







# THE SECOND INTERNATIONAL CONFERENCE ON SCIENTIFIC, ECONOMIC AND SOCIAL ISSUES

# DIGITAL TRANSFORMATION, COOPERATION AND GLOBAL INTEGRATION IN THE NEW NORMAL



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# INDUSTRIAL AND HUMAN RESOURCES FORM THE FOUNDATION FOR BINH DUONG'S SUSTAINABLE ECONOMIC DEVELOPMENT

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### Abstract

After 25 years since its re-establishment (1997-2023), Binh Duong province has experienced numerous positive transformations and achieved significant successes in its socio-economic development. The global complications caused by the Covid-19 pandemic in 2020 and 2021 posed challenges to the recovery of the global economy, including that of Vietnam and Binh Duong province. However, thanks to the collective efforts of the entire political system, the Covid-19 epidemic situation in the province has been effectively contained, leading to a swift restoration of normalcy in social life, production, and business activities. The development momentum has been steered towards security and adaptability, reaffirming Binh Duong's status as a scientifically advanced and environmentally conscious industrial province. This article draws on secondary documents, including the Party's guidelines and policies, annual reports summarizing the socio-economic situation, and the results of the Binh Duong statistical yearbook for the years 1997-2022, to analyze the significant achievements in the local economic development in the past and to provide directions for harnessing the province's human resources in the coming years.

**Keywords:** Binh Duong, industry, human resources, economy, development

#### 1. Introduction

The Fourth Industrial Revolution is advancing rapidly, impacting all aspects of socioeconomic life. This influence enables countries to develop more prosperously, fostering swift connections and integration. However, it also brings challenges, including unemployment, employment concerns, and inequality among target groups in society. Machines and artificial intelligence pose a threat not only to the jobs of low-skilled workers but also to highly skilled workers who lack new, creative skills in line with the developments of the Fourth Industrial Revolution.

Binh Duong, a province in the Southeast region, plays a vital role in the main economic region of the South. It was separated from Song Be province in 1997 (Government, 1997). Covering a natural area of 2,694.43 km2 (approximately 0.83 percent of the country's total area and around 12 percent of the Southeast region's area), the province has a population of 2,455,865 and consists of nine district-level administrative units, including Thu Dau Mot city, Thuan An city, Di An city, Tan Uyen city, Ben Cat town, and the districts of Bau Bang, Bac Tan Uyen, Dau Tieng, and Phu Giao. Binh Duong ranks third in terms of gross domestic product (GRDP) in 2019, third in terms of GRDP per capita, and eighth in terms of GRDP growth rate (Binh Duong Provincial Statistics Office, 2020). By 2022, Binh Duong's GRDP is projected to increase by 8.29%, total retail sales of products and services by 16.8%, and total social development investment by 12.8%.

Despite facing difficulties due to global market fluctuations, the province achieved an export turnover of 35.7 billion US dollars in 2022, representing an increase of nearly 9 percent from 2021 (VOV, 2022). Binh Duong has creatively applied the Party's guidelines and principles to local practices, viewing industry and human resources as the foundation for the province's development towards a digital and knowledge-based economy, to meet the evolving needs of people and businesses. However, with the growing demands of the global economy, Binh Duong must continue to promote human resource development to meet labor market demands and facilitate integration.

#### 2. Literature Review

Industrial development plays a pivotal role in propelling economic growth and transforming Binh Duong into a modern economic powerhouse. Nguyen and Nguyen (2020) highlight that the establishment of industrial zones and the attraction of foreign direct investment have significantly contributed to the province's gross domestic product (GDP) growth. This process of industrialization not only spurs production and exports but also stimulates other sectors, including transportation, services, and technology.

Le et al. (2018) underscore the importance of industrial clusters in enhancing regional competitiveness and fostering sustainable economic development. By fostering collaboration and specialization among firms within the same industry, industrial clusters in Binh Duong facilitate knowledge spillovers, drive innovation, and improve supply chain efficiency.

