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Influence of investment environment and development of infrastructure investment technology on state management of effective infrastructure development investment

Nguyen Van Thu[1], Pham Thanh Hung[2*], Ha Thi Thu Phuong[3], Nguyen Chi Mai[4], Bui Xuan Phong[5]
[1]University of Labour and Social Affairs, Vietnam; vanthu75@gmail.com (N.V.T.)
[2,3,4]Hanoi University of Business and Technology, Vietnam; thanhhungdpi@gmail.com (P.T.H.) haphuongtc96@gmail.com (H.T.T.P.) chimaihl@gmail.com (N.C.M.)
[5]Posts and Telecommunications Institute of Technology, Vietnam; phongbx@ptit.edu.vn (B.X.P.)

Abstract: The awareness of party committees, party organizations, authorities, enterprises, and society about the role and special importance of infrastructure for socio-economic development, industrialization, and modernization of the country has seen many positive changes. The legal system has been improved, approaching international practices, especially policies on planning, development investment, public investment, and public-private partnerships. Many programs, projects, and works have been put into operation and effectively promoted, especially in transport infrastructure, energy, irrigation, urban areas, and information and communication. However, some of these results have not met the requirements, have not created a breakthrough in mobilizing resources, have not formed a synchronous and modern infrastructure system, and have not ensured rapid and sustainable development. Through qualitative and quantitative research methods, the objective of this article is to study the influence of the investment environment and the development of infrastructure investment technology on the effective state management of infrastructure development investment in Quang Ninh province. The results show that the development of infrastructure investment technology positively affects the effective state management of infrastructure development investment in Quang Ninh province. From there, some recommendations are proposed to improve the effectiveness of state management of infrastructure development investment in Quang Ninh province.

Keywords: *Business administration, Development investment, Economics, Infrastructure, State management.*

1. Introduction

Quang Ninh Province, located in the Northeast of Vietnam, has a strategic geographical position, bordering many provinces and countries. In particular, the North borders China (Mong Cai International Border Gate is a major trading point between Vietnam and China), the Northwest borders Lang Son Province, the West borders Bac Giang Province, the Southwest borders Hai Duong Province, the South and Southwest borders Hai Phong City, and the East is the East Sea (Quang Ninh has a coastline of about 250 km, including many large and small islands such as Co to Island, Quan Lan Island and the famous Ha Long Bay). Quang Ninh province has an administrative system consisting of 13 district-level administrative units, divided into 4 cities, 2 towns, and 7 districts. Quang Ninh province has a diverse and complex terrain, a combination of mountains, coastal plains, and islands. This is a province with special terrain characteristics. The area of Quang Ninh province is about 6,208 km2. The population of Quang Ninh is 1,362,880 people as of 2022, 1,413,452 people—the population of Quang

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* Correspondence: thanhhungdpi@gmail.com

Ninh province as of June 13, 2023, according to the average estimate of the General Statistics Office of Vietnam.

According to Truong [1] in 2023, Quang Ninh's economic growth rate reached 11.03%, the 9th consecutive year the province has grown by double digits. According to the report of the Quang Ninh Statistics Office, in 2023, Quang Ninh's economic scale reached over 315,000 billion VND, 1.5 times higher than in 2020. The state budget revenue is estimated at over 55,600 billion VND, leading the country in attracting foreign direct investment with a figure of over 3 billion USD, 3.1 times higher than the annual plan. The average GRDP per capita of this locality in 2023 is estimated at over 9,400 USD, 1.4 times higher than in 2020. If the growth momentum continues to be maintained, it is forecasted that in the next 5 years, Quang Ninh's economic scale will reach over 600,000 billion VND.

The geographical location contributes to creating conditions for Quang Ninh to become an important transit market, thereby creating many opportunities for developing trade and services in the border area, especially in the border economic zones. Developed traffic routes and important border gates are favorable conditions for Quang Ninh to strongly develop the exchange of goods within the region, between the region and large international markets, thus becoming an important trade center, a trading point of provinces in the country, of ASEAN with China, to East Asian and Asia-Pacific countries. However, in recent times, the results of state management of infrastructure development investment have not achieved the set plan.

