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Conceptual Planning for Da Nang High-Tech Park

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Abstract: The DaNang High-Tech Park (DHTP) project was implemented in 2010 through the revision of the '2030 Urban Basic Plan for DaNang' and its importance has grown bigger as a case of the first high-tech industrial complex in the central region of Vietnam. The paper established the strategic adjustment of the master plan and design for the DHTP based on the strategic position and comparative advantages in the existing city for the successful DHTP.

Keywords: Concept; Planning; DaNang High-Tech Park.

1. Introduction

DaNang City plans to grow it as a core city in the central region of Vietnam with the population of 2.5 million by 2030 through the revision of '2030 Urban Basic Plan for DaNang'. The 'DaNang High-Tech Park (DHTP)', one of various plans revised by the basic plan, was implemented in 2010 to establish new urban infrastructure and environment to turn the infrastructure into cutting-edge and high value-added industries. The goal is to build an eco-friendly city balanced with production, technology research and development with cutting-edge technologies, academic and living complexes. The importance in the DHTP has grown for affecting the urban plan by expanding the city to the northeast region with cutting-edge industrial complexes and adding the industrial growth based on advanced industries.

The DHTP is the first advanced industrial complex in central Vietnam but the third complex following Hanoi and Ho Chi Minh. Such plans are precedence cases similar to the DHTP plan and there raise concerns that the DHTP plan may become similar to previous plans. Therefore, it is required to form the DHTP differentiated from the previous 2 industrial complexes.

The purpose of the study is to establish plans for the successful DHTP and secure the competitive edge of the DHTP through differentiated strategies from other industrial complexes. The paper

established the strategic adjustment of the master plan and design for the DHTP based on the strategic position and comparative advantages in the existing city to achieve this goal. The study compared major issues of DaNang to the existing plan on the advanced industrial complex to reconfigure the status and goal of the complex, prepare the foundation for the industrial complex based on found suggestions and configure the land use plan while considering local conditions. Then it set up the land use plan for each purpose based on such guideline.

Figure 1. (a) A general view of DHTP (b) Visions and Goals of DHTP.



2. Results and Discussion

2.1. Analysis of existing plan on the DaNang advanced industrial complex

The total planned area of the DaNang High-Tech Park is 1,232ha, 12 times and 4 times larger than Sangam Digital Media City and Seoul Digital Industrial Complex, respectively and the development in phase is more suitable for the complex land use and utilization than the packaged development. The complex consists of the functional area of 673.94ha and green belt of 455.82ha. Major functions in the former include the production, research, development, nurturing and incubator, administration and management, residence and urban and green areas. Among them, the production area takes the largest portion of 30.88%, followed by the research, development, nurturing and incubation area of 14.02%. Meanwhile, the administration, residence and logistics areas show low portion of 5% each. The average site ratio in representing Korean cities with similar conditions of DaNang including Sangam DMC and Daegu Innovative City shows that the supporting functional area takes the largest portion of 28.9%, followed by green area like parks of 24.4%. The industrial and R&D area marks 19.3% and higher than the residential area of 18.9%. It indicates that the site use ratio is improper due to poorly considering the environment for the good city like supporting facilities, green and open spaces compared to Korean cities with similar conditions.

In addition, the DaNang High-Tech Park plan shows poor connection with nearby areas, expected to sever ties with existing and new cities, have vague boundaries with existing road plans and focus on vehicles with poor consideration on pedestrians and public transport system.

Figure 2. A existing mater plan of DHTP.

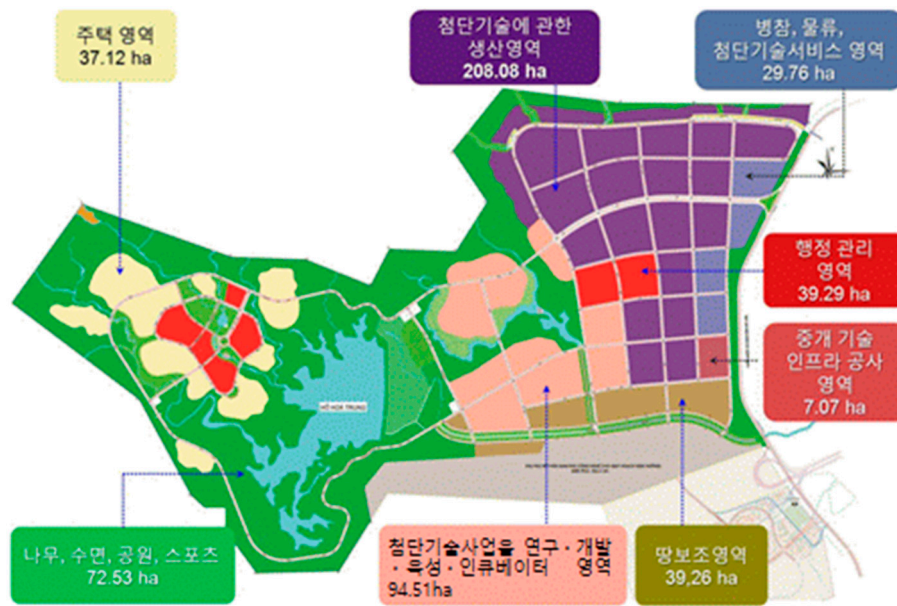


Figure 3. (a) The site ratio of existing DHTP's plan. (b) The site ratio of representing Korean cities's plan.

