ABSTRACT

Urban planning and development of Thai Nguyen province has made breakthrough achievements, creating a driving force to develop Thai Nguyen to become a regional commercial center, trade and economic center of the Midlands and Northern mountainous region and Hanoi capital area. The article focuses on analyzing the current status of the urban system of Thai Nguyen province through analyzing the current distribution, size, and urban characteristics, and forecasting the province's urban population in 2025 and 2030. This study points out some limitations that exist in the process of urbanization such as: small urban population size, low urbanization rate, inadequate infrastructure... and challenges that the province will have to face. Based on the results of analysis and assessment of the current situation, the study proposes a number of solutions to overcome the limitations and overcome challenges, promoting the development of the urban system of Thai Nguyen province in the coming time.

Keywords: Planning, Thai Nguyen, Urban, Urbanization

I. INTRODUCTION

Thai Nguyen is a province in the socio-economic center of the Northern Midlands and Mountains, one of 10 administrative units in the Hanoi Capital region. For many years, Thai Nguyen province has focused resources and solutions to transform urbanization in association with urban construction and social security. The province attaches importance to planning zoning, especially urban development towards green, smart and sustainable criteria. Up to now, the province's urbanization rate has reached 36%; the average floor area of houses in urban areas is about 28m²/person; the rate of permanent houses reaches 85%; the ratio of traffic land to construction land in urban areas of grade I reaches 16%, urban areas from grade III to grade IV reach 11%... urban areas of the province have assumed the role of development nucleus. socio-economic conditions of each region with distinct characteristics. However, the technical and social infrastructure of urban areas is still not synchronized, and the capacity for urban management and development in localities is not uniform. The identity of some localities is still unclear, the architectural space landscape is still messy, not in order, and has not yet created its own voice and characteristics. This is partly because the quality of urban planning projects is not high, natural conditions have not been thoroughly studied, especially sustainable urban development in the current period must take into account the response to the climate change.

Many studies on urban development or urbanization have been carried out by scientists and organizations at home and abroad, such as the study “Urbanization and growth” by Michael et al. (2010) presented historical patterns of urban population growth in different national regions, the relationship between urbanization and growth, and the experiences of countries dealing with these problems in the process of urbanization; The study "Assessment of Vietnam's urbanization – Technical assistance report” has evaluated many aspects of the urbanization process in Vietnam, raising concerns about the situation of urbanization in Vietnam, chaotic pattern in urban development, environmental pollution etc. (World Bank, 2011). Trung (2014) in “Research on urbanization process and its effects on socio-economic development of Can Tho city” pointed out the inadequacies and limitations in the process of urbanization, causing undesirable consequences for the economy, society and the environment such as: congestion of the urban system, inequality, environmental pollution, etc. The author has also proposed some solutions to overcome: regional linkage in socio-economic development and urban development, urban planning, speeding up the industrialization process, urban infrastructure development, investment of urban development etc.
Some studies on planning and urbanization issues in Thai Nguyen province such as "Study on the organization of industrial territory in Thai Nguyen province" have studied from a geographical perspective when evaluating factors affecting the organization of industrial territories in Thai Nguyen province, analyze and evaluate the current situation of industrial territorial organization in Thai Nguyen province, thereby proposing orientations and solutions for industrial territorial organizations in Thai Nguyen province by 2030 (Long, 2020); Hien (2017) in the study "Improving the management of planning and construction according to urban planning in Thai Nguyen province" proposed general directions and possible specific solutions to increase the role of the State in the management of urban planning (focusing on issues of management and implementation of urban planning projects, management of construction permits and permits, management and handling of violations of construction order) in the urbanization process of Thai Nguyen city.

Based on the results of the review of research materials, the authors found that although there have been many studies on urbanization or urban system development in the world and in Vietnam, as well as research on planning or urban in Thai Nguyen province, but these studies still stop at analysis, evaluation and improvement in state management. This is a research gap that opens up new research directions for scientists, focusing on analyzing the current situation of urban system development in Thai Nguyen province, comprehensively as well as in-depth on aspects of distribution of the urban system, the size and nature of the province's urban areas, etc., from which synchronous solutions will be found, promoting the development of the province's urban system in a comprehensive manner.

II. METHODOLOGY

The research has collected secondary information from reports and statistics from agencies of Thai Nguyen province such as: People's Committee of Thai Nguyen province, Department of Statistics of Thai Nguyen province, Department of Planning and Investment of Thai province etc. and published results of conferences, seminars, investigations and scientific researches conducted by relevant organizations and individuals. The methods of descriptive statistics and comparative analysis were used to conduct data analysis.