Infrastructure is one of the important premises contributing to promoting socio-economic development and human life. Therefore, to promote socio-economic development, it is necessary to start with the development of the infrastructure system. Infrastructure is the most important material and technological basis in the national economy. The basic functions and tasks of infrastructure are necessary to ensure that the process of scaling up continues.

Infrastructure development investment is one of the extremely important investment activities, serving economic and social development. However, state management of infrastructure development investment is one of the complicated activities. Besides, currently the investment environment, legal environment and policy mechanism in Vietnam have many fluctuations, gradually improving to attract investors.

In recent years, the socio-economic situation of Quang Ninh province has developed significantly; infrastructure continues to be prioritized for investment. Quang Ninh province has continued to mobilize all resources, diversify investment forms, accelerate the development speed, complete the synchronous and modern socio-economic infrastructure system, and promote regional connectivity. Regarding public investment, on June 14, 2024, the total planned public investment capital is 15,130,929 billion VND, 850,209 billion VND higher than the plan assigned by the Provincial People's Council at the beginning of the year (14,280.72 billion VND), of which the detailed allocated capital is 15,123,438 billion VND (equivalent to 99.95% of the capital plan). Disbursed capital on June 14, 2024, reached VND 2,351,682 billion, equal to 15.5% of the capital plan and 16.8% of the capital plan assigned by the Prime Minister at the beginning of the year (VND 14,278,211 billion) [2]. However, in reality, the quality and efficiency of managing infrastructure development investment projects still have many limitations and difficulties, such as budget revenue in the area still being low compared to investment spending needs, capital mobilization from socialized capital sources still facing many difficulties, compensation progress for site clearance of some projects still being slow, and planning not being close to reality, thereby affecting the socio-economic development process of the locality.

The structure of the paper is as follows: In addition to the introduction, Section 2 examines pertinent research; Section 3 discusses the study's methodologies; Section 4 provides results; and Section 5 has implications.

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2. Literature Review

2.1. State Management Effective Infrastructure Development Investment

Bui [3] believes that state management is a special form of social management, in which the management subject has state power, using tools such as policies and laws to regulate the behavior of individuals and organizations according to the management purpose set by the management subject.

State management of development investment is understood as the state performing a management role over investors, investors and development investment activities with the aim of making social investment highly effective [4].

State management of infrastructure development investment is understood as the responsible state agency using its apparatus, staff, and tools to perform management functions according to the law to make infrastructure investment more effective, contributing to making the entire investment in socio-economic development more effective, making the socio-economic development process more qualitative, effective, and sustainable [4].

State management of infrastructure development investment is a part of state management of development investment. The subject of this activity is the State, in which the State carries out a synthesis of many activities for infrastructure development investment activities with the aim of enforcing the law, ensuring resource mobilization for infrastructure development, and completing the infrastructure development investment plan [4].

Thus, the effectiveness of state management of infrastructure development investment includes (i) promulgation and implementation of policies related to state management of infrastructure development investment; (ii) planning and plans; (iii) management of infrastructure development investment; and (iv) inspection, examination and supervision of infrastructure development investment.

2.2. Investment Environment and State Management of Infrastructure Development Investment

The investment environment is the sum of internal and external factors and conditions. It directly and indirectly affects investment results and decisions. If the investment environment is good, it will create favorable conditions for investment activities and promote effective production and business processes.

The investment environment has an impact on the structure and value of investment capital. It directly affects the investment decision-making process.

Characteristics of the investment environment include the following: the investment environment is comprehensive, the elements that make up the investment environment have an interactive and complementary relationship, the investment environment is two-way, the investment environment and investors interact with each other, the investment environment is constantly changing, the investment environment is open, and the investment environment is systematic.

Research hypotheses H1: Investment environment (IE) has a positive influence on the effectiveness of state management infrastructure development investment.

2.3. Development of infrastructure investment technology and State management of infrastructure development investment

Applying new technologies and new materials to develop infrastructure: Applying some new technologies, new materials, alternative materials, and recycled materials to save resources and protect the environment.

The system of technical regulations, standards, and economic-technical norms is gradually being improved to meet the development needs of the industries.

Perfecting the autonomy mechanism, improving the operational efficiency and competitiveness of public science and technology organizations, research institutes, universities, academies and enterprises.

