

Strategies for the Regional Development of Jeollanam-do through Marine Specialization: Developing Human Capital and International Student Policies

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Abstract

This proposes strategies for the regional development of Jeollanam-do through marine specialization. Jeollanam-do boasts an abundance of islands and marine resources, with agriculture and fisheries being the primary industries. However, rapid population decline and urbanization threaten the sustainability of its development. By analyzing the 5th National Comprehensive Territorial Plan and Jeollanam-do's 4th Comprehensive Plan, this research derives sustainable development strategies to leverage the region's unique resources. Emphasizing the pivotal role of local universities such as Mokpo National University, it discusses how revitalization of island- and marine-centered industries and tourism can be achieved through regional talent cultivation and development. It further highlights the necessity of fostering talent, enhancing research and development capabilities, attracting domestic and international students, expanding cooperation between local universities and industries, and utilizing historical and cultural resources. In conclusion, it is anticipated that marine specialization strategies reflecting Jeollanam-do's unique characteristics will contribute to balanced regional development and sustainability.

Keywords

Jeollanam-do

Human capital

Marine specialization

Local university

Regional development

1. Introduction

Jeollanam-do is a province in South Korea that extends across the western and southern coasts of the Korean Peninsula. With its distinctive natural environment, agriculture and fisheries have historically been the main industries. In 2024, the province continues to have the country's largest share of the population working in those industries (Statistics Korea, 2024). Jeollanam-do also has the largest number of islands and the most extensive tidal flat areas of all provinces in

South Korea. This includes the Dadohaehaesang National Park and the UNESCO World Natural Heritage Site that is comprised of multiple tidal flats spread across Shinan County, Boseong County, and Suncheon City.

Since the early 1970s, South Korea has drawn up a series of so-called National Comprehensive Territorial Plans that set out policies and guidelines for the long-term development of its regions and the country as a whole. In simple terms, these plans aim to balance industries and populations regionally and achieve long-term sustainable growth nationally. They define the framework within which regional governments ought to work out their localized development strategies so as to ensure these strategies are in line with national objectives. Thus far, the country has seen five of such plans, implying that at present the 5th National Comprehensive Territorial Plan is in effect.

After the Japanese colonial period (lasting until 1945) and the Korean War (1950–1953), South-Korea was one of the poorest countries in the world. However, since then it has managed to rise up the ranks and establish itself among the developed countries. Whereas for many other countries natural resources form the primary basis of development, South-Korea largely lacks natural resources. The country's rapid economic development is often said to have been mainly due to its people (i.e., "human capital"). Strong educational aspirations laid the foundation for its human capital-driven development at a national level (Charles, 2023; Filho *et al.*, 2019).

However, South Korea is facing significant challenges due to rapid population decline due to low birth rates and population imbalance as a result of urbanization. Labor-intensive industries, such as agriculture and fisheries, struggle with workforce shortages as younger generations migrate from rural areas to urban areas, in particular the metropolitan area of the capital Seoul. Consequently, these industries increasingly rely on seasonal foreign workers to meet labor demands during peak periods. Furthermore, the outflow of regional talent – driven by the fierce competition regarding access to the highest ranked institution for higher education possible – exacerbates the issue, with few graduates returning to their home regions. Local universities, which have a crucial role to play in supplying human capital, increasing local income, expanding educational opportunities, and improving regional image (Nauta *et al.*, 2015; Park, 2011), face mounting challenges. Thus, collaboration between regional governments and universities has become indispensable for achieving sustainable development of regions (Kisman and Tasar, 2014) like Jeollanam-do.

This paper explores strategies for the regional development of Jeollanam-do by means of marine specialization and related talent development, leveraging its key assets—its islands and seas—to address population decline and ensure sustainable development.

2. Sustainable development plan for Jeollanam-do through marine specialization

The National Comprehensive Territorial Plan is South Korea's highest-level spatial planning framework, established under the National Land Planning and Utilization Act and the Constitution. Since 1972, these plans have been formulated in approximately 10- to 20-year cycles to present long-term development directions. Table 1 provides an overview of the five plans to date. Based on the most recent national plan, regional governments have the task to create localized strategies that align with national objectives and to ensure effective implementation.

The first to fourth National Comprehensive Territorial Plans primarily focused on land-based development, limiting the concept of national territory to the Korean Peninsula's mainland. This focus remained the same despite the occasional revisions that took place under the influence of election cycles. However, the fourth plan underwent a revision in 2011

that introduced a significant paradigm shift by recognizing marine areas as part of national territory, thus expanding the scope of spatial planning to include the seas. This change marked a turning point, incorporating marine resources and industries into the nation's developmental priorities.