III. RESULTS AND DISCUSSION

A. Status of population distribution and urban system in Thai Nguyen province

1. Urban population distribution

The total population of Thai Nguyen province in 2020 is 1,307,789 people, of which the urban population is 419,679 people, accounting for 37.1% of the total population and the rural population is 888,192 people, accounting for 66.9% of the total population.

The urbanization rate of Thai Nguyen province in 2020 is 32.1%, lower than the national average of 36.8%. However, the average urban population growth rate in the period 2021 - 2020 is 3.6% per year, higher than the national average growth rate of 3.08% per year. The population density of Thai Nguyen province is 371 people/km², higher than the national average of 295 people/km².

2. Distribution of urban system

At present, the urban system of Thai Nguyen province has 13 urban areas, divided into two levels: urban areas of the province and urban areas of the district. 3 urban areas directly under the province are Thai Nguyen city, Song Cong city and Pho Yen town. 10 urban centers directly under the district, including 06 towns and 04 specialized urban areas of the district.

The urban system of Thai Nguyen province is distributed on the main traffic axes of National Highway (NH) 3, NH 37, NH 1B, NH 17. Along NH3 there are urban centers of Pho Yen town, Song Cong city, Thai Nguyen city, Giang Tien town, Du town, Cho Chu town (NH3C); To the Northeast, along NH1B, there are urban centers of Hoa Thuong, Song Cau and Dinh Ca towns; According to NH 37, there are urban centers of Hung Son and Huong Son centers. In addition, other urban areas are distributed along provincial roads such as TT Quan Chu (DT 261); Trai Cau Center (NH 17).

The urban areas that are the driving force of the province are distributed concentratedly in the southern region along National Highway 3 and the Hanoi - Thai Nguyen highway, which is a key area for industrial and service development with Thai Nguyen city, Song Cong city and Pho Yen town. At present, these urban areas are focusing on construction investment in housing, commercial and tourism projects and key technical infrastructure works for urban and industrial development.
In general, the distribution of urban areas in Thai Nguyen province is sparse, many urban centers are formed and developed mainly on the basis of administrative urban functions. Urban areas specialized in industrial, commercial and service development are still few, small in scale, slow and weak urban development due to the lack of development driving factors, thus affecting the urbanization speed. The quality and infrastructure in the towns are still poor, inconsistent and small in size. Urban areas, especially towns of districts have not yet promoted their role as driving forces for regional and sub-regional development, and have not yet created their own identity in mountainous urban areas.

B. The development of urban system in Thai Nguyen province

Over the years, Thai Nguyen province has adjusted, developed, expanded urban space and changed the number of urban areas. In the period 2010-2020, Thai Nguyen city has been developed and expanded by 5,243.8ha (in the North it was merged with Son Cam commune; in the East is Chua Hang town, Linh Son commune, Huong Thuong commune and Dong Lien commune). Song Cong city was developed and expanded to include Luong Son commune (formerly in Thai Nguyen city). In Pho Yen town, the inner urban area is being developed and expanded, in which the focus is on the East, in the Yen Binh industrial and service urban area. There are 2 former grade V urban centers, Bac Son town and Bai Bong town, both of which have been transformed into wards of Pho Yen town. As for district-level urban centers, Hung Son town (Dai Tu) and Du township (Phu Luong) have been adjusted urban space to neighboring communes to gradually develop and upgrade urban areas; establish a new town as the district town of Dong Hy district in Hoa Thuong commune.

Up to now, Thai Nguyen has 1 urban area of grade I (Thai Nguyen city), 2 urban areas of grade III (Song Cong city and Pho Yen town), 1 urban area of grade IV (Hung Son town of Dai Tu district), and The 9 grade-V urban areas (the district towns of Du, Dinh Ca, Cho Chu, Huong Son, Hoa Thuong and the specialized towns of the district, namely Quan Chu, Trai Cau, Giang Tien and Song Cau). According to the Decision No. 17/2015/QD-UBND dated June 22, 2015 of the People's Committee of Thai Nguyen province on approving the construction planning of Thai Nguyen province until 2035, Thai Nguyen has not achieved the target according to the proposed master plan (in 2020: The total number of urban centers in the province will reach 16, of which there are 1 grade I, 1 grade II, 6 grade IV and 8 grade V).