The development of a skilled and adaptable workforce is critical for sustainable industrialization. Tran et al. (2019) emphasizes the significance of investing in human capital through education and vocational training programs. A skilled labor force enhances productivity, attracts more foreign investment, and promotes technological advancement.

However, there are challenges in developing a high-quality workforce in Binh Duong, as identified by Hoang (2021). These challenges include a skills mismatch between graduates and industry demands, limited access to advanced training programs, and inadequate incentives to retain skilled workers. Addressing these issues is vital for the sustainable economic development of the province.

The relationship between industrialization and human resource development is mutually reinforcing. As reported by Vu et al. (2017), a thriving industrial sector generates employment opportunities, attracting a diverse pool of talent to the region. Concurrently, a well-educated and skilled workforce enhances the competitiveness and productivity of industries, leading to sustainable economic growth.

These studies demonstrate that industrial and human resources serve as the foundation for Binh Duong's sustainable economic development. The province's success in attracting industrial investments, fostering industrial clusters, and investing in human capital has significantly contributed to its remarkable economic progress. However, addressing challenges related to human resource development is crucial to ensuring the continued sustainability of Binh Duong's economic growth. By integrating industrial and human resource strategies, the province can bolster its position as a regional economic powerhouse and achieve long-term prosperity.

#### 3. Main findings

#### 3.1 Human Resources Situation in Binh Duong Province

Starting as a "pure agricultural" province with low economic development, Binh Duong has taken significant steps to establish industrial zones and clusters in line with the Central Government's industrialization and modernization policy. The Party committees and provincial authorities have implemented various programs and plans to develop human capital. Since its re-establishment in 1997,

Binh Duong's population has reached 679 thousand, with a population density of 252 inhabitants per square kilometer. To ensure an adequate workforce for industrial development, the Provincial Party Committee and People's Committee of Binh Duong have introduced mechanisms and policies to attract human resources from other provinces and cities to settle and work in industrial zones. The province's focus is on providing equal access to social security services such as healthcare, education, and insurance, attracting 80-90% of non-provincial employees to work in industrial parks within Binh Duong.

Since 2011, the Binh Duong Provincial Party Committee has implemented the program "Improving the Quality of Human Resources for the Period 2011-2015," aiming to enhance human resources to meet social demands, contribute to the transformation of the economic development model, and enhance the province's competitive advantage. Vocational training for employees is highly encouraged, with over 30,000 individuals graduating from vocational training institutions annually, contributing to the province's trained worker rate of more than 70% (Nhan Dan, 2023).

Despite challenges posed by global changes and complex developments, particularly during the outbreak of the Covid-19 pandemic in 2020, the socioeconomic development of Binh Duong province has been quite successful. Between 2016 and 2020, the economy expanded by 9.04%, and the economic structure continued to shift in the right direction. In 2020, the GRDP per capita reached 151 million VND. The industrial production index steadily increased each year from 2016 to 2019, with growth rates of 9.2%, 9.8%, 9.8%, and 9.9%, respectively. In 2020, the index was affected by the Covid-19 epidemic and recorded an 8.0% increase. On average, the annual industrial production index rose by 9.33%.

Table 1: Annual employment of workers aged 15 and older by occupation and employment

status in Binh Duong province, 2016-2020

Year	2016	2020
Leaders	10,742 (0.7%)	11,752 (0.7%)
Advanced technical expertise	63,885 (4.6%)	82,204 (5%)
Intermediate technical expertise	54,654 (3.9%)	75,524 (4.6%)
Staff	65,788 (4.7%)	105,684 (6.4%)
Personal service, sales protection	229,497 (16.4%)	260,571 (15.8%)
Occupations in agriculture, forestry and fishery	66,764 (4.7%)	43,656 (2.6%)
Craftsmen and other related workers	323,345 (23.1%)	356,893 (21.7%)
Assembler and operator of machinery and equipment	383,537 (27.4%)	500,868 (30.5%)
Simple job	194,568 (13.9%)	203,136 (12.3%)
Other	2,178 (0.2%)	1,802 (0.1%)
Total quantity of workers	1,394,958	1,642,090