Ensure the quantity and quality of qualified scientific and technological human resources to meet development needs, focusing on developing high-quality human resources; gradually master the exploitation and effective operation of new, advanced and modern technologies.

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Promote digital transformation in all fields, especially in public services and management activities, to develop modern, advanced infrastructure and protect the environment.

Proactively develop solutions and technologies to implement green energy conversion, reduce carbon and methane emissions, protect the environment and respond to challenges from climate change.

Acquiring, mastering, transferring and widely applying the world's advanced technology to increase labor productivity and improve product and service quality and competitiveness of enterprises.

Strengthen scientific research activities towards technological autonomy, especially in developing new technologies.

Research hypotheses H2: Development of infrastructure investment technology (IIET) has a positive influence on the effectiveness of state management infrastructure development investment.

3. Methodology

3.1. Qualitative Research Methods

We adopt a qualitative field study approach, as it is often deemed appropriate for gaining insights into a complex phenomenon deeply embedded in its context. This approach allows researchers to explore the intricacies of the research setting [5-7]. We find the field-based approach well-suited to our objectives.

Quang Ninh province was selected as our case study organization on the basis of theoretical appropriateness and reality.

To construct the case study, semi-structured interviews were conducted over two months between October and November 2024, with a total of 7 interviewees from 7 districts or cities in Quang Ninh province. The interviews were conducted online through MS Teams and recorded by asking the permission of participants. Identifying the key institutional logics and characterizing their effects requires empirical justification in the particular case under investigation [8, 9].

Analysis and statistical methods: Used to analyze statistical data on investment in infrastructure development and the effectiveness of state management of investment in infrastructure development in Quang Ninh province in recent years. Based on the results of the analysis and data processing collected, forecasts are made about the investment situation and infrastructure development in the province, thereby proposing effective solutions for state management of investment in infrastructure development.

Comparison method: We use it to compare the results of infrastructure development investment and the effectiveness of state management of infrastructure development investment in Quang Ninh province over the past years. When necessary and possible, it can also be used to compare the level of achievement with the set goals and plans.

3.2. Quantitative Research Methods

Data collection for this study is undertaken via convenience sampling and survey forms distributed to respondents in Quang Ninh province.

Only 165 of the 200 replies that were gathered from the online and offline survey processes were deemed valid observations for additional analysis in this study.

The ideas and the literature review served as the foundation for the questionnaire's design. 21 observation variables are included, each with a 5-point Likert scale (the dependent variable ranges from 1 "not totally agree" to 5 "fully agree," while the independent variables' degree of effect is measured using a 5-point Likert scale, which ranges from 1 "not influenced" to 5 "very influenced").

Figure 1 shows the conceptual model research framework for this study, which is based on the theories and literature review as well as the research findings of earlier studies.

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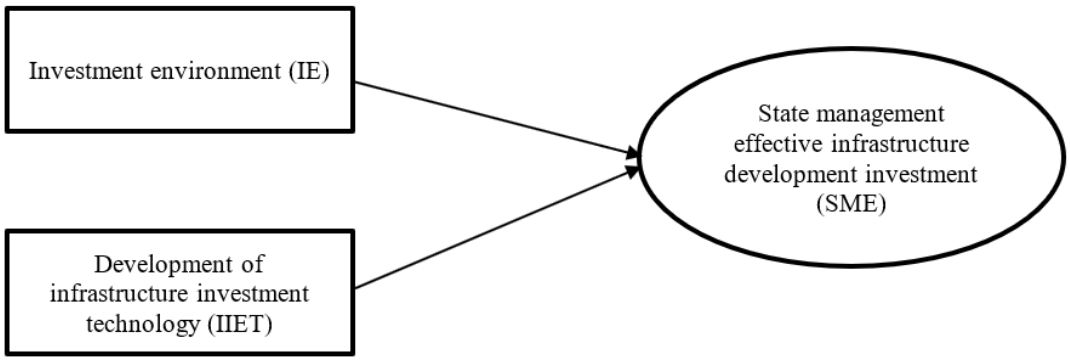

Figure 1.
Research model.

