of e-commerce websites, e-marketplaces, online auction sites, etc. They also have shipping partners on an on-demand basis. They use online driver-based matching platforms, also understood as crowdsourcing shipping, such as Ahamove, Grab, Be, and Lalamove for express

[1] Loan et al. Last–Mile Delivery in B2C E-Commerce – Common Practices in Some Countries, But What Do They Mean for Businesses in Vietnam?, Vol. 49 No. 5 May 2022. https://doi.org/10.55463/issn.1674-2974.49.5.3
[2] Vietnam E-commerce Association (VECOM). (2024). Vietnam E-Business Index 2023.

or same-day deliveries. They also use other major LMD companies such as Giao Hang Tiet Kiem (GHTK), Giao Hang Nhanh (GHN), J&T, Viettel Post, and VNPost for regular delivery with reasonable prices.

Some e-commerce platforms such as Shopee have both in-house subsidiaries (e.g., Shopee Express, SPX) and 3PL partners (e.g., Giaohangtietkiem, Giaohangnhanh, and J&T Express) to fulfill a massive number of orders daily.

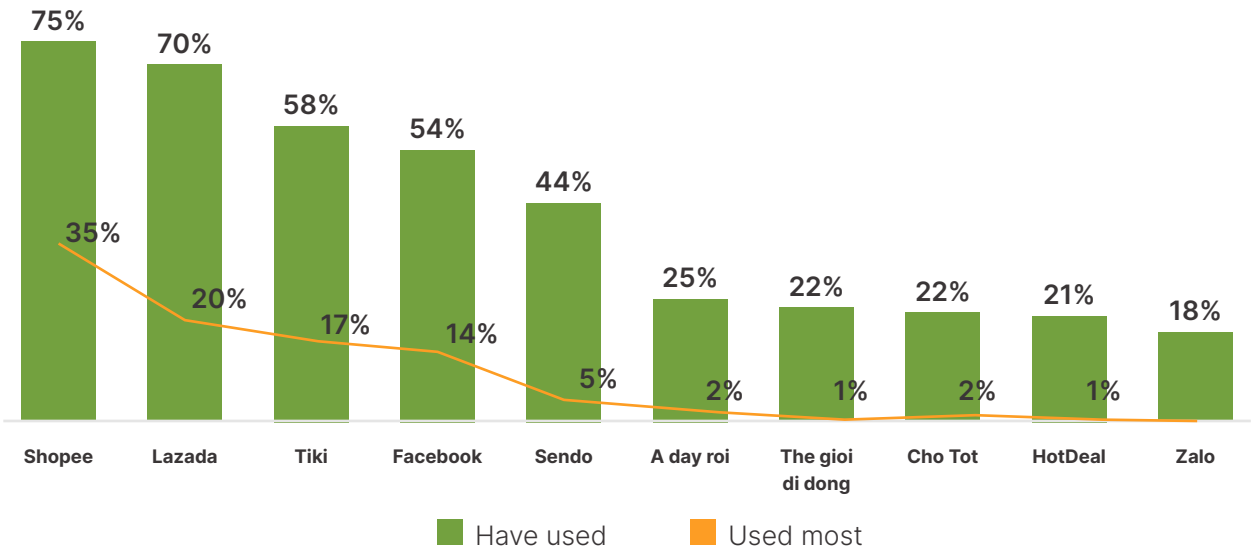


Figure 3: Popular e-commerce sites for shopping in Vietnam (Q&Me 2018).

The Vietnam E-Business Index 2024 revealed that 67% of businesses handle their own logistics for both inbound and outbound shipments while 57% reported using 3PL services. Large enterprises tend to utilize 3PL services, while small and medium-sized enterprises tend to use their own transportation services (Figure 4). Although a significant portion of e-commerce businesses still manage their own logistics, there is a growing trend of outsourcing logistics to third-party providers, especially among larger enterprises.[3]

[3] VECOM. (2024). Vietnam E-commerce Index 2024.

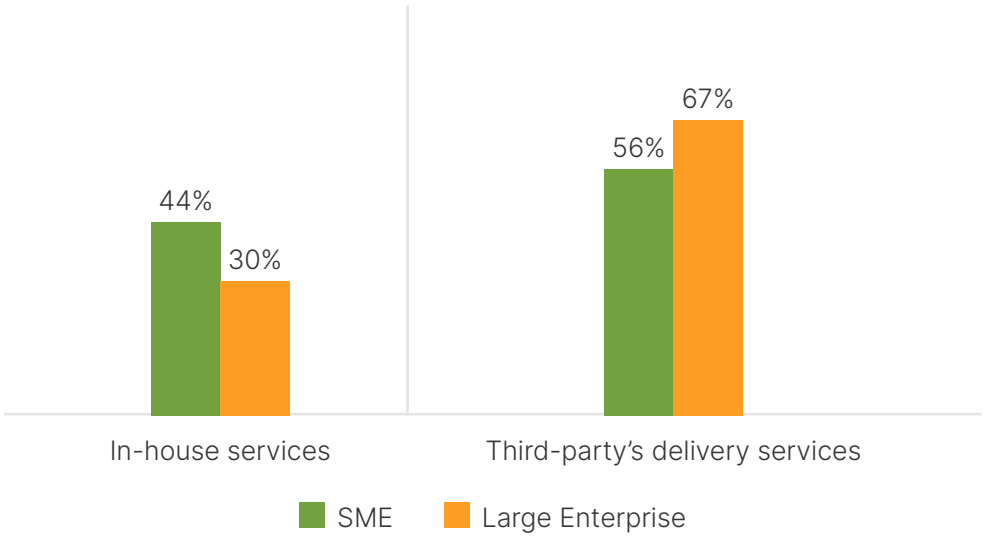


Figure 4: Methods of goods transportation used by enterprises, by enterprise size.
Source: VECOM (2025).

Freight MCs ownership

There are two types of freight MCs ownership, by the LMD companies or by drivers. For instance, state-owned CEP companies, like VNPost or Viettel Post, maintain direct ownership of their delivery fleets, including motorcycles used for last-mile services. In contrast, crowdsourcing-based LMD companies operate on a fundamentally different ownership structure. These platforms, which provide on-demand or same-day delivery services, do not own any freight motorcycles. Instead, they rely on individual drivers who own their vehicles and operate as partnered drivers or independent contractors.

This substantial factor has significant implications for environmental responsibility and the transition to low-carbon transportation. State-owned companies bear direct corporate responsibility for fleet electrification and emission reduction. They can implement centralized green policies, negotiate bulk purchases of electric vehicles, and ensure consistent environmental standards across their operations. Vietnam Post's collaboration with Honda for electric motorcycle procurement demonstrates how state-owned entities can drive systematic green transformation.

Crowdsourcing platforms, however, face a distributed responsibility challenge. Since individual drivers own the vehicles, the platforms cannot directly mandate vehicle upgrades or environmental standards. The responsibility for transitioning to electric or low-emission vehicles falls on thousands of individual drivers, creating significant barriers to coordinated environmental action.

This implies both barriers to green transformation and differentiated policy and market approaches the for the LMD industry toward low-carbon and inclusive transportation.

Cost of LMD services

An LMD service is paid for by either the sender, the receiver, or both.

- **From the client side of LMD (sellers):** LMD costs are a significant component of the overall expenses of businesses, particularly e-commerce enterprises. A VECOM EBI 2024 reported that a majority of these businesses reported spending less than 10% of their e-commerce revenue on order fulfillment and LMD (Figure 5). However, this figure varies depending on the size and scale of the business. Industry reports offer a broader perspective, with Datex estimating that LMD accounts for 28% of total shipping costs, while Deloitte's global report suggests a higher figure of up to 41% (Deloitte, 2024)[4]. Some studies have even indicated that LMD can account for as much as 75% of total logistics costs in e-commerce, directly affecting operational efficiency.[5]

- **From the customer side of LMD:** According to the WhiteBook of E-commerce in Vietnam 2023, 23% of Vietnamese online shoppers are concerned about delivery costs, and 29% consider the high delivery cost to be a barrier when they make online purchases.[6]

Consequently, LMD providers seek to optimize pricing and service quality to remain competitive in the market.

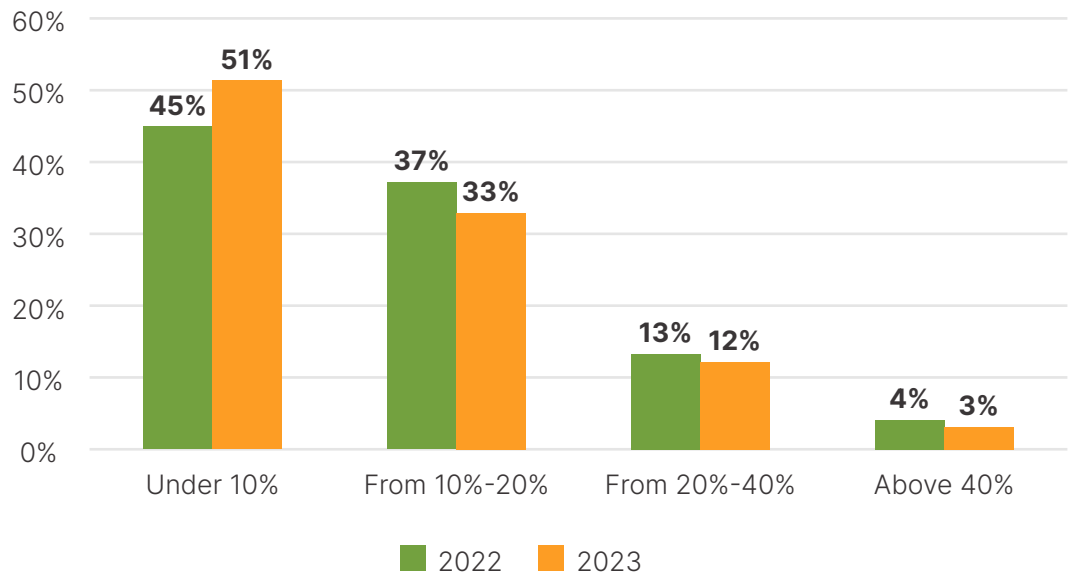


Figure 5: Order fulfillment and LMD cost in total e-commerce revenue of Vietnamese companies.
Source: VECOM EBI 2024.

[4] Deloitte. (2024). 2023 Global Smart Last-Mile Logistics Outlook.
[5] CafeF. Mạng lưới điểm giao hàng chặng cuối: Yếu tố giúp thị trường thương mại điện tử phát triển bền vững.
[6] Vietnam E-commerce and Digital Economy Agency, under the Ministry of Industry and Trade. (2024). Vietnam E-Business Index 2023 [p. 51-52]

Stakeholders of LMD services

As highlighted by Maja Kiba-Janiak et al. (2021), LMD for urban e-commerce involves a variety of stakeholders, each with distinct preferences and expectations. These stakeholders include local authorities, shippers, sellers, surrounding residents, e-customers (receivers), and courier, express, and parcel (CEP) companies. E-customers (receivers) choose companies (retailers) that deliver goods faster and cheaper than others, authorities (local government) prioritize the needs of all residents over the individual needs of enterprises, transport companies focus on low delivery costs and often ignore environmental pollution or congestion problems, and e-commerce services (shippers) compete in satisfying individualized customer needs.[7]

All stakeholders' concerns are linked to LMD businesses' decision to adopt green, low-emission, or inclusive measures. According to Juan Nicolas Gonzalez et al.[8] an assessment of the economic, environmental, and social dimensions and stakeholder perspectives (including government agencies, consumer or community groups, retailers, transportation companies, and researchers) on sustainable LMD reveals that price is not considered a critical factor for achieving sustainable LMD by most stakeholders. Environmental issues, primarily emissions reduction and noise pollution, are considered important by stakeholders, and they are willing to adopt measures to contribute to reducing the environmental impact of LMD. From a social perspective, stakeholders consider "deliveries by a company that treats its workers well" as a significant factor (Figure 6).