According to the data table above, the proportion of workers with leadership roles and high-level technical expertise is relatively low in 2020, at 0.7% and 5%, respectively. Notably, compared to five years ago, the percentage of workers in these two categories has not changed significantly, with the group of highly specialized and technically skilled workers increasing only marginally from 4.6% in 2016 to 5% in 2020. The majority of employees in Binh Duong are machine operators, machine assemblers, and personal service providers. This labor structure indicates that despite being a typical industrialized locale, Binh Duong's economy still heavily relies on labor-intensive sectors, employing primarily low-cost labor and simple job occupations, which make up 80.3% of the province's total workforce.

As part of Binh Duong's industrialization, modernization, and development orientation, the labor structure has shown changes over the years. The percentage of workers engaged in agriculture, forestry, and fishing has decreased from 11.07% in 2011 to 6.90% in 2015, and further to 5.20% in 2020. In contrast, the proportion of industrial and construction workers increased from 65.36% in 2011 to 68.70% in 2015, and then further to 70.60% of the total workforce in 2020. Additionally, the service sector also experienced growth, with the proportion of employees increasing from 65.36% in 2011 to 70.60% in 2020.

As of April 1, 2019, 23.23% of employees aged 15 and older in Binh Duong had received formal education and obtained degrees or certificates, compared to the national average of 23.1%. Compared to April 1, 2009, the percentage of workers aged 15 and older with degrees and certificates increased by 11.48 percentage points, while the proportion of workers without degrees and certificates decreased by 11.48 percentage points. Specifically, the percentage of workers with primary qualifications increased from 4.27% on April 1, 2009, to 13.4% on April 1, 2019. Similarly, the labor force with a bachelor's degree increased from 1.17% to 2.14%, and the percentage of workers with a master's degree or higher increased from 2.74% to 5.64% (Binh Duong Statistical Department, 2020).

Regarding vocational training, Binh Duong province currently operates 100 vocational education institutions, providing opportunities for approximately 30,000 students to enroll in courses at various levels, including college, intermediate, elementary, and vocational courses lasting less than 3 months (Vietnamnet, 2022). These vocational education institutions play a crucial role in training and enhancing the professional qualifications of the local workforce.

Thanks to these training programs, the percentage of locally trained workers is expected to increase to 80.5%. This indicates that a larger proportion of workers will have the chance to acquire professional and practical skills, making them well-prepared to participate in the modern labor market.

Furthermore, around 30% of trained workers will receive diplomas and certificates, which will help validate and demonstrate their qualifications and professional skills. This becomes a significant factor in greatly improving the employment opportunities and income levels of those who participate in vocational training programs.

Overall, the investment and development of vocational education institutions in Binh Duong are actively contributing to the enhancement and diversification of the local workforce, thereby fostering sustainable economic and industrial development in the future.

# 3.2. Improving the Quality of Human Resources - Efforts of the Party Committee and Authorities in Binh Duong Province

The efforts to enhance the quality of human resources in Binh Duong province have been undertaken by the provincial Party Committee and government through various programs and initiatives to support industrialization and integration into the global economy. Since 2016, the Provincial Party Committee issued Program No. 20-CTr/TU, focusing on improving the quality of leadership, management, scientific and technical personnel, and the labor force. The Provincial People's Committee has also issued several specific plans and projects, such as the Plan to Ensure the Human Resources for the Education and Training Sector (2016-2020), the Plan for Training and Development of Commune-level Civil Servants and Non-professional Officials at Commune Level (2017-2020), and the Plan to Ensure Skilled Labor Supply to Meet the Requirements of Enterprises in Binh Duong Province (2018-2025), among others.

