

Current Status of Logistics Infrastructure Associated with the Development of Vietnam's Sea Tourism



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ABSTRACT: With a coastline of 3260 kilometers, 2,773 islands, and 28 coastal provinces, Vietnam has a great potential for sea tourism development. One of the factors affecting this development is logistics infrastructure. This research paper aims to analyze all of the logistics infrastructure factors including highways, railways, inland waterways, seaway, and airways; and the connection between logistics transport infrastructure and marine tourism development. The result shows that coastal tourism areas have made strong investments in logistics infrastructure and future planning. However, the lack of synchronization in transport networks connecting tourist destinations, the adaptation of the seaport systems and waterway transports, along with the overall infrastructure serving the needs of accommodations and tourism services have not met the increasing demand. Based on these bases, this paperwork proposes solutions to developing the logistics infrastructure associated with the development of Vietnam's sea tourism.

KEYWORDS: Logistics infrastructure, sea tourism development, Vietnam

1. INTRODUCTION

Vietnam has a large and resource-rich sea area, playing an instrumental role in economic development, environmental protection and national security. The Vietnamese coastline stretches approximately 3,260 kilometers along the seaboard from North to South. The mainland territory of the country is surrounded by the coastline extending in three distinct directions: east, south, and southwest, with a maritime area exceeding 1 kilometer squares. The coastal region includes 2,773 islands sizing from small to big, covering an area of around 1,700 kilometer squares. Among these, three biggest islands have the areas surpassed 100 kilometer squares, 23 islands have the areas larger than 1 kilometer squares, and 82 islands have the areas bigger than 1 kilometer squares, and thousands of unnamed islands (iTDR.org.vn,2024). Currently, Vietnam has more than 90 ports, both large and small, with a total of 24,000 meters of wharf and 10 transshipment zones, including piers capable of accommodating ships up to 50,000 DWT. The coastal provinces and cities is 28, covering 41.3% of the country's total land area which are home to 49.2% of the total population (Tram, P.T & .Ngoc,L.H,2023).

Due to its potential, Vietnam's sea has become an attractive destination for both domestic and international tourists. The marine tourism industry contributed much to the nation's GDP, and in the end, it became a new trend and drive leading in the country. Statistics recorded by the Ministry of Culture, Sports and Tourism of Vietnam showed that in 2023, the country welcomed 12.6 million international visitors, 3.5 times higher than in 2022. Of those, visitors have grown remarkably for years and always made up about 70% of the total tourism in the country. Tourism in islands and coasts has emerged as the chief tourism form, thus making tourism become one of the important economic industries in Vietnam. According to the Institute for Tourism Development Research (2023), coastal tourism attracts not only many domestic tourists but also contributes much to the economy in terms of drawing international visitors.

However, the logistics infrastructure related to coastal tourism still faces numerous challenges, including a lack of synchronization, suboptimal service quality, and the limited capacity to meet the growing demands of tourists. The issues surrounding Vietnam's tourism logistics infrastructure- including information infrastructure, accommodation services, food services, transportation infrastructure, and the logistics of services related to tourism – are reducing the competitiveness and diversity of Vietnam's tourism products (Dao, D.D., 2017). According to Lambert and Stock (2001), logistics infrastructure comprises four elements: (1) the transportation system, (2) warehousing and storage systems, (3) equipment and technology, and (4) logistics services. Logistics infrastructure refers to the physical and spatial structures within the logistics system, which include warehouses, transportation vehicles, conveyors, storage facilities, technology, and other physical resources such as communication systems. The author restricts himself, in the host paper, to the transport network of roadways, railways, airways, inland waterways, and maritime routes.

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According to A. A. Zuraimi et al. (2013), logistics transportation infrastructure comprises fundamental elements in the operation of the logistics network by integrating maritime, air, and road transport modes. Improving transportation infrastructure is essential for achieving sustainable and balanced economic development (Nhan, A.T.T., 2023). Vietnam currently has more than 30,000 enterprises registered in the logistics sector. The logistics market includes the participation of over 5,000 companies providing third-party logistics (3PL) services, with domestic enterprises accounting for 89%, joint ventures 10%, and wholly foreign-owned companies providing cross-border logistics services 1% (Hoang Anh, 2023). However, most of these are small-scale enterprises. The logistics costs in Vietnam remain high, equivalent to 16.8-17% of GDP, significantly higher than the global average of 10.6% of GDP (Quoc Khanh-Nguyen Kien, 2024). As such, the infrastructure supporting logistics is lacking in synchronization (Vi, N.T., 2023). The primary cause of high logistics costs in Vietnam stems from elevated transportation expenses due to the unsynchronized transportation infrastructure, limited connectivity between maritime, rail, and road transport, and the absence of national-level logistics centers.

Facing with current situation, Vietnam's tourism industry needs to reach appropriate logistics solutions to build up contributions to achieve the target of making the industry one of the key economic sectors in 2030. Because transport cannot be separated from the tourism sector, improvements in transportation have been instrumental for the establishment of wider tourism developments. Trinh, B.V., & Phong, D.T. (2021). The research will also determine the current status and situation of the logistics infrastructure in the coastal tourism industry in Vietnam. In this respect, the study will examine major components of logistics transportation infrastructure: roadways, railways, inland waterways, maritime routes, and airways. Based on such analyses, the study will also propose certain suggestions that may lead to an improved state of logistics infrastructure for better coastal tourism services and foster favorable conditions for the sustainable development of coastal tourism in Vietnam in the future.

2. LITERATURE REVIEW

2.1. Concept and components of logistics infrastructure

Concept

Logistics is a comprehensive service type, characterized by its interdisciplinary nature and the full application of information technology advancements. The efficiency of logistics management results from the scientific participation and coordination of multiple sectors, such as transportation, planning and investment, commerce, customs, and information technology. Therefore, it is essential to develop a modern national logistics system, carefully planned and systematically invested in, both for the immediate and long-term future (Dao, D.D., 2017).