C. Forecast of urban population size and urbanization rate of Thai Nguyen province in 2025 and 2030

In the past 10 years, Thai Nguyen province has had an average population growth rate of about 1.49%, higher than the national average (about 1%). This may be due to the migration of labor force from neighboring provinces to meet the labor force needs of Thai Nguyen province. It is important to note that population growth increased dramatically in Thai Nguyen province in 2014, about 3.65%. The main factor for the sudden increase in population that year was due to many FDI projects in the province, which attracted many workers not only in Thai province but also many other provinces (Fig. 1.).

What is more interesting is that, while the majority of the population is rural, the proportion of the urban population has increased from 26% in 2010 to 32% in 2020. This urbanization trend is expected to continue to increase in the coming years in order to respond to growth in the industrial and service sectors and increased productivity in the agricultural sector (Fig. 2.).
Fig. 2. Ratio of urban population in Thai Nguyen province from 2010 to 2020

Based on the law of population growth 2010 - 2020 with an average annual growth rate of 1.49%/year, with a slight decrease in the rate of natural increase and expected in the next 10 years (2021-2030), the socio-economic development of Thai Nguyen province along with a large mechanical increase of population, so the average population growth is about 1.5%. The average population growth rate is forecasted to be 1.48% by 2025, to in 2030 is 1.52%. At that time, the population size of the whole province by 2025 will reach 1,407,863 people and by 2030 will reach 1,517,909 people. The urbanization rate by 2025 will reach 43.1%, with the urban population reaching 606,438 people, the period from 2026 to 2030 is a period of rapid growth, the urbanization rate will reach 59% with the scale urban population is 894,367 people.

**TABLE I: FORECAST OF URBAN POPULATION SIZE OF THAI NGUYEN PROVINCE TO 2030**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Year 2019</th>
<th>Year 2020</th>
<th>Year 2025</th>
<th>Year 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population of the province</td>
<td>1,290,945</td>
<td>1,307,871</td>
<td>1,407,863</td>
<td>1,517,909</td>
</tr>
<tr>
<td>Urbanization rate (%)</td>
<td>32.06</td>
<td>32.1</td>
<td>43.07</td>
<td>58.92</td>
</tr>
<tr>
<td>Urban population (people)</td>
<td>413,878</td>
<td>419,679</td>
<td>606,438</td>
<td>894,367</td>
</tr>
<tr>
<td>Urban population growth rate (%)</td>
<td>-</td>
<td>1.4</td>
<td>7.9</td>
<td>7.86</td>
</tr>
</tbody>
</table>

Source: Thai Nguyen Department of Planning and Investment, 2021.

**D. Model of Urban Development Planning of Thai Nguyen Province in the Period of 2021 – 2030**

With the goal that Thai Nguyen will become an urban center directly under the central government, the provincial development planning model is selected with a zoning plan consisting of two regions: (1) The southern region of Thai Nguyen is an urbanized area for industrial development. Industry and major service centers are the driving force of the province's development, in which the cluster of Thai Nguyen cities, Song Cong and Pho Yen associated with the Hanoi - Thai Nguyen expressway corridor - National Highway 3, National Highway 37 and RR5 is the nucleus. and 2 satellite towns, Dai Tu town and Phu Binh town in the future; (2) Northern Thai Nguyen region includes 3 areas: The Northeast is Vo Nhai district in which the urban chain: Dinh Ca, Hoa Thuong, Song Cau, La Hien and Quang Son are associated with the National Highway 1B Corridor; The Northwest region is Dinh Hoa district and the North area includes 2 districts of Phu Luong and Dong Hy, associated with National Highway 3, National Highway 3C and Thai Nguyen - Bac Kan road.

Fig. 3. The area planning of Thai Nguyen province (Thai Nguyen Department of Planning and Investment, 2021).
The urban system of Thai Nguyen province is organized in the northern and southern regions of the province, Thai Nguyen City is the central urban area, the urban concentration areas are organized along the following axes:

- The southern axis follows National Highway 3 connecting Thai Nguyen City with Song Cong city, Pho Yen town.
- The western axis follows National Highway 37 connecting Thai Nguyen City with Dai Tu district and the urban centers of Cu Van, Hung Son and Yen Lang.
- The Northeast axis along National Highway 1B connects Thai Nguyen City with Dong Hy and Vo Nhai districts along with the urban centers of Venerable Thuong, Song Cau, Quang Son, La Hien and Dinh Ca.
- The Northwest axis along national highways 3 and 3B connects Thai Nguyen City with Phu Luong and Dinh Hoa districts and the urban areas of Giang Tien, Du, Trung Hoi and Cho Chu.

