

Investment in Infrastructure Development of Thai Nguyen City

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ABSTRACT: As the economy continues to develop, the demand for infrastructure also needs to grow accordingly. The infrastructure system of Thai Nguyen city has undergone significant positive changes in recent years: The transportation system has been gradually invested in with projects such as the extended Bac Son Road project, the Viet Bac Road upgrade project (phase 2), the construction of the Thong Nhat and Viet Bac intersection as part of the Northern mountainous urban development project, etc. Through data analysis, alongside the achieved results in investing in infrastructure development, Thai Nguyen city is also facing some challenges in mobilizing and allocating resources for infrastructure investment. This study has proposed solutions to enhance the effectiveness of infrastructure investment in Thai Nguyen city, Thai Nguyen province in the coming period.

Keywords: Investment, Development investment, Infrastructure, Urban.

I. INTRODUCTION

During the process of socio-economic development, investment in infrastructure plays a pivotal role in economic growth. A synchronized and modern infrastructure system will drive economic growth, enhance productivity, efficiency, and contribute to addressing social issues. Conversely, an underdeveloped infrastructure system acts as a significant impediment to development. In recent years, Vietnam has placed emphasis on sustainable urban development, thus, investing in urban infrastructure development should be prioritized.

Thai Nguyen city, a first-tier urban area under the jurisdiction of Thai Nguyen province, holds a pivotal position as the political and economic center of the Northern Vietnam region in particular, and the Northeast mountainous midlands in general. It serves as a gateway for economic and social exchange between the midlands and the North Delta region. This is a significant advantage for Thai Nguyen city in attracting investment for the development of economic and social infrastructure. Implementing Decision No. 1478/QĐ-TTg dated November 28, 2022, of the Prime Minister on issuing the Plan for promoting the movement "Accelerating the development of synchronized and modern infrastructure; practicing thrift and anti-waste", the People's Committee of Thai Nguyen province has issued Plan No. 35/KH-UBND to implement and carry out the movement "Thai Nguyen accelerates the development of synchronized and modern infrastructure; practicing thrift and anti-waste".

The urban landscape of Thai Nguyen city has undergone many positive changes, becoming brighter, greener, cleaner, and more beautiful. Despite numerous advantages, the city also faces many challenges due to the urbanization process and industrial construction, resulting in the current lack of synchronized and connected basic infrastructure, leading to constraints in exploiting the potential and advantages of the city and Thai Nguyen province as a whole. To achieve the goal of becoming a civilized and modern urban area by 2030, and one of the leading centers in economic, digital transformation, cultural, educational, healthcare, scientific and technological, sports, and tourism development in the midlands and Northern mountainous regions, the city needs effective and synchronized infrastructure development investment solutions. Therefore, it is necessary to comprehensively study the investment situation in the development of Thai Nguyen city's infrastructure. Based on this, appropriate solutions should be devised to sustainably invest in the infrastructure development of Thai Nguyen city in the future.

II. METHODOLOGY

The study uses secondary data on investment capital for infrastructure development collected from official documents published by the Department of Planning and Investment of Thai Nguyen province and the People's Committee of Thai Nguyen City and Thai Nguyen Provincial Statistics Department. To analyze the data, the study uses descriptive statistics and comparative analysis methods.

III. FINDINGS

3.1. Current state of infrastructure in Thai Nguyen city

Thai Nguyen city is a class I urban area under Thai Nguyen province of Vietnam, the socio-economic center of Thai Nguyen province, with an area of 222.93 km², 32 commune-level administrative units, of which, including 21 wards and 11 communes, with a current population of more than 360,000 people. Thai Nguyen city is about 75km from the center of Hanoi capital. Thai Nguyen city has favorable conditions for economic exchanges with provinces throughout the country and especially Hanoi city, contributing to attracting investment and economic development.

The transportation system of Thai Nguyen city is gradually invested. Projects such as: Bac Son road extension; Viet Bac road upgrading project (phase 2); Dynamic urban integrated development project of Thai Nguyen city... contributes to perfecting the city's urban framework infrastructure in a civilized and modern direction. The city currently has two water plants: Thai Nguyen water plant and Tich Luong water plant with a total capacity of 40,000m³/day and night, ensuring clean water supply for daily use at 100 liters/person/day. . Currently, 93% of households in the inner city have been supplied with water for daily use. In addition, the power supply system of Cao Ngan Thermal Power Plant (capacity 2 x 57.5MW) is an important source plant in the Viet Bac region, headquartered in Quan Trieu ward, Thai Nguyen city, Thai Nguyen province. Cao Ngan Thermal Power Plant will both contribute to stabilizing quality electricity supply and reduce power loss due to transmission from other places.