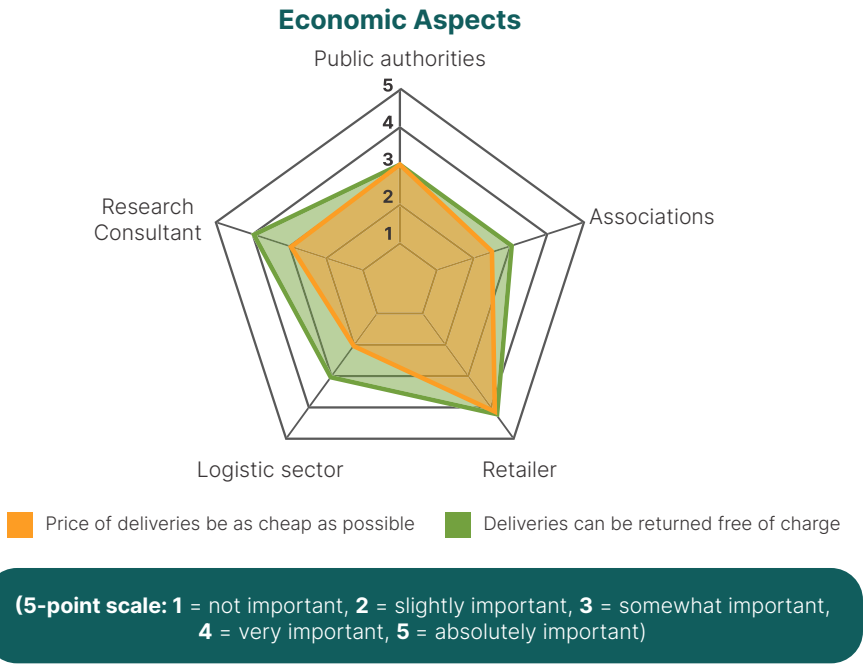


Figure 6: Sustainability pillars with direct impact on LMD

[7] Maja Kiba-Janiak et al., (2021). Sustainable last mile delivery on e-commerce market in cities from the perspective of various stakeholders. Literature review. https://doi.org/10.1016/j.scs.2021.102984

[8] Juan Nicolas Gonzalez, Laura Garrido , Jose Manuel Vassallo. (2023). Exploring stakeholders' perspectives to improve the sustainability of last mile logistics for e-commerce in urban areas. https://doi.org/10.1016/j.rtbm.2023.101005

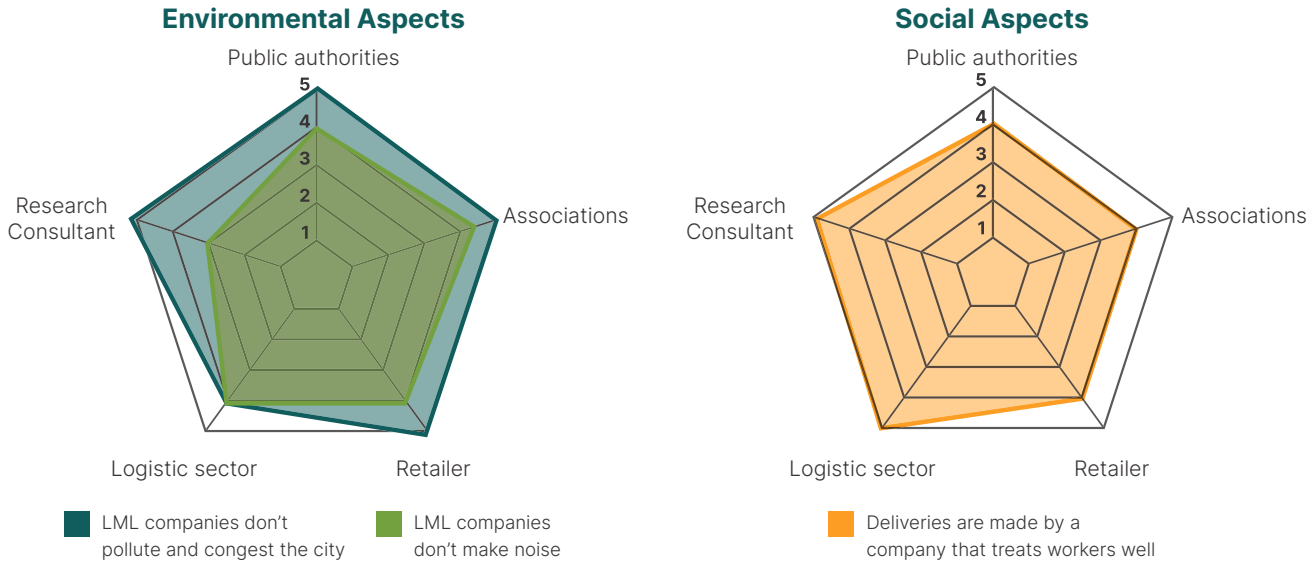


Figure 6: Sustainability pillars with direct impact on LMD

Key players - LMD using two-wheelers in Vietnam

LMD pool and key players

In Vietnam, LMD falls under postal services, also called competitive postal services (B2B, B2C), which include public postal services and supporting services.[9] In the period of 2017–2022, the country's postal service maintained a revenue growth rate of 19.8% and output of 35.3%. The revenue from the postal service recorded an average increase of 29% per year, while the number of postal items increased by 40% per year. At the same time, this sector created jobs for more than 170,000 workers (including freelance workers like drivers of delivery companies), contributing over VND 4,335 billion to the state budget.[10] According to Motor Intelligence, Vietnam's CEP market had an estimated value of $1.62 billion in 2024 and is projected to reach $2.53 billion by 2030, equivalent to a compound annual growth rate of 7.76% during the forecast period (2024-2030).[11]

In recent years, the LMD industry has witnessed significant growth, driven by the rapid expansion of e-commerce, online retail, technological advancements, and changing consumer trends, especially in large cities. Vietnam's e-commerce market has grown by over 25% from 2022, reaching $25 billion,

[9] Ministry of Industry and Trade (2023). Vietnam Logistics Report 2022. [p.59]
[10] Ministry of Information and Communications. (2024). White Book of Viet Nam Information and Communications 2023 [p.17].
[11] Motor Intelligence. (2024). Vietnam Courier, Express, and Parcel (CEP) Market SIZE & SHARE ANALYSIS - GROWTH TRENDS & FORECASTS UP TO 2030.

with online retail accounting for $17.3 billion.[12] This boom was conditioned by numerous factors. For instance, technological advancements, including digital banking and e-wallets, have made online payments easier, driving the growth of convenient and secure online shopping. Vietnamese consumers have increasingly shifted from traditional B&M stores to online platforms, with a weekly online purchase rate of 60.7% among Vietnamese internet users and a total of 61 million online shoppers in 2023,[13] fueled by the ease and affordability of online shopping.

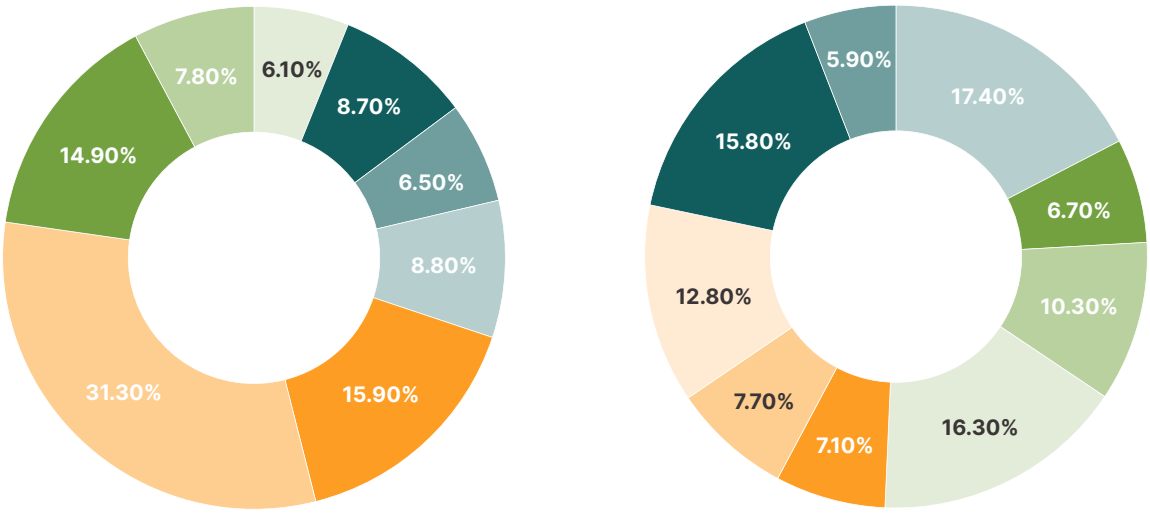
The rapid growth of the LMD market in Vietnam has attracted both domestic and foreign players. The market is becoming increasingly competitive, with a focus on pricing and service quality. According to Allied Market Research, the emerging market of foreign-owned e-commerce logistics companies is growing significantly; meanwhile, LMD is witnessing intense competition in terms of pricing and service quality.[14] However, no official report indicates the exact number of LMD companies operating in the Vietnamese market. The Vietnam Ministry of Information and Communications (MIC)[15] indicates that by 2022, the country's postal sector (including letter service and packet, parcel item services) had 655 operators, 94% of which are non-state owned companies (excluding FDI postal operators) and with only 5 of them being state-owned operators (Table 1).

Table 1: Number of postal operators in Vietnam. **Source:** MIC.

No.	Indicator	2018	2019	2020	2021	2022
1.1	**Number of licensed and certified postal operators**	410	468	573	728	655
1.1.1	Number of licensed postal operators	350	410	500	596	557
1.1.2	Number of certified postal operators	367	424	521	668	632
1.2	**Number of postal operators by economical type**					
1.2.1	Number of state-owned postal operators	5	5	5	5	5
1.2.2	Number of FDI postal operators	16	25	27	34	34
1.2.3	Number of non state-owned postal operators (excluding FDI postal operators)	389	438	541	689	616

[12] Vietnam E-commerce Association (VECOM) (2024). Vietnam E-commerce Index Report 2024.
[13] MOIT. (2024). Vietnam E-commerce Report 2023. [p.30, 40]
[14] VECOM. (2024). Vietnam E-Business Index 2023.
[15] MIC. (2024). White Book of Information Technology and Communications 2023. [p.19]

Key postal operators in terms of market share by revenue are GHTK (15.9%), VNPost (14.9%), Viettel Post (8.8%), SPX Express (8.7%), and Thuan Phong (7.8%) (Figure 7-left). By volume share, SPX Express—the in-house delivery company owned by Shopee, which is the largest e-commerce platform in Vietnam[16]—is the leading postal operator with a revenue share of 17.4%. It is followed by GHTK at 15.8%, VNPost at 12.8%, Thuan Phong at 10.3%, EMS (under VNPost) at 7.7%, and Viettel Post at 7.1% (Figure 7-right). These market shares are relatively similar to the market research reports by Vietdata[17] (with the top 5 express companies in 2023 being Viettel Post, VNPost, SPX Express, GHTK, and J&T Express) (Figure 8) and Motor Intelligence (with the major players being DHL Group, GHN, GHTK, VNPost, and Viettel Post) (Figure 9).[18]



Market Share by Revenue

- VN Post
- DHL-VNPT
- Thuang Phong
- Viettel Post
- Flex Speed
- GHTK
- SPX Express
- Others

Market Share by Volume

- GHTK
- Others
- GHN
- Viettel Post
- SPX Express
- EMS
- Flex Speed
- VNPost
- Thuan Phong

Figure 7: CEP market share by revenue and volume of postal operators in 2022 in Vietnam.
Source: MIC, 2023.

[16] Tuổi Trẻ Newspaper. (2024, August 12). Các sàn thương mại điện tử ở Việt Nam đang làm ăn ra sao?
[17] Viet Data, 2023. Doanh thu bưu chính, chuyển phát nhanh tăng trưởng 9,3%, "ông lớn" nào "ăn nên làm ra", doanh nghiệp nào "chật vật tìm chỗ đứng"?
[18] This list is sorted in alphabetical order. Source: https://www.mordorintelligence.com/industry-reports/vietnam-courier-express-and-parcel-cep-market

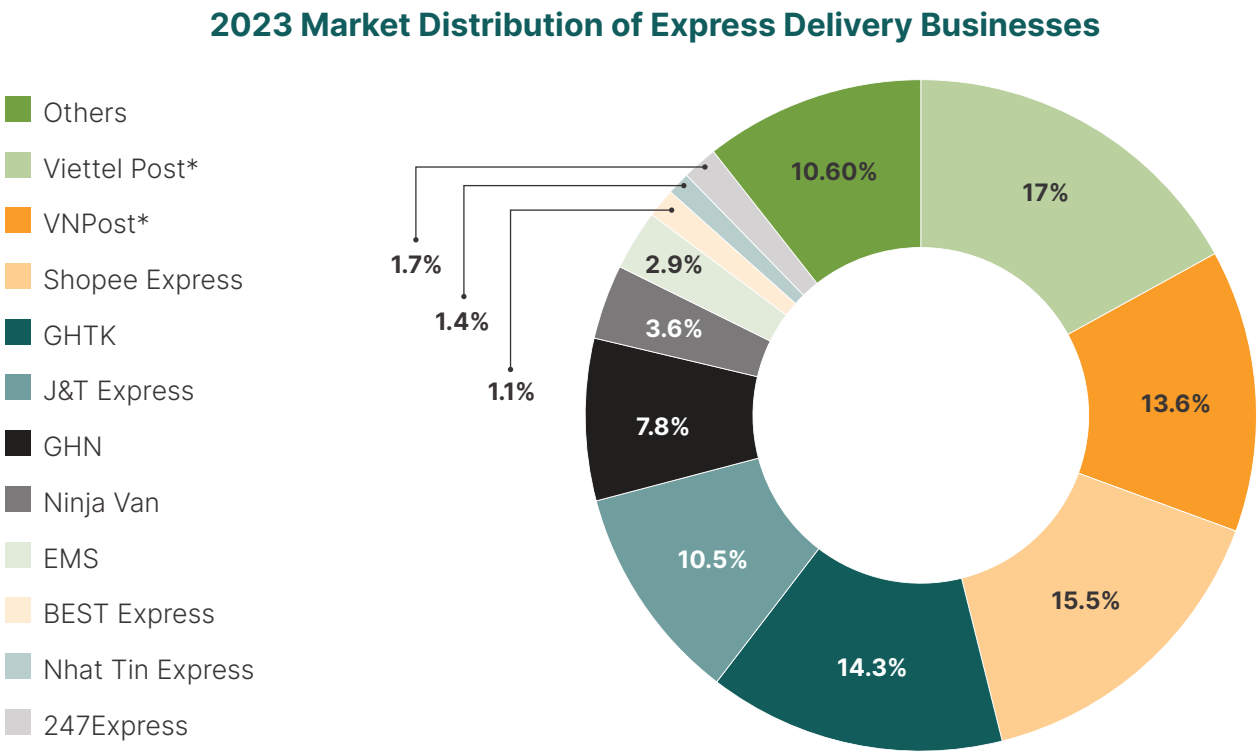


Figure 8: Shares of express delivery market in Vietnam in 2023 (Vietdata, 2023).

