

Environmental Quality Development Strategy in Central Government Areas: Case Study of Dompak Island, Riau Islands Province

Roby Cahayadi¹, Yuanita FD Sidabutar¹, Cevy Amelia¹, Isramilda¹

¹Universitas Batam, Batam, Indonesia

Corresponding author e-mail: yuanita.fd@univbatam.ac.id

Article History: Received on 11 March 2024, Revised 17 April 2024,

Published on 25 May 2024

Abstract: Environmental quality refers to the state or condition of the environment in a particular area, taking into consideration various factors that affect the well-being of living organisms, including humans. It encompasses the health and sustainability of ecosystems, air, water, soil, and other natural resources. The interpretation of environmental quality as providing optimal carrying capacity for human survival implies that the environment should meet certain criteria to support human life and well-being. This research aims to find out how to apply and development strategy in providing regional facilities and infrastructure to optimize environmental quality on Dompak Island as the Central Government Area of the Riau Islands Province. This research uses a qualitative method with a descriptive approach through SWOT analysis. The research results found that the strategy for providing facilities and infrastructure to improve environmental quality on Dompak Island is by developing a drinking water supply system (SPAM), increasing drainage capacity, providing street lighting infrastructure, providing green open space, maintaining existing physical infrastructure, utilizing empty land. for the construction of parking lots, collaboration with other parties and strengthening regional management institutions. The novelty of this research involves various infrastructure components, effective use of resources, multi-party collaboration, institutional strengthening, and strategies based on SWOT analysis to achieve the goal of improving sustainable environmental quality on Dompak Island.

Keywords: Dompak Island, Environmental Quality, Facilities and Infrastructure

A. Introduction

Dompak Island was designated as the central government area of the province based on a memorandum of understanding (MOU) and a letter of agreement between the Government and the DPRD of the Riau Islands Province. In the Riau Islands Province RTRW for 2017-2037 which has been stipulated through the Riau Islands Province Regional Regulation Number 1 of 2017, the Central Government Area of the Riau Islands Province which is called "Piring Island Dompak City Palace" is designated as a Provincial Strategic Area, so that the spatial planning of the Dompak Island area is

prioritized. because it has a very important influence within the provincial scope on the economy (Wulandari & Afriyanni, 2021), social (Ru et al., 2020), culture (Ding et al., 2022) and or environment (Giles-Corti et al., 2020).

Environmental facilities and infrastructure are the basic physical features of the environment that enable the environment to function as it should (Budiati et al., 2022). The availability of quality infrastructure such as clean water (Bibri et al., 2020), sanitation (Morita et al., 2020) and drainage infrastructure (Skjærseth, 2021), as well as the provision of liveable settlements as well as flood control infrastructure and well-maintained road infrastructure will improve environmental quality (Permatasari et al., 2023).

Since 2008 until now, physical development in the form of infrastructure supporting regional development has been carried out (Purwasih et al., 2023). These physical stages start from land acquisition to infrastructure developments such as roads (Cai et al., 2002), bridges (C.-H. Wang et al., 2021), drainage (Chen & Kong, 2021), settlements (Newton et al., 2020), office buildings (Coenen et al., 2021) to regional landscaping (Zerbe, 2022).

As the center of government, good environmental quality needs to be realized. There are still land conflicts, lack of availability of clean water, continued flooding, environmental degradation due to development activities on Dompak Island as well as development activities that do not comply with established spatial plans are some of the obstacles that exist in improving environmental quality on Dompak Island. For this reason, the participation and efforts of all parties, not only the government, are needed in realizing the development of the area as the center of government so that it is in accordance with the development plans that have been determined (Palomares et al., 2021).

Based on research by (Purwasih et al., 2021) regarding the characteristic value of Dompak Island as the central image of the Riau Islands Provincial Government in Tanjungpinang City, it is stated that Dompak Island can become a micro-economic commodity for local residents by considering that Dompak Island has adequate facilities, there is a University, a Grand Mosque, Beaches, historical sites, interesting spots in accordance with Malay culture. Research conducted by (Sidabutar & Indera, 2021) regarding the study of the regional planning potential of Binjai City, North Sumatra, obtained a concept for how to increase the economic value of Binjai City.