Educational institutions within the province have also made progress in collaborating with universities both domestically and internationally, such as the Vietnamese-German University and the Eastern International University, as well as universities in countries like Japan, South Korea, the United States, Singapore, Taiwan, and Malaysia. Regular activities, including faculty and student exchange, joint training programs, research cooperation, and technology transfer, have been carried out, ensuring a well-trained workforce to meet the province's development needs.

However, there are still some challenges in enhancing the quality of human resources in Binh Duong, such as the mismatch between graduates' skills and the demands of enterprises, limited access to advanced training programs, and difficulties in retaining highly skilled labor. To maintain sustainable development, the province needs to address these challenges by reviewing, revising, and implementing policies and regulations related to the program of improving the quality of human resources. Policies for attracting and supporting training, development, particularly for students studying medicine and pharmacy with specific destination usage, need to be made more concrete and effective. The recruitment process for certain professions at some vocational colleges and intermediate schools still falls short of meeting targets, and the quality of training for some professions remains inadequate. Some vocational education institutions lack practical facilities, unified standard curricula, and well-trained faculty, resulting in a significant number of graduates unable to meet the requirements of businesses, both in terms of professional skills and communication, including foreign languages

### 3.3 Industry Situation in Binh Duong Province

To promote rapid and sustainable development in its industrial sector, especially in response to the influx of investment shifting to Vietnam and the expanding production trends of investors within industrial zones, as well as the booming Fourth Industrial Revolution, Binh Duong province is actively focusing on building a smart city. This development is primarily geared towards attracting both domestic and foreign investments in high-tech industries. The province has introduced various policies to entice high-tech enterprises, concentrating on developing industrial zones that emphasize scientific and technological advancements. This approach aims to create industrial-technological urban areas to attract all types of businesses, particularly small and medium-sized enterprises (SMEs) and startups in high-value-added and environmentally friendly industries with low labor intensity. Emphasis is placed on innovating modern and advanced technologies to enhance the quality of products, thus boosting competitiveness in international economic integration.

Binh Duong has closely collaborated with the World Technopolis Association (WTA) and large enterprises to learn from successful city models around the world, such as Singapore, Daejeon in South Korea, and Eindhoven in the Netherlands. Furthermore, the industrial zones in the province actively connect with educational institutions and businesses to enhance research, scientific experimentation, and long-term training of high-quality human resources. In addition to this, Binh Duong has established the Public Administrative Center, adopting the "one-stop-shop" principle to simplify administrative procedures and implement solutions to improve the Efficiency of Provincial Governance and Public Administration Index.

With a series of these policies, the overall socio-economic development of Binh Duong province, especially in the industrial sector, has achieved encouraging results. Despite facing difficulties and challenges due to the Covid-19 pandemic in 2021, there are still many bright spots in the province's economic and social landscape. According to the report by Binh Duong Provincial People's Committee on December 3, 2021, the industrial sector continues to play a significant role in the province's economic structure, accounting for 67.91% of the overall economy. The proportion of industries, services, agriculture, and tax on products minus subsidies is 21.31%, 3.1%, and 7.67%, respectively (compared to the planned percentages of 65.1%, 23.73%, 3.17%, and 8.0%). (Binh Duong Gov, 2022)

In 2021, industrial production experienced fluctuations and remained stable during the first six months. The estimated industrial production index for 2021 increased by 4.5% compared to the previous year (in 2020, it increased by 8.02%, and the target was set to increase by 9.2%). Key sectors like manufacturing and processing increased by 5.3%, electricity and gas production and distribution increased

by 2.8%, water supply increased by 1.3%, and mining decreased by 35.7%. The industrial development strategy is deeply tied to the value chain of multinational corporations. The internal structure of the sector is undergoing a positive shift, reducing labor-intensive and assembly-oriented industries, and enhancing the application of science and technology.

