

The groundbreaking strategic socio-economic development - Smart City planning: a case study of Binh Duong

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Abstract

After 20 years of successful transformation from an agricultural province to an industrial hub, in 2015, Binh Duong province - Vietnam started research on innovation strategies to continue to break out to a high-tech industry and service, raising socio-economic levels, and gradually laying the foundations for a knowledge and digital economy. This requires a comprehensive, synchronous, sustainable approach in development both socially and economically, not only in Binh Duong, but also in connection with its surroundings, promoting international cooperation, attracting resources for breakthroughs, and that aspiration has formed the Binh Duong Smart City project. With this goal, Binh Duong adopted a unique approach in developing a smart city that is suitable to the local context, adopting via the localization of the Eindhoven city model from The Netherlands.

The paper will analyze (A) Realities and aspirations of Binh Duong, (B) The development model of Eindhoven city that Binh Duong is learning from, (C) Binh Duong Smart City project, (D) Step by step planning, (E) Binh Duong's international repositioning.

Keywords: Smart city, Binh Duong, Triple Helix model, Eindhoven

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Current environment fluctuation and population growth in urban area emerge as a new urgent global issue, calling for innovative solutions to generate new and better work - life conditions for people everywhere. As a matter of fact, half of the world population is living in urban and sub-urban areas, and the urbanization continues to grow. One realistic solution for these urgent issues that recently shapes the global trend is gearing urban planning towards smart city - a place where modern strategies and technologies are adopted to improve people's living conditions. "Smart city" certification with various sets of criteria have been granted to many cities in developed countries, such as New York in the USA, Montreal in Canada, Suwon in Korea, Stockholm in Sweden, Bologna in Italy and so forth. Many governments also go so far as declaring smart city as their national strategy, such as the Netherlands, Singapore (with their smart nation program). The race towards smart cities is also witnessed amongst developing countries, where issues of growing population and degraded environment are becoming more and more daunting, for example, China and India. Vietnam is no exception. Acknowledging the impact of such trend, a number of localities in Vietnam such as Ha Noi, Quang Ninh, Da Nang, Ho Chi Minh city, Can Tho, and so on, took turns announcing their smart city projects, and the topic has received request for in-depth study from the country's top government leaders.

However, as for any other original issues or concepts, the smart city definition is still in debate since there are many approaches adopted by the cities. Smart city is commonly understood as an urban space that pioneers technology solutions, especially ICT, to solve its own problems to the satisfaction and demand of its people, giving way to a larger participatory approach in the whole community. Smart solutions should improve management efficiency a great deal in transport, education, healthcare, public administration, management of waste, water, power, and urban planning, etc. Nonetheless, besides success stories, bitter ends for smart city projects worldwide are not rare. These projects must overcome many setbacks, such as appropriate mobilization and allocation of resources so as not to fall in the dark pit of fragmentation, which sector to invest, which should be prioritized and which technology used. In many cases, the investment, construction, operation and maintenance of such technologies outweighs their benefits. However, hitting the sweet spot in investment would drastically lift up the whole society and economy.

That is the reason why cities worldwide tend to carefully deliberate step-by-step moves. One effective approach often seen in many prosperous cities around the world is paying great attention to, first, establishing a structured yet dynamic cooperative mechanism among stakeholders in a specific locality (e.g., industries, local government, local people, etc.) to leverage collective efforts and initiatives; then, based on the overall environment and local socio-economic conditions, setting up breakthrough goals together and implement them in tandem, with the ultimate focus on human, not on the technology per se for the shared common benefits. Binh Duong is an exemplary model of this approach in Vietnam, reflecting in the province's urban planning and socio-economic development strategies which are based on a careful study of challenges and opportunities together with the province's own potentials, aiming at a creative and flexible adoption of international models. This

article would provide a more detailed look at (A) Binh Duong's current situation and aspiration for the future, (B) Eindhoven's Development Model - Binh Duong's choice, (C) The creatively adjusted Eindhoven model in practice to meet Binh Duong's development demands and (D) The Initial Planning of Binh Duong Smart Region toward ICF standards, and (E) Binh Duong's international repositioning via Smart City strategy.

