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### Benefits and Difficulties When Developing Green Industrial Parks in Vietnam

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#### Abstract

Vietnam is at the gateway of development with much potential to reach further in the world map. However, developing Vietnam's industrial parks needs to look at lessons from other countries in the region and around the world to avoid falling into the same trap and consider green factors as a necessary condition for development. industrial area. Currently, there are many industrial real estate developers focusing on environmental factors. When traditional "input" factors such as cheap labor and abundant resources are no longer strengths, Vietnam is accelerating adjustment and re-planning of industrial parks towards greening and economic development. Circular economy, attracting high-tech industries, etc. to bring about higher and more sustainable economic

efficiency. First, the green model will help businesses control and maintain technical systems in industrial parks. The trend of developing sustainable industrial parks or green industrial parks is becoming clearer than ever. This is an inevitable development trend of the industry and a competitive advantage for industrial park developers that meet the above standards. This article aims to achieve three specific goals: (i) Systematize the theoretical basis of green industrial parks; (ii) Assess benefits and difficulties in implementing green industrial park development; (iii) Propose some recommendations to promote the development of green industrial parks in the future.

**Keywords:** Industrial Park, Green Industrial Park, Benefit, Hard

#### 1. Introduction

Currently, developing industrial parks towards green, environmentally friendly growth is a general trend for sustainable development. More and more industrial real estate developers are focusing on 'greening' industrial parks. For example, Shinec's plan to develop a network of eco-industrial parks with 10 CO<sub>2</sub>-neutral industrial parks and clusters by 2025<sup>[1]</sup>. In fact, many businesses and foreign investors investing in Vietnam today pay close attention to the fact that Vietnam has green raw materials, green energy, renewable energy, etc. to serve friendly production. Environmental and sustainable? Vietnam is at the gateway to development and has greater potential on the world map. However, Vietnam needs to learn lessons from countries in the region and around the world to avoid repeating similar mistakes. Vietnam should consider "green" factors as a necessary condition for developing industrial parks. Currently, all companies listed on the Vietnam stock exchange must report on environmental, social and governance (ESG) annually. This requirement requires companies to disclose their energy efficiency, human rights measurements, and labor policies of their human resources. At the same time, the industrial park is shifting, prioritizing investment in "cleaner" production and high-tech sectors. These are industrial parks with high added value. In addition, the government has introduced policies to encourage investment and use of renewable and alternative energy sources such as wind energy and solar energy. Economic experts believe that high-quality foreign investment flows play a very important role in greening the country's economy. On the other hand, the consumption trends of countries with developed economies in the world today have changed. They are not only interested in product design and quality but also in environmentally friendly products. school. Therefore, developing green industrial parks has also become an important factor for Vietnam to attract investment competition.

Compared to conventional industrial parks, green industrial parks are very different. Built in a cost-effective and environmentally friendly way. Specifically, increasing green space and using recyclable materials. Above all, the focus here is on using available energy sources (sun, water, wind). At the same time, reasonably develop other natural resources. Limit the use of toxic chemicals (fertilizers, pesticides, etc.) during work<sup>[3]</sup>.

The use of new technology has improved the ability to collect and treat waste compared to before. Centrally treated wastewater can be used for daily activities (watering, road cleaning). The second is to reduce emissions, significantly contributing to protecting the surrounding environment. The benefits are reducing environmental pollution and reducing the consequences of climate change.

The existence of green industrial parks helps businesses gain a lot of economic benefits. Optimizing raw material usage and shortening production and distribution processes can help reduce production costs. This has forced the company to come up with plans to reduce product costs to improve competitiveness with other businesses. On the other hand, it also ensures cleaner production and sustainable operation according to green industry standards. Helps facilitate business development domestically and worldwide. Green industrial park with many trees and factories planned according to industry, bringing many values to businesses. Green-clean-beautiful production environment ensures product quality and worker health. The factory is located in a valuable green industrial park, the factory's brand will be enhanced and win the trust of customers and partners. With the benefits it brings to businesses and the economy, it is necessary to develop industrial parks in the direction of green industrial parks.