Logistics is a general term used to refer to various industries and specific service sub-sectors directly related to the transportation, circulation, and distribution of goods from producers to consumers (VCCI-WTO, 2019). The U.S. Logistics Management Council defines logistics as "the process of planning and selecting the optimal method for effectively managing and controlling the movement and storage of materials, semi-finished products, as well as corresponding information, in a cost-efficient and time-efficient manner, from the pre-production stage to the point where the goods reach the end consumer, in order to meet customer requirements" (Douglas, L., 1999).

The 2005 Vietnam Commercial Law does not define the term "logistics" but instead provides the concept of "logistics services" in Article 233: "Logistics services are commercial activities in which a trader organizes and performs one or more tasks, including receiving goods, transporting, warehousing, storage, customs clearance, other paperwork procedures, customer consulting, packaging, labeling, delivery, or other services related to goods as agreed with the customer in exchange for remuneration" (National Assembly, 2005). Decree 163/2017/ND-CP on logistics services business does not provide a definition but lists 17 types of services classified under logistics. Except for air transportation, the other transport services listed under Vietnamese law include only goods transportation and do not cover passenger transport.

Concepts and the components of logistics infrastructure

- Logistics infrastructure can be defined as a network of structures comprising the facilitator, equipment, systems, and services that accompany transportation, storage, and distribution processes in the most effective, high-performance manner from the point of production to the consumer. Logistics infrastructure is crucial in providing smooth connectivity for the stages of the supply chain, from production and storage to the final product's distribution to the consumer.

- The infrastructure for logistics transportation can be defined as the combination of both physical and non-physical elements serving the transportation and circulation of goods within the supply chain. For the physical aspect, it involves the route and vehicle, but in management and operation, it should be directed toward how those vehicles are managed and operated to optimize transportation at minimal cost and maximum efficiency (Christopher, 2016). There should be a good relationship between the elements of infrastructure and related services.

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2.2. Tourism & coastal tourism

Tourism is a service-based economic branch that comprises travel, accommodation, sightseeing, recreation, and cultural experiences of tourists visiting a destination other than their normal place of residence. Coastal tourism-a significant branch of tourism-deals with coastal areas, which represents multiple activities associated with relaxation, sightseeing, sports on water, and marine ecosystems.

Coastal tourism is one of the types of tourism that caters to the human desire to connect with nature (Miller, M.L., & Hadley, N.P., 2005). It has become increasingly attractive to tourists due to the rising demand for experiences in nature and the allure of the blue seas (Thu, T.T., 2023). Besides recreation, tourism in coasts brings considerable income for many countries, especially those with long coasts like Vietnam. According to the UNWTO 2019, about 30% of the total global tourist numbers are found in tourism in coasts; thus, this part shows the importance of the sector towards the global tourism industry.

Sustainable development of coastal tourism requires a comprehensive approach that integrates sustainability indicators into planning and design models (Huyen, P.T.T., 2021). Within this, logistics transportation infrastructure, including transportation infrastructure components and related services, are crucial areas for further study.

(i) The components of logistic infrastructure

- *Road Transport*: This encompasses a system of highways, national roads, provincial roads, urban roads, and other connecting routes. Road transport is one of the most widely used means of transportation within logistics infrastructure, playing a crucial role in connecting regions and destinations, while facilitating the movement of goods to consumption points (Glaeser, 2018).

- *Rail Transport*: The railway system functions both for freight and passenger transportation. Rail transport is an effective way to transfer bulky volumes of goods, especially heavy cargo or items which require long distances for transport. The railway network links not only the inland areas but also seaports and inland ports, hence connecting import and export activities as well (Rodrigue, 2020).

- *Inland Waterways*: Rivers, canals and lakes are used for the conveyance of people and goods. In coastal areas with high tourist activity, transport on water becomes very crucial. It would, therefore, be required to invest in high-speed boats, ferries and smaller vessels to be able to connect various tourism spots, coasts and islands Kasarda, 2015.

- *Seaports and Riverports*: The ports are designed to handle goods through sea and river routes. Seaports are the main traffic junctions within the global logistics network, where different activities such as loading and unloading, warehousing, and distribution of international cargo are performed. Seaports can be classified into container ports, bulk ports, general cargo ports, and other types of specialized ports. It is very important that modern seaports be developed with automated loading devices supported by advanced information infrastructure as such to promote efficiency in the overall system of logistics - Notteboom, 2017.

- *Air – line Transportation*: Terminals and services for the movement of goods by air. The terminals are very instrumental in transporting high-value cargo, which requires short delivery time with high reliability. The terminals system encompasses both international and domestic terminals, which are well equipped with modern facilities and equipment, including cold storage, warehouses for hazardous goods, and modern security inspection systems (Kasarda, 2015).

(ii) Related services

- *Passenger transport services*: Coastal tourism requires a multimodal transportation system that combines road, waterway, rail, and air transport. The flexible and seamless integration of these transportation modes is essential to ensure that tourists can easily move from one location to another without difficulties (Christopher, 2016). Currently, storage capacity and logistics services have not developed in alignment with the demands of coastal tourism. In some major tourist destinations, facilities such as parking lots and logistics service centers remain limited, impacting the overall experience of tourists.

- *Port services for tourism*: Seaports need to be divided and re-planned to accommodate various needs, including those of cargo ships and cruise vessels (Notteboom, 2017). Ports serving tourism should not merely function as standard cargo ports but must have separate areas or dedicated ports to cater specifically to cruise ships and pleasure boats. The facilities should include visitor reception areas, parking, shopping, and dining services. Accompanying support services should encompass vessel maintenance and repair, security services, and medical services to ensure a safe experience for tourists.

- *Support services and technical infrastructure*: Telecommunications and information technology infrastructure require investment to meet the communication and information needs of tourists. This includes public Wi-Fi systems and mobile applications designed to assist tourists in finding information, making reservations, and contacting emergency services. Environmental services such as waste and wastewater management in coastal tourist areas must also be prioritized to protect the marine environment and preserve the tourist landscape (Glaeser, 2018).

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2.3. The relationship between logistics infrastructure and coastal tourism development

Logistics transportation infrastructure and coastal tourism complement and depend on each other. Since tourism has been becoming a crucial economic pillar for most countries, especially in an elongated country with a long coastline like Vietnam, the development of logistics transport infrastructure has aimed to improve connectivity and effectively support transport in order to directly contribute to sustainable development and the quality of tourist experiences. Developments in coastal tourism as an economic sector call for the development of both incentives: "supply" and "demand." In each, the logistics infrastructure is indispensable.