Thai Nguyen city's telecommunications network infrastructure basically fully meets current service development needs, with the ability to upgrade to meet new services. Peripheral network infrastructure has met people's needs for service use with the underground cable network rate per kilometer of cable reaching 15% in trunk and main street areas. Developing technology: 4G, broadband Internet... allows the provision of services with better quality, more effective and faster infrastructure construction solutions. In the city, there are mobile information networks including Vinaphone, MobiFone, Viettel Mobile, Vietnam Mobile, Gmobile. Mobile network operators have covered 3G/4G mobile coverage to 100% of communes and wards.

In particular, Thai Nguyen city is the center of scientific research and education and training of the northern midland and mountainous region with 612 educational institutions, including: Thai Nguyen University is a regional university with 8 universities members and 1 college; and education systems at all levels. However, many schools and classrooms were built a long time ago, so many degraded items need repair and upgrading. Libraries, classrooms and teaching facilities are still lacking; some functional rooms and study service rooms have been used as classrooms. Therefore, further investment in educational and training facilities needs attention.

In addition to developing transportation, telecommunications, and cultural and educational infrastructure, health infrastructure is extremely important. Currently, Thai Nguyen city has 16 hospitals and 04 centers and many private medical examination and treatment centers, nursing and rehabilitation hospital projects. Among them, large hospitals such as: Thai Nguyen Central General Hospital, Hospital A, Hospital C, Thai Nguyen International General Hospital,... A team of highly qualified doctors and nurses can meet the needs people's demand for medical examination and treatment.

3.2. Investment in infrastructure development of Thai Nguyen city

3.2.1. Scale of investment capital

To carry out investment activities, investment capital is an indispensable factor, contributing to the socio-economic development of Thai Nguyen city. From 2020 to 2022, the total investment capital for infrastructure development in Thai Nguyen city has changed significantly.

Table 1. Investment capital for urban infrastructure development in Thai Nguyen city, 2020-2022

Unit: Million VND

Criteria	Year	2020	2021	2022
Investment capital for urban infrastructure development		1,857,133	3,244,349	2,229,797

Continuous growth rate of investment capital for urban infrastructure development (%)	-	74.7	-31.3
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(Source: Department of Planning and Investment of Thai Nguyen province and authors' calculations, 2024)

In the period 2020 - 2022, the total investment capital for urban infrastructure development is 7,331,279 million VND. In 2020, the city's investment capital for urban infrastructure development is 1,857,133 million VND. By 2021, investment capital will increase by 74.7% compared to 2020. After 4 capital adjustments in 2022, capital for investment in urban infrastructure development has decreased sharply by 31.3% compared to 2021. The reason for such uneven increases and decreases is because in these 3 years, the economy has not stabilized, people's lives have still changed a lot after the Covid - 19 pandemic and capital resources are focused mainly on finalizing previously frozen projects and arranging capital for site clearance for large projects to continue construction and complete projects in the following years.

3.2.2. Sources of development investment capital

Thai Nguyen City has promoted attracting resources to invest in construction projects to serve socio-economic development. In the period from 2020 to 2022, investment capital for infrastructure development in Thai Nguyen city is formed from state budget capital, residents, businesses and ODA capital, but there is still a lack of important capital source - foreign direct investment (FDI).

Table 2. Investment capital for urban infrastructure development in Thai Nguyen city by capital source, 2020-2022

Unit: Million VND

Criteria	Year2020	Year2021	Year2022
Investment capital for infrastructure development	1,857,133	3,244,349	2,229,797
State budget capital	1,361,021	2,180,799	1,082,047
Capital from residents and businesses	115,140	616,550	623,750
ODA	380,972	447,000	524,000
FDI	-	-	-
Structure of investment capital (%)			
State budget capital	73.3	67.2	48.5
Capital from residents and businesses	6.2	19.1	28
ODA	20.5	13.7	23.5
FDI	-	-	-

(Source: Department of Planning and Investment of Thai Nguyen province and authors' calculations, 2024)

From 2020 to 2022, investment capital from the state budget will always account for a high proportion of total investment capital. In 2020, this capital source accounts for 73.3% of the total capital, reaching 1,361,021 million VND. In 2021, capital from the state budget will increase significantly compared to 2020, reaching 2,180,799 million VND.