4. Research Findings

The findings of this study are displayed in detail below using SPSS software:

4.1. Cronbach's Alpha – Reliability

Cronbach's alpha is the most widely used and efficient technique in SPSS analysis for doing the reliability test [10]. Five independent and one dependent variable are subjected to the Cronbach's alpha test in this study. The Cronbach's alpha test result is shown in Table 1. Hair, et al. [10] also point out that for a Cronbach's alpha result to be considered dependable enough for study, it must be equal to or more than 0.7 (≥ 0.7). All of the Cronbach's alpha findings in Table 1 satisfy these common standards, indicating that each questionnaire item has a high degree of reliability and is suitable for use in this study.

Table 1.
Cronbach's Alpha Analysis.

Variables and coding	Cronbach's Alpha	Item-Total Correlation	No. of items
Investment environment (IE)	0.886	0.306	7
Development of infrastructure investment technology (IIET)	0.922	0.562	8
State management effective infrastructure development investment (SME)	0.860	0.629	4

4.2. Factor analysis

George and Mallery [11] stress that exploratory factor analysis (EFA), which determines the association between observed variables and assesses the validity of the collection of questions, is one of the most important procedures when analyzing data with SPSS.

As shown in Table 2, the KMO and Barlett's Test for independent variables are used in this study. As can be seen, the KMO value is 0.930 ($0.5 < 0.930 < 1$) and the sig. value is 0.000, both of which are less than 0.05 (<0.05), indicating that the study's requirements were met [10]. Furthermore, we obtained the following results after applying the rotation matrix: eigenvalues of $1.687 > 1$ for each determinant with factor load > 0.5, and 63.939 % variance explained. It proves that the research data's factor analysis is suitable.

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Table 2.
KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.930
Bartlett's Test of Sphericity	Approx. Chi-Square	1,662.343
	Df	105
	Sig.	0.000

4.3. Regression Model Analysis

Multiple regression analysis is used to ascertain the result of this study, which consists of one dependent variable and two independent variables. State management's effective infrastructure development investment will be the sole variable included in this study's regression phase.

Research and use the model regression (see Fig. 1) to test hypotheses H1 and H2 on the impact of the investment environment and the advancement of infrastructure investment technology on state management of successful infrastructure development investment. The model's validity and the connections between the two independent variables and the dependent variable—state management of efficient infrastructure development investment—are demonstrated in Table 3. Two factors account for 35.8% of the variance in state management of successful infrastructure development investment, according to this model's R-square value of 0.358 [10, 12]. With a 95% confidence interval, the ANOVA test's p-value (sig. value) is 0.000, meeting the requirement that it be less than 0.05 (table 4). In other words, the linear model's significance is demonstrated by the ANOVA analysis [10, 12].

Because the Durbin-Watson value falls between 1 and 3 (DW = 1.928), Durbin-Watson statistics, which are used to verify the autocorrelation of residuals, demonstrate that the model is not violated when employing the multiple regression method. Stated differently, the model shows no residual autocorrelation [10, 12].

Table 3.
Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.598[a]	0.358	0.350	0.51707	1.928

Note: a. Predictors (Constant): IIET, IE
b. Dependent Variable: SME.

Table 4.
Anova[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.140	2	12.070	45.144	.000[b]
	Residual	43.313	162	0.267		
	Total	67.452	164			

Note: a. Dependent Variable: SME
b. Predictors: (Constant): IIET, IE.

Table 5.
Coefficients[a].

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.002	.241		4.165	0.000		
IE	.073	.085	.074	.863	.390	.545	1.835
IIET	.523	.082	.546	6.403	.000	.545	1.835

Note: a. Dependent Variable: SME

One of the p-values (sig. values) in the coefficients result displayed in Table 5 is less than 0.05, indicating that one independent variable is a significant predictor of the dependent variable.

Additionally, both predictors' VIF values are less than 2, indicating the absence of multicollinearity [10, 12].

Thence, one hypothesis (H2) is accepted and hypothesis (H1) is rejected.