(1) Logistics transport infrastructure and coastal tourism supply

For developing coastal tourism, improvement in the quality of the tourism "supply" is essential. Tourism supply consists of elements like natural resources, infrastructure, services, and amenities. In all these logistics transportation infrastructures are the basic foundation on which tourism activities could be built up. Nicolaidis (2020) views that transportation infrastructure improves not only the accessibility but also enhances the level of experience and satisfaction of travelers. It is evidenced by modern transportation systems, like highways, seaports, and airports, allowing for quick and convenient travel to coastal tourist areas, with the added value of increasing the competitiveness of the destination. Research by Han, X., Li, Y., & Wang, X. (2020) shows that investment in tourism infrastructure can boost economic growth in developing countries. Specifically, a 1% increase in infrastructure investment in the previous year can raise GDP by an average of 0.30% the following year. In ASEAN countries, it is as high as 0.59%, which means logistics transportation infrastructure plays a significant role in both economic development and tourism.

Logistics concern not only the management of transportation and storage but are also closely linked with the management of tourist flows, accommodation services, and experiential tourism activities. Logistic in coastal tourism is of central importance because it allows convenience and safety of travelers. The big challenge is how infrastructure development can be balanced with the protection of marine environments. Increased tourism activities result in environmental pollution, depletion of natural resources, and may have negative effects on local communities as well. (Hall, C. M., 2010). For that purpose, the development of logistics infrastructure has to be developed under the issues of sustainable development in which tourism activities do not harm the environment and resources.

(2) Logistics transport infrastructure and coastal tourism demands

- Besides playing a role in providing tourism services, the logistics transportation infrastructure has a direct influence on the demand for tourism spent in coastal destinations. Demand mainly emanates from tourists' needs at destination places, which are determined by accessibility, appeal at the destination, and quality of services. A study by Jangra et al. (2023) shows that transportation is also one of the significant facilitating factors to the destination image, laying the groundwork for a successful tourism industry. When transportation infrastructure is developed in a coordinated and modern manner, tourists can easily access coastal attractions, thereby increasing the destination's appeal and enhancing its image.

- Transportation infrastructure conditions are paramount to facilitate tourists with access. According to the World Bank (2024), sustainable transportation makes a serious contribution to the promotion of inclusive growth and empowering persons' access to basic services such as tourism. In 2023, Vietnam ranked 59th, slipping seven places in the Global Tourism Development Index released by the WEF. According to the report, Vietnam excels in terms of competitive pricing and security, though it remains lagging behind in service infrastructure and socio-economic impacts.

In contrast, the high volume of tourist arrivals in the coastal and island tourism of Vietnam has encouraged more foreign investment in the industry. At present, foreign investment in coastal and island tourism has poured into almost all provinces and cities nationwide, making up more than 70 percent of total investment projects in the sector so far (Vietnamtourism, 2016). From this perspective, transportation infrastructure development will not only allow connectivity among different regions of a country but build up the international corridors for trade, enhancing cross-border tourism in the coastal areas, thus attracting foreign investment to the coastal tourism sector.

3. RESEARCH METHODOLOGY

Data collection method

The authors employed a literature review methodology to systematize the theoretical foundations regarding logistics transportation infrastructure and the development of coastal tourism, as well as to explore the roles and interrelationships between logistics transportation infrastructure and coastal tourism development. This paper reviews theories and studies related to logistics transportation infrastructure and coastal tourism development. The relevant studies were selectively gathered from databases such as Scopus, the online library of Vietnam Logistics Review, and specialized journals including the Journal of Economics and Forecasting and the Journal of Industry and Trade.

The main content is analyzed thematically and synthesized through a narrative approach. To investigate the current state of logistics infrastructure in relation to coastal tourism development in Vietnam, the research team focused on the following areas: (i) An overview of coastal tourism in Vietnam; (ii) The current state of logistics infrastructure; (iii) Identification of achieved outcomes, existing limitations, and underlying causes. The data sources for assessing the current state were collected from books,

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scientific journals both domestic and international, and from aggregated data provided by the Ministry of Industry and Trade, the General Department of Tourism, and the People's Committees of coastal provinces and cities. Based on the collected data, the authors synthesized and selected information relevant to the research content, employing descriptive statistical methods to elucidate the current situation.

Data analysis method

The secondary data for this article is provided in the Vietnam Logistics Report by the Ministry of Industry and Trade, and specialized journals such as Vietnam Logistics Review and Industry and Trade Magazine. The collected data is synthesized, calculated, and presented in tables. From there, the research team evaluates and analyzes the data to draw conclusions regarding the achievements and existing limitations. Based on this, the research team proposes solutions for developing logistics infrastructure in conjunction with promoting sea tourism in Vietnam.

4. CURRENT STATUS OF LOGISTICS INFRASTRUCTURE ASSOCIATED WITH SEA TOURISM DEVELOPMENT IN VIETNAM

4.1. Overview of beach tourism in Vietnam

Vietnam is blessed by nature with an extensive coastline and hundreds of renowned beautiful beaches, ranging from famous tourist destinations such as Ha Long, Da Nang, and Nha Trang to more pristine coastal areas like Phu Quoc and Con Dao. Additionally, Vietnam boasts over 2,773 offshore islands, with a total offshore island area of approximately 1,700 km², offering great potential for the development of marine tourism (Hai Bang, 2015). These beaches are not only distinguished by their natural beauty but also serve as hubs for many rich marine ecosystems, providing favorable conditions for the development of various forms of marine ecotourism, leisure tourism, water sports, and other experiential activities (Nguyen & Le, 2020). In addition to coastal landscapes, the diversity of tropical forest ecosystems, natural reserves, and marine wildlife and resource observation sites on offshore islands also creates favorable conditions for the development of marine tourism. Moreover, the abundant mineral water resources along Vietnam's coastal regions present a significant advantage for the promotion of wellness and health tourism. Vietnam currently has 33 national parks with a total area of approximately 10,665.44 km², of which 620.10 km² is marine area, accounting for about 3% of the total land territory. Marine national parks such as Con Dao and Phu Quoc are not only key destinations for ecotourism but are also home to many rare species of flora and fauna. These areas are prioritized by local authorities within the strategy for marine economic development, focusing on marine tourism as a spearhead industry linked to environmental protection (Vietnamnet, 2023). Beyond the beautiful natural landscapes, Vietnam's coastal culture also significantly contributes to the allure of marine tourism. The festivals, distinctive customs, and traditions of coastal communities, along with intangible cultural heritage, create unique attractions that draw international tourists (Xu & Thanh, 2017). These unique cultural features not only enrich visitors' tourism experiences but also play a role in preserving and promoting the traditional cultural values of coastal communities.