Major Players

DHL Group

GiaoHangNhanh
Giao Siêu Nhanh, Giá Siêu Tốt

GHTK

VIETNAM POST
BƯU CHÍNH VIỆT NAM
Gửi cả niềm tin

viettel post

Figure 9: Major players in Vietnam's courier, express, and parcel (CEP) market.

[19] Wang et al. (2021). Evaluating Sustainable Last-Mile Delivery (LMD) in B2C E-Commerce Using Two-Stage Fuzzy MCDM Approach: A Case Study From Vietnam.

In terms of sustainability practices, research evaluating sustainable LMD in B2C e-commerce in 2021 concluded that the most sustainable major LMD enterprises in Vietnam were Grab Express, TikiNow, Viettel Post, Giao Hang Tiet Kiem, and GHN.[19] Other LMD players with prominent low-carbon practices and rising popularity are LPX (Lazada), XanhExpress (Xanh SM), Gojek, Ahamove, and beExpress. However, at the time of writing, Gojek announced its exit from the Vietnam market starting on September 16, 2024.[20]

Two-wheeler LMD services in Vietnam

Motorcycles (MCs) dominated the LMD global market in 2023 as they are popular for urban deliveries, they offer agility and speed, and they are ideal for congested areas, although their capacity is limited;[21] they are an alternative to lightweight vans, heavy-weight trucks, etc. In line with this global trend, over 90% of households in Vietnam own at least one MC; hence, the LMD market in urban areas primarily relies on two-wheeler (2W) vehicles. However, there are no official reports on the exact number of MCs used in the LMD sector.[22] Some studies conducted in Hanoi stated interesting statistics. A 2020 study found that MCs accounted for 70% of delivery vehicles for 16 LMD companies operating in Hanoi. LMD MCs contribute significantly to urban traffic. A survey conducted by the University of Transport and Communications in 2020 revealed that freight MCs accounted for approximately 11% of traffic in three major Vietnamese cities.[23] Based on vehicle counts at 40 roads and CCTV systems traffic data in Hanoi, the 2020 study by Nhu et al. found that freight MCs accounted for about 4% of all circulating vehicles.

The country's freight MCs are predominantly powered by gasoline. The adoption rate of electric vehicles in the LMD sector is modest relative to the burgeoning LMD market, although the total electric MC usage has gained traction, accounting for approximately 10% or around 5.9 million units.[24] A limited number of electric MCs are being piloted for LMD services by companies such as GHN, Ahamove, Vietnam Post, and Viettel Post. Vietnam Post, according to its press releases, had a fleet of 200 electric MCs for LMD services between 2022 and 2024. This number is lower than the total number of delivery vehicles required to handle their annual CEP volume of 2 million. Viettel Post conducted a two-month pilot program in 2022 with 24 electric MCs in Hanoi to assess fuel efficiency, load capacity, and environmental friendliness. Ahamove, in partnership with Vinfast, aims to deploy 350 electric MCs in Hanoi and other provinces. Notably, Vinfast, a domestic electric MC manufacturer, has entered the delivery market through its subsidiary XanhSM, offering same-day and express delivery services exclusively using electric vehicles. No delivery service using bikes or hybrid bikes exists, but TNGo, a bike-sharing company, is considering entering the delivery market with hybrid bicycles.

[19] Wang et al. (2021). Evaluating Sustainable Last-Mile Delivery (LMD) in B2C E-Commerce Using Two-Stage Fuzzy MCDM Approach: A Case Study From Vietnam.

[20] Vietnam News. (2024, 5 September). Gojek quits Viêt Nam to focus on major markets.

[21] Maximize Market Research. (n.d). Last Mile Delivery Market: Global Industry Analysis and Forecast (2024-2030).

[22] Nhu et al. (2021).

[23] An Minh Ngoc, Hiroaki Nishiuchi, Nguyen Thi Nhu, Le Thu Huyen. (2022). Ensuring traffic safety of cargo motorcycle drivers in last-mile delivery services in major Vietnamese cities https://doi.org/10.1016/j.cstp.2022.07.004

[24] According to a recent report by Motorcycles Data, over two-thirds of the Vietnamese population own an MC, and more than 90% of households have at least one MC. While the majority of MCs in Vietnam run on gasoline, electric MCs account for about 10% of the total or approximately 5.9 million units.

Environmental impacts and Inclusiveness of 2W LMD in Vietnam

Greenhouse gas emissions from 2W LMD

In Vietnam, transport is reported to be responsible for 18% of Vietnam's total national greenhouse gas (GHG) emissions according to the Pathway to Low-carbon Transport Report.[25] However, there is a scarcity of in-depth research or reports specifically on GHG emissions from LMD services using 2W vehicles in Vietnam. A few national studies on the environmental impact of LMD on urban areas, particularly Hanoi, are summarized as follows:

- **A study by Thao et al. in 2022** observed 234,476 average daily freight vehicles in the main roads of Hanoi. LMD vehicles constituted about 27% of the total annual vehicle kilometer travelled (VKT), contributing to around 13% of CO_2 emissions. Freight MCs recorded a total travel distance of 10,235 million VKT, doubling that of light commercial vehicles and emitting 2.3 million tons of CO_2e (18% of freight emissions).[26]

- **A study by Nhu et al.** indicated that freight MCs accounted for approximately 4% of all circulating vehicles, with a median distance of 70 km per day and an average time use of vehicles being 6–10 hours per day (Figure 10) according to a survey of 16 surveyed LMD companies. Emissions from freight MCs contributed about 8% to the total emissions from all road vehicles (private vehicles, public transport, and freight vehicles). Emissions from all freight vehicles reached 717,013 tons of CO_2 and are forecasted to reach over 1.2 million tons by 2025 and 2.2 million tons by 2030, equivalent to 21% and 31%, respectively, of the total urban transport emissions (Figure 11).[27]

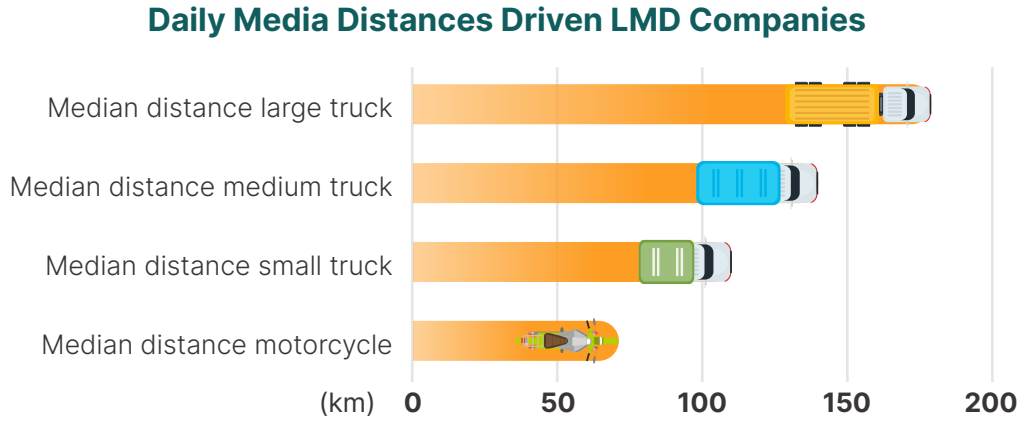


Figure 10: Characteristics of freight MCs. Source: Nhu et al., 2021.

[25] Oh, J. E., Cordeiro, M., Rogers, J. A., Nguyen, K., Bongardt, D., Dang, L. T., & Tuan, V. A. (2019). Addressing Climate Change in Transport-Volume 1: Pathway to Low-Carbon Transport.

[26] Thao, T.T., Binh, D.T.T. (2022). Impacts of Last Mile Delivery on Environment in Urban Areas: Hanoi Case Study. In: Ha-Minh, C., Tang, A.M., Bui, T.Q., Vu, X.H., Huynh, D.V.K. (eds) CIGOS 2021, Emerging Technologies and Applications for Green Infrastructure. Lecture Notes in Civil Engineering, vol 203. Springer, Singapore. https://doi.org/10.1007/978-981-16-7160-9_167

[27] Nhu et al. (2021). The 14th EASTS Conference 2021.

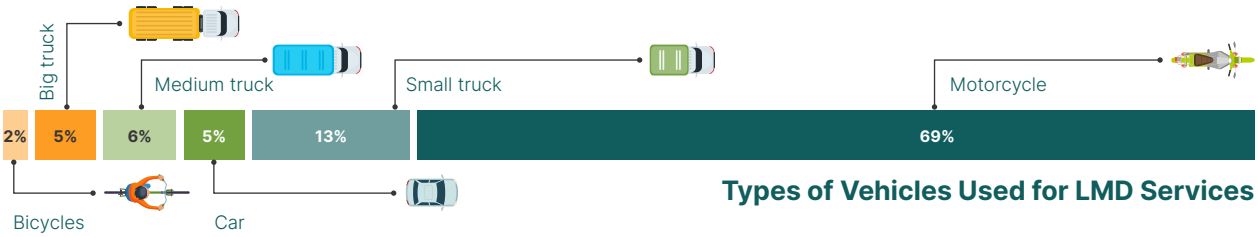


Figure 10: Characteristics of freight MCs. **Source:** Nhu et al., 2021.

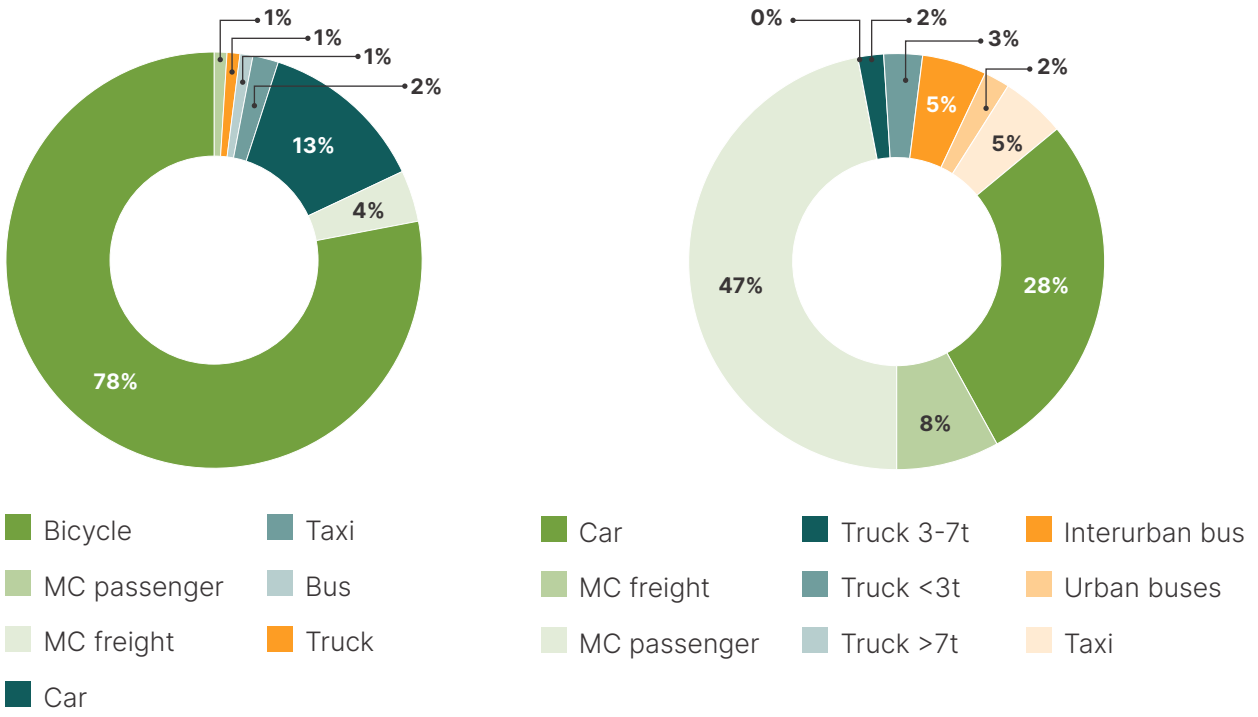


Figure 11: Emissions share by freight MCs. **Source:** Nhu et al., 2021.

According to a study by a ADB project TA-9055 VIE, each gasoline motorbike emits 66g CO_2 per kilometers. One motorbike travels in average from 15km to 30km per day that can emit 0,36 to 0,73 tons of CO_2 per year. It is estimated that there are 60 million gasoline motorbikes in circulation in Viet Nam and they emit up to 42 million tons of CO_2 per year depending on the number of traveled kilometers.[28]

[28] UNDP (2023). https://www.undp.org/vietnam/blog/transitioning-fuel-charge-policy-experiment-driving-green-mobility-viet-nams-last-mile-delivery

Similarly, there is a dearth of GHG emissions inventories published by LMD companies. Only a limited number of LMD companies have voluntarily disclosed their GHG emissions or announced a commitment to GHG reduction. Specifically:

- **Ahamove** is the only domestic private CEP company to publicly disclose its total GHG emissions, reporting 21,400 tons of CO_2 in 2021 and 24,300 tons in 2022. Notably, it reported a reduction of 179,000 tons CO_2e in 2022, with 2.5 tons of CO_2e achieved through the use of electric vehicles for deliveries and 1.78 tons of CO_2e saved through the optimization of delivery routes using algorithms.