Table 1. Overview of the National Comprehensive Territorial Plans in South Korea*

Plan	Background	Vision and Goals	Strategies and Key Policies
1st Comprehensive Plan	(1972–1981) Expansion of national power	Promote industrialization	Efficient land use, development of resources, infrastructure expansion, and environmental preservation.
2nd Comprehensive Plan	(1982–1991) Mitigate capital concentration	Improve living conditions, decentralize population	Formation of multi-nuclear regional structures and development of backward regions.
3rd Comprehensive Plan	(1992–2001) Overcome limitations in social overhead capital	Sustainable and balanced development	High-speed exchange networks, enhance environmental investments, and support inter-Korean exchange.
4th Comprehensive Plan	(2000–2020) Respond to 21st-century challenges	Realize a balanced and sustainable nation	Promote green growth, improve national and regional competitiveness, and strengthen inter-Korean cooperation.
5th Comprehensive Plan	(2021–2040) Address demographic decline and uneven development	Achieve regional and national balance	Build smart and safe living spaces, foster cultural and environmental sustainability.

*Organized and edited data from the Ministry of Land, Infrastructure and Transport (<https://www.molit.go.kr>)

The 5th National Comprehensive Territorial Plan (2021–2040) identifies and envisions Jeollanam-do as a "future-oriented hub for advanced industries and a global center for island and marine tourism in the Southern Coast Era." Reflecting this vision, Jeollanam-do formulated its 4th Comprehensive Plan (2021–2040), aligning it with the national plan as outlined in Table 2.

Table 2. Alignment of Jeollanam-do's Regional Plan (4th Comprehensive Plan) with the National Plan (5th National Comprehensive Territorial Plan)

Strategic goals specified for Jeollanam-do		Implementation goals for Jeollanam-do
5 th National Plan	4 th Regional Plan	
Promote advanced industries through the Blue Economy	Transition to green-digital industries	Establish a new mobility and energy ecosystem, and upgrade key industries.
Develop a global tourism hub focused on islands and marine areas	Establish a unique tourism identity using Jeollanam-do's cultural and historical resources	Enhance "glocal" tourism belts and foster attractive tourist destinations.*
Enhance livability and vitality	Provide tailored regional spaces and improve basic rights	Strengthen social overhead capital and sustainable management.
Strengthen connectivity and infrastructure for Northeast Asia	Develop sustainable ecosystems and landscapes	Promote cultural and environmentally friendly regional identities.

* "Glocal" is a combination of the words "global" and "local". It refers to the concept of "thinking globally while acting locally", emphasizing the importance of being aware of global trends and influences while addressing and respecting local needs and contexts.

Jeollanam-do has developed its regional plan in line with the four strategic goals set for its region at the national level. First, to foster future-oriented industries through the Blue Economy, the region aims to transition to green-digital industries while establishing smart agriculture and fisheries systems. Second, Jeollanam-do plans to develop a South Coast tourism belt centered on islands and marine resources by utilizing its unique historical and cultural assets to create a distinct regional identity. Third, the province has established strategies to enhance the bio-industry and improve residential conditions, focusing on expanding social overhead capital, strengthening region-specific revitalization initiatives, and ensuring fundamental housing, healthcare, and welfare rights. Lastly, Jeollanam-do seeks to build

sustainable ecosystems and landscapes to achieve its goal of becoming a key infrastructure hub for Northeast Asia and, through education, fostering talent development.



Fig 1. Location of Jeollanam-do

Island- and marine-focused tourism is a central theme for Jeollanam-do given its geographical location along the western and southern coasts of the Korean Peninsula (Fig. 1). Consequently, the region has proposed various initiatives, including advancing its tourism platform, promoting regionally specialized tourism, and constructing robust tourism infrastructure. However, while comprehensive plans for regional development and tourism have been outlined as such, specific and actionable measures for talent cultivation and development remain insufficient. In the face of accelerating population decline and the outflow of talent, Jeollanam-do has yet to present concrete strategies to address these pressing challenges effectively.

3. Regional Talent Development Through Glocal Universities

The earlier National Comprehensive Territorial Plans, particularly the first three that spanned 1972–2000, primarily focused on economic growth and infrastructure development. These plans were centered on rebuilding the nation's infrastructure after the Korean War, including industrial complexes and national transportation networks. With the 4th National Comprehensive Territorial Plan introduced in the 2000s, planning priorities shifted to address climate change

and improve the quality of life for citizens. Three revised versions of this plan were developed, reflecting changes in government priorities and increasing concerns over population decline and regional imbalance. The focus on economic development subsided, and environmental preservation and measures to counteract demographic challenges were defined as pressing issues.