With such potential, in recent years, marine tourism has become one of the key service industries that the Government of Vietnam has planned and oriented to become a spearhead economic sector (Nam & Lan, 2021). Benefiting from natural advantages, Vietnam's marine tourism has witnessed remarkable growth, becoming the primary source of income for many coastal localities. According to the data from the Vietnam National Administration of Tourism (2023), marine tourism accounts for more than 70% of the total number of international tourists visiting Vietnam (Figure 1).

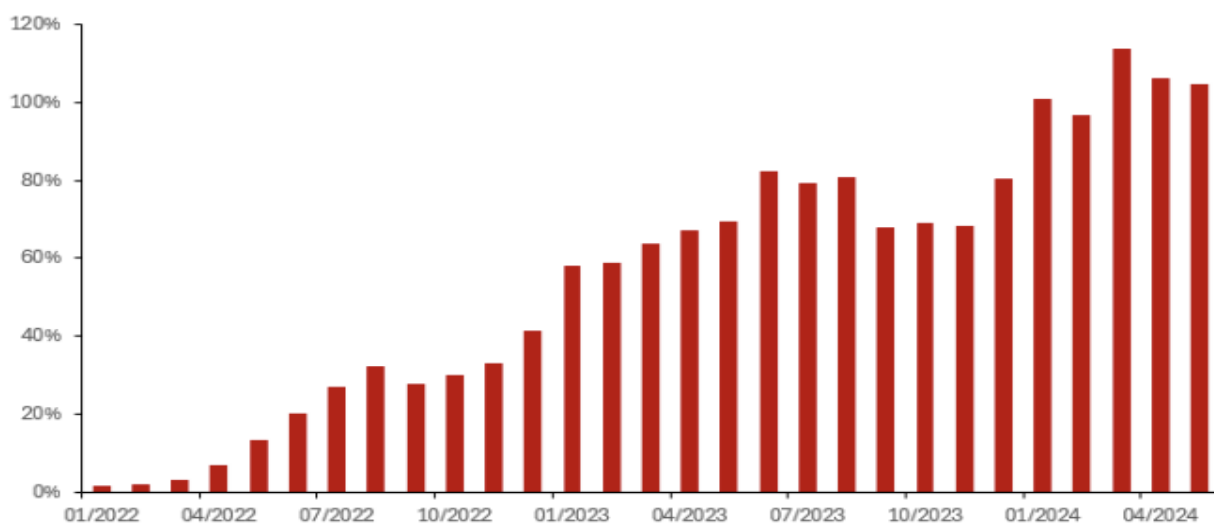


Figure 1. Number of international tourists to Vietnam (% before COVID-19)

Source: Michael Kokalari, (2024)

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Prior to the COVID-19 pandemic, Vietnam’s GDP was approximately 8%-international tourism and domestic tourism, which made for about 4% of GDP (Michael Kokalari, 2024). International tourist arrivals after the COVID-19 pandemic have been very impressive. They not only increased in the numbers of tourists arriving but the recovery has been truly the most in the more specialized markets of South Korea, the United States, and China. In 2023, the number of foreign visitors to Vietnam surfaced by more than 200%, nearly 13 million tourists on this spectrum. The outlay by international tourists accounts for just 10% of Vietnam’s retail sales, but the entire tourism sector, including both the immediate and indirect contributions, independently provides for more than 15% of GDP (Michael Kokalari, 2024).

Marine tourism has rapidly gained in recent years and became one of the human activities that bring enormous profits to the GDP of the coastal areas. Nevertheless, the balance between the environmental disturbance and solar energy production is the most affected issue. Thus, the nonuse of solar panels and reliance on diesel generators mainly contribute towards CO2 emissions, which causes climate change.

4.2. Analysis of the current status of logistics infrastructure associated with the development of sea tourism in Vietnam

(1) Current status of transport infrastructure factors connecting with sea tourism

Vietnam’s transport systems, in terms of volume and quality, have evolved drastically over time. This marriage of transport modes in Vietnam incorporates highway, railway, inland waterway transportation, and airlines transportation. Driving to the heart of the problem concerning the current state of transport infrastructure linking to the sea tourism in Vietnam states that the country is endowed with a variety of logistics systems – a very important asset in the potential development of maritime tourism. Important elements consist of land, water, air and northbound conveyance logistics systems.

Table 1. Summary of achievements in building logistics infrastructure in Vietnam in 2023