## 2. Overview of Green Industrial Parks

Green industrial park is an environmentally friendly industrial park, an industry that produces environmentally friendly products and helps make the natural conditions of the environment better. Throughout the production process, green industrial parks help minimize negative impacts on the environment.

In addition, green industrial parks also include the reuse of waste, energy waste, economical and efficient use of energy and other natural resources (minerals, natural wood,...), limit the use of toxic chemicals (fertilizers, pesticides, food preservatives,...) overcome and control environmental pollution through the use of advanced technology.

Green industrial parks will focus on the following 4 main groups [2]:

- + Green products
- + New and renewable energy (low CO<sub>2</sub> emissions)
- + Green service
- + Sustainable environment.

The green industrial park model was formed with the aim of being environmentally friendly in its efforts to help reduce waste and pollution, effectively sharing resources (information, materials, water, energy, machinery, etc.), infrastructure and natural resources), and contribute to the realization of green industry. Specifically, the green industrial park model will be built on a large area of land, with a closed scale and process, environmentally friendly and financially sustainable.

Vietnam divides green building standards mainly into 4 types, including:

- LEED (US Green Building Council): LEED is issued by the US Green Building Council, established in 1995 in the US, and is a certificate issued to green buildings that meet standards, use clean energy, and utilize energy. local resources and less CO<sub>2</sub> emissions.
- LOTUS (Vietnam Green Building Council): issued by Vietnam Green Building Council (VGBC). This is the first green building criteria system developed specifically for the construction market in Vietnam. Unlike other certifications that emphasize mechanical and electrical solutions, LOTUS focuses on encouraging architectural solutions that "follow" nature or passive design in addressing health and comfort goals for people. use.
- BCA GREEN MARK (Singapore Green Building

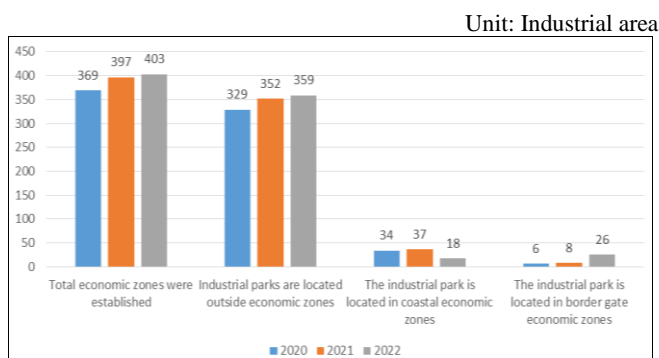
Council): issued by the Singapore Ministry of Construction (BCA - Building and Construction Authority) since 2005 to develop the Singapore construction industry towards sustainable goals. In addition to the green building criteria system structure similar to other certifications, according to BCA, Green Mark has been adjusted to suit tropical climates. The certification will have 3 levels: Gold, Gold Plus and Platinum depending on the scale the project achieves.

- EDGE (IFC International Finance Corporation - a member of the World Bank Group): is a certification that evaluates projects that use resources effectively, helping to save energy, water and energy used for production. Exporting construction materials, thereby helping to reduce greenhouse gas emissions. EDGE certification focuses on solving financial and environmental problems, so that projects achieve two parallel goals: economic efficiency and efficient energy use.

Currently, the trend of developing green industry in the world will focus on the main goal: pushing emissions from industrial parks and export processing zones to zero and developing new environmentally friendly energy sources. school.

## 3. Benefits and Limitations When Developing Green Industrial Parks in Vietnam

### 3.1 Number of Industrial Parks Established and Put Into Operation in the Period 2020-2022



Source: Ministry of Planning and Investment, 2020, 2021, 2022 [6]

Fig 1: Number of industrial parks established in the period 2020-2022

The number of industrial parks tends to increase over the years, in which industrial parks located outside economic zones account for the highest proportion and industrial parks located in border gate economic zones account for the smallest proportion.