Table 2: Industrial production index of Binh Duong province, period 2011-2021

Index of Industrial Production (IIP)	2011	2015	2020	2021
Total IIP	112.9	109.3	108.02	104.51
In there:				
Manufacturing and processing industry	112.4	109.4	107.96	105.33
Some processing and manufacturing industries:				
Food production and processing		106.3	105.6	101.73
Weaving		112.1	101	102.43
Production of costumes		102.5	103	101.14
Manufacture of prefabricated metal products (except machinery and equipment)		105	108.7	125.46
Manufacture of electronic products, computers and optical products		110.2	117.14	99.87
Manufacture of electrical equipment		120.9	108.66	88.81
Manufacture of beds, cabinets, tables and chairs		102	114.59	107.06
Other processing and manufacturing industries		104	117.36	107.27

Regarding industrial zones, according to the report from the Binh Duong Industrial Zones Management Board in 2022, the total investment in infrastructure construction for industrial zones reached over 19,122 billion VND, accounting for 50.3% of the approved investment. There are 19 enterprises of various economic components participating in the construction and business of industrial zone infrastructure, including 1 state-owned joint-stock company, 2 joint ventures, 11 joint-stock companies, 4 limited liability companies, and 1 private enterprise. In 2021, the total investment in infrastructure construction reached nearly 5.7 trillion VND, with 160 hectares of leased land attracting 1.7 billion USD in foreign investment (accounting for 82% of the province's total) and 3.1 trillion VND in domestic investment. The enterprises in the industrial zones disbursed 2.1 billion USD, with a revenue of 35.1 billion USD and an export value of 20.9 billion USD. Becamex IDC Corporation, as a key player, is responsible for managing five major industrial zones in the area, including My Phuoc 1,2,3, Thoi Hoa, and Bau Bang. Moreover, Becamex also collaborated with Sembcorp Industries (Singapore) to establish the Vietnam-Singapore Industrial Parks (VSIP 1, 2, 3),... All operating industrial zones in Binh Duong have relatively modern and synchronized technical infrastructure to meet investors' requirements. Additionally, they have constructed 31 centralized wastewater treatment plants, reaching 100% capacity, with a total design capacity of 172,200 m3/day and night. Notably, Dong An 1, My Phuoc, and My Phuoc 3 industrial zones have multiple centralized wastewater treatment plants (Binh Duong Provincial Statistics Office, 2022).

In recent years, to achieve sustainable and in-depth industrial development, Binh Duong has actively supported the development of support industries, aiming to increase the value of industrial products produced by domestic enterprises and integrate the local industry into the global value chain. Currently, there are 2,277 production and business enterprises related to support industries in the province, including 442 textile and garment enterprises, 172 leather and footwear enterprises, 593 wood processing enterprises, and 710 mechanical enterprises, ... Among them, Bau Bang Industrial Zone, covering over 1,000 hectares, has attracted many support industry projects from large global corporations. A prime example is the

investment of 1 billion USD by the Kolon Group (South Korea) to establish a factory for producing automotive airbags and tires on an area of 42 hectares, supplying materials for the automotive manufacturing sector. Furthermore, in the Vietnam-Singapore Industrial Park 2-A, Tetra Pak Binh Duong Joint Stock Company (Singapore) invested in a specialized factory for producing sterile packaging made of paper, plastic, and aluminum for food packaging. The registered investment capital for this project was 124 million USD.

The robust development of the industrial sector has contributed to Binh Duong ranking second nationwide in attracting foreign direct investment, second only to Ho Chi Minh City. The province currently has 29 industrial zones covering an area of 10,963 hectares, with an 88.13% occupancy rate, as well as 12 industrial clusters with a total area of 790 hectares and a 67.4% occupancy rate. In terms of domestic investment, there are over 53,000 registered businesses with a total registered capital of over 515,000 billion VND, along with over 4,000 active foreign-invested projects with a total registered capital of 37 billion USD. The average GRDP per capita for Binh Duong province in 2022 reached 166 million VND (Binh Duong Provincial Statistics Office, 2022).