The regression equation can be determined as follows based on the outcome:

SME = 0.546*IIET

4.4. Discussion

4.4.1. Overview of Location, Status, and Natural and Social Conditions of Quang Ninh province

According to Quang Ninh Click [https://special.nhandan.vn/dieu-kien-tu-nhien-tai-nguyen-thien-nhien-tinh-Quang-Ninh/index.html] is a province located in the Northeast of the Socialist Republic of Vietnam, with a geopolitical, economic, and foreign affairs and especially important position in terms of national defense and security. The north of Quang Ninh province borders the People's Republic of China; the south borders Hai Phong city; the east borders the sea; the west and northwest border Lang Son and Bac Giang provinces; the west and southwest border Hai Duong province. Quang Ninh has an area of over 12,000 km², including 6,206.9 km² of land and sea surface area with the outer boundary 6 nautical miles from the average low-water line for many years as determined and announced by the Ministry of Natural Resources and Environment. 80% of the province's land area is mountainous with a width of 195 km from east to west and a length of 102 km from north to South. Quang Ninh province has 13 district-level administrative units, including 4 cities (Ha Long, Uong Bi, Cam Pha, and Mong Cai), 2 towns (Quang Yen and Dong Trieu) and 7 districts (including 2 island districts), with a total of 177 communes, wards and towns. Ha Long City is the political, administrative, economic and cultural center of Quang Ninh Province, home to the World Heritage Ha Long Bay.

Quang Ninh is considered a gateway connecting international, regional and interprovincial routes. (i) First gateway: Quang Ninh is the only locality in Vietnam that has both land and sea borders with China, the most populous market in the world. Therefore, when the two countries cooperate in development based on the economic corridor, Quang Ninh is a locality of Vietnam located in the corridor-road cooperation area between Vietnam and China, including 2 economic corridors: Kunming-Lao Cai-Hanoi-Hai Phong-Quang Ninh, Nanning-Bang Tuong-Lang Son-Hanoi-Hai Phong-Quang Ninh, and the coastal economic belt of the Gulf of Tonkin. (ii) Second gateway: Quang Ninh is the only locality in Vietnam that has both land and sea borders with China, the most populous market in the world. Therefore, when the two countries cooperate in development based on the economic corridor, Quang Ninh is a locality of Vietnam located in the corridor-road cooperation area between Vietnam and China, including 2 economic corridors: Kunming-Lao Cai-Hanoi-Hai Phong-Quang Ninh, Nanning-Bang Tuong-Lang Son-Hanoi-Hai Phong-Quang Ninh, and the coastal economic belt of the Gulf of Tonkin. (iii) Third gateway: Along with Hai Phong, Quang Ninh is the gateway to the sea for the entire North, especially since passing through Quang Ninh is the fastest way to the sea for the two most dynamic provinces in the Northern Midlands and Mountains region today, Bac Giang and Lang Son.

Along with Hanoi and Hai Phong, Quang Ninh is identified as a pole in the development triangle of the Northern Key Economic Zone, in which Quang Ninh is adjacent to Hai Phong, creating a pair of localities that complement each other, forming a strong maritime center of Vietnam. These important factors create favorable conditions for Quang Ninh to develop industries, process products for export, become a logistics center, and become a service center that effectively serves the economic development of the whole region.

Quang Ninh is a province with a favorable geographical location for cooperation in economic development, industry, trade and tourism domestically and internationally by road, waterway and air, especially with China as well as localities in the Northern Key Economic Zone. However, with its border location and wide border both at sea and on land, Quang Ninh has to face problems arising in national defense and security, such as smuggling, illegal immigration and border disputes.

Along with Hanoi and Hai Phong, Quang Ninh is identified as a pole in the development triangle of the Northern Key Economic Zone. Quang Ninh has diverse terrain from mountainous areas to midlands

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and coastal plains, coastal areas and islands, creating a diverse climate, ecosystem and geology. The fragmented mountainous terrain also creates population distribution and development, regional differences between the east and west, midland mountainous areas and coastal strip. The mountainous terrain also causes difficulties in economic development (limited land fund, lack of space for economic development) as well as maintaining and ensuring security, safety and social order in the province.