No.	Type of transport infrastructure	Results
1	Highways	<ul style="list-style-type: none"> - Total length: 595,201 km, of which national roads (including highways and expressways) account for 25,560 km. - Several sections of the North-South Expressway, with a total length of 411.6 km, were completed and put into operation in 2023. These include four component projects: Mai Son - National Highway 45, Nha Trang - Cam Lam, Vinh Hao - Phan Thiet, and Phan Thiet - Dau Giay, all part of the Eastern North-South Expressway. - Nationwide, there are 1,822 km of expressways, with an additional 1,071 km currently under construction. - Construction commenced on five nationally significant road projects.
2	Railways	<ul style="list-style-type: none"> - The national railway network has a total length of 3,143 km and includes 277 stations, of which 2,703 km are main lines and 612 km are station and branch lines, comprising seven main routes. - The railway network spans 34 provinces and cities, connecting four out of the six economic regions of the country. The railway density reaches approximately 9.5 km per 1,000 km². - Additional stations have been put into operation for international transit, such as Kep Station (Bac Giang) and Song Than Station (Binh Duong), with plans to explore the Cao Xa Station (Hai Duong) for international transit to connect with China.
3	Inland waterways	<ul style="list-style-type: none"> - The construction of the complex connecting the Day River with the Ninh Co River, part of the Northern Delta Transport Development Project, has been completed and put into operation. Located in Nghia Hung District, Nam Dinh Province, this project contributes to reducing transportation and logistics costs along Waterway Corridor No. 2. Additionally, the maritime channel for large vessels on the Hau River has been further developed.
4	Seaways	<ul style="list-style-type: none"> - Investment has been made in Lien Chieu Port, along with the dredging of several important maritime channels at Hai Phong, Cua Lo - Nghe An, Da Nang, and Vung Tau.
5	Airways	<ul style="list-style-type: none"> Long Thanh airport has been built and many other airports have been upgraded and renovated such as Con Dao and Dien Bien.

Source : Ministry of Industry and Trade-Vietnam logistics report, (2023)

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- Road transport: The total length of the road network reaches 595,201 km, with the national and expressway network extending 25,560 km. The expressway system, particularly the North-South route, has been and continues to be expanded, facilitating connections between economic centers and coastal tourism hubs. The investment in and operation of expressways will help save social costs and contribute to a growth of about 0.7% - 2.1% in the Gross Regional Domestic Product (GRDP) of the provinces the projects pass through, compared to the absence of expressway projects (Prime Minister, 2021). Newly completed expressway sections, such as Mai Son - National Highway 45 and Phan Thiet - Dau Giay, have reduced travel times and logistics costs, supporting the development of marine tourism. The expressway network has experienced rapid growth in recent years, with the growth rate of the 2011-2020 period being approximately 13.1 times greater in length compared to the previous decade (Ministry of Industry and Trade, 2023). However, due to challenging terrain, 39% of the national highway network is located in mountainous areas, and many planned highways have not yet been upgraded, with design standards still low and not meeting planning requirements (Huy., N.K., 2024). About 64.76% of the national highways are paved with asphalt, while the remainder consists of concrete, tar-sealed, and gravel roads. Single-lane roads account for 11.04%, two-lane roads for approximately 74.53%, four-lane roads for 13.93%, and roads with 6-10 lanes make up 0.5%, with the rest being roads of varying widths.

- Railways: The national railway network, with a total length of 3,143 km, connects 34 provinces and cities, including several key economic regions. Railways are currently primarily used for freight transport, but the expansion of international transit routes, such as Kep Station, Song Than Station, and Cao Xa Station, will provide better conditions for tourism, particularly in facilitating travel between Vietnam and neighboring countries. Presently, there are two routes connected to the Chinese railway at Dong Dang (Hanoi - Dong Dang line) and at Lao Cai (Hanoi - Lao Cai line), both linking to major railway stations. However, there is no direct connection to coastal tourism areas, requiring transfers to other modes of transportation. Most railway lines are outdated and require upgrading to meet the demands of marine tourism and logistics development.

- Inland waterways: Inland waterway transport is a flexible mode of transportation, particularly suited to coastal regions. Vietnam's extensive river network provides favorable conditions for the development of inland waterway transport. In 2023, projects such as the canal linking the Day River and the Ninh Co River helped reduce logistics costs along the inland waterway transport corridor, supporting marine tourism development in riverside areas and enhancing connectivity between localities. The investment in maritime channels for large vessels on the Hau River has also improved the efficiency of waterborne freight transport. Although inland waterway transport accounts for 21.6% of total freight volume, this mode of transportation has not yet been fully exploited to serve marine tourism.

- Seaways : Maritime transport plays a vital role in freight transport and marine tourism. Several seaports, such as Lien Chieu, Hai Phong, Cua Lo, and Da Nang, have been invested in and dredged, providing better conditions for large cargo vessels. However, further investment is needed in international seaports, along with improvements in cargo and passenger handling capacities, to enhance international marine tourism connectivity.

-Airways: Airways currently plays a particularly important role in serving tourists in Vietnam. For instance, in the first quarter of 2023, out of 2.7 million visitors to Vietnam, more than 2.4 million arrived by air, accounting for 89.8% of the total (GSO, 2023). However, with the increasing number of flights, the limited space and flight routes at many airports have led to congestion, necessitating improvements to meet the growing demand for tourism (Hanh, N.D., 2022).

(2) Transport capacity of logistics infrastructure system

-The territorial structure of Vietnam is divided into three key economic regions: the port cities of Hai Phong, Quang Ninh, and Hanoi (in the north), Ho Chi Minh City (in the south), and Da Nang (in the central region). These are the main economic centers and port cities of the country. Road, rail, sea and air communications connect the three key economic zones forming the central transport artery of the country.

- To date, there is a gradual recovery of the international transport sector where more than 61 foreign airlines together with 5 Vietnamese airlines are operating 147 international routes, covering 28 destinations (Ministry of Transport, 2023).

According to the Ministry of Transport (2023), passenger transport in 2023 reached 4,203 million passengers, an increase of 11.5% compared to 2022. The transport capacity of the transportation system, especially along the North-South axis, is facing significant imbalances. In terms of domestic passenger transport, road and inland waterway transport currently dominate (Figure 2).