- **Viettel Post**, a state-owned enterprise that has been operating in the CEP sector for 25 years, has announced a target of reducing its GHG emissions by 20% by 2050. Specifically, the company aims to reduce emissions from its own fleet by 25%, although it has not disclosed a specific GHG emissions inventory.

- **Gojek**, a multinational on-demand LMD company operating in Vietnam, has released its corporate-wide GHG emissions inventory. Accordingly, Gojek's global emissions in 2020 were 1.04 million tons of CO_2e, as calculated under the Scope 3 emissions protocol. Notably, less than 1% of these emissions originated from energy and fuel usage.

- **Lazada**, a multinational e-commerce platform that operates its own LMD services and outsources to 3PL providers, has released a report detailing the percentage of its total GHG emissions attributable to company-owned vehicles and fugitive emissions (Scope 1). Specifically, Scope 1 emissions account for 44% of the company's total emissions across all operating countries. However, emissions from outsourced delivery services are not included in this figure. Lazada has not disclosed the specific amount of GHG emissions in this report.

Given the absence of industry-wide emissions data for the LMD industry, this research was unable to estimate the exact proportion of Vietnam's transportation-related GHG emissions attributable to 2W vehicle-based LMD services.

Air pollution from 2-W LMD

The 2-W LMD segment, given its notable shares in terms of VKT and in-circulation on-road vehicles, may account for a significant to the air pollutants emissions, especially in large cities like Hanoi and Ho Chi Minh City. However, this topic has not been well studied and documented.

According to Vietnam's Ministry of Agriculture and Environment (MAE),[29] motorcycles contribute more than 90% of carbon monoxide (CO) and volatile organic compounds (VOCs), and 60% of suspended particulate matter (SPM) from the transportation sector. In Hanoi and Ho Chi Minh city, studies have pointed out these significant contributions (results on the next page):

[29] MAE was merged between Vietnam's Ministry of Natural Resources and Environment and Ministry of Agriculture and Rural Development in March 2025.

In Hanoi:

- Road transportation, especially MCs, is the main source of air pollution in traffic activities in Hanoi, contributing up to 93% for various substances. Specifically, for PM_{10} and $PM_{2.5}$, road traffic contributes 67% and 71% of total transportation emissions, respectively. MCs accounted for 32% of NOx emissions and up to 94.3% of the total CO emissions, and 18.3% of the total SO_2 emission of Hanoi. (Table 2).[30]

Table 2. Share of MCs in all transportation sources of air pollutants in Hanoi

Indicator	NO_x	CO	SO_2	$PM_{2.5}$	PM_{10}
Total emissions	65,963 tons/year	1,815,670 tons/year	10,570 tons/year	32,640 tons/year	42,492 tons/year
Share of MCs/all transportation sources	MCs: 32%	MCs: 94.3%	MCs: 18.3%	all transportation sources: 66.3%	all transportation sources: 54%

- A recent studied by Hien et al. indicated that total emissions from motorcycles are 5,261 tons PM per year, NOx is 22,478 tons per year, CO is 845,340 tons per year and SO_2 is 345 tons per year in 2022. CO_2e emission of MCs is 4.6 million tons per year. According to the business-as-usual scenario, emissions from MCs in Hanoi can be seen increasing by 7.4% and 19.2% in 2025 and 2030, respectively (Table 3).[31]

Table 3. Emissions from MCs across Hanoi according to a normal development scenario.

Year	2022	2025	2030
PM	5,261	5,652	6.271
SO_2	245	371	411
CO	845,340	908,143	1,007,605
NOx	22,478	24,148	26,793
CO_2e	4,599,909	4,941,650	5,482,873

[30] Quoc Bang Ho et al. (2024). IOP Conf. Ser.: Earth Environ. Sci. 1383 012018.
[31] Hien Tran et al. (2024). IOP Conf. Ser.: Earth Environ. Sci. 1391 012007.

In **Ho Chi Minh City,** similar to Hanoi, a study showed that the motorcycles were the main reasons of emission in HCMC, contributing 90% of CO, 68% of non-methane volatile organic compounds (NMVOC), 63% of CH_4, 41% of SO_2, 29% of NOx, and 18% of particulate matter ($PM_{2.5}$) (Table 4).[32]

Table 4. Air pollutants emission from motorcycles in Ho Chi Minh City.[32]

	CH_4	CO	NMVOC	NOx	SO_2	$PM_{2.5}$
Total emissions (tons/year)	10,117	3,195,936	411,869	14,671	5,241	738
Share in total emissions from transportation	63%	90%	68%	29%	41%	18%

Inclusiveness of 2W LMD in Vietnam

Inclusiveness is a relatively new concept in Vietnam. Among the LMD companies we reviewed, only a few have disclosed practices and reports related to inclusive growth, primarily foreign companies operating in Vietnam, such as Ahamove, GrabExpress, Gojek, and Be. Viettel Post is the sole Vietnamese company to have published a report on gender. Some of the reviewed LMD companies have provided other support, such as insurance and allowances for their driver employees/partners.

In terms of contracts, social insurance for drivers/ shippers, the business models of LMD companies have major influence. Our desk review revealed that postal service providers, order fulfillment LMD companies often have labor contracts with their shippers, such as in the case of VNPost. Meanwhile, on-demand LMD companies like Grab, Ahamove, be, etc. operate a partnership agreement with the crowdsourcing shippers, means the shippers are partners, not labors, of such companies.

[32] Ho, Bang & Vu, Khue & Nguyen, Thoai & Nguyen, Thi & Thuy, Nguyen. (2019). A combination of bottom-up and top-down approaches for calculating of air emission for developing countries: a case of Ho Chi Minh City, Vietnam. Air Quality, Atmosphere & Health. 12. 10.1007/s11869-019-00722-8.

Policy clipping and catalysts for low-carbon, inclusive LMD

This background study initially focused on the "low-carbon" aspect of LMD services; however, the Vietnamese research team employed an approach involving the "co-benefits of addressing both climate change and air pollution" to capture the environmental and climate impacts, relevant policies and regulations in place for the LMD industry. This approach has been adopted by United Nations Environment and World Bank with the belief that one environmental problem will be solved as a co-benefit of another (Table 5). A World Bank report indicated that urban transport is one of the key emission sources accounting for the greatest overlap of priority sources of air pollution and GHGs but is rarely the main culprit of either problem.[33] Vietnam both have regulations and policies to address GHG emissions and air pollution but not yet have synergies between these efforts. We believe that the approach would help to reveal Vietnam's regulatory efforts to solve its environmental and climate issues.

Table 5. Impact of pollutants on local human health (through air pollution) and climate change. **Source:** World Bank.

Pollutant	Local Health Impact	Climate Impact	Co-benefits or trade-offs between air pollution and climate change
Black carbon - component of $PM_{2.5}$	Harmful	Warming	Synergy between air pollution and climate (short-lived climate pollutants)
Ground-level ozone (O_3)	Harmful	Warming	
Methane (CH_4)	Harmful indirectly	Warming	
Carbon Monoxide (CO)	Harmful	Warming	
Volatile organic compounds (VOCs)	Harmful	Warming	
Organic carbon (OC)	Harmful	Cooling	Trade-offs between air pollution and climate mitigation
Sulfur dioxide (SO_2)	Harmful	Cooling	
Nitrogen oxides (NO_x)	Harmful	Cooling	
Ammonia (NH_3)	Harmful	Cooling	

Note: $PM_{2.5}$ = particulate matter two-and-one-half microns or less in width

[33] Peszko, Grzegorz, Markus Amann, Yewande Awe, Gary Kleiman, and Tamer Samah Rabie. (2022). Air Pollution and Climate Change: From Co-Benefits to Coherent Policies. International Development in Focus. Washington, DC: World Bank. doi: 10.1596/978-1-4648-1835-6. License: Creative Commons Attribution CC BY 3.0 IGO

Table 5. Impact of pollutants on local human health (through air pollution) and climate change. **Source:** World Bank.

Pollutant	Local Health Impact	Climate Impact	Co-benefits or trade-offs between air pollution and climate change
Secondary inorganic aerosols	Harmful	Cooling	Trade-offs between air pollution and climate mitigation
Heavy metals, benzo[a]pyrene, dioxins, etc.	Harmful	Neutral	
Carbon dioxide (CO_2)	Neutral	Warming	Long-term climate forcers, neutral for air quality
Chlorofluorocarbons (CFCs)	Neutral	Warming	
Hydrofluorocarbons (HFCs)	Neutral	Warming	
Nitrus oxide (N_2O)	Neutral	Warming	

Consequently, this section focuses on summarizing the national and municipal policies and regulations that directly influence GHG reduction and control of air emissions from LMD 2Ws' exhaust.

In general, the LMD services in Vietnam are regulated through multiple ministries. MIC oversees the postal sector, while the Ministry of Industry and Trade (MOIT) governs overall business operations and the logistics industry. MOIT is also responsible for policymaking related to energy use and issuing standards for vehicle manufacturing. Transportation-related aspects are under the jurisdiction of the Ministry of Transport (MOT).[34] The Ministry of Science and Technology (MOST) oversees the development of vehicle emissions standards and technical regulation on fuels. Most importantly, the Ministry of Natural Resources and Environment (MONRE), now the MAE, is in charge of the environmental and climate targets of the country. This Ministry serves as the coordinating unit between other ministries, sectors, and localities, setting out relevant guidance and regulations to fulfill the national environmental targets.

- **GHG emissions from LMD using 2Ws:** They are affected by regulations on the national targets of climate change in the transport sector. However, emissions from the transport sector are incorporated into the energy domain as in Vietnam's Nationally Determined Contribution (NDC) inventories and reduction targets, which is joint work between MOIT (for fuel consumption, electrification) and MOIT (for vehicle management and GHG emission inventories/reduction).

- **Control of air pollution from 2W LMD emissions:** It is directly influenced by the regulations of MONRE in coordination with MOT, supplemented by relevant technical standards by MOST.

[34] The Ministry of Transport was merged with Ministry of Construction, now named "Ministry of Construction".

The current systems of legal documents related to GHG reduction and air pollution control from the transport sector share a common legal hierarchy, from the Constitution to the laws passed by the National Assembly, decrees issued by the Prime Minister, circulars issued by ministries at the national and provincial levels, and the local policies and regulations issued by the People's Committees of provinces and centrally governed cities.

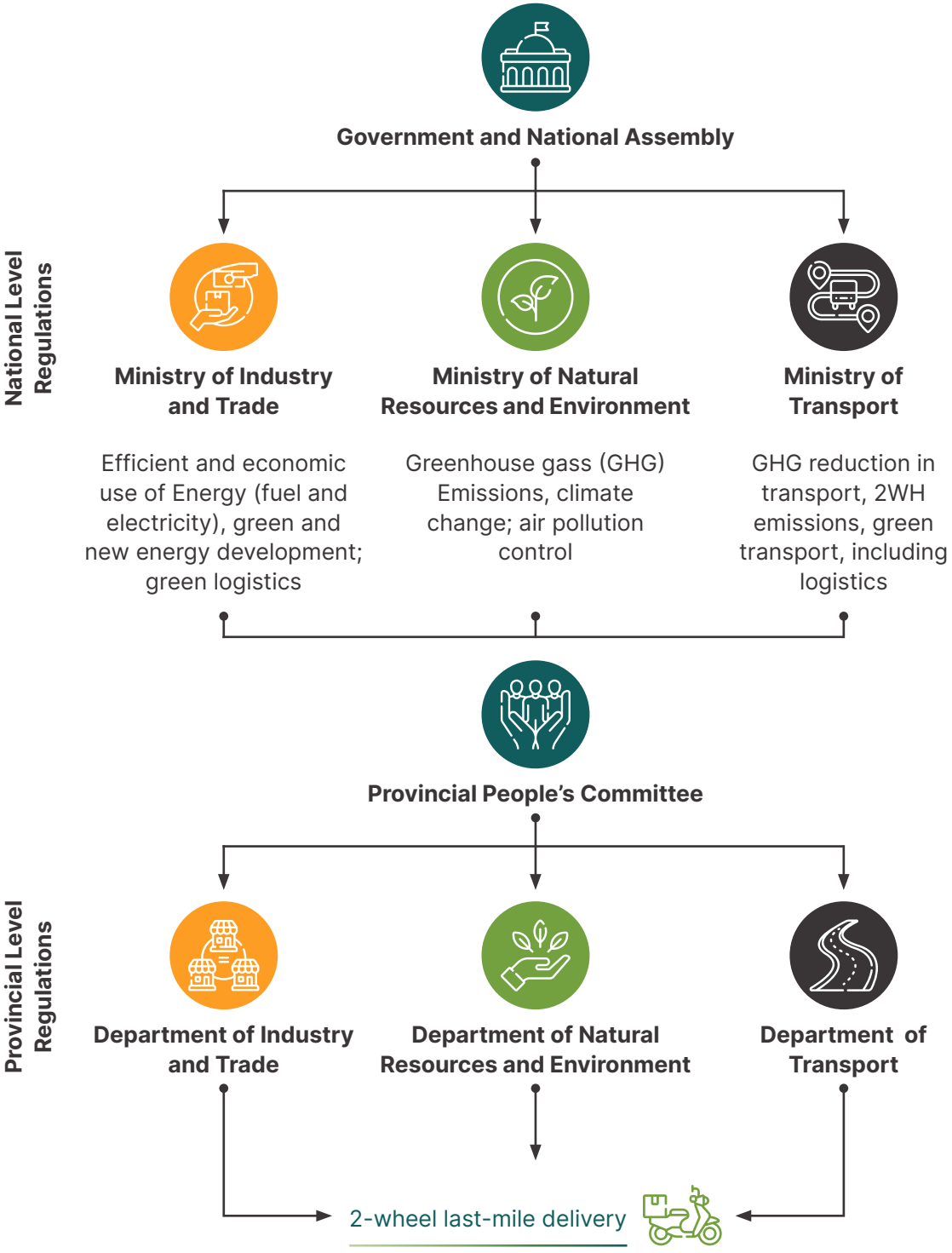


Figure 12: Specialized ministries' levels of state management that influence emissions from 2W LMD in Vietnam.