Quang Ninh has a unique coastal archipelago terrain consisting of large and small islands. In which, Ha Long Bay and Bai Tu Long Bay are natural treasures, with exceptional value, unique grandeur, thousands of limestone islands, white sand beaches serving tourism, and raw materials for glass technology. The seabed terrain has reefs that are home to diverse coral reefs, which are favorable factors for the development of marine tourism. In particular, the seabed terrain has deep channels forming channels and seaports on the wind-sheltered coastline thanks to the sheltered island corridors, creating favorable conditions for the construction and development of seaport systems, especially deep-water ports that can receive large-tonnage ships and inland waterway ports to meet the needs of exchanging goods with provinces in the region. With a coastline of more than 250 km and 2,077 islands (accounting for the majority of the country's islands), including large and medium-sized land islands such as Cai Bau: 190 km², Tra Ban: 76.4 km², Vinh Thuc: 32.6 km², Ba Mun: 23.4 km², Thanh Lan: 16.8 km², and Co To: 15.6 km², suitable for people to live, develop the economy, be a springboard to the sea, and protect the sovereignty of the Fatherland. Another special point is that Ha Long Bay has many rocky islands, while Bai Tu Long Bay has many land islands, which can be inhabited, with beautiful beaches, of which Tra Co beach stands out as the longest beach in Vietnam with 17 km.

4.4.2. Activities of Planning, Scheduling, and Allocating Investment Capital

In the coming time, the province will continue to mobilize all resources to invest in infrastructure development, focusing on transport infrastructure, industrial park and cluster infrastructure, and urban infrastructure; promoting the attraction of investment resources; and implementing the public investment plan for 2024. Strive for the disbursement rate of public investment capital to reach at least 80% on September 30, 2024 and to reach 100% of the investment capital plan assigned at the beginning of the year on December 31, 2024. In particular, prioritizing resources for key projects, transitional projects, and projects completed in 2024. In particular, speeding up the development and completion of a synchronous, modern infrastructure system, ensuring connectivity, comprehensiveness, focus, and key points; promptly completing strategic transport infrastructure projects, promoting regional and intra-regional connectivity such as Riverside Road connecting from Ha Long - Hai Phong expressway to Dong Trieu town, completing the construction of Dam Nha Mac intersection, and renovating and upgrading provincial road 342, National Highway 279; closely coordinating with Hai Phong city to strive to complete and put into operation Ben Rung bridge and Lai Xuan bridge in 2024. Along with that, focus on removing difficulties and obstacles, speeding up the construction progress, completing and putting into operation the Dong Trieu Golf Course project in 2024; resolutely and effectively implementing the project on renovating and upgrading rural traffic in the province for the period 2024-2030, the project on upgrading urban areas of Quang Yen town, and the project on establishing Dong Trieu City [2].

According to MGVS [13] Quang Ninh province focuses on investing in developing and completing a synchronous infrastructure system, focusing on strategic transport infrastructure, information technology, telecommunications, economic zones and seaport services. Over the past years, Quang Ninh has been assessed as a locality with a strongly developed transport infrastructure nationwide. Quang Ninh province focuses on investing in infrastructure development in 2021: Since the beginning of the year, the province has focused on directing the acceleration of investment preparation progress, approving contractor selection plans for new construction projects, and accelerating the progress of key projects. On the first day of the new year, 2021, the Trieu Bridge connecting Quang Ninh with Hai Duong province was officially opened to traffic and put into operation after 14 months of construction. The completion of the project in synchronization with the upgrading and opening of Highway 389 and

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May Bridge has shortened the travel distance between Dong Trieu town and Highway 5, Hanoi - Hai Phong Expressway, as well as Hai Duong province, the northern coastal provinces, and Hanoi. The left branch—the last branch of the mountain tunnel of the Ha Long - Cam Pha coastal road project—was opened on July 23. This is the largest mountain tunnel in Quang Ninh and also one of the mountain tunnels with the largest roadbed in the country. The province aims to complete the project by the end of 2021. The Van Don – Mong Cai Expressway is also being accelerated, which has strategic significance for the province's socio-economic development. This expressway also has the ability to connect inter-regionally, intra-regionally and internationally to promote the development of the Red River Delta provinces, the key economic triangle and the northern region.