FUNCTION	Percent (%)	FUNCTION	Percent (%)
PRODUCTION	30.88	PRODUCTION,	19.3
RESEARCH	14.02	R&D, Innovative cluster	
Land for supporting industries	5.83	Commercial	3.8
ADMINISTRATION	5.83	HOUSING	18.9
HOUSING	5.51	Supporting facility	28.9
LOGISTIC & HI-TECH SERVIVE	4.42	Green area	24.4
INFRASTRUCTURE	1.05	Tourist accommodations	5.7
Green area, lake sports facilities	10.76	Reservation area	3.7
TOTAL	100	TOTAL	100

2.2. Direction in the land use for each purpose

The plan approached the adjustment and complement while keeping the existing DHTP plan as much as possible. It maintained the frame for already planned complex like arterial roads and lands and reflected opinions from DaNang to respond changes and demand for the city.

The basic direction is toward the complex land use plan with work, play and live while respecting existing plans. The study formed the urban ecosystem with free exchange and communication and set up the foundation for the flexible response to changes in the economy, society and culture by securing the diversity of scale for combining functions and configuring the possibility for the connection of private and public sectors.

1) Industry (Production and research)

The industrial production facilities (mechanics, computer/electronics) are placed outside to consider environmental impact for the future expansion and facilities like the mechatronics, precision machinery and IT are placed for the academic and R&D purposes as knowledge-intensive industries.

Research-based production facilities are basically located for connection with urban activities, universities and company HQs to form the knowledge industry ecosystem for the converged environment. The BT industry is located for the connection with hospitals and universities to cluster front and rear industries for mutual interaction and cooperation. The ET, E and GT industries are located for connection with universities for the research and technological development. The IT industry is located in the IT Park planned to be built in the southern part of the site for the mutual interaction and future expansion.

Figure 4. Land use planning of Industry.

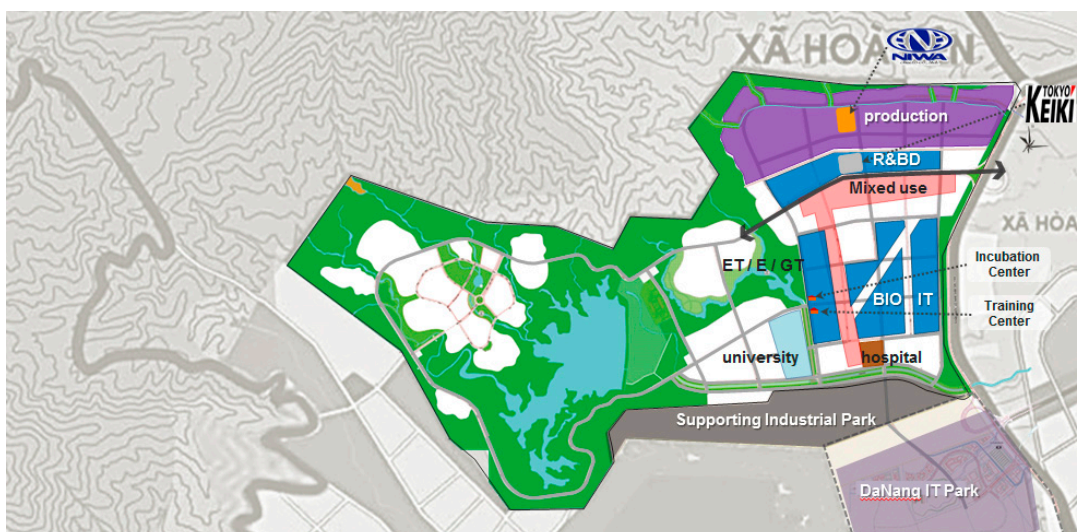
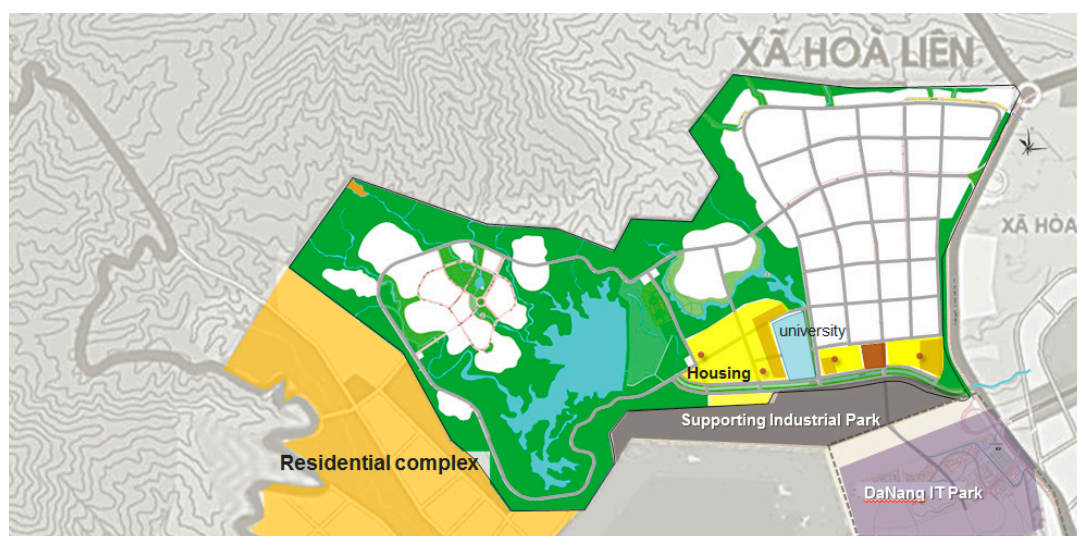