GHG emissions reduction regulations related to 2Ws

Vietnam has committed its net zero emissions by 2050, in which energy, including transport, is one of the key domains of CO_2 inventory and reduction. To realize this commitment and other national targets of sustainable socioeconomic development, the country has issued and implemented many policies and regulatory documents. Figure 13 summarizes Vietnam's NDCs over the years since its first inventories in 2014.

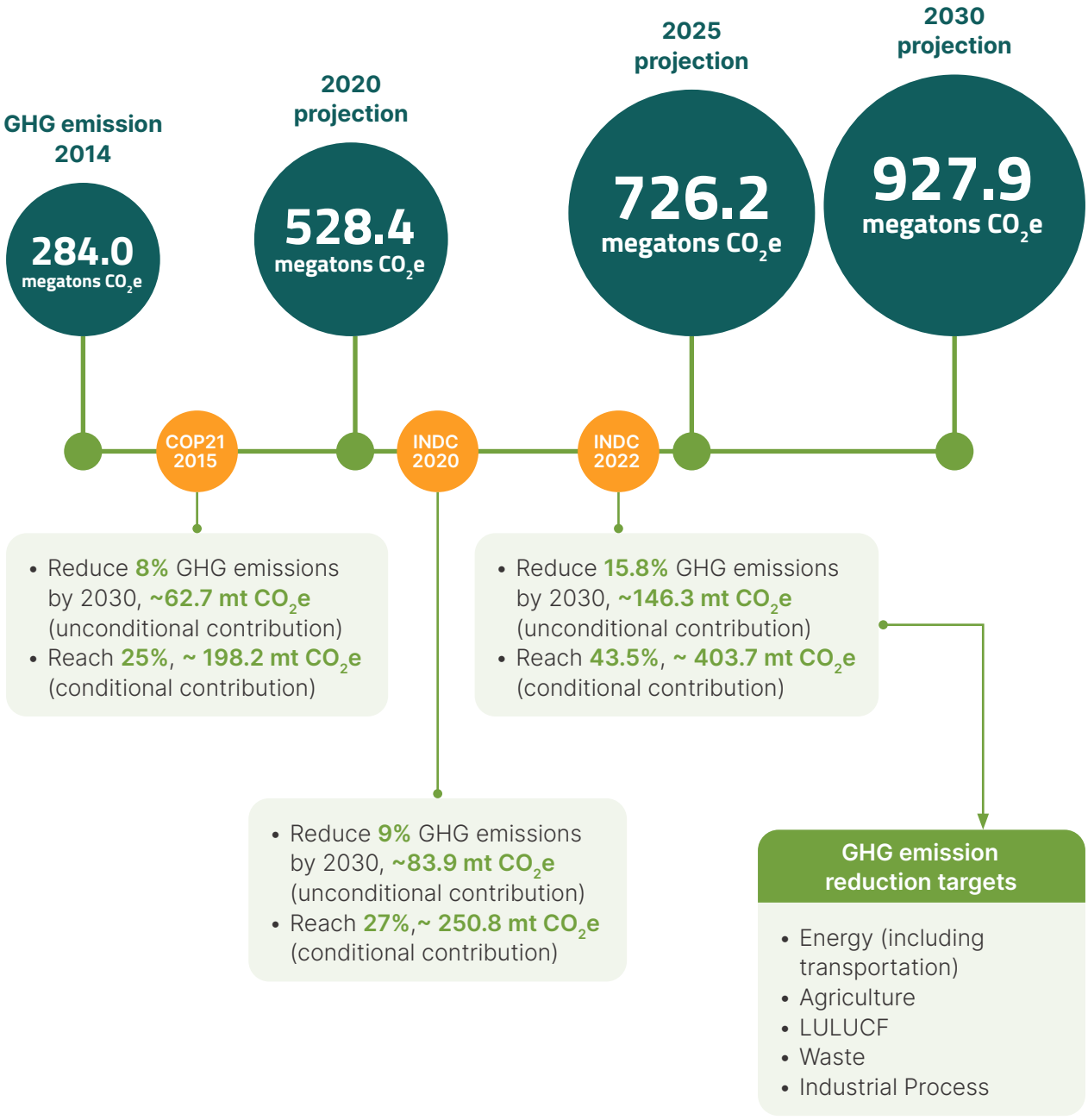


Figure 13: Vietnam's GHG emissions inventories and NDC targets for 2014, 2020, 2025, and 2030.
Source: Consolidated from Vietnam's NDC report 2022.

Vietnam's NDC 2022 report updated the national targets and scenario of reducing GHG emissions from five major sectors, namely, energy; agriculture; land use, land-use change, and forestry; waste; and industrial process. The energy sector's emissions targets include GHG emissions from transport, mainly from fuel combustion. However, this report does not indicate specific targets of GHG emissions reduction for the transport sector but outlines measures to reduce GHG emissions for this sub-sector:

> For energy usage: efficient use of energy in transportation; limitation of fuel consumption for motor vehicles; conversion of modes of transportation of passengers and goods; increase of the load factor of cars; use of compressed natural gas and biofuels; use of electric motorbikes, cars, and buses.

Accordingly, MOT has outlined its sectoral targets to fulfill the national GHG targets. By 2030, under the unconditional contribution, the transport sector aims to reduce 5.9% of its emissions by business-as-usual, equivalent to 45.62 million tons of CO_2e. To achieve this, the Ministry has set out 10 measures and a roadmap, in which electric MCs are planned to take up 22% of the total MCs to reduce GHGs from this emission source.[35]

In terms of the legal system for GHG reduction, according to the GIZ report[36], Vietnam's 2013 Constitution is the basic legal framework that lays the foundation for building a system of legal documents to concretize the guidelines and policies on climate change and climate change response. To date, the legal framework on climate change and climate change response has been increasingly strengthened. Several policies related to GHG emissions reduction from the transport sector specifically include the National Climate Change Strategy to 2050, the Mechanism for Tasks and Solutions to Implement the Outcomes of COP26, the Action Program on Green Energy Transition, Carbon and Methane Emissions Reduction in the Transport Sector, the National Green Growth Action Plan for the period 2021–2030, and the development of a domestic carbon market mechanism. In particular, the 2020 Law on Environmental Protection (LEP) No. 72/2020/QH1 has Chapter VII on climate change, followed by MONRE's Decree No. 06/2022/ND-CP guiding the LEP on GHG mitigation and protection of the ozone layer and a decision announcing the list of emission factors for GHG inventories and decision on lists of sectors and facilities emitting GHGs subject to GHG inventories. However, MONRE's lists of sectors and facilities subject to GHG inventories do not include any CEP companies. Aside from the 2020 Law on Environmental Protection, the 2010 Law on Economical and Efficient Use of Energy has no provision directly related to climate change; however, the economical and efficient use of energy is considered as one of the prerequisites for GHG emissions reduction toward the goal of environmental protection in response to climate change. In particular, this law dedicates Chapter IV to the content of energy efficiency and energy saving in the transport sector.

[35] Government News. (2024, October 31). Ngành giao thông đặt mục tiêu giảm 5,9% lượng phát thải khí nhà kính trong 5 năm tới.
[36] GIZ. (2023). The 2023 policy brief on GHG emission in the transport sector.

Air pollutant control from 2Ws

Big cities in Vietnam like Hanoi and Ho Chi Minh city (HCMC) have identified circulating 2Ws as a key source of air pollutants. This is due to a lack of emission standards applicable for this vehicle group, multiplied by its dominant number in urban mobility in Vietnam. To tackle this issue, the government, Prime Minister, ministries, and sectors have been making efforts with numerous policies and regulations in recent years. The umbrella legal document that stipulates air quality protection from the transport sector is the LEP 2020, which includes Chapter II on environmental protection, including ambient air protection, followed by Decree No. 08/2022/ND-CP guiding the LEP on environmental protection. This law also regulates the mandates of MONRE, in coordination with MOT, to develop and submit to the Prime Minister a roadmap for the promulgation of emission standards for circulating road motorized vehicles, including 2Ws, in Vietnam. It addresses a large policy gap in air pollution control from this road transport source. Previously, the Prime Minister has issued many regulatory documents to control air emissions from motor vehicles, but they have mostly focused on newly assembled/manufactured or imported vehicles. Notably, the 2024 Law on Road Traffic order and Safety No. 36/2024/QH15 dated June 27, 2024, assigns MOT to issue regulations and procedures for 2W emission inspection, which can bolster the 2W emission control as per the LEP. Other ministries and sectors shall study and develop relevant regulations for this issue.

The national efforts to tackle transport-related air pollution are emphasized through several policies. For instance, the Prime Minister's Decision No. 985a/QD-TTg, dated June 1, 2016, approved the National Action Plan on Air Quality Management to 2020 with a vision to 2025, which requires strengthening the control of pollutants in emissions from vehicles and developing, issuing, and implementing national technical regulations and standards for vehicle emissions. The Prime Minister issued Directive No. 03/CT-TTg, dated January 18, 2021, to strengthen air pollution control with many urgent and important solutions. The Prime Minister also requested MONRE to review and report on the implementation of the roadmap for applying the national technical standards for emissions of road vehicles circulating in Vietnam, to be completed in the fourth quarter of 2021. Subsequently, the Prime Minister signed and issued Decision No. 1973/QD-TTg, dated November 23, 2021, approving the National Plan on Air Quality Management for the period 2021–2025, in which MONRE is assigned to review, finalize, and submit for issuance the roadmap for applying national technical standards for emissions of road vehicles circulating in Vietnam;[37] followed by Decision 891/QD-BTNMT on the implementation of PM's Decision No. 1973/QD-TTg; Prime Minister's Decision No. 450/QD-TTg approving Strategy for Environmental protection to 2030, with a vision to 2050; Prime Minister's Decision 909/2-1-/QD-TTg dated 17/6/2010 on approving scheme on motorcycle emission control.

At the provincial level, local authorities have realized the national policies in GHG reductions and air quality control through the development and implementation of various policies and measures. Notably, major cities such as Hanoi and HCMC, with approximately 14,500 and 62,000 shippers, respectively,[38] address the impacts of the transportation sector more robustly than medium and small

[37] MONRE. (2021). Report on roadmap for vehicles emission standards in Vietnam.

[38] Truong, T.T.M. (2024). Barriers for E-Scooter Adoption for Last-Mile Urban Delivery in Hanoi, Vietnam. In: Ha, V.T., Nguyen, H.N., Linke, HJ. (eds) Proceedings of the 8th International Conference on Sustainable Urban Development. ICSUD 2022. Advances in 21st Century Human Settlements. Springer, Singapore. https://doi.org/10.1007/978-981-99-8003-1_16

cities. Hanoi and HCMC authorities have issued action plans to reduce GHG emissions to implement the Paris Agreement. They also prepared air quality management plans, conducted studies and pilots on 2W emission control programs, and translated their results into transport and air environment protection policies. More concrete policies on this issue have been observed in Hanoi, the capital of Vietnam. In early 2023, Hanoi issued its first air quality management plan up to 2030 with a vision extending to 2035, which prioritizes measures to reduce air pollution from road transport. In 2024, the National Assembly passed the Capital Law No. 39/2024/QH, stipulating low-emission zone (LEZ) development, a strong measure for addressing air pollution. This is followed by a Resolution No. 47/2024/ND-HDND dated December 12, 2024 by the Hanoi People's Council to regulate key features of LEZ policies, with a roadmap of pilot and full implementation, emission standards and vehicles applied, and supplementary support measures. The LEZ pilots shall be conducted in Hoan Kiem and Ba Dinh districts from 2025 to 2030.

Generally, local authorities are given more power and responsibility to implement environmental protection measures by adapting them to local conditions while MONRE and other national ministries play critical oversight and support roles. The ministry, in coordination with relevant specialized ministries (MOT, MOIT, etc.), is responsible for guiding and supporting local governments in implementing environmental policies effectively according to their local contexts.

However, the Government of Vietnam and the provincial authorities have not yet synergized the mitigation measures for addressing climate change and air pollution. Policies, plans and regulations concerning these two issues are developed and implemented independently, with a primary focus on either reducing GHG emissions or controlling air pollution.

Figure 14 summarizes effective multilevel policies on 2W emissions in Vietnam. These policies are categorized into the three following groups: **(i) directly relating to green transportation and GHG emission reduction,** **(ii) climate change in general,** **(iii) energy use relating to transport sector in general,** and **(iv) emission standard/control for vehicles.** Further details of these policies can be found in Annex 2.