Of the four axes mentioned above, the three development axes including the Southern Axis, the Western Axis and the Northeast Axis will be the fast growing axes in the coming time.

Along the axes, concentrated industrial zones, commercial service establishments, urban centers and urban areas will be arranged.

In the core areas between the axes are hilly areas, natural and semi-natural green spaces, rural residential areas will arrange commune cluster centers to play the role of socio-economic promotion, accelerate the transformation of the economic structure, the structure of labor and employment. Protect and develop a system of natural green spaces and semi-natural green spaces in areas of forests, mountains, rivers, lakes, and fields in cities, towns and districts. In particular, it is necessary to zone off and protect the green corridors of Cau and Song rivers, and minimize investment projects on riverside construction.

IV. CONCLUSION AND RECOMMENDATION

In recent years, Thai Nguyen Provincial People's Committee, Department of Construction and Thai Nguyen provincial authorities have paid attention to the formulation and management of construction planning, contributing to promoting urban development, socio-economic development. Many programs and documents issued by the Provincial People's Committee manage urban development and attract investment resources for urban development have contributed to positively changing the face of urban areas in the province. The urban system of Thai Nguyen province has changed with many positives, especially the rapid, strong and in-depth development in the urban areas in the southern part of Thai Nguyen province, namely Thai Nguyen city, Song Cong town, and Thai Nguyen city. Pho Yen commune. Along with that, the rapid development of Dai Tu district with Hung Son town and Phu Binh district has advantages for development in the coming period. However, for the system of urban and rural areas in the northern districts of the province, there are still some limitations, the urban population size is still small, the urbanization rate is still low, the infrastructure is still limited. In addition, the urban system of Thai Nguyen province also faces challenges such as the uneven development of the urban system across regions, areas, limited infrastructure, planning work. building district areas in the districts is not timely and complete, it is required that in the coming years, appropriate solutions are needed to promote all potentials and advantages of the province. In order to overcome existing difficulties and overcome challenges in the process of urbanization, and at the same time strongly promote the process of urbanization in Thai Nguyen province in the coming time, a number of solutions are proposed as followings:

(1) Completing the system of mechanisms and policies. Developing a plan to complete the Urban Development Program in the province. Regularly inspect and urge investors to speed up the construction of industrial zones, clusters, commercial services, tourism, housing, etc. ensure planned targets. Reviewing and reform administrative procedures in the fields of investment, architectural planning, land management, construction permits and land use rights, etc. Strengthening coordination in urban development and management in the locality to comply with the provincial planning, the construction planning of the district, the general urban planning to ensure the urban development criteria, regulations and standards of the State.

(2) Solution for propaganda. Organizing propaganda and providing information to all classes of people, organizations and businesses in order to promote all resources of the community in urban and rural development.

(3) Solution on land. Regularly reviewing the planning of land use, in which, focusing on the land area for housing development, urban development, industrial projects, handicrafts, and commercial services, tourism, infrastructure, green space in urban areas, rural residential areas. Studying and supplementing the land fund reserved for the development of urban centers and rural residential areas in the province's annual land use planning and land use plan to ensure conformity with the population size and planning orientation. Socio-economic development of the province. Resolutely withdrawing or stop projects that have been delayed in implementation, have been allocated land but have not been used or have exceeded the time limit.

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prescribed by law.

(4) Solution on planning. Reviewing and adjusting urban and rural planning to suit development needs; publicize the planning, create favorable conditions for organizations and individuals to participate in investment in urban renovation, upgrading and development according to the planning. In the existing urban area and areas planned for urban development in the future, it is necessary to pay attention to synchronize with the system of technical and social infrastructure, and at the same time improve the quality of planning, contribute to creating landscape and architecture for sustainable urban and rural construction and development.

(5) Solutions on infrastructure. Proposing solutions to create capital to invest in the construction of technical and social infrastructure according to the planning, creating conditions for the formation of synchronous urban and residential development projects. Promote the way the State and people jointly invest in the construction of technical infrastructure such as pavements, trees, asphalt (or concrete) alleys, lighting systems in urban areas; concreting the rural transport system according to the planning. Exploiting land fund in places with favorable conditions to create capital to build synchronous urban infrastructure, create commercial land fund of high value to encourage investors to invest in housing and construction projects other production and business to serve the requirements of urban development. Continue to promote reform of administrative procedures to create favorable conditions for businesses to invest in building infrastructure and housing.

CONFLICT OF INTEREST
Authors declare that they do not have any conflict of interest.

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