The reason for the sharp increase in capital is that the city has accelerated the implementation progress of previous projects and arranged compensation capital, site clearance capital, construction of resettlement area infrastructure and reciprocity to carry out the project. Current projects: Northern mountainous urban program - Thai Nguyen city and Dynamic urban integrated development project - Thai Nguyen city. In 2022, the amount of capital from the state budget will be adjusted to decrease compared to 2021, reaching 1,082,047 due to the reduction of completed project capital plans that have not yet been finalized, capital plans for investment preparation, capital plans that have not yet been allocated. allocation of capital for site clearance and infrastructure construction in resettlement areas.

In the structure of investment capital for infrastructure development in Thai Nguyen city, in 2021 capital from farmers and businesses will only account for 6.2% of the total investment capital. However, in 2021 and 2022, this capital source will increase sharply from 115,140 million VND to 616,550 million VND in 2021 and 623,750 million VND in 2022. As for ODA capital, in 2020 it will reach 380,972 million VND and in 2021 and 2022 respectively is 447,000 million VND; 524,000 million VND. ODA capital is used to finalize projects completed in the 2017 - 2019 period of the Northern Mountainous Urban Program - Thai Nguyen city and the Dynamic Urban Development Project - Thai Nguyen city. Based on table 2, it can be seen that from 2020 to 2022, Thai Nguyen city has not yet attracted foreign direct investment in infrastructure development investment. In recent years, Thai Nguyen province has shown an imbalance between industries, while the processing and manufacturing industry accounts for over 80% of foreign direct investment projects. As for other investment fields,

especially infrastructure investment in Thai Nguyen city, there are no foreign direct investment projects during the research period.

3.2.3. Investment in urban infrastructure development in Thai Nguyen city by field

Investment in infrastructure development in Thai Nguyen city in the period 2020-2022 has had positive changes, specifically as shown in table 3.

Table 3: Investment capital for urban infrastructure development in Thai Nguyen city by field, 2020-2022

Criteria	Year2020	Year 2021	Year 2022
Investment capital for infrastructure development (million VND)	1,857,133	3,244,349	2,229,797
Transportation infrastructure	139,115	321,273	142,809
Educational infrastructure	128,282	216,929	153,970
Electricity supply, water supply, wastewater and garbage treatment	45,148	23,790	18,481
Medical infrastructure	13,405	7,381	8,025
Cultural and sports infrastructure	115,482	330,533	225,651
Telecommunications Infrastructure	11,361	11,361	9,361
Residential Construction	1,404,340	2,333,082	1,671,500
Investment capital structure by field (%)			
Transportation infrastructure	7.50	5.01	6.40
Educational infrastructure	6.9	6.69	6.91
Electricity supply, water supply, wastewater and garbage treatment	2.4	0.73	0.83
Medical infrastructure	0.72	0.23	0.36
Cultural and sports infrastructure	6.22	10.2	10.12
Telecommunications Infrastructure	0.61	0.35	0.42
Residential Construction	75.61	76.79	74.96

(Source: Department of Planning and Investment of Thai Nguyen province and authors' calculations, 2024)

For Thai Nguyen city, Thai Nguyen province during the research period, investment in infrastructure development focuses on areas such as: Traffic; education; electricity supply, water supply, wastewater and garbage treatment; medical; culture, sports; telecommunication; residential area. Among the fields, investment in developing residential projects receives the most attention. In 2020, investment capital in residential projects accounted for 75.61% of the total investment capital, reaching 1,404,340 million VND. In 2021 and 2022, investment capital for developing residential projects both accounts for over 70% of the total capital and reaches 2,333,082 million VND and 1,671,500 million VND, respectively. During this time, Thai Nguyen city is focusing on investing in the construction of resettlement areas in the area and the project of integrated development of dynamic urban areas in Thai Nguyen city.

Transportation is a field considered essential in investing in urban infrastructure development in Thai Nguyen city including road, railway and waterway systems with many investment items such as: new construction, upgrading, renovating, repairing lighting systems, and banner signs on roads. In the three years from 2020 - 2022, the investment capital is 603,197 million VND. These projects mainly focus on renovating and upgrading degraded roads and the capital in 2021 will increase more strongly than in the other two years. The reason is that in the state budget capital, the compensation capital for site clearance for the investment project to build the extended Bac Son road and the Thanh Nien Xung Phong route with the adjusted capital is 158,703 million VND.