The province aims to complete the project by the end of 2021. The Van Don – Mong Cai Expressway is also being accelerated, which has strategic significance for the province's socio-economic development. This expressway also has the ability to connect inter-regionally, intra-regionally and internationally to promote the development of the Red River Delta provinces, the key economic triangle and the northern region. This will be a springboard for the province to attract investment in construction, development, and completion of key port infrastructure and port services in Con Ong - Hon Net, Hai Ha, Van Ninh, and Nam Tien Phong. Some important projects are also being planned and built by the province, including the international standard marina in Cua Luc Bay, the Van Don - Mong Cai highway, the Ha Long - Cam Pha coastal road, and the Cua Luc 1 and 3 bridges.

In 2022, Quang Ninh plans to focus on developing projects of access roads and bridges to Hon Net - Con Ong general port, Cua Luc 2 bridge, and connecting road from Cua Luc 2 bridge to Dong Tra village (Dong Lam commune), riverside road connecting from Ha Long - Hai Phong expressway to Dong Trieu town. Regarding the infrastructure of economic zones and industrial parks, Quang Ninh prioritizes capital allocation to build essential infrastructure and projects with spillover effects. This will be the basis for the province to attract investment in high-tech processing and manufacturing projects, clean industry, smart industry, projects with casinos, high-end island tourism, and international comprehensive services.

Clearly identifying the synchronous development of infrastructure and traffic works as an important task, Quang Ninh hopes to create new breakthroughs in infrastructure development, thereby creating momentum to promote the development of other fields, enhancing the province's position in the country and the region.

4.4.3. Management Activities, Organization and Implementation of Investment

Quang Ninh province has invested in developing and perfecting a synchronous, modern, interconnected, comprehensive, focused and key economic-social infrastructure system. In particular, the province has mobilized social resources and promoted the role of state-owned enterprises in combination with private enterprises and foreign-invested enterprises to invest heavily in building industrial infrastructure as a lever for economic development.

Currently, the province has 8 operating power plants with a total capacity of 5,643.6 MW, annually supplying 35-38 billion kWh of electricity to the national grid, contributing over 1,000 billion VND to the state budget, and contributing to ensuring national energy security as well as electricity demand for national development. The province is implementing a 1,500 MW LNG power project (phase 1) in Cam Pha city (started on October 24, 2021); expected to be completed and put into operation in the 2026-2027 period; when the plant comes into operation, it is expected to supply the national grid with about 9 billion kWh of electricity/year and contribute about 57,700 billion VND to the local budget within 25 years. In addition, Quang Ninh province is proposing to add the LNG Power Plant project (phase 2) to the National Power Development Plan for the 2021-2030 period, with a vision to 2045; the project has a capacity of 1,500 MW and is invested in construction next to the Phase 1 Plant location.

Along with power infrastructure, Quang Ninh is also a locality with strong investment in industrial parks and economic zones. Currently, the province has 5 economic zones with a total area of 375,171 hectares; 16 industrial park projects with a total area of 12,886.8 hectares (of which 10,387.3 hectares

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are located in economic zones). The total area of industrial parks and economic zones is 377,090 hectares, the province with the largest number and scale of industrial parks and economic zones in the country. The province's 16 industrial parks are all included in the Industrial Park Development Plan until 2020. Along with that, Quang Ninh has 3 border gate economic zones in the development plan approved by the Prime Minister with a decision to establish them with a total area of over 144,735 hectares.

In the field of road construction and development, Quang Ninh clearly identifies the important role of transport infrastructure, which must always be one step ahead to act as a premise and driving force to attract investment, promote socio-economic development, and ensure national security and defense. Currently, with a total road system length of about 6,361.93 km in the area, Quang Ninh province is always striving to gain support and assistance from the Central Government, building policies and mechanisms to attract investment, and focusing on investing in dynamic projects with strategic breakthroughs.

Regarding agricultural infrastructure, the province has invested in repairing, renovating and upgrading more than 3,000 km of roads and 32 bridges of all kinds, creating favorable conditions for rural people to access essential services and helping people to easily promote and consume agricultural products. To date, 100% of communes have asphalted, concreted or hardened roads to communes and villages.

Quang Ninh province focuses on investing in infrastructure for the trade and tourism sectors. The province has mobilized all resources to invest in building, completing and exploiting the tourism and service infrastructure system associated with synchronous transport infrastructure, associated with effectively exploiting the border gate system, airports and seaports. At the same time, diversifying tourism products; forming a chain of diverse, unique, modern and high-class marine tourism, eco-tourism and resort tourism products such as Tuan Chau International Tourism Area, Golf Course, Legacy Yen Tu - MGallery Resort, and Vinpearl Ha Long high-class resort.