2020: According to the Report of the Ministry of Planning and Investment, by the end of 2020, there were 369 industrial parks established nationwide (including 329 industrial parks outside economic zones, 34 industrial parks located in coastal economic zones, 06 industrial zones located in border gate economic zones) with a total natural land area of about 114 thousand hectares. Of which, the industrial land area is about 73.6 thousand hectares, accounting for about 59.3% of the natural land area.

Of the 369 established industrial parks mentioned above, there are 284 industrial parks in operation with a total natural land area of about 85 thousand hectares, an industrial land area of about 57.1 thousand hectares and 85 industrial

parks. The industry is under basic construction with a total natural land area of about 29 thousand hectares, industrial land area of about 16.5 thousand hectares. The total area of leased industrial land in industrial parks reached 42.2 thousand hectares, reaching an occupancy rate of 57.4% of industrial parks. Only industrial parks have completed site clearance work. and when put into operation, the occupancy rate is about 70.2%. Industrial parks across the country have created jobs for about 3.83 million direct workers. Industrial parks were established in 61 provinces and cities, mainly concentrated in key economic regions to promote the advantages of geographical location and economic development potential of the regions. Specifically, the Red River Delta and the Southeast region currently have a total of 207 industrial parks with a total natural land area of about 70.5 thousand hectares, industrial land area of about 47.2 thousand hectares, accounting for 56.1% in quantity, 61.9% in natural land area and 64.2% in industrial land area compared to the whole country.

In 2021, there will be 397 industrial parks established, including 352 industrial parks located outside economic zones, 37 industrial parks located in coastal economic zones, 8 industrial parks located in border gate economic zones, with a total natural land area of about 122,900 hectares. Of these, 291 industrial parks have been put into operation, with an occupancy rate of 71%, approximately compared to the end of 2020.

By 2022, 403 industrial parks, 18 coastal economic zones and 26 border gate economic zones have been established. FDI capital in industrial parks accounts for about 35 - 40% of the total registered FDI capital increase of the country in recent years. Especially in the field of processing and manufacturing, FDI capital in industrial parks accounts for 70 - 80% of the total registered capital of the country. Currently, the localities with the most operating industrial parks are: Dong Nai, Binh Duong, Ho Chi Minh City, Long An and Bac Ninh. Dong Nai is currently the province with the most operating industrial parks in the country, with 31 industrial parks. Therefore, industrial parks have truly become key areas attracting investment capital and large projects at home and abroad. Currently, the industrial park is the destination of many leading corporations such as Samsung, Canon, LG.

### **3.2 Trends in Industrial Park Development in Vietnam**

Vietnam is entering a new phase, requiring comprehensive and strong innovation to become a developed and modern country, overcoming the middle-income trap, avoiding falling behind other countries in the region. area. This poses a requirement to continue to innovate and further improve institutions and policies and adjust goals and orientations for the development of industrial parks and economic zones to adapt to the new context, contributing to the implementation of industrial parks and economic zones. National development strategy<sup>[5]</sup>.

On May 28, 2022, the Government issued Decree 35/2022 ND-CP "Regulations on Management of Economic Zones and Industrial Parks" setting out "construction directions and plans for developing the industrial park system", economic sector; infrastructure investment, establishment, operation, development policies and state management of industrial parks and economic zones". The Decree has oriented the construction of economic zones, industrial zones, industrial - urban-service zones, eco-industrial zones, reducing energy

consumption, limiting greenhouse gas emissions, focusing on social responsibility. Association and managed according to the digital government model.

Eco-industrial park is a "community" of manufacturing and service enterprises operating with the goal of protecting the environment. Simply put, this is an industrial park model consisting of member businesses cooperating with each other to improve comprehensive economic and social efficiency by well managing issues related to natural resources and the environment school.