Investment capital to develop educational and training facilities reaches 499,181 million VND in the three years from 2020 to 2022, accounting for an average of 6.9% of total investment capital each year. To further develop the education system, Thai Nguyen city needs to pay more attention to investing in developing educational and training facilities commensurate with the potential and strengths of the number of educational facilities. Over the years, the field of culture and sports has also seen a significant increase in investment capital. In 2020, investment capital for the culture and sports system only accounts for 6.22% of the total investment capital, reaching 115,482 million VND. In 2021, it increased to 330,533 million VND and in 2022 it was 225,651 million VND. The investment capital of the electricity supply, water supply, wastewater and garbage treatment system in 2020 accounts for 2.4% of the total investment capital, reaching 45,148 million VND. In the remaining two years, investment capital will decrease significantly, in 2021 it will be 23,790 million VND and in 2022 it will decrease to 18,481 million VND. The health system with a total investment capital in three years is 28,811 million VND and only accounts for a small proportion of the total investment capital, in 2020 it accounts for 0.71% of the total

investment capital and in 2021 and 2022 this proportion is are 0.23% and 0.36% respectively. The telecommunications field in 2020 and 2021 will have an investment capital of 11,361 million VND, and in 2022 it will reach 9,361 million VND. Thus, during the research period, the structure of development investment capital according to the field of infrastructure in Thai Nguyen city and Thai Nguyen province is quite different. Development investment capital focuses on residential construction, while other fields account for a relatively small proportion of total investment capital.

3.2.4. Results of investment in infrastructure development of Thai Nguyen city

Table 4. Amount of investment capital to develop urban infrastructure in Thai Nguyen city, 2020-2022

Criteria	Year2020	Year 2021	Year 2022
Plan (million VND)	1,857,133	3,244,349	2,229,797
Actual implementation (million VND)	1,851,783	3,224,349	2,229,797
ActualImplementation/Plan (%)	99.7	99.4	100

(Source: Department of Planning and Investment of Thai Nguyen province and authors' calculations, 2024)

In 2020, the planned investment capital for infrastructure development of Thai Nguyen city is 1,857,133 million VND. Implemented investment capital only reached 1,851,783 million VND, reaching 99.7% of the plan. In 2021, 99.4% of investment capital will be realized according to the plan. In particular, in 2022, with the determination to implement the investment capital plan for infrastructure development, Thai Nguyen city has implemented 100% of the capital plan, reaching 2,229,797 million VND. With the promotion of investment and development, Thai Nguyen city's infrastructure has become more spacious. Hanoi - Thai Nguyen railway overpass project (Quang Trung street intersection with Viet Bac road), Bac Son road extension project; Viet Bac road upgrading project... has contributed to reducing traffic congestion in the city. Post and telecommunications network infrastructure has developed widely in Thai Nguyen city; Ensuring to serve the postal needs of the Party, State, organizations and individuals in the area. Postal businesses are constantly promoting market development, expanding many types of business services to many customers. Postal services have rapidly transformed, gradually shifting from traditional postal services to participating in developing delivery services for e-commerce and supporting public services, pension payment services, payment services, agent services for telecommunications, etc. The cultural and educational system of Thai Nguyen city holds an important position and role in the development orientation of the region. In recent years, Thai Nguyen has invested and grown strongly, worthy of being a key education center.

IV. CONCLUSION

In the process of socio-economic development, the infrastructure system plays an extremely important role. If the infrastructure system develops synchronously and modernly, it will promote economic growth, improve productivity and efficiency of the economy and contribute to solving social problems and vice versa. Therefore, to be able to attract maximum and effectively use investment capital to develop a synchronous and modern infrastructure system in all fields of transportation, electricity, water supply, drainage, education, etc. Education, healthcare,... to meet the socio-economic development needs of Thai Nguyen city, some solutions are proposed as follows:

Firstly, improve the quality of planning and infrastructure development plans in Thai Nguyen city. Review all plans and master plans for socio-economic development of Thai Nguyen city. Construction and planning adjustments must be based on the city's natural and socio-economic characteristics and forecasts of future development needs. It is necessary to ensure consistency and synchronization between infrastructure development planning and land use planning; between 5-year and annual socio-economic development plans; At the same time, we focus on the connection between different types of sectoral, regional and provincial planning.

Second, mobilize and effectively use development investment capital sources. In the context of increasingly limited state budget capital, accessing ODA capital is more difficult. Thai Nguyen city needs to better exploit investment capital from the residential and private sectors. In particular, Thai Nguyen province has attracted many FDI projects, however these projects mostly focus on the processing and manufacturing industry. Therefore, Thai Nguyen city needs to implement priority policy mechanisms and incentives to attract foreign investment; Build a project list and project implementation process for foreign investors.

Third, build an investment structure to develop infrastructure fields. In the investment capital structure for infrastructure development of Thai Nguyen city by fields from 2020 to 2022, the ratio of investment capital for health, telecommunications, and education is still low. Therefore, in the coming period, Thai Nguyen city needs to make adjustments in the allocation of investment capital between sectors, and need to further strengthen investment in developing education, health care and post and telecommunications.

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