#### 4. Suggestions and recommendations

Bình Durong has adopted an industrial-focused strategy as the foundation for sustainable economic development. To achieve this, the province aims to prioritize the development of a high-quality workforce. In the short term, an effective solution is to attract and utilize skilled labor currently studying and working abroad. However, this has mainly been done by private enterprises and corporations. Market mechanisms also pose challenges in labor market competition. Government employees desire stable incomes and appropriate rewards, but the current salary and allowances in the public sector may not fully meet their increasing demands, especially among those with expertise in science and technology.

Meanwhile, the private sector and foreign businesses offer attractive employment opportunities and better treatment, especially for high-quality and technology-savvy talents. To address these issues, Binh Duong has issued Program No. 20-CTr/TU to enhance the quality of human resources, especially for leaders, managers, scientific and technical personnel, and laborers, meeting the province's development requirements in the new period. Additionally, it is essential to build reasonable incentive policies in terms of salary, bonuses, allowances, and non-material benefits to attract and retain high-quality talent in the public sector. To ensure the workforce's adaptability to the Fourth Industrial Revolution, the education and training system must focus on providing cutting-edge knowledge and skills, such as IoT, AI, and robotics. Moreover, collaboration with world-leading organizations and institutions can further enhance the competence of public officials and civil servants. Encouraging young talents in the public sector to participate actively in technology-related long-term training programs through financial support and scholarships is crucial.

Furthermore, improving the working environment and conditions for employees in the public sector is vital. Adequate allocation of the state budget is necessary to create a favorable working environment for public officials with qualifications and capabilities that match the digital transformation process. It is essential to allow them to dedicate their talent and effort and to enjoy the fruits of their creative labor, commensurate with the value they contribute. Compared to other countries like South Korea, China, and even Cambodia, which have effective policies in attracting and retaining talents with competitive income levels, the working environment and conditions in Binh Duong need improvement. Many officials and units still lack full trust and autonomy in personnel matters and professional activities.

To develop a highly competent and professionally skilled workforce of officials and civil servants, Binh Duong needs to focus on building reasonable mechanisms, policies, and welfare systems. Key points to consider are:

High-quality human resources play a decisive role in economic and social development. This resource is not finite and can be developed and effectively utilized through training and development.

omprehensive and fundamental innovation in the education and training system is essential to enhance the quality of human resources, particularly high-quality human resources. Training should focus on the capacities and qualities of learners, integrating theory with practice and aligning with social demands.

Ensuring the effectiveness of planning, managing, and utilizing high-quality human resources is necessary to unleash the creativity and productivity of these individuals. Thoughtful planning and management mechanisms should be in place.

Attracting and employing officials and civil servants based on their qualifications, capabilities, and values is crucial. The working environment should be innovative and modern, and salary policies and benefits should be commensurate with dedication and job responsibilities.

#### 5. Conclusion

Binh Duong holds a strategically important geographic position as a province within the Southern Key Economic Region, adjacent to Ho Chi Minh City - the economic, financial, industrial, and technological hub of Vietnam. This advantageous location and potential have attracted increasing foreign investment and facilitated access to the international market. The province's educational quality, especially at the tertiary and post-graduate levels, is approaching international standards.

Binh Duong possesses the potential to develop a high-quality workforce to serve the overall industrialization and modernization of the country, as well as the specific development of Binh Duong itself. Though there are still some limitations, the process of developing a high-quality workforce in Binh Duong from 1997 to 2021 has fostered connections with other key provinces and cities in the South. It has laid the foundation for the province to enhance its capacity for cooperation and international integration, embracing advanced scientific and technological knowledge.

A high-quality workforce comprises skilled and technically competent laborers capable of creatively applying the knowledge and skills gained through training to achieve high labor productivity and efficiency. The development of a high-quality workforce in Binh Duong will deeply impact production and business activities, acting as a driving force for the province's industrialization and modernization.

Beyond favorable geographical location and infrastructure, the policies to attract and train a high-quality workforce will make Binh Duong a magnet for talent from other regions, contributing to a youthful and abundant labor pool. This is an opportunity and a prerequisite to transform Binh Duong into a region with sustainable industrial development in the coming period.

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