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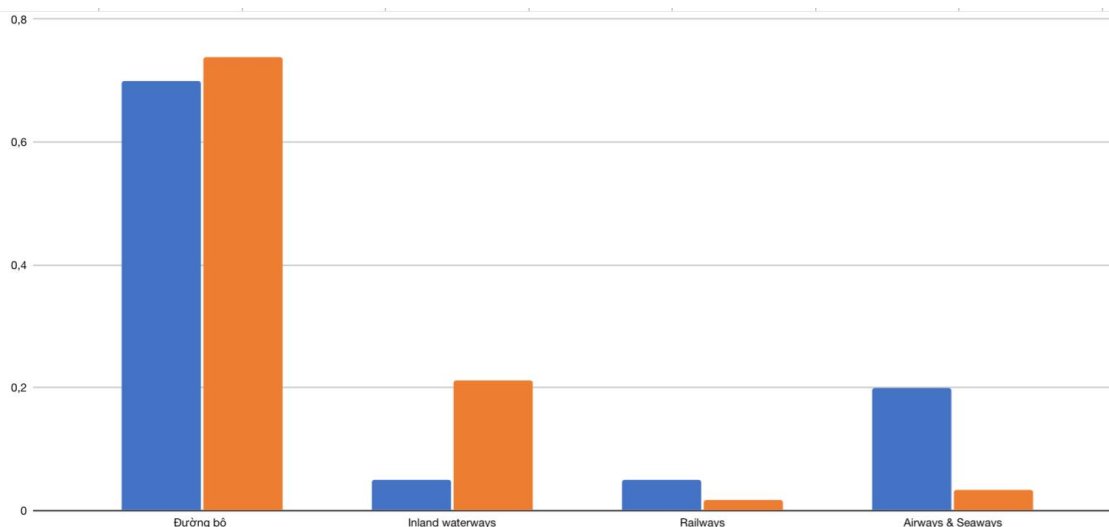


Figure 2. Domestic passenger and freight traffic

Source: Ministry of Transport, (2023)

The current situation of highways still accounts for 70% of total passengers and 73.8% of total goods in internal transport, leading to very high logistics service costs in Vietnam, currently equivalent to 20% of GDP, much higher than other countries in the region and twice as high as the global average (10.8%).

(3) Current status of logistics infrastructure linkage in marine tourism development

The means of transportation can be road, rail, and inland waterway, maritime, and air transport and are crucial in linking coastal tourism regions to the rest of the country and abroad. Because of the particular terrain and geographical position, it has been found that aerial transport is the major means of access to coastal touristic sites also embraces international and local travelers moving towards Vietnam coastal resorts: Phu Quoc, Nha Trang, Quy Nhon, Phu Yen, Da Nang, Con Dao; rail means are used for traveling to Quang Binh and Hue; road transport is common for Ha Long, Sam Son, Cua Lo and Con Dao; whereas, inland waterway and maritime transport are selected for travel to Co To, Cat Ba. In particular:

- Highways is a flexible and efficient mode for short and medium distances (under 300 km) and plays a key role in supporting the collection and distribution of goods and passengers for other modes of transport, as well as connecting different transport modes. Both road and rail significantly aid in linking coastal tourism areas with urban centers.

- Inland waterways: This mode is primarily focused on freight transport (accounting for 21.6% of the total freight volume). However, it has yet to be fully exploited for coastal tourism. There is a need for more flexible connections between seaports and other transport modes to enhance passenger transport to coastal tourism areas by water.

- Seaways: Vietnam possesses several important seaports serving both freight and tourism, particularly in Hai Phong, Da Nang, Vung Tau, and Cua Lo. However, the current seaport infrastructure lacks clear planning to differentiate between freight and tourism vessels for optimal operational efficiency. Some ports have designated separate areas for cruise ships and cargo vessels, but the facilities to meet the specific needs of the tourism industry, such as reception areas, parking lots, and other accompanying services, remain limited.

- Airways: The fact that 89.8% of international visitors arrive by air highlights the significant role of this transport mode. However, with the increasing density of flights, Vietnam's airport system faces challenges in accommodating the large number of tourists traveling to coastal destinations. Expanding and upgrading existing airports, as well as accelerating the construction of new international airports—particularly in provinces with coastal areas (28 provinces bordering the sea)—is essential to alleviate pressure on major airports and optimize passenger routes.

(4) Current status of services related to coastal logistics infrastructure in Vietnam

- *Passenger Transport Services*: Coastal tourism in Vietnam currently requires a multimodal transport system that integrates various modes of transportation. The flexible and seamless connection between these modes is crucial to ensure that tourists can travel conveniently and cost-effectively. This necessitates that the transport infrastructure for all modes must guarantee convenience, safety, diversity, and speed. At present, passenger transport services in coastal tourism regions primarily rely on road and air transport, while inland waterway and rail transport have not yet developed robustly. However, there has been the emergence of ferry and cruise services facilitating the transportation of passengers from the mainland to tourist islands such as Phu Quoc, Con Dao, Ha Long Bay, Co To, and Cat Ba. The electric vehicle and taxi systems on the road also provide significant support in connecting coastal tourist sites with central areas.

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- *Port services for tourism:* Vietnam has a vast network of seaports serving both cargo transport and tourism purposes. Several major ports catering to coastal tourism have been invested in and upgraded to accommodate international cruise ships and yachts, particularly in well-known destinations such as Da Nang, Ha Long, and Nha Trang. These ports are equipped with modern facilities, including visitor reception areas, parking lots, and supporting services such as shopping and dining. However, in some cases, the division and specific planning between cargo ports and tourist ports remain unclear, leading to many seaports being used for multiple purposes, which causes congestion and reduces operational efficiency. Furthermore, there is a need to develop additional supporting services such as vessel maintenance, repair services, security, and medical services to ensure that tourists have a safer and more comfortable experience.

- *Support services and technical infrastructure:* The technical infrastructure supporting maritime logistics in Vietnam, which includes warehouses, distribution centers, and supply chain services in coastal areas, remains limited, affecting the ability to store goods to meet tourism activities and tourist demands. Additionally, the application of information technology and automation in logistics management and operations is gradually receiving more attention to enhance service efficiency.

(5) Current status of planning and investment in logistics infrastructure associated with marine tourism

According to the Vietnam Logistics Report (2023), public and private sector investment in infrastructure in Vietnam has reached 5.7% of GDP in recent years, the highest in Southeast Asia and the second-highest in Asia, only behind China (6.8% of GDP). In the future, the allocation of capital for infrastructure projects will depend on the planning of each transportation mode.