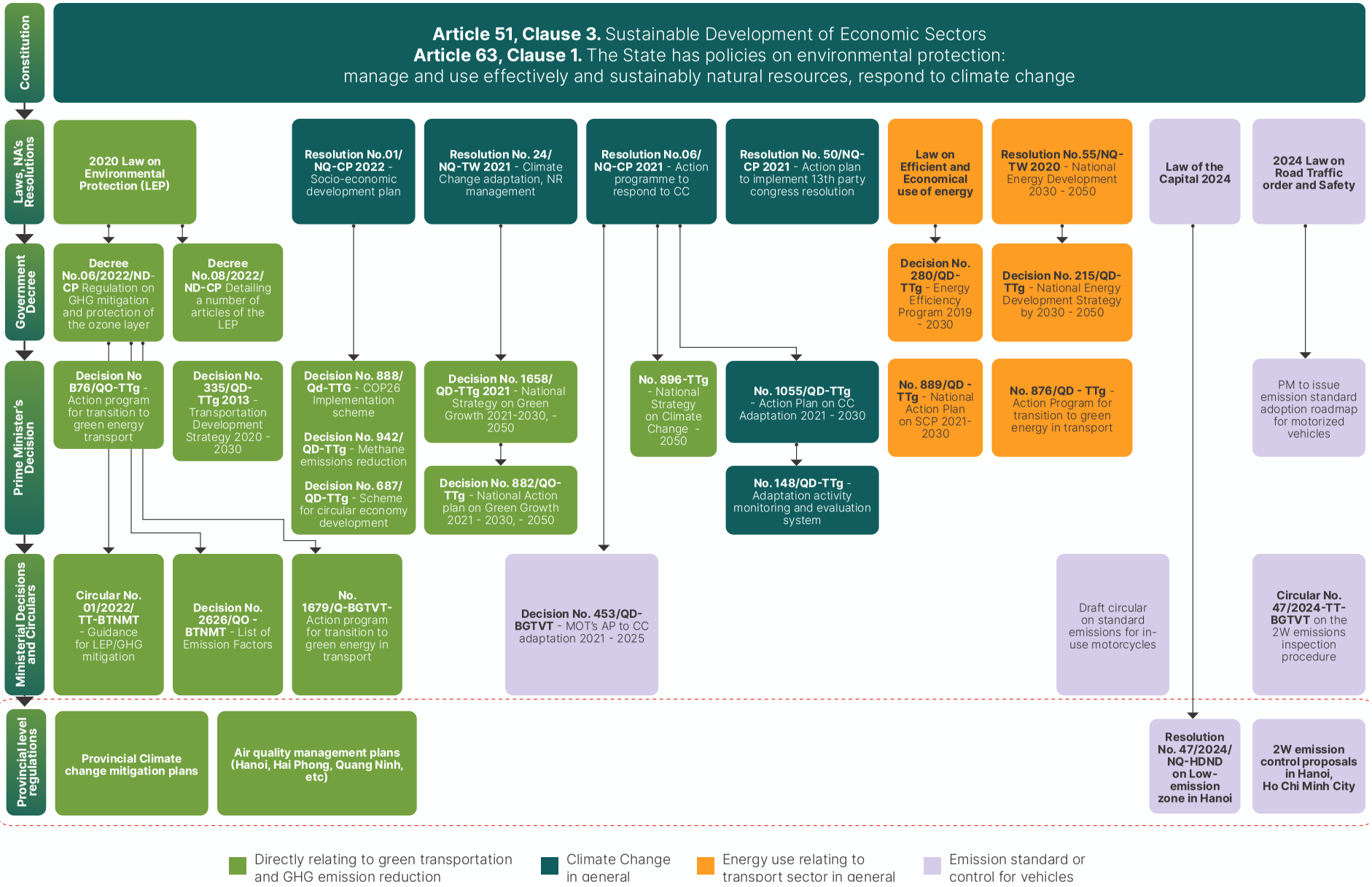


Figure 14: Key policies on 2W emissions in Vietnam.

Case study and good practices

This background study has reviewed good practices in terms of low-carbon/ low-emission and inclusive growth among 14 LMD players from state-owned, local, and multinational companies.

Low-carbon practices

In terms of setting low-carbon targets, Viettel Post pioneered as the only local brand publishing the company's goal to reduce 20% of GHG emissions by 2025. In 2022, Ahamove was the first local LMD brand to publish an environmental, social, and governance (ESG)[39] report, including a GHG inventory and commitments to reduce GHG, but without specific targets. For multinational companies, Grab[40], the mother company of GrabExpress, and Alibaba Group[41], the owner of Lazada, were the only ones to set carbon-neutral targets by 2040 and 2030, respectively. GoTo, the mother company of Gojek, was also the only brand pledging to transition to 100% electrical vehicles by 2030[42]. However, these foreign companies do not state specific targets for each of its subsidiaries in each country.

Six key players have switched to electric 2Ws for delivery. These brands have piloted a number of electric scooters for delivery in Hanoi, HCMC, and Da Nang, collaborating with local and international electric vehicle manufacturers, including Honda, Selex Motors, Vinfast, and Datbike. The most notable low-carbon 2W initiative was adopted by Xanh Express, part of the Xanh SM transport company, by using 100% e-scooters by Vinfast for delivery. Xanh SM has reportedly reduced 52,000 tonnes CO_2e[43] in one year by using 100% electric vehicles.

Table 6 summarizes the categories of low-carbon practices adopted by the 14 key players.

Table 6. Overview of low-carbon practices adopted by Vietnam's LMD players

No	Categories of low-carbon practices	Identified practices	Adopted by key players
1	Two-wheel fleets	Using electric two-wheelers	Vietnam Post, Viettel Post, Ahamove, GrabExpress, LEX, Gojek, Xanh SM, Be
2	Route optimization	Automated route planning	Viettel Post, Ahamove, J&T Express
		Installing smart lockers	Vietnam Post, Viettel Post, LEX
		Grouping multiple orders	Grab Express

[39] Ahamove. (2023). ESG Report 2022.
[40] Grab. (2022). Grab ESG Report 2021.
[41] Alibaba Group. (2022). Alibaba Group Carbon Neutrality Action Report.
[42] Goto. (2021). GoTo 2021 Sustainability Report - English.
[43] Xanh SM. (2024, April 15). Xanh SM vượt mốc 50 triệu lượt khách hàng sau 1 năm ra mắt

Table 6. Overview of low-carbon practices adopted by Vietnam's LMD players			
No	**Categories of low-carbon practices**	**Identified practices**	**Adopted by key players**
3	Carbon offset	Purchasing carbon credits	Grab Express
		Carbon offset option for customers	Grab Express
4	Packaging	Reducing packaging	Vietnam Post, Viettel Post, J&T Express, SPX, Tikinow, Ninja Van
		Packaging recycling or reuse	Vietnam Post
5	Renewable energy	Using alternative energy sources	Viettel Post
		Purchasing energy attribute certificates	Grab, Gojek

Inclusion practices

Ahamove was the only local LMD brand to state its commitment to promote gender equality in its ESG report. Some multinational brands (Grab, Lazada, Goto, SEA) shared their regional's inclusion strategies in their ESG reports. Among all LMD key players, Grab was the only brand to set specific inclusion targets of increasing the number of women in leadership positions and implement some initiatives to support female drivers in Vietnam.

Regarding social and health insurance policies for their delivery partners, four delivery brands (GrabExpress, Ahamove, Gojek, and beExpress) provide personal accident insurance for their delivery drivers, whereas Xanh Express covers only parts of the accident insurance. However, the majority of these brands do not buy default social or health insurances for their driver-partners, whereas beExpress and ShopeeFood are the only companies to buy health insurances for drivers with high mileage and good performance.

To provide a detailed portrait of LMD key players in Vietnam and their adoption of low-carbon practices, the research team has reached out to nine companies within 2 months but only received one acceptance of invitation. For this LMD case study, we compiled the results of both desk review and in-depth interviews. Due to limited time and resources, these case studies were selected based on the availability of their data regarding low-carbon and inclusion strategies as well as their willingness to participate in the interviews. Each case study analysis included (1) a detailed overview of the company's low-carbon strategies, (2) a detailed overview of the company's inclusion practices, and (3) an analysis of the company's opportunities and challenges in adopting these practices through in-depth interviews (if applicable).

Case 1 - Vietnam Post

Vietnam Post is one of the largest courier companies in Vietnam, recording a share of 13.6% in the express delivery market in 2023 (Vietdata, 2023). Since its establishment in 2008 by the MIC, Vietnam Post, with a team of 18,000 postmen, has provided public and competitive postal services, express delivery, and logistics across 63 provinces of Vietnam.[44,45] A subsidiary of the Vietnam Post is EMS, a company composed of 11,800 postal drivers providing express and e-commerce delivery services.[46] Freight MCs are owned by Vietnam Post and then allocated to their postmen for delivery services. Vietnam Post/EMS supplies services for order fulfillment for e-commerce and retailers (on-demand) mainly for B2C but not C2C. Several C2C services are operated under the postal service. In recent years, Vietnam Post has started to lose its market share as it faces difficulties in grasping market trends.[47]

Low-carbon practices

Vietnam Post does not publish annual operational reports and has not set a target to reduce carbon emissions. However, its website displays its commitment to align its operations with Vietnam's zero-carbon target by 2050.

In terms of adopting electric 2W freight vehicles, Vietnam Post partnered with Honda to pilot 70 electric 2Ws in Hanoi in 2021 and 130 e-scooters in HCMC in 2024.[48] However, the research team could not find additional data on the results of these initiatives.

In terms of other low-carbon practices, the company has implemented other low-carbon practices, including waste reduction and installation of smart lockers. In 2019, the company launched the Postgreen program to reduce single-use plastic waste in its supply chain by encouraging employees and customers to use carboard boxes for packaging.[49] The company has also planned to install 50 smart lockers in Hanoi and HCMC in collaboration with iLock Vietnam to shorten the shipping routes, saving time and fuel.[50]

Inclusion strategies and practices

The research team could not find published inclusion strategies of Vietnam Post.

[44] Vietnam Post. (n.d). Introduction. https://vietnampost.vn/gioi-thieu
[45] Dan Tri. (2014). VNPost tăng cường đào tạo lại cho 18,000 bưu tá.
[46] EMS. (n.d). History of EMS.
[47] Viet Data. (n.d). Revenue in the postal and express delivery sector grew 9.3%, which "big players" are "flourishing" and which businesses are "struggling to find a foothold"?
[48] Vietnam Post. (2024, June 20). Bưu điện Việt Nam mở rộng triển khai giao hàng bằng xe điện tại TP. Hồ Chí Minh
[49] Vietnam Post. (2024, July 5). Xây dựng "Bưu chính xanh" vì sự phát triển bền vững.
[50] EMS. (2021, June 14). Vietnam Post sẽ sớm thí điểm giải pháp giao hàng không tiếp xúc

Case 2 - Viettel Post

Viettel Post is the subsidiary of the Military Industry - Telecoms group called Viettel and is one of the biggest courier enterprises in Vietnam, accounting for 17% of the express delivery market in 2023 (Vietdata, 2023). The company has been operating for 25 years with a team of approximately 20,000 postmen,[51] providing national and international postal, express delivery, fulfillment warehouse, and commercial services.[52] In recent years, Viettel Post has witnessed a stable growth in revenue and has overtaken Vietnam Post to dominate the express delivery market (17%) in Vietnam.[53]

Low-carbon practices

In terms of low-carbon development, Viettel Post mentioned in its recent annual report that it has set to reduce GHG emissions from all its vehicles by 25%. Starting from 2018, Viettel Post switched to biofuel for its delivery trucks; in 2022, the company partnered with Averte Global to pilot 24 e-scooters for 2 months in Hanoi. In 2023, Viettel Post continued to work with Selex Motors in a policy experiment evaluating shippers' constraints and benefits in adopting EV by UNDP. The experiment included a one-month pilot of e-scooter delivery, which was reported to increase delivery efficiency by 50% and drivers' income by 34% compared with gas vehicle delivery.[54]

In terms of other low-carbon practices, the state-owned enterprise has implemented multiple practices, including packaging, energy efficiency, and route optimization initiatives. Regarding energy efficiency practices, the brand has invested in energy-saving equipment, including LED lighting system, inverter air-conditioning, and solar panel installation for its data center (1 MW).[55] In 2023, Viettel Post reported to have saved 10% of its electricity, and 5% of the company's energy consumption came from renewable energy sources. To optimize delivery routes, the company used the Network Operations Center to monitor all operations and delivery.

Inclusion strategies and practices

The company was also the only brand to publish an annual gender report starting from 2021, with an average gender distribution of approximately 59% male and 41% female employees. However, no other gender and inclusion policies were available in the reports.

[51] Viettel Family. (n.d). Mỗi shipper là một "chiến sĩ bưu tá".
[52] Viettel Post. (n.d). Introduction https://viettelpost.com.vn/gioi-thieu/
[53] Viet Data. (n.d). Revenue in the postal and express delivery sector grew 9.3%, which "big players" are "flourishing" and which businesses are "struggling to find a foothold"?
[54] United Nations Development Program. (2023, November 15). Transitioning from Fuel to Charge: A Policy Experiment Driving Green Mobility in Viet Nam's Last-Mile Delivery
[55] Viettel Post. (2024). Viettelpost Annual Report 2023.

Case 3 - Ahamove

This is the only LMD company that accepted our interview, which provided us with insightful information. Ahamove, founded in 2015, is a rising local tech-based LMD service provider in Vietnam, providing on-demand delivery in urban areas through its mobile app. With over 534,000 registered driver-partners (crowdsourcing) as of 2022, the company aims to become a high-tech platform for delivery in Vietnam. The brand is the first local LMD key player analyzed in this research to publish an ESG report in 2022.