1. BINH DUONG: FROM CURRENT SITUATION TO THE TRANSFORMATION ASPIRATION

Twenty years ago, Binh Duong boldly undertook a series of breakthroughs with its industrialization strategy, bringing the southern province from a purely agricultural locality into a symbolic industrial hub of the country, with per capita income of 108.6 million VND. The share of agriculture sector declined from being the highest proportion of GRDP two decades ago to only 4.3% now, giving way to industry (63%), and services (23.5%) (2016). With a clear vision and determination of the province's leadership, in the past twenty years, Binh Duong has fearlessly taken the lead in Public-Private Partnership and international collaboration; gradually developed several arterial roadway axis (such as Binh Duong Boulevard, My Phuoc-Tan Van Expressway) and industrial parks that meet international standards (Vietnam-Singapore Industrial Park VSIP, My Phuoc). The province ranked second in the country's foreign direct investment attraction, accounting for 9.4% of total foreign direct investment capital, and has become the third largest domestic total revenue in the country (2016). With an open and transparent business environment, Binh Duong came fourth in the provincial competitiveness (2016 Provincial Competitiveness Index announced by Vietnam Chamber of Commerce and Industry), and for many years, has continuously kept its annual GRDP growth rate of 9% - 15%. Many urban areas are built to meet the demand of the increase of population and businesses. The 4196 ha Binh Duong Urban Service and Industry Complex with Binh Duong New City at its heart is a relevant example of this development.

However, besides these achievements, Binh Duong province is also facing new challenges. The province's economy still relies on traditional production, low value added products, and labor-intensive industries. For instance, Taiwan's investment in Binh Duong by the end of 2015 was US \$5 billion, accounting for 20.8% of the total foreign direct investment (FDI) of the province, but most of the invested industries were ones that had low value added such as wood processing, textiles. High annual GRDP growth might demonstrate the prosperity of the province, but this also led to higher prices and labor costs, reducing its competitive advantage in the low-cost processing industries. Traditional production has prompted a rapid increase in the province's population, but mainly low-skilled laborers, giving ways to many social problems. In addition, the potential problem of environmental pollution caused by processing plants also needs to be addressed and prevented.

To thoroughly solve the said challenges, Binh Duong needs to transform its economy that relies on traditional production to a higher value added economy, focusing on high-tech industries that are less labor-intensive, as well as to upgrade the scale and quality of its core urban areas. However, this

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new development direction requires new development methods. A Deloitte's research has shown that when high-tech enterprises seeking investment destination, they place cost competitiveness second but put the quality of human resources at the forefront (Deloitte 2016). In addition, other criteria such as workforce productivity, supplier network, regulatory system, education, infrastructure system, public health, innovation policy, and energy policy, etc. are also especially important.

Located in the Vietnam Southern Key Economic Zone, Binh Duong has the initial advantages to prepare for this direction. In 2016, the province was home to nearly 30,000 enterprises with more than 3,000 foreign direct investments, most of which were manufacturing plants located in the 10,560 ha within the 28 Industrial Parks (approved by the government to 14,790 ha by 2020), as well as large scale and synchronous infrastructure. Especially, Binh Duong is located in the high literacy area of the country. As of 2016, the province had 8 universities, 7 vocational colleges and 16 vocational schools, 45 vocational centers and there were about 100 other universities and colleges within a 2 hours drive radius. In addition, other social and political factors in the country and the world also opened up great opportunities for an industrial province like Binh Duong. Vietnam with political stability, "prime population" and the leading number of Free Trade Agreements in the world, along with other countries in the region like Malaysia, India, Thailand and Indonesia (MITI-V countries), has become a hot spot in the global transformation of production. Meanwhile, there have been a lot of new development models around the world that have been affirmed as the waves of the century such as the fourth industrial revolution, the birth of numerous smart cities (as strategy of many countries and territories such as Singapore, Taiwan, the Netherlands...). These models pose great difficulties for countries with low technology starting point, but at the same time implies an excellent opportunity for development.