Currently, this development model is an effective solution to build green industrial parks, eliminate waste and minimize environmental impacts. Developing industrial parks according to the current ecological model is no longer a recommended solution but has become a mandatory issue if businesses want to be more effective in attracting investment, especially investors foreign investment.

However, building an eco-industrial park will cost more than traditional industrial parks. Eco-industrial parks must meet 8 criteria: 1) Infrastructure must comply with the law and protect the environment and labor, 2) Infrastructure must have full basic services, 3) Use of natural resources efficient and clean production, 4) Having a reasonable land area to grow trees, 5) Industrial symbiosis, 6) Building social works for workers, 7) Having a monitoring mechanism, environmental protection management and 8) Implement environmental protection report publication.

### **3.3 Benefits of Green Industrial Park Development**

First, to avoid system congestion due to overload, operators in industrial parks often require businesses to share their production processes and input materials. From there, the investor can evaluate the suitability of that manufacturing industry in the industrial park

The presence of green industrial parks helps businesses benefit economically. Optimal use of raw materials, production and distribution processes are shortened, reducing production costs. Leading to the company launching a plan to reduce product costs, increasing competitiveness with other businesses. On the other hand, it also ensures clean production and sustainable operation according to green industry standards. Help promote domestic business development and reach out to the world.

Second, a clean and modern industrial park is one of the options to attract high-quality labor. Many businesses are paying more attention to synchronously developing internal infrastructure and improving the working environment to retain workers. Investing in a waste treatment system and "greening" the landscape of the industrial park will help improve the quality of life in the project.

Green industrial park with many trees and factories planned according to industry brings a lot of value to businesses. Green - clean - beautiful production environment ensures product quality and workers' health. This is also the factor that convinces foreign experts to come and work in Vietnam.

Third, the green industrial park model brings benefits to many sides. From the tenant's perspective, a factory with a "green" certificate will help meet the Government's requirements and sustainable development goals. Therefore, projects that meet environmental standards are of interest to many investors. This will be a competitive advantage for real estate developers that are able to meet strict conditions later.

Fourth, environmental protection: Compared to conventional industrial parks, green industrial parks are truly different. Built in a cost-effective and environmentally friendly way. Specifically, increasing green area and using recyclable materials. Above all, here the focus is on using available energy (sun, water, wind). At the same time, rationally exploit other natural resources. Limit the use of toxic chemicals (fertilizers, pesticides,...) during work. The use of new technology increases the ability to collect and treat waste compared to before. Centrally treated wastewater can be used in daily activities (watering plants, cleaning roads). Next, reducing emissions contributes significantly to protecting the surrounding environment. The benefit is to reduce the consequences of environmental pollution and climate change<sup>[4]</sup>.

### 3.4 Difficulties in Developing Green Industrial Parks

Besides the benefits from developing the green industrial park model, there are certain limitations for businesses to implement<sup>[4]</sup>:

*Financial potential is not strong enough:* Investing in green industrial parks "there is no other way than having financial potential" to build infrastructure, ensure integration of workers' lives, and create jobs. jobs based on the solution of linking agriculture with industry.

*Lack of financial incentive policies for eco-industrial parks:* such as tax exemption, reduction, land rent, priority credit loans... to encourage businesses to self-convert and build new industrial parks ecological industry, green industry. According to analysts, the major challenges of green industry development policy in Vietnam are awareness, capacity, and institutions. Vietnam has initially formed an institutional framework towards green industry such as legal framework, incentive policies, system of norms and standards, responsible agencies and related organizations. However, the financial challenge for green industrial park development in Vietnam today is limited budget resources to implement the green industrial park development strategy, and businesses have difficulty finding capital.

*Awareness of the green economy is still new:* In Vietnam today, awareness and understanding of what a green economy or green industrial park is is still a new issue. Vietnam still maintains a high industrial growth rate but total factor productivity remains low, reflecting low labor productivity and inefficient use of technology, capital, raw materials and energy.