(Massikki, 2012) in his research regarding the analysis of the availability of facilities and infrastructure in residential environments shows that improving the quality of the environment in dense residential areas in the city center is through optimizing the function of environmental facilities and infrastructure which will have an impact on economic aspects, where the closer a group of residents are to regarding facilities and infrastructure (Infra Structure), the more often they visit these facilities and

infrastructure. Research conducted by (Rohmadiani & Dede, 2017) regarding strategies for developing hinterland areas in Gresik Regency using the SWOT analysis technique resulted in several strategies for developing hinterland areas in Driyorejo District, Gresik Regency as a case study location.

From the description of the problem above, the problem can be formulated as follows: (1) How to apply SWOT analysis in providing regional facilities and infrastructure to optimize quality environment on Dompok Island as the Central Government Area of the Riau Islands Province?; (2) What is the strategy for increasing the provision of regional facilities and infrastructure to optimize environmental quality on Dompok Island as the Central Government Area of the Riau Islands Province?.

From the problem formulation, the research objectives are as follows: (1) To find out how to apply SWOT analysis in providing regional facilities and infrastructure to optimize environmental quality on Dompok Island as the Central Government Area of the Riau Islands Province. (2) To find out the strategy for improving the provision of regional facilities and infrastructure to optimize environmental quality on Dompok Island as the Central Government Area of the Riau Islands Province.

B. Methods

This study uses a qualitative method by taking a descriptive approach. This method describes an objective situation or certain event based on visible or appropriate facts accompanied by efforts to draw general conclusions based on these historical facts (Nawawi & Martini, 1996). The literature used is taken from several related regulations and research that supports this paper. The analysis technique used is the SWOT analysis technique with a case study approach carried out in the Central Government Area of Dompok Island, Bukit Bestari District, Tanjungpinang City.

SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis is a method commonly used to evaluate strengths, weaknesses, opportunities and threats relevant to a particular project, business or area. In the case study approach in the Central Government Area of Dompok Island, Bukit Bestari District, Tanjungpinang City, the SWOT analysis technique was used to gain a comprehensive understanding of the situation and potential of the area. The steps for implementing the SWOT analysis technique in this case study are as follows:

Respondents

This research involves collecting data from various respondents to evaluate Strengths, Weaknesses), Opportunities, Threats relevant to development and environmental management on Dompok Island. The data obtained from these respondents is used to develop optimal strategies for improving environmental quality in the area. The respondents for this research are (1) Regional Government Officials at the provincial and city levels who have a role in planning and managing the central government area

on Dompok Island. (2) Infrastructure Manager who is responsible for the management and maintenance of physical infrastructure on Dompok Island, such as providing drinking water, drainage and street lighting. (3) Local communities who live and carry out activities around the Dompok Island area, who can provide information regarding environmental and infrastructure conditions from the perspective of everyday users. (4) Business and Private Actors: who are involved or have the potential to be involved in area development, such as investors, property developers and business actors with an interest in the area.

Identify Strengths

Identify the positive aspects of the Dompok Island Central Government Area by involving supportive government policies, good infrastructure, trained human resources, and other advantages (Saragih et al., 2021).

Identify Weaknesses

Review the weaknesses or obstacles that the Dompok Island Government Center area has, including inadequate infrastructure, lack of trained human resources, or other obstacles that could affect growth and development.

Identify Opportunities

Identify external factors that can be utilized to improve the performance and development of the Central Government Area. Opportunities may include economic growth in the surrounding area, investment potential, or supportive government policy changes.

Threat Identification (Threats)

Review external factors that could hinder the growth and development of the Central Government Area. Threats can include competition from nearby areas, adverse regulatory changes, or other factors that can reduce the attractiveness of the area.

Analysis and Categorization of Findings

Analyze SWOT findings to gain a thorough understanding of the region's position. Findings can be grouped into internal (Strengths and Weaknesses) and external (Opportunities and Threats).

Strategy Formulation:

Using the results of the SWOT analysis to formulate a strategy. Exploiting strengths and opportunities and mitigating weaknesses and threats must be the basis of strategic planning (X. Wang & Wang, 2021).

Stakeholder Involvement

Involve relevant parties, including regional government, local communities and the private sector, to gain a more comprehensive perspective and support strategy implementation (Suharno et al., 2020).

Monitoring and Evaluation

Establish performance indicators and monitoring systems to monitor strategy implementation. Regular evaluation is necessary to assess success and make adjustments if necessary.

The application of SWOT analysis in the case study of the Dompak Island Central Government Area in Tanjungpinang City will provide a clearer picture of the internal and external factors that can influence the development of the area. This can also be a basis for making better strategic decisions to increase absorption capacity and sustainable growth in the area.

C. Results and Discussion

Area conditions