Confronted with fundamental challenges and presented with potentials and opportunities of the era, leveraging on Binh Duong's solid foundation of international relations, the provincial leaders and Becamex corporation - one of the leading Vietnamese developers in industrial parks, infrastructure and urban area - decided to study successful cases around the world. They have especially been interested by the development model of Eindhoven city of The Netherlands, in using the smart city strategy as an inspiration. The Triple Helix concept, which is built on the nexus between government - industries - universities (academic institutes), is the basis of this strategic project. The idea is to have the parties share knowledge, aspirations, and hence work together to develop the region's socio-economy. Following an analysis of potentials and similarities of the two provinces, Binh Duong and Eindhoven city have established a partnership and on March 28th 2016, launched the project of Binh Duong Smart City with the Triple Helix concept at its heart. The strategic project aims to lay the foundation for the first service and high tech manufacturing industry and a smart urban-oriented planning before 2021, entailing advancement to a knowledge economy.

2. EINDHOVEN'S DEVELOPMENT MODEL

In the late 1990s, Eindhoven, an industrial city in the Netherlands, was hit hard by a serious economic crisis that left a great number of corporates and companies (Philips, DAF, etc.) struggling and even going bankrupt. The city's unemployment rate was over 25%. Almost all its people shared the same concern regarding the city's paramount hurdles, namely, quickly increasing employment and product value creation, pushing investment in education and research, and – as the poor coordination at local-levels had put its social values under great pressure – reconnecting the local authorities and businesses for long-term strategies.

At that critical moment, the City Mayor, together with the President of Eindhoven's Chamber of Commerce and the President of Eindhoven University of Technology, made a pivotal decision: a new value-creation strategy that advocate a nexus among state administration, academia and businesses, big and small alike, entitled the "Triple Helix".

Among megacities in the Netherlands, Amsterdam has the famous Schiphol airport, and Rotterdam has one of the world's largest and busiest seaports. These two ports have been the gold mines for those cities ever since. Eindhoven has yet to find its own gold mines rather than ports, an aspiration in the making: a figurative "port" of knowledge and wisdom, science research, and high-tech production to be assembled with the Triple Helix at its core. In 2004, the Brainport Program was developed to form a new super-area of Brainport Eindhoven consisting of the city itself and twenty adjacent municipalities. The program was led by (the then newly-established) Brainport Development and aimed at supporting the area to improve its supply chain management and increase the local businesses' value added on one hand, and encouraging the universities' investment in the "human capital" on the other hand.

Thanks to the initiative, Brainport Eindhoven survived the crisis and rose to be one of leading high-tech R&D centers in Europe. Its massive success was remarkably lauded in the Fortune as "The next Silicon Valley could well be in Eindhoven". Besides, Eindhoven's economic growth has proved sustainable with high living standard for its people. The city deservedly earned the title of "the world's smartest region" by the ICF (Intelligent Community Forum) in 2011.

3. BINH DUONG SMART CITY PROJECT: A GROUNDBREAKING STRATEGY

Based on Eindhoven's model and the above goals, Binh Duong adopts its own approach to smart city, which deviates from the common view that smart cities only mean leveraging technology to solve social issues. In Binh Duong's view, smart city is a dynamic, creative and well-connected ecosystem in which all of its actors are constantly being improved, innovated and optimized.

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Based on the 5 breakthrough programs of Binh Duong Party Committee in 2016-2020, Binh Duong Smart City project aims at attracting various domestic and foreign resources, creating new economic values of the 21st century both regionally and globally, focusing on people and knowledge, and using “Smart” cooperation with a focus on the Triple Helix collaboration model to develop a dynamic, innovative and flexible economy that is adaptive to changes of the world.

3.1 Triple Helix model:

Theoretically speaking, the concept of Triple Helix was first introduced by two scholars - Henry Etzkowitz and Loet Leydesdorff in the mid 1990s, and soon adopted by several cities, including the city of Eindhoven in the Netherlands.