Regarding commercial infrastructure, Quang Ninh province has mobilized many resources to invest in strong development, contributing to changing the appearance, urban civilization and consumer culture of the people. Investment in new construction, upgrading and renovating the traditional market system has received attention; the model of commercial centers and supermarkets is increasing in quantity and scale in a modern direction. Up to now, many large domestic and foreign corporations and brands have been present in Quang Ninh: Big C Ha Long, Lotte, KFC, HC Electronics, Media Mart, Vincom Center Ha Long, and Vincom Mong Cai.

5. Implications

Quang Ninh Province should improve the quality of planning, management and implementation according to the plan: Focus on organizing and implementing the planning of Quang Ninh Province for the period 2021 - 2030, with a vision to 2050; Establish and adjust general planning, zoning planning, and detailed planning in accordance with the provincial planning, especially in economic zones, industrial parks, urban areas, tourist areas, and key areas. Strengthen the leadership of Party committees at all levels, improve the effectiveness of state management in planning development and implementation, allocate adequate resources for planning work, and mobilize resources to implement and realize plans. Innovate planning methods, ensuring that in addition to complying with current regulations, general planning projects and zoning plans need to be more flexible, with higher orientation for investment attraction and management work; Resolutely complete synchronous zoning plans in accordance with general construction plans, in sync with 3-type forest planning, land use planning and plans.

Quang Ninh Province should improve the quality of planning work and develop medium-term public investment plans. In particular, it is necessary to focus on reviewing and supplementing plans; selecting consulting units with sufficient capacity to carry out planning work; systematizing types of planning in accordance with the requirements of state management of infrastructure development

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investment; perfecting the content, methods, and procedures for planning at all levels; investing in improving the qualifications and capacity of officials assigned to develop, approve, and manage investment plans; strengthening post-planning management of state management agencies; and allocating sufficient capital to meet the requirements and tasks of planning work. At the same time, innovating the work of planning in terms of process and time and closely combining it with the steps of the investment process.

Quang Ninh Province should improve the efficiency of using mobilized capital sources for infrastructure development investment: Persistently implement the motto "using public investment to lead private investment"; prioritize the arrangement and use of state budget capital only as seed capital to stimulate and maximize the exploitation of capital sources from other economic sectors, especially from the private sector; and develop the form of public-private partnership to invest in synchronous infrastructure development to create momentum for socio-economic development. In addition to not allocating state budget development investment capital to areas and projects that other economic sectors can invest in, it is necessary to focus on investment preparation work, resolutely direct site clearance work regardless of investment capital sources, create "clean" land funds for investors, and publicly announce the list of projects attracting investment under the public-private partnership method.

Quang Ninh Province should continue to develop and perfect a synchronous, modern, and diverse strategic infrastructure system, including digital infrastructure, ensuring overall connectivity, promoting intra-regional connectivity, regional connectivity associated with economic development corridors and belts, and convenient international connections so that Quang Ninh becomes a logistics center of the region and the whole country.

Quang Ninh Province should improve the quality of appraisal and approval of infrastructure development investment projects. Currently, the quality of project appraisal in Quang Ninh Province still has some limitations due to the process of receiving documents not being strictly followed by the one-stop procedure, leading to prolonged project appraisal time, and project appraisal not paying full attention to the efficiency and operating conditions of the project, leading to waste in some projects. Therefore, it is necessary to improve the responsibility of project approvers, the capacity and responsibility of consulting organizations, reform administrative procedures, implement decentralization in investment, and project appraisal and approval associated with the responsibility of specialized agencies.

Quang Ninh Province should improve the quality of bidding work. First of all, it is necessary to improve the capacity of investors, strictly implement the mechanism for selecting consulting contractors, and at the same time have clear rewards and penalties. Then, strictly comply with the Law on Bidding and documents guiding the implementation of the Law on Bidding. Regularly send staff to participate in professional training courses on bidding and advanced bidding to enhance the capacity of the team.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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