In the 5th National Comprehensive Territorial Plan, the development of local human capital was identified as a critical component for achieving regional balance. Recognizing that regional growth requires the presence of local talent—even as talent migration to metropolitan areas persists—the plan emphasized fostering skilled individuals to lead local development (Charles, 2023). For Jeollanam-do, which faces challenges such as the impact of climate change on fisheries and the need for tourism development based on its natural and cultural resources, cultivating specialized talent is indispensable. However, as stated, the region's 4th Comprehensive Plan leaves out any elaboration regarding specific measures for talent cultivation and development (Hong and Grydehøj, 2022).

Historically, the central government has implemented various initiatives to strengthen the role of universities in regional development, such as the New University for Regional Innovation (NURI) program, the National University Development Projects, and the Leaders in Industry-University Cooperation (LINC) initiative. However, these efforts often lacked continuity across administrations and sometimes favored metropolitan universities, thereby diminishing their impact on regional development (Kim, 2013).

Fostering regional talent with specialized skills tailored to local needs is crucial for sustainable development. In particular, the cultivation and development of professionals in marine and fisheries industries could have a significant impact on Jeollanam-do's economy. Regional universities play a pivotal role in this endeavor. While universities have traditionally been hubs for education and research, there is an increasing expectation for them to contribute to national and regional development through initiatives that align with both global and local priorities (Park *et al.*, 2001; Filho *et al.*, 2019).

Regional universities, in their role as centers of innovation, can drive socio-economic goals within their regions. (Feldman and Desrochers, 2003; Kisman and Tasar, 2014). By fostering skilled and creative human capital, they can create a positive feedback loop, where talent circulates within the region, improving labor quality and boosting industrial productivity (Park *et al.*, 2001). This capacity makes regional universities essential not only for local but also national development (Choi and Baeg, 2012; Filho *et al.*, 2019; Florida, 1999; Uyarra, 2008).

Given these considerations, the Ministry of Education launched the "Glocal University" program in 2023. This initiative aims to designate and support 30 universities outside Seoul and its metropolitan area under this header by 2026, so as to encourage collaboration between these universities, local governments, and industries to foster sustainable regional development (Ministry of Education, 2024).

Mokpo National University, a central institution in Jeollanam-do, is among the universities that have been selected for the Glocal University program. One of the main factors that have contributed to this is its already strong track record of playing a crucial role in cultivating the human capital necessary for the region's key industries, such as fisheries and marine-related sectors. Additionally, the university houses South Korea's oldest research institute dedicated to island studies, as well as leading facilities for fisheries and shipbuilding research. These strengths position Mokpo National University as a critical hub for addressing socio-economic issues, countering population decline, and utilizing the region's historical and cultural heritage for the purpose of sustainable development.

The university's success in becoming part of the Glocal University program marks a significant step toward realizing Jeollanam-do's vision of revitalizing the region and supporting its development by integrating its historical and cultural resources of the islands and marine industries not only along the pathway of tourism but also the cultivation and development of human capital (Blagoeva-Yarkova, 2012; Harrison and Turok, 2017).

4. Strategies for Marine Specialization Through Fostering International Students and Utilizing Regional Resources

The South Korean government emphasizes the need to foster talent to support a balanced development across the country, particularly in regions like Jeollanam-do. The province's abundant natural resources, including its islands and marine ecosystems, provide a foundation for developing tourism, fisheries, and other marine industries. Mokpo National University, a key institution in Jeollanam-do, plays a pivotal role in making this happen with an extended focus on human capital and was therefore selected for the Ministry of Education's Glocal University program in 2024. As the central hub for research and education in the province, the university is integral to fostering talent and addressing socio-economic challenges.

To address Jeollanam-do's pertinent challenges, such as rapid population decline and talent outflow, it is crucial to adopt proactive strategies for attracting and retaining diverse talent pools. While domestic talent remains essential, relying solely on local resources is increasingly impractical. The influx of international students, particularly from developing countries, is increasingly being recognized as a critical component of regional and national strategies to enhance research, technological development, and economic growth.