Learning from Eindhoven experience, Binh Duong uses the Triple Helix as a model to strengthen and officially recognize the collaboration between local government, businesses and academia, and its flexible linkages with other regions. In this relationship, the government plays the leading role, while businesses and the academia have supporting roles in line with their expertise. This model allows many parties to join and create a shared and long-term vision, appropriate strategies and action plans to promote dynamic development and innovation in Binh Duong. Though officially recognized, the Triple Helix collaboration is still highly flexible and voluntary as in the context of global economy, there will be less focus on fixed organization or hierarchical structure. All stakeholders in the Triple Helix contribute to the joint agenda by sharing their specific interests, knowledge, ideas, and vision on future development. In return, they can join in specific projects, which will help their own organizations to gain a higher competitive position within the region and outside. It means that all partners still have their own independence and responsibilities. Triple Helix Collaboration Model will support each partner to make better decisions that are more suitable to the environment and link them to the joint objectives.

Within the scope of Binh Duong Smart City Project, the Steering Committee, the Operational Committee, the Triple Helix Advisory Board and the Binh Duong Smart City Office have been established with participation from the top provincial officials to guide and run the whole project. The Committees, the Board and the projects are executed on the basis of Triple Helix collaboration and its established international connection, especially with its development partner - city of Eindhoven. Special attention shall be paid to the governance, transparency and sharing of data and information. Participants can change over time and even vary by each project.

3.2 Binh Duong Navigator:

All goals and detail guidance for Binh Duong Smart City Project are presented in the Binh Duong Navigator 2021 – Binh Duong’s Breakthrough Program 2021 with a vision to 2030 (with reference to the Decision 3206 approved by Binh Duong Provincial People’s Committee dated November 21, 2016) This document sets the joint perspective, development directions, arrangements and commitments for specific concrete action programs to further develop Binh Duong from an important part of the Southern Vietnam Key Economic Zone to a Smart City and a leading technological and economic world-class region for innovation, high-tech manufacturing and services.

It is important to emphasize that the Navigator is a joint effort with contributions from many stakeholders in the Triple Helix from different domains, all led by provincial leaders. The program will evolve over time and can be updated regularly. Concrete actions will be appropriately adjusted for different situations, based on the overall shared-vision of the project. The document includes 46 concrete actions which are organized under 14 programs and divided into 4 domains: “people”, “technology”, “business”, “basics”.

People: People are the focus of this project. Central to the ‘People’ domain are labor force and their working capacity, cooperation skills, education, job skills, and the ‘fit’ between people and work. The long-term goal is for Binh Duong to become a competitive global player in attracting, training, developing, and retaining science and engineering talents that drive innovation and economic growth. Empirical study centers/maker spaces (TechLab, FabLab, MakerSpace), which will be developed in Binh Duong, are where facilities are always available and shared between the institutes and businesses to enable students, startups, and small and medium enterprises to create and develop new ideas. This objective is backed by good education infrastructure and dynamic and cooperative working environment which can be formed thanks to solid finance system. As a result, the province will be able to possess talented and efficient labor force.

Technology: Projects in the ‘Technology’ domain aim to attract and strengthen R&D activities, encourage innovation, collaboration and knowledge transfer, connect new technology to key business sectors and daily life and put it into practice at Living Lab to facilitate research activities and improve people’s living standards. In acknowledgement of this domain, local government will take the lead in this effort, providing special supports, and collecting buy-in from local and regional educational and business organizations. In the long-term, Binh Duong needs a solid knowledge base to serve more advanced manufacturing companies. In the future, R&D facilities sponsored by private and public entities will serve not only Binh Duong province but also the Southern Key Economic Zone and stakeholders will work together to enhance competitiveness in manufacturing. Binh Duong can create a better future for their people and their businesses, by using technology as a social-economic driver.

Business: The main objective of projects in the “Business” domain is to strengthen existing business and generate new business. Binh Duong has a great advantage of a large number of high-quality manufacturing companies occupying large-scale industrial parks. The province will continue working towards a business database and portal related to regional supply chains, and developing supporting industry, Sci-Tech industrial parks, and business incubators based on international models. In the future, Binh Duong aims to create an innovative entrepreneurial ecosystem and a supply chain network with solid, capable suppliers ready to integrate and attract high-tech foreign investors.