Low-carbon practices

Ahamove aims to reduce GHG emissions by implementing low-carbon vehicles and technological innovation. The company has provided a GHG inventory from all of its vehicles for 2021 and 2022 by using an online carbon footprint calculator. Ahamove has not committed to a specific target for carbon reduction due to lack of resources.

In terms of 2W freight vehicles, the brand was reported to reduce over 2.5 tonnes of CO_2e by piloting 100 electric motorbikes for ride-hailing in Da Nang in collaboration with Vinfast in 2019. The company had also aimed to expand the model in Hanoi by 2023 and operate 10,000 electric vehicles by 2025[56], but has yet been able to confirm this plan.

In terms of other low-carbon practices, Ahamove developed its own route optimization algorithms for in-app deliveries. Calculations by this measure only showed a 40%–45% reduction in GHG emissions from delivery in 2023.[57] In 2022, the brand reported to have reduced 1.79k tonnes of CO_2e[58]. The algorithms allow retail customers to optimize the routes of their orders to lower the shipping cost and waiting time right on the mobile app. For private business clients, Ahamove's algorithms help reduce the number of vehicles needed for deliveries and calculate the amount of cost and fuel saved by the company.

Inclusion strategies and practices

For social initiatives, Ahamove focused on improving livelihoods and employment opportunities for its driver-partners. The company has established a fund called "Quy Tam Long Cam"[59] to cover the costs of occupational accidents for its driver-partners and enacted policies to provide additional financial bonuses for drivers. An Ahamove representative shared in the in-depth interview that "Driver-partners are the most important [stakeholders] for us." Regarding healthcare for employees and driver-partners, during the COVID-19 pandemic, Ahamove sponsored 20,000 vaccinations for its employees and drivers and provided over 330 million VND worth of financial aid.

[56] Ahamove. (n.d). GIAO HÀNG BẰNG XE ĐIỆN – XU HƯỚNG "XANH" CỦA TƯƠNG LAI
[57] This information was directly shared by Ahamove through direct interview.
[58] Ahamove. (2023). Ahamove ESG Report 2022.
[59] Facebook Tài Xế Ahamove. (2017). [QUỸ TẤM LÒNG CAM] CÙNG AHAMOVE CHUNG TAY GIÚP XẾ.

Regarding gender inclusion practices, Ahamove's gender distribution in 2022 for back-office workers was 56% women and 44% men while only 8% women were driver-partners. The company also committed to fostering a gender-equal working environment but did not share specific practices.

Opportunities and Challenges

Regarding Ahamove's motivations for publishing an ESG report, the company's representative shared that the company's vision focuses on long-term sustainable development along with technological advancement. Given its existing technological-based operation and priority on sustainability, Ahamove has many opportunities to adopt low-carbon initiatives, such as electric vehicles, robot delivery, and hybrid delivery.

However, the company encountered three main barriers in setting specific commitments to reduce emissions and fully transition to a low-carbon LMD service. First, guideline materials and technical support to create a GHG inventory for its operated fleets are lacking because the emissions of LMD vehicles are difficult to track. Second, the company's plan to transition largely depends on the needs of customers and driver-partners. The demand from customers and drivers for green initiatives is insufficient, and app users may not be willing to pay extra for carbon-offset options. Third, the company lacks technical and financial resources to focus on achieving specific ESG or GHG reduction goals. The team also lacks adequate human capacity and external fundings to support green LMD initiatives.

Case 4 - GrabExpress

Grab Express is an on-demand express delivery service and the most popular food delivery app in 2022.[60] Established by Grab Vietnam since 2015, the brand has an estimated 300,000 driver-partners.[61] The brand also provides delivery services for e-commerce companies such as Lazada and Shopee. With Grab Express being an online matching platform or crowdsourced shipping, MCs used for delivery services by Grab belong to the drivers, and no labor contracts are tied between the platform and drivers.

Low-carbon practices

In terms of 2W freight vehicles, Grab Express Vietnam partnered with Selex Motors to pilot e-scooters in Hanoi in 2022, covering over 30,000 km on e-bikes and reducing 3,4 tonnes of CO_2e[62]. The model was expanded to HCMC in 2023. To support their driver-partners' transition to electric vehicles, Grab continued working with Selex Motors in 2024 to roll out two initiatives to support their driver-partners switching to e-scooters.[63] The first program allows Gold Grab drivers (drivers riding for 6 months and above) to purchase a Selex Camel electric scooter via a 12-month installment loan with a deposit of 2 million VND, along with other benefits. The second initiative is a reward program for Grab drivers currently operating Selex bikes with high weekly performances.

[60] Qandme. (2022). Food delivery trend in Vietnam 2022.
[61] Dân Trí. (2023, December 18). Một chọi cả trăm, tài xế công nghệ "mơ" được làm công nhân.
[62] Selex. (2023, May 23). Selex Motors hợp tác GrabExpress: Thí điểm sử dụng xe máy điện cho giao vận tại TP. HCM.
[63] Selex. (2024, April 4). Chương trình hỗ trợ mua xe điện Selex trả trước 1 triệu đồng dành cho tài xế Grab.

In terms of other low-carbon practices, Grab Vietnam introduced the carbon-offset feature in 2021, allowing customers to donate 1,000–2,000 VND per delivery on GrabFood or GrabMart[64]. This amount went directly into planting forests in Vietnam, through a partnership with Sống Foundation, a nonprofit foundation supporting communities affected by climate change[65]. In 2024, Grab Express also launched the option to group multiple orders in HCMC to optimize routes and save delivery time.[66]

Inclusion strategies and practices

To support gender equality, Grab Vietnam launched a new Grab's Women Programme in 2024 allowing women to gain equitable access to earning opportunities as drivers. The program included capacity trainings, community activities, and health insurance for those in difficult circumstances. Another new feature called "Women Passengers Preferred BETA," which allows female partners to indicate their preference for women passengers, was introduced to increase the safety of female drivers.[67]

In 2023, Grab emerged as the first on-demand delivery brand in Vietnam to hire driver-partners with disabilities,[68] including those with mild mobility impairment and hearing/speech impairment, for GrabExpress, GrabFood, and GrabMart. All drivers with disabilities shared a reduced commission rate (5%) compared with other drivers (20%) while the first 100 registered drivers with disabilities received free health insurance for a year.

In 2024, Grab Vietnam and the Department of Education and Training, Ministry of Labour - Invalids and Social Affairs completed a three-year capacity training program for driver-partners.[69] The training focused on improving soft skills, such as English-speaking and emergency response skills, for drivers through online courses and e-learning videos. By the end of the program, 87.7% of the drivers surveyed shared that the training content was useful and necessary.7[0]

[64] Grab. (2021, November 11). Grab | Triển khai tính năng Đóng góp trung hòa các-bon trên ứng dụng Grab từ ngày 12/11/2021.
[65] The Saigon Times. (2023, Auguest 19). 1.000 đồng và chuyện đóng góp để giảm phát thải.
[66] Grab. (2024, June 6). Grab | Triển khai thử nghiệm tính năng ghép đơn dành cho dịch vụ GrabExpress Siêu Tốc tại TP. Hồ Chí Minh
[67] Vietnam Investment Review. (2024, March 8). Grab introduces Women Programme for driver-partners.
[68] Grab. (2023, March 21). Grab || Triển khai thử nghiệm dự án hợp tác với các Đối tác là người khuyết tật
[69] MOLISA. (2024, July 18). Nâng tầm kỹ năng cho cộng đồng lái xe công nghệ tại Việt Nam.
[70] Tien Phong Newspapers. (2024, June 20). Tổng cục Giáo dục nghề nghiệp và Grab Việt Nam hoàn thiện hợp tác nâng tầm kỹ năng cho đối tác tài xế.

Case 5 - Shopee Express

SPX is Shopee's in-house LMD service, providing e-commerce logistic solutions for Shopee registered businesses (B2C) and on-demand delivery for customers through its mobile app. The delivery brand covers all 63 provinces of Vietnam with over 800 warehouses[71] and accounts for 15.5% shares of the country's express delivery market in 2023 (Vietdata, 2023). The company does not own cargo MCs; the driver-partners should own an MC to work with SPX.

Low-carbon practices

SEA, the mother group of Shopee and SPX, published a preliminary estimated carbon footprint in which its operated fleet of vehicles accounted for over 25% of total emissions in 2022.[72] However, no data on GHG emissions of Shopee were reported within SEA's sustainability report in 2021 and 2022.

In terms of 2W freight vehicles, SPX Vietnam has not shared any initiatives to transition to electric vehicles for its delivery services.

In terms of other low-carbon practices, Shopee collaborated with DARAVIN to pilot the replacement of single-use plastic packaging with reusable pallet packaging for products in Shopee's warehouses.[73] The research team could not find available data on other low-carbon or green practices that SPX or Shopee Vietnam has implemented.

Inclusion strategies and practices

The study could not identify any available inclusion policies or programs adopted by SPX in Vietnam. Meanwhile, Shopee Food launched some short-term events to support female drivers on Vietnam Women's Day, i.e., providing free health-check up and organizing workshops on improving women's health,[74] and provided health insurance for its HUB driver-partners with high performances in 2024.[75] Recently, SPX has announced its partnership with Bao Viet Insurance to provide Accident Insurance 24/7 to their nationwide driver-partners.[76]

[71] SPX Express. (2024, March 21). Facebook Post.
[72] SEA. (2023). 2022 Sea Sustainability Report.
[73] Daravin. (2022, April 8). SHOPEE TIÊN PHONG SỬ DUNG GIẢI PHÁP LƯỚI QUẤN PALLET CHO KHO HÀNG.
[74] Tuổi Trẻ Newspapers. (2023, March 8). Tài xế nữ tiêu biểu của ShopeeFood được khám sức khỏe miễn phí nhân dịp 8-3
[75] Shopee Food. (2024, March 23). SHOPEEFOOD RA MẮT GÓI BẢO HIỂM CAO CẤP DÀNH CHO TÀI XẾ HUB TIÊU BIỂU
[76] SPX. (2024, November 28). Facebook post to annouce the Accident Insurance 24/7.

Window panes toward low-carbon and inclusive LMD in Vietnam

The profiles of LMD companies using 2W vehicles within the scope of this background study are categorized into a key matrix of (i) in-house or 3PL providers and (ii) on-demand or order fulfillment. This matrix reveals which types of LMD companies are involved with urban mobility and what could be the driving forces for greening the 2W LMD. Such on-demand LMD companies have driver-partners with or without labor contracts and social insurance, and the MCs used for LMD are owned by the participating or crowdsourcing shippers. Meanwhile, some LMD companies have labor contacts with their shippers and even own the MCs used for LMD, such as in the case of Vietnam Post. Consequently, the business models of LMD companies in terms of freight MC ownership and their ties with shippers could influence their efforts in reducing GHG emissions and achieving a more inclusive LMD (details are available in Part 3 - Case studies).

As aforementioned, 2W LMD involves several stakeholders, each of which has distinct concerns and priorities, especially over environmental impacts and social aspects. The supply and demand of LMD services have paradoxes. Customers/citizens prefer low-cost, efficient delivery but high economic vitality and less pollution and traffic congestions. LMD companies aim for increased profits, efficiency, and reduced costs but with little investment. Shippers aim for customer satisfaction, increased income, and high efficiency with low delivery costs.

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2021) pointed out that the main impact of the LMD is due to its large number of relatively short trips. The growing number of trips means more air pollutant and GHG emissions, congestions on urban roads, labor demand, and labor issues. Accordingly, environmental impacts can be mitigated by the **LMD industry by switching to more sustainable solutions and by regulators by implementing incentives for using sustainable technologies and solutions and disincentivizing polluting operation modalities and technologies.** LMD companies, authorities, and shippers should enforce **measures for workers' protection**, such as medical insurance, accident insurance, medical leave, retirement contribution, and others, depending on legislation of countries.[77] In addition, other stakeholders such as citizens/customers and research/academia/NGOs should be involved in bolstering a low-carbon and inclusive LMD industry.

Challenges and Opportunities for a greener LMD in Vietnam

Our analysis suggests that there are three key challenges for the green transformation of the 2-W LMD in Vietnam: (i) Cost & revenues and Requirements/ pressure from customers/clients; (ii) Infrastructure and Policy Gaps; and (ii) Corporate values.

[77] ESCAP. (2021). Policy brief: Green and sustainable logistics network: micro mobility in the first - last mile.

Cost versus revenues/price and Choices/ pressure from customers/clients

- **LMD companies** encounter substantial financial barriers when implementing green measures. Electric vehicle (EV) adoption requires significant upfront investments, with electric two-wheelers costing substantially more than conventional motorcycles, while the total ownership costs of new electric 2W technologies generally exceed those of traditional gasoline-powered vehicles. The implementation of route optimization, GHG tracking, and carbon reporting systems presents additional operational expenses. While technology integration can reduce delivery costs and increase delivery capacity, the initial investment burden forces companies to either absorb costs—reducing profitability—or pass them to customers through higher service fees.

- **Shippers:** Upfront investment in EVs without financial support is a barrier for drivers. For crowdsourcing drivers operating on thin margins and less secured safety net, these upfront costs represent insurmountable barriers without financial support. Fee exemptions provide substantial financial incentives for EV adoption. Under Decree No. 51/2025/ND-CP, battery-powered electric vehicles enjoy 100% registration fee exemption only until February 28, 2027.