Table 2. Planning of transport infrastructure network to 2030

No.	Type of transport infrastructure	Planning to 2030, vision to 2050
1	Highways	<ul style="list-style-type: none"> - The road network plan aims to complete and put into operation approximately 6,470 kilometers of expressways by 2030. - With a vision towards 2050, the expressway system is planned to include 41 routes with a total length of 9,014 kilometers, while the national highway system will consist of 172 routes, totaling 29,795 kilometers.
2	Railways	<ul style="list-style-type: none"> - Complete the investment preparation for the North-South high-speed railway (with the goal of securing project investment approval by 2025). - Finalize the investment preparation for the Ho Chi Minh City - Can Tho railway, as well as other railway lines connecting to major transport hubs with high traffic volumes. - Establish international railway connections with China and other countries.
3	Inland waterways	Complete and put into operation the cluster of projects connecting the Đáy River with the Ninh Cơ River under the Northern Delta Transport Development Project, located in Nghĩa Hưng District, Nam Định Province. This initiative will contribute to reducing transportation and logistics costs along Inland Waterway Corridor No. 2.
4	Seaways	Investments have been made in the Lien Chieu Port and the dredging of several important maritime channels, including the Cai Trap Channel, Rach Gia Channel, Hai Phong Channel (Lach Huyen segment), Hai Thinh Channel, Cua Lo Channel, Da Nang Channel, Sa Ky Channel, Soai Rap Channel, and the Sai Gon - Vung Tau Channel, as well as the maritime channel for large vessels on the Hau River.
5	Airways	The construction of Long Thanh International Airport has been initiated, along with the upgrades and renovations of several other airports, including Con Dao and Dien Bien.

Source: Ministry of Industry and Trade- Vietnam logistics report, (2023)

The planning of the national road traffic network for the period 2021-2030 prioritizes the inclusion of high-capacity expressways to form a regional interconnection and serve as the backbone of the national road system. The vision extends to 2050, aiming to complete a synchronized road network throughout the country that is modern and ensures a rational connection and development between different modes of transportation.

At the local scale, for the 28 coastal provinces, the coastal road network is planned to have a total length of approximately 3,034 kilometers. To ensure coherence, the planning includes connecting segments that consist of local roads or specialized routes linking the national road system with transportation hubs (border gates, seaports, inland waterways, railway stations, and airports). The specific scale and alignment of these segments are determined in provincial planning and identified as priority investment projects.

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The expressway system is planned to include 41 routes with a total length of 9,014 kilometers, while the national highway system consists of 172 routes totaling 29,795 kilometers. Based on this planning, during the period 2021-2025, the Ministry of Transport anticipates an investment requirement of approximately 462 trillion VND for transportation infrastructure, with the National Assembly and Government allocating 304.105 trillion VND (66% of the demand) to the Ministry of Transport (Vietnam Logistics Report 2023). Specifically, the total investment for the North-South expressway project is estimated at 146.990 trillion VND, with 119.666 trillion VND allocated for the period 2021-2025 and 27.324 trillion VND for the period 2026-2030.

4.3. Achievements, limitations and causes

(1) Achievements

- The planning of the national road traffic network for the period 2021-2030 prioritizes the inclusion of high-capacity expressways to form a regional interconnection and serve as the backbone of the national road system. The vision extends to 2050, aiming to complete a synchronized road network throughout the country that is modern and ensures a rational connection and development between different modes of transportation.

- At the local scale, for the 28 coastal provinces, the coastal road network is planned to have a total length of approximately 3,034 kilometers. To ensure coherence, the planning includes connecting segments that consist of local roads or specialized routes linking the national road system with transportation hubs (border gates, seaports, inland waterways, railway stations, and airports). The specific scale and alignment of these segments are determined in provincial planning and identified as priority investment projects.

- The government has a detailed plan for the improvement of transportation infrastructure logistics in widespread and logistics specifically related to coastal tourism. Additionally, there are investment plans involving non-public area participation to reduce the financial burden on the State budget.

- The transportation infrastructure is intently aligned with the making plans and development ability of coastal tourist locations inclusive of Sam Son (Thanh Hoa), Non Nuoc, My Khe (Da Nang), Nha Trang Bay, Cam Ranh Bay (Khanh Hoa), Mui Ne Beach (Binh Thuan), and Vung Tau Beach (Ba Ria - Vung Tau) (Vietnamtourism, 2016). For global vacationers, Vietnam has set up 3 predominant coastal tourism hubs with giant enchantment: Ha Long Bay (Quang Ninh), Da Nang, and Nha Trang (Khanh Hoa).

- The authorities have prioritized infrastructure funding: Numerous transportation infrastructure tasks have been finished or are underway, enhancing connectivity and promoting the improvement of coastal tourism. Increased infrastructure investment has contributed to Vietnam's boom in shipping infrastructure, positioning the USA. Competitively both within the region and globally, and enhancing its rankings in phrases of national infrastructure ability and fine. According to the Ministry of Science and Technology (2024), Vietnam ranked 52nd out of 185 international economies in the Quality Infrastructure (QI) index for 2023.

(2) Limitations

- The institutional framework and policies related to the logistics sector remain inconsistent. While the legal framework for the logistics industry has been established, specific policies detailing and implementing these overarching directives have either not been enacted or are still overlapping (Logistics Summit, 2023).

- The transport and logistics infrastructure remains limited and lacks synchronization (Logistics Summit, 2023). Logistics infrastructure, including roads, ports, and warehouses, is underdeveloped and poorly coordinated, affecting the smooth flow of goods and leading to delays (Thien, L.K., 2023). The road infrastructure is overloaded, with many routes being narrow and maintenance or repairs slow. The railway and inland waterway infrastructure have not been fully exploited; most railway lines are outdated and lack direct connections to coastal tourist areas; inland waterways have not been maximized for tourism purposes. Many airports are facing capacity issues and need upgrades and expansions to meet the rising demand for tourism, particularly coastal tourism.

- Currently, road transport accounts for up to 70% of total passenger traffic and 73.8% of total cargo in domestic transportation, leading to extremely high logistics costs in Vietnam, equivalent to 20% of GDP, significantly higher than other countries in the region and twice the global average (10.8%). Meanwhile, infrastructure investment and maintenance demand substantial capital. This is one of the major obstacles to the development of coastal tourism.

- The connectivity between different modes of transportation remains limited, with infrastructure bottlenecks at airports, seaports, and warehouses being scattered. The overburdened key infrastructure negatively impacts the overall experience of tourists.