Basics: The ‘Basics’ domain focuses on the preconditions for a strong region. Good infrastructure, a well-respected brand, a favorable business climate, a pleasant and attractive living environment, a distinctive culture, sports and recreation facilities, and ICT broadband are some examples of the ‘Basics’ domain. Binh Duong pays very close attention to building strategic internal and trans-provincial transport infrastructures, logistic centers, ICD (Inland Container Depot) as well as building broadband ICT infrastructure, ensuring stable power supply for advanced manufacturing. The long-term goal is for Binh Duong to be known globally, not only as a comfortable place to live and work, but especially as a Smart Region of dynamism and innovation, and to become a member of the Intelligent Community Forum (ICF) - a network of 160 smart cities around the world, before 2021.

A well-planned development road map towards a Smart City will strongly attract foreign technological investors, local and international dynamic young people and intellectuals. The Triple Helix collaboration model as adopted by Eindhoven with a focus on people instead of technology will help Binh Duong create a vibrant environment, encouraging universities, businesses and the international communities to join hands in developing smart ideas, solutions and business models that benefits all stakeholders. Besides, Binh Duong also has a step-by-step development roadmap to avoid fragmentation of resources, starting from projects that can leverage the economy and well-planned urban areas in strategic location then upscaling to the whole province.

4. BINH DUONG SMART REGION: STEP-BY-STEP PLANNING

The entire smart region of Brainport Eindhoven has witnessed the application of a vast number of ideas, especially non-technological strategies like Triple Helix. Additionally, Brainport still regards Eindhoven as the central area where resources are gathered and initiatives are tested in the early stages, so that the branding of Eindhoven in the world can be improved, and thereafter its twenty neighboring municipalities may enjoy similar development.

In a similar vein, Binh Duong Province creates a region called Binh Duong Smart Region, selected based on the international criteria by the Intelligent Community Forum (ICF). The region is a collection of municipalities, and key areas for educational and research institutions and industries. Thanks to full support from Eindhoven, Binh Duong Smart Region will be the center development to fulfill the above criteria and become an official member of ICF prior to 2021, hence, establishing the collaboration with more than 160 thriving smart regions in the rest of the forum, and following new global trends in development. Earning the title will establish an international reputation for Binh Duong, generating trust amongst investors and businesses, increasing foreign investment dramatically, and attracting universities, research institutes all across the world, and knowledge workers. This is the experience from the success of Eindhoven. The satisfaction of ICF’s criteria for award-winning purposes may also enable Binh Duong to align its development with high-tech economy.

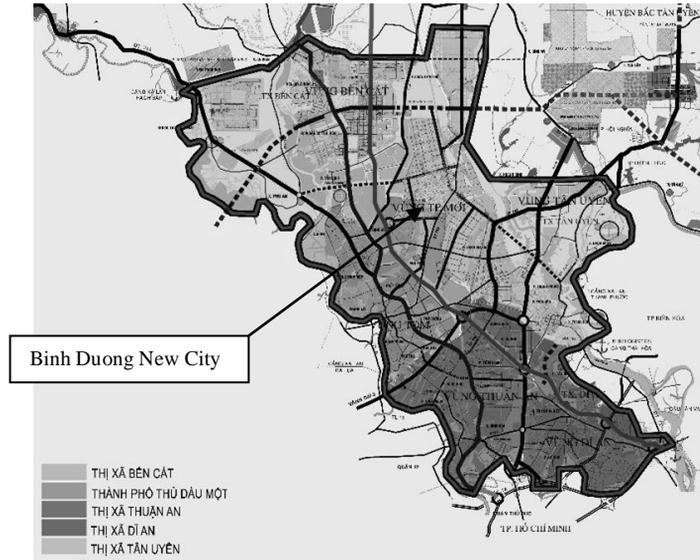


Fig 1: Binh Duong Smart Region (area in bold line)

Source: Decision 3206/QĐ-UBND, Nov 21 2016, of People’s Committee of Binh Duong province, Vietnam

The province also devotes to transforming Binh Duong New City, the nucleus of Binh Duong smart region and the province as a whole, into an epitome of new development strategies, and a Living Lab for novel ideas. This should lay a solid foundation for the large-scale application in the smart region, and then Binh Duong province, and possibly the neighboring countries.