According to the Ministry of Education, South Korea hosted 181,842 international students as of April 2024, a significant increase from just 12,314 in 2003. Students from economically advanced nations often pursue language and cultural studies, while those from developing countries primarily focus on completing degree programs in higher education and research. The latter category of international students represents an opportunity to enhance the research capabilities of regional universities and contribute to long-term development initiatives. However, challenges such as illegal immigration and limited employment opportunities for (foreign) graduates highlight the need for comprehensive management and support systems. In this context, the following strategies for fostering and developing local talent are suggested:

1. Financial Support and International Training Programs

Governments at both the national and local levels should implement and diversify financial aid programs. Sufficient funding can directly enhance educational and workforce outcomes through improved training systems and employee performance (Bong and Park, 2019; Sun, 2021). International training programs tailored to the unique characteristics of each region, such as marine and island studies in Jeollanam-do, can connect local universities with global opportunities, fostering international collaboration and enhancing regional competitiveness.

2. Attracting Diverse Student Populations

Regional universities should expand their recruitment efforts to include not only graduate students but also vocational trainees and general exchange students. Jeollanam-do, with its labor-intensive industries like fisheries and shipbuilding, can benefit from partnerships between universities and local industries. These collaborations can help design tailored training programs to address the specific workforce needs of the region.

3. Establishing a Communication Platform for International Students

A dedicated communication platform can support international students in overcoming academic, social, and cultural challenges. One-on-one mentoring systems and a confidential channel for personal issues can help students adapt to their new environment. Additionally, providing opportunities for internships and direct connections with local businesses can enhance students' career prospects and increase their integration into the region.

4. Collaboration Between Local Governments and Universities

Strengthened partnerships between universities and local governments are essential for implementing exchange programs and international cooperation projects in the marine and fisheries industries. Collaborations with organizations like the Alliance of Small Island States (AOSIS) and the Asia-Pacific Economic Cooperation (APEC) can facilitate the recruitment of specialized talent, fostering mutual benefits for both local and international stakeholders (Kisman and Tasar, 2014). Expanding the range of research institutions conducting projects in the region will also increase the retention of skilled talent.

5. Utilizing Islands as Strategic Resources

Islands constitute unique physical systems that are particularly sensitive to environmental changes, making them ideal locations for experimental research (Pungetti, 2012). Jeollanam-do's islands, which face challenges like population decline and climate change, are valuable sites for studying the impacts of shifts in the marine industry and exploring sustainability strategies (Hong *et al.*, 2022; Kim, 2019). Leveraging the islands as living laboratories can provide insights into broader regional and global issues.

6. Promoting Historical and Cultural Resources of Jeollanam-do's Islands

The islands of Jeollanam-do are treasure troves of historical and cultural heritage. Isolated by both physical and social barriers, these islands have preserved unique traditions and ecosystems. Developing tourism content centered on these resources can enhance the region's identity and economic potential (Kim, 2017). As the oldest dedicated research institute on islands in South Korea, Mokpo National University's Institution for Marine and Island Cultures offers a valuable platform for utilizing these assets for regional development.

By implementing these strategies, Jeollanam-do can leverage its unique marine and island resources to cultivate specialized talent, foster international collaboration, and enhance the region's sustainability and competitiveness.

5. Conclusion

Jeollanam-do, located in the southwestern part of South Korea, has a vast coastline and includes numerous islands. These characteristics set it clearly apart from other provinces and therefore it is self-evident to define its islands and marine resources as the central elements of regional specialization and sustainable development (Hong and Grydehøj, 2022). By doing so, the province can promote economic and social revitalization, as well as address challenges such as population decline and the risk of depopulation of areas, including islands, due to urbanization trends.

Mokpo National University plays a crucial role in advancing regional development through its research and education programs tailored to Jeollanam-do's unique characteristics, particularly its fisheries and other marine industries in both coastal areas and islands. As an institution selected to be part of the Ministry of Education's "Glocal University" program, the university is destined to form a foundation for nurturing regional talent and driving economic development in collaboration with the province.

To put it into practice, specific measures must be implemented. First, financial support and enhanced programs for attracting international and domestic students are necessary. This includes providing scholarships, research grants, and opportunities to strengthen connections between students and the local community. Second, fostering collaboration between universities and regional industries is essential to cultivate talent tailored to the region's specialized industries and create sustainable job opportunities. Third, initiatives are needed to leverage the region's unique identity and resources, such as its islands and marine ecosystems, in order to boost tourism and innovation in fisheries and other marine-related fields. Fourth, global partnerships through international cooperation and network-building need to be established to further enhance regional competitiveness and development models.

This study has highlighted suggested strategies for fostering regional talent and utilizing Jeollanam-do's island and marine resources, offering a pathway to balanced regional development and sustainable growth. By addressing both local and global challenges, Jeollanam-do can position itself as a model for innovation and resilience in marine and island-based development.

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