*Outdated technology:* In particular, currently old and outdated technologies and equipment are still being used in many energy-intensive fields such as power generation, steel, cement and chemicals, causing huge waste of raw materials.

*Not synchronized:* Developing green industrial parks will help Vietnam save energy inputs and raw materials, increase efficiency, reduce fuel imports, and at the same time reduce the trade deficit burden on the economy, creating Many new jobs contribute to hunger eradication and poverty reduction and ensure a sustainable environment for future generations. However, although Vietnam has a policy of moving towards green industrial parks with low energy consumption and minimizing production that causes environmental pollution, the implementation is still small and not synchronized.

Vietnamese businesses invest very little in research and technological innovation, only about 0.2% - 0.3% of total revenue. Economical and efficient use of energy and raw

materials on a large scale has not yet become a reality, and environmentally friendly industries and environmental service industries have not yet been developed.

*Increased competition and emissions generation:* Furthermore, industrial businesses and products have low competitiveness compared to other countries in the region, and industry continues to emit a lot of untreated waste. into the environment, exacerbating pollution and environmental degradation.

### 4. Solutions for Developing Green Industrial Parks

Faced with the above difficulties and challenges, to develop green industrial parks, the following solutions need to be implemented:

First, the Government has a key role in developing the policy system during the early stages of the process. Cooperation between the Government, research organizations and the private sector is necessary to enhance the competitiveness of the industry. Besides, there needs to be a multi-sectoral approach and solution in institutionalization and coordination of green industry policies; regional approach, strengthening regional links to develop green industry; Green industry needs a reasonable policy framework and a specific, feasible implementation roadmap...

Second, localities need to require infrastructure investors and businesses in industrial parks to strictly comply with environmental laws, including planting trees. Therefore, planting and protecting trees in today's working environment is becoming a need and responsibility of every company. According to the National Technical Regulations on construction planning, industrial parks and industrial clusters must reserve at least 10% of their land area for greenery, and businesses operating in industrial parks must reserve at least 20% of their area. green land. This regulation aims to reduce the concrete area, reduce the greenhouse effect and aim to create an ecological landscape to serve the purpose of sustainable industrial development.

Due to the nature of being a production place for many types of products, an unavoidable amount of dust and odors will arise in the industrial park. However, if you plant many trees, it will limit the spread of dust. When encountering leaves, dust particles are blocked and cannot move far to other plants. Through research, many experts believe that even lawns contribute to reducing air pollution. A well-developed green lawn can help absorb carbon dioxide and produce oxygen.

Third, manufacturing business owners need to prioritize the selection and development of green industrial parks in the direction of green and clean factories in green industrial parks. This is considered a measure of the reputation and brand of a business.

Green and clean factories in green industrial parks help create a green-clean-beautiful production environment, help products achieve high quality, and create prestige with business partners, customers and inspection partners. According to experience, businesses will be highly appreciated when they have green industrial park factories. Businesses need to invest and choose a wastewater treatment system. This causes stagnation and pollutes the water source. People around the industrial park have difficulty using domestic water sources. Therefore, for a green and clean factory, a wastewater treatment system is very important. Besides, the water supply and drainage



system also needs careful investment. The reason is that industrial parks often use machines, vehicles and factories that emit a lot of waste: solid, liquid and gas. Therefore, green and clean factories in green industrial parks need to control and treat the amount of waste discharged into the environment.

## 5. Conclusion

Localities have proposed many solutions, requiring infrastructure investors and businesses in industrial parks to strictly comply with environmental laws, including planting trees. Therefore, planting and protecting trees in today's working environment is becoming a need and responsibility of every company. Through research, many experts believe that even lawns contribute to reducing air pollution. A well-developed green lawn can help absorb carbon dioxide and produce oxygen. Therefore, developing green industrial parks brings practical benefits to businesses and the economy.

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