10 years ago, Binh Duong New City came into existence and was equipped in such a way to provide an attractive modern environment for work and live, to which knowledge workers and experts gravitate. The planning focuses upon enabling environment to the growth of high-technology industry and opportunities for start-ups. The city also emphasizes on education and research by preparing modern infrastructure for institutes and universities. Assuming a connective role, the city offers liaison among the people, local authorities, institutes, universities, and companies in a center that links municipalities, industrial zones, and services in the region. On a larger scale, the transport system has been designed to connect the city with provinces in the key economic region, especially with Ho Chi Minh City by dint of a public transport system, and in the future, a subway system.

5. BINH DUONG’S INTERNATIONAL REPOSITIONING:

Binh Duong Smart City Project has achieved fundamental outcomes, reflected in a huge number of new ideas and specific projects actively implemented by local units, at different scales, from new city to the province entirely. The project significantly contributes to the socio-economic development of Binh Duong, generating a breakthrough in integration, international partnership expansion and engagement of investors, and gradually re-positioning Binh Duong internationally.

The adopted Triple Helix model proves to be flexible, adaptive, transparent and effective, not

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only on the overall scale but also in the mode of operating specific projects. Year 2018 marked an important milestone when Binh Duong officially joined the World Technopolis Association (WTA), and alongside with UNESCO, WTA and Daejeon City (Korea) successfully held the 20th anniversary of WTA, and the Global Innovation Forum in the New City. On Nov 25-26th 2018, Binh Duong again successfully hosted the Horasis Asia Meeting 2018. These two important international events have brought Binh Duong more than 50 conferences on global trends and visions, with the presence of 20 mayors, presidents of cities and provinces all over the world, 30 university rectors and about 1000 leaders of enterprises from more than 60 countries, enhancing Binh Duong's international reputation and brought in many new partners. Particularly, on Oct 25th 2018, during a ceremony in Canada and from headquarter in New York (USA), the ICF named 21 cities from 10 countries in 6 continents which had the most typical city smart development strategies for 2019 (Smart21) including Binh Duong smart region, along with globally reputed cities such as Chicago (USA), Moscow (Russia), Taoyuan (Taiwan) ect. Binh Duong also became a member of ICF, opening up tremendous cooperation opportunities for the province. The above awards are considered a badge of honor internationally, a trust in investors and businesses to attract foreign investment, knowledge workers, and research institutions in the world, at the same time laying premises for the development of future high-tech production and services.

To recapitulate, since the smart city-oriented planning and construction requires a long-term strategy and is strewn with a variety of difficulties, a careful deliberation on the socio-economic situation of the locality is necessary, and an appropriate roadmap needs to be defined so that fundamental breakthroughs are possible. Given its potential in industry, the infrastructure and new cities are designed in accordance with international standards, rather than starting at each and every small component of the smart city, such as traffic control, water control, e-government, and so forth, Binh Duong chose to establish a strategic cooperation with Eindhoven city from Netherlands, adopting their Triple Helix model, which involves collaboration between government, academia and industry, in order to bring about a comprehensive development, a gradual shift in the economy to high technology manufacturing and knowledge-based service, an increase in value added and a progressive construction of a smart city to create a better life for people. With a foolproof cooperative mechanism within Binh Duong province, crucial international collaborations, and unanimity of the province, many government bodies and agencies have been committed to proposing and simultaneously implementing specific projects, based on Binh Duong Navigator – a strategic program for Binh Duong socio-economic breakthroughs by 2021, with the vision to 2030. The proposal takes an open approach, so that lessons can be learned, discussions made, and willingness seen in welcoming opinions from domestic and foreign leaders and experts, thereby, promoting cooperation with partners around the world, soon forming an original, vibrant and innovative Binh Duong ecosystem to benefit people and businesses alike.

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