- Coastal tourism development planning remains largely local. Despite the interdisciplinary nature of coastal tourism, development planning across various sectors and regions has been conducted independently, significantly affecting the integrated development of coastal tourism.

- The planning for coastal tourism development has not yet aligned with sustainability standards. In many areas, new tourism projects such as airports, marinas, resorts, and golf courses have raised concerns about linking the development of coastal tourism and transportation infrastructure with the protection of ecological environments (Huyen, P.T.T., 2020).

- The trend of self-planned travel poses challenges for data collection and infrastructure planning. Previously, in the tourism supply chain, travel agencies played a central role in distributing tourists and allocating benefits to other businesses involved in the

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tourism supply chain. However, with the advancement of information technology, an increasing number of tourists now prefer to arrange their trips independently, without going through travel agencies or purchasing packaged tours (Giang, K.T., 2023).

5. PROPOSING SOLUTIONS FOR DEVELOPING LOGISTICS INFRASTRUCTURE ASSOCIATED WITH DEVELOPING SEA TOURISM IN VIETNAM

(1) Improving the legal framework and policies for logistics and coastal tourism: It is necessary to revise and issue specific regulations to detail the policies related to the development of logistics connected to coastal tourism. In particular, the synchronization of policies across sectors and localities is required to eliminate overlaps and inconsistencies. The government needs a comprehensive and long-term strategy for the development of coastal tourism logistics, ensuring close coordination between state agencies, coastal provincial governments and neighboring regions, businesses, and international organizations.

(2) Upgrading and expanding transportation infrastructure serving coastal tourism logistics:

- *Highways:* Prioritize resources to upgrade and expand strategic road networks, particularly coastal expressways that connect coastal tourism areas with the main transportation systems. This would help reduce travel time, lower logistics costs, and enhance the tourism experience.

- *Railways:* Upgrade existing railway lines while also developing new routes that directly connect with coastal tourism areas. This will help alleviate the burden on the road system and optimize transportation costs. To enhance efficiency in developing railways and other transportation modes for tourism, it is crucial to decentralize management and investment, thereby avoiding the delays and resource wastage caused by centralized management.

- *Port and waterway systems:* Maximize the potential of inland waterways and develop port infrastructure to serve coastal tourism. This will reduce pressure on other modes of transportation and facilitate the growth of waterway tourism.

(3) Establishing and developing tourism logistics centers

- *Investment in centralized logistics hubs:* Develop large-scale centralized logistics centers at key transportation nodes to efficiently support the storage, preservation, and distribution of goods for coastal tourism. These centers must be modernly equipped and well-connected to tourism areas.

- *Rest stops and logistics services along tourist routes:* Construct rest stops and logistics service facilities along coastal tourist routes to meet the needs of travelers, thus facilitating the expansion of inter-regional tourism routes.

- *Digitization of services:* The digitization of services such as booking, transportation coordination, and accommodation management is also a key solution to enhance the efficiency of coastal tourism logistics.

(4) Developing logistics infrastructure with environmental sustainability

- *Sustainable infrastructure planning:* The development of logistics infrastructure should be aligned with sustainability standards, ensuring that projects such as airports, seaports, and resorts do not harm the ecological environment. Policies should be introduced to encourage investment in green, environmentally friendly technologies during infrastructure development.

- *Environmental protection integration:* It is essential to integrate environmental protection considerations into all aspects of logistics and coastal tourism development, from infrastructure construction to the management and operation of coastal tourist destinations.

(5) Strengthening regional linkages and developing coastal tourism products

- *Regional collaboration:* To maximize the benefits of coastal tourism development, there must be strong coordination between coastal provinces and cities in planning and developing tourism products. Building inter-regional tourism routes, such as the "Three Provinces - One Destination" model (Quang Nam, Da Nang, Thua Thien-Hue), helps create attractive tourism value chains.

- *Developing new coastal tourism products:* Tourism products associated with sports, marine experiences, and eco-tourism are increasingly popular among visitors. There should be a focus on developing new coastal tourism products, especially inter-regional tour routes, to attract more tourists and enhance connectivity between tourism destinations.

(6) Attracting investment and public-non-public partnerships (PPP): To deal with capital constraints, it's important to boost up the disbursement of finances for key logistics infrastructure initiatives. To ensure the sustainable and lengthy-term development of the coastal tourism sector, expanding mechanisms to attract private quarter sources is essential. Public-private partnerships (PPP) present a viable answer for developing technical infrastructure, thereby lowering the burden on the nation's finances.

6. CONCLUSION

Coastal tourism in Vietnam has turned out to be and continues to be one of the principal drivers of the countryside tourism enterprise's development. Coastal tourism is not necessarily an important part of the overall tourism sector but additionally has the capacity to stimulate auxiliary industries such as transportation, commerce, and services. The observation on "The Current State of Logistics Infrastructure in Connection with the Development of Coastal Tourism in Vietnam" presents a complete view of the important role logistics systems play within the boom of coastal tourism. One of the key conclusions is that Vietnam's logistics infrastructure in coastal tourist regions still faces many boundaries, despite large advancements within the beyond decade. Specifically, the road transportation machine connecting coastal tourist regions to major towns and different vacationer facilities stays incomplete, causing disruptions and growing expenses for tourists. The maritime transport network and seaports, whilst

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upgraded, nevertheless do not now meet international standards, specially in phrases of accommodating massive cruise ships and offering helping logistical offerings. Storage ability and logistics services, together with warehousing and distribution systems in coastal provinces, have no longer been developed consistent with the call for for coastal tourism. The lack of synchronization and coordination in planning and developing logistics infrastructure between localities additionally poses a sizable barrier to the comprehensive development of coastal tourism. Based on these conclusions, a look at gives several policy pointers for Vietnam to enhance the performance of logistics infrastructure for coastal tourism. Future studies might also consciousness greater on specific factors of logistics infrastructure, the improvement of particular coastal tourism areas, or increase research to different logistics components. Regarding research techniques, destiny research should undertake a quantitative technique, investigating the impact of logistics infrastructure on the development of coastal traveller locations in Vietnam.

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