Figure 5. Land use planning of Housing.



2) *Residence*

The eco-friendly residential complex is formed harmonized with existing natural environment like watershed and greenery areas. The location is connected to the residential complex to be built in the southern part of the site for nearby universities and R&D centers for the mutual interaction and future expansion of various city functions. The pedestrian-centered zone is configured to form communities and residential environment with community facilities.

3) *Greenery*

The green network system connecting existing natural environment of the site is formed as a foundation for the eco-friendly green city. It connects major ecological hubs to build the living area with urban parks and rich forest. The urban green system is formed near from the living environment and the open space is planned in line with features of business, commercial and residential areas. Parks are connected to libraries and cultural facilities reflecting local features if required to form public facilities for supporting residents.

Figure 6. Land use planning of Green & Park.



4) *Supporting function*

Supporting facilities are required for safe and comfortable life for citizens and programs and spaces are planned in line with land use purpose for integrated and efficient land use. Universities are located considering the link to R&D and business facilities and to form the cooperation among facilities. Also, the universities are planned as the open campus to contribute to the local development and parks and libraries are built to provide rest areas for residents. Hospitals are planned as competitive landmark to contribute to creating the medical market for medical technology development and clinical application and sustainable development system is prepared through exchanges with nearby universities. Hotel, conference and entertainment facilities play a role as a landmark for major anchor facilities at the site gate, horizontally connect the site with the commercial facility and enforce major commercial functions.

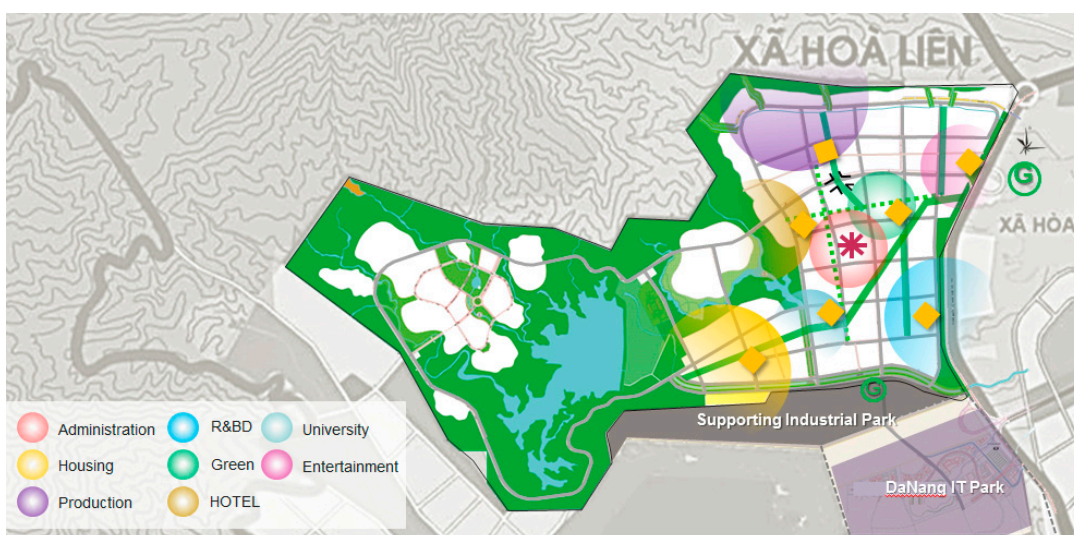
Figure 7. Land use planning of Support facility.