- **Customers:** Vietnamese consumers show mixed willingness to pay for green services. While 72% of Vietnamese consumers are ready to pay a premium for green products, influenced significantly by demographics and income,[78] choosing green products and green consumption are not yet a top priority for many consumers. Even in major cities like Hanoi and Ho Chi Minh City, only 12-18% of consumers frequently choose green products.[79] Further, with customers valuing "Delivery cost" as the most important criterion,[80] any increase in shipping fees to cover green technology costs risks affecting demand and consumption patterns, particularly given that LMD costs account for up to 40% of total e-commerce revenue (Figure 5).

- **Clients, especially international corporates with ESG target:** Supply chain requirements are pushing for low-carbon practices, pressuring LMD companies. International corporations operating in Vietnam face increasing ESG requirements from their home markets, concerning mitigation of environmental risks and human rights violations in their global supply chains. This creates pressure on Vietnamese LMD companies to implement green practices to maintain international business relationships. Plus, Vietnamese LMD companies, especially small and medium sized one, could be competitively disadvantaged with leading logistics companies from developed nations who have already invested in green technologies, such as alternative fuel vehicles and AI-driven logistics optimization.

[78] Le Thi The Buu, La Thi Kim Khanh, Nguyen Thi Bich Thuong. (2024). Factors affecting consumers' green product purchase decisions in Vietnam. VNU Journal of Economics and Business.
[79] Dan Tri Newspaper (2024). Price remains greatest barrier to green consumption.
[80] Uyen, B. T. et al., (2023). Evaluating the Selection Factors for Vietnamese Last-Mile Delivery Service Providers using Best Worst Method. International Journal of Supply Chain Management,12(2), 23-32, https://doi.org/10.59160/ijscm.v12i2.6166

Infrastructure and Policy Gaps

- **Charging infrastructure limitations:** The development of EV charging infrastructure lags behind adoption needs. Vietnam needs about 350,000 EV charging stations to meet rising demand,[81] but current infrastructure development is insufficient. Vietnam currently lacks standards on site selection, technology, and safety protocols, hindering EV-related business models.

- **Environmental implies of EVs:** Unsure/unclear challenges in clean energy development in Vietnam is also affecting the real cost and clean sources for EVs. Furthermore, the management and handling of end-of-life EV batteries remains weak in Vietnam, challenging the real cleanliness of EV adoption at scale.

- **Policy gaps:** Vietnam's current regulatory framework exhibits a dual approach: voluntary, incentive-based climate policies versus mandatory, health-driven air pollution rules. This split undermines coherent progress for low-carbon LMD actors.

    - **GHG Regulations** - Encouragement with limited reach: Vietnam's principal GHG regime—Decree 06/2022 on emission reduction and Decision 01/2022/QĐ-TTg—mandates biennial inventories only for 21 high-emitting sectors and 1,912 facilities, primarily in heavy industry and power generation. Most LMD companies, including both state-owned fleets and crowdsourced platforms, fall outside this list and thus face no GHG reporting obligations or penalties. Voluntary measures, such as the planned Carbon Labeling program, aim to build capacity but lack enforcement or direct impact on LMD operations. An online GHG reporting system exists, yet participation by logistics small-and-medium enterprises remains optional, yielding negligible emissions-reduction pressure.

    - **Air pollution policies** - Mandatory emission controls: By contrast, air quality rules directly regulate two-wheelers—the backbone of LMD: Emission Standards for all new MCs (above Euro 3 limits), in-use MCs (under draft for issuance); (ii) LEZ scheme: Hanoi's pilot LEZs (Hoàn Kiếm, Ba Đình) from 2025 pose a limit on Euro 2 MCs, directly affecting high polluting delivery fleets operating downtown; (iii) Energy & Emission labeling: From 2025, all new MCs require energy-consumption labels and undergo safety certification; older bikes (>5 years) face mandatory emissions tests under Circular 47/2024, enforced at inspection centers.

Corporate values:

The case of Ahamove, an IT-based company, has corporate values of environmental protection and inclusion. This has driven their voluntary efforts to have more low-carbon and more inclusive practices. However, in-depth review with the company revealed that limited GHG knowledge and dedicated resources may weaken its commitments.

[81] VCCI (2025). Vietnam's EV charging infrastructure key to green transition.

The intersection of corporate environmental values with technical knowledge gaps represents both Vietnam's greatest challenge and opportunity in developing sustainable last-mile delivery. Companies like Ahamove demonstrate that environmental commitment exists within the sector, but systematic interventions addressing awareness, expertise, and capacity are essential to translate values into meaningful environmental impact. Success in addressing these challenges could position Vietnam as a regional leader in sustainable logistics innovation while creating competitive advantages for forward-thinking companies like Ahamove.

In terms of inclusion, it matters LMD crowdsourcing shippers, considered as "driver partners". This group can control their income and set their days off yet have poorly secured working conditions caused by their financial, social, and health vulnerabilities.

- **As outdoor workers**, they are vulnerable to heatwave, air pollution, and climate change.

- **As self-employees**, they also may have fewer benefits, such as insurance coverage, life insurance, disability insurance, and company pensions, than full-time employees. They can fulfill some of these benefits on their own through the Voluntary Social and Health insurance schemes promoted by the Vietnam Ministry of Health. Some private LMD companies, such as Ahamove and SPX, cover accident insurance for their driver-partners.

- **As delivery-app dependents**, they may be the subject of unprotection and exploitation by platforms through algorithms and opaque evaluation systems. Giang et al.[82] pointed out that Grab gig workers in Vietnam are "taming the algorithms" not to hack the algorithm but to survive on the platform. GrabBike workers revealed that they have to deal with "productivity" and the weekly changing rules by the algorithm to earn more. The algorithm detects the productivity, preferred areas, and correlated orders of gig workers. "Productivity" means the more rush hours they navigate and/or the more delivery trips and kilometers traveled they complete, the more rewards and income they earn. However, this also means the workers are more vulnerable to air pollution and road congestion and accident, partly attributed to their presence. The algorithmic figure cannot present the lived reality of the workers, and companies could refuse to take responsibility for them.

Despite these discussions on measures for workers' protection, the entity to take the responsibility remains a huge question. ESCAP (2021) warned against relying heavily on the companies for social protection and called to the regulators to create flexible, universal and equally accessible, and transferrable (i.e., easily transferrable with workers when they change platforms or employers) solutions using the tools and opportunities provided by technologies such as medical insurance, accident insurance, medical leave, retirement contribution, and others depending on the legislation of countries.[83]

[82] Nguyen-Thu, G., & Munn, L. (2024). Taming the algorithm: The platform realism of GrabBike delivery workers. New Media & Society, 0(0). https://doi.org/10.1177/14614448241262417

[83] ESCAP. (2021). Policy brief: Green and sustainable logistics network: micro mobility in the first - last mile.

What CSOs/NGOs can do?

We recommend four strategies for the CSOs/NGOs to support the green and inclusive transformations of LMD service.

Research & Data Transparency

- Quantify emissions and assess the benefits of low-carbon practices.
- Support emission tracking and reporting frameworks for transparency.

Awareness & Capacity Building

- Provide knowledge, awareness and training on low-emission transport and inclusion for LMD companies, shippers, and customers.

Piloting & Industry Engagement

- Facilitate pilot programs for EV adoption and low-emission solutions.
- Build industry coalitions to drive corporate commitments and policy changes.

Policy Advocacy & Support

- Collaborate with authorities to develop and implement sustainable transport policies.
- Advocate for financial incentives such as subsidies and tax breaks to encourage EV adoption and protect vulnerable communities/groups.

Annex 1 - LMD key players' operation and scales

No.	Company	Mode of Operation	Headquarter	Scale
1	Vietnam Post	State-owned company **(AHD/OTH)**	Hanoi	• Delivery in 63 provinces • 1–2 million deliveries/ day • 13,000 posts
2	Viettel Post	State-owned company **(AHD/OTH)**	Hanoi	• Delivery in 63 provinces • 2 million deliveries/day • 2,200 posts • Operating in Myanmar, Lao, Cambodia
3	Ahamove	Private company **(AHD)**	Hanoi	• Delivery in 20 provinces • 60,000 deliveries/day • 1,000 m2 of warehouses • >534,000 registered drivers
4	GHN (Fast Delivery)	Private company **(AHD/OTH)**	Ho Chi Minh	• Delivery in 63 provinces • 500,000 deliveries/ day • 2,000 posts
5	Ninja Van	Private company **(AHD/OTH)**	Hanoi	• Delivery in 63 provinces • 593 posts • 5 warehouses
6	TikiNow	Private company **(AHD)**	Ho Chi Minh	• Delivery in 63 provinces • 3,000 deliveries/day • 10 warehouses
7	Giaohangtietkiem	Private company **(AHD/OTH)**	Hanoi	• Delivery in 63 provinces • 1,200 posts • 20 center points
8	Xanh Express	Private company **(AHD)**	Hanoi	• N/A
9	beExpress	Private company **(AHD)**	Ho Chi Minh	• Delivery in 25 provinces and/ or cities • 485,000 partner stores

Note: AHD = Attended Home Delivery; OTH = Out-of-Home Delivery

No.	Company	Mode of Operation	Headquarter	Scale
10	J&T Express	Multinational company **(AHD/OTH)**	Indonesia/ Ho Chi Minh	• Delivery in 63 provinces • 1,900 posts
11	Shopee Express	Multinational company **(AHD)**	Singapore/ Ho Chi Minh	• Delivery in 63 provinces • 405 warehouses
12	Grab Express	Multinational company **(AHD)**	Singapore/ Ho Chi Minh	• 300,000 deliveries/ day on average for GrabFood • 31 provinces and/or cities
13	LEX	Multinational company **(AHD/OTH)**	Ho Chi Minh	• 80 pick-up and delivery points
14	GOJEK	Multinational company **(AHD)**	Ho Chi Minh	• 200,000 driver-partners

Note: AHD = Attended Home Delivery; OTH = Out-of-Home Delivery

Annex 2 - Summary of Key Legal Documents

Level	Issued by	Name of Document
Constitution	The National Assembly	THE CONSTITUTION OF THE SOCIALIST REPUBLIC OF VIETNAM 2013
Law, Resolution	The National Assembly	Law on Environmental Protection 2020
		Law on economical and efficient use of energy
		Law on Road traffic order and safety 2024
Decree	The Government of Vietnam	Decree No. 06/2022/ND-CP guiding the LEP on GHG mitigation and protection of the ozone layer
	The Government of Vietnam	Decree No. 08/2022/ND-CP guiding the LEP on environmental protection
Decision	Prime Minister	Decision No. 876/QD-TTg approving the action program for transition to green energy and mitigation of carbon dioxide and methane emissions from transportation
	Prime Minister	Decision No. 888/QD-TTg approving the scheme for setting out tasks and solutions for implementation of outcomes of the COP26 to the United Nations Framework Convention on climate change
	Prime Minister	Decision No. 942/QĐ-TTg approving the action plan for methane emissions reduction by 2030 (05/08/2022)
	Prime Minister	Decision No. 687/QĐ-TTg approving the scheme for circular economy development in Vietnam (dated 07/06/2022)
	Prime Minister	Decision No. 1658/QĐ-TTg approving the National Green Growth strategy for 2021–2030, with a vision by 2050 (dated 01/10/2021)
	Prime Minister	Decision No. 882/QĐ-TTg approving the National Action Plan for Green Growth for 2021–2030, with a vision by 2050 (dated 22/07/2022)
	Prime Minister	Decision No. 896/QD-TTg approving the National Strategy for Climate Change until 2050

Level	Issued by	Name of Document
	Prime Minister	Decision No. 1055/QD-TTg promulgating the National Climate Change Adaptation Plan for 2021–2030, with a vision by 2050
	Prime Minister	Decision No. 148/QĐ-TTg on the monitoring and evaluation system of climate change adaptation activities
	Prime Minister	Decision No. 355/QD-TTg on the Transport development strategy to 2020, with a vision by 2030 (25/02/2013)
	Prime Minister	Decision No. 215/QD-TTg dated 01/03/3024 approving the National Energy Master Planning by 2030, with a vision by 2045
	Prime Minister	Decision No. 889/QĐ-TTG approving the National Action Program for Sustainable Production and Consumption for 2021–2030 (dated 24/06/2020)
	Prime Minister	Decision No. 280/QD-TTg approving the National Program for Economical and Efficient Use of Energy for 2019–2030 (dated 13/03/2019)
Decision, Circular by Ministries	MONRE	Circular No. 01/2022/TT-BTNMT on the guidelines for implementation of law on environmental protection regarding response to climate change
	MONRE	Decision No. 2626/QD-BTNMT on the list of emission factors serving greenhouse gas (GHG inventory development
	MOT	Decision No. 1679/QD-BGTVT promulgating the plan of the Ministry of Transport to implement the action program for transition to green energy and reduction in carbon dioxide and methane emissions of the transport sector
	MOT	Decision No. 452/QD-BGTVT - Action plan of the MOT to actively respond to climate change and increase state management of natural resources and environmental protection for the period 2021–2025

Level	Issued by	Name of Document
Provincial	HCMC People's Committee	Proposal on 2W emission control programme in HCMC
		Air quality management plan
		Action plan to implement Paris Agreement
	National Assembly	The Capital Law No. 39/2024/QH15 dated June 28 2024
	Hanoi People's Committee	Air quality management plan to 2030, with an outlook to 2035.
	Hanoi People's Committee	Action plan to implement Paris Agreement
	Hanoi People's Committee	Resolution No.47/2024/NQ-HDND dated December 12, 2024 on Low-emission zone

CLEAN Mobility Collective SOUTHEAST ASIA

SEAMA SOUTHEAST ASIA MOBILITY AWARDS