5) *Strategic hub facility*

The facilities lead the urban development of the DHTP and visualize the overall image of the city. Therefore, it shall be configured while considering possibility for connection with major facilities in the city. The hubs are planned to attract large-scale development and consider local conditions and industries to plan and consider the plan and project units in the development by phase. The public sector leads the development to lead the early vitalization of the city, upgrade the project reliability, to gradually increase the participation from the private sector and successfully build a new center for DaNang.

Figure 8. Major strategic points.



3. Conclusion

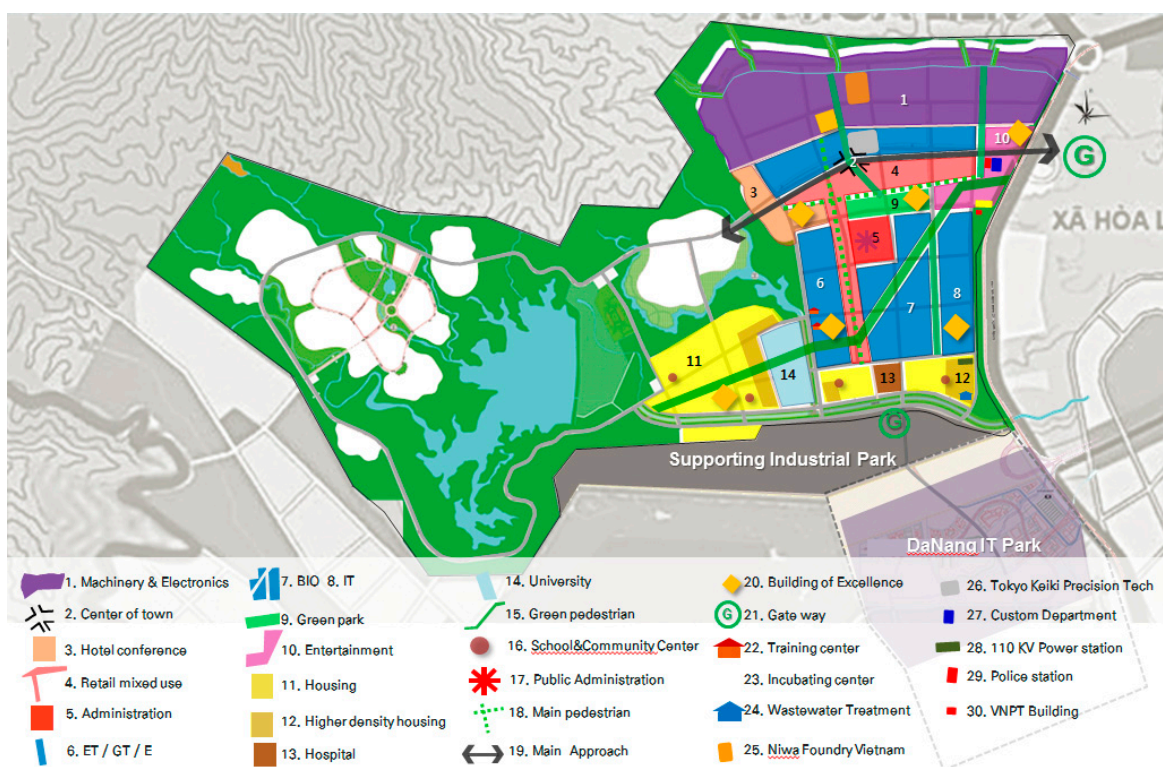
Recently, cities have planned strategic development to provide new values to the city itself, as well as a country and region to restore the competitive edge and quality of life for the city and the urban

development based on forming the cutting-edge industrial complex has been recognized as a new model for the strategic urban development.

The DHTP is the project based on forming the advanced industrial complex and its importance has been expanded in Vietnam. The plan sets up its basic direction of complex land use for work, play and live for the purpose of successful implementation of the DHTP and proposes directions for the industry, residence, green, supporting facilities and strategic hubs.

The study began as a part of the project through the 'Urban Basic Plan for DaNang 2030' and it would contribute to founding the ground for securing the competitive edge in Vietnam by establishing plans for successful implementation of the DHTP and strategies differentiated from other industrial complexes. In addition, the study would play a role in planning future foreign industrial complexes as a new model.

Figure 9. Conceptual proposal.



Acknowledgments

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Conflict of Interest

The authors declare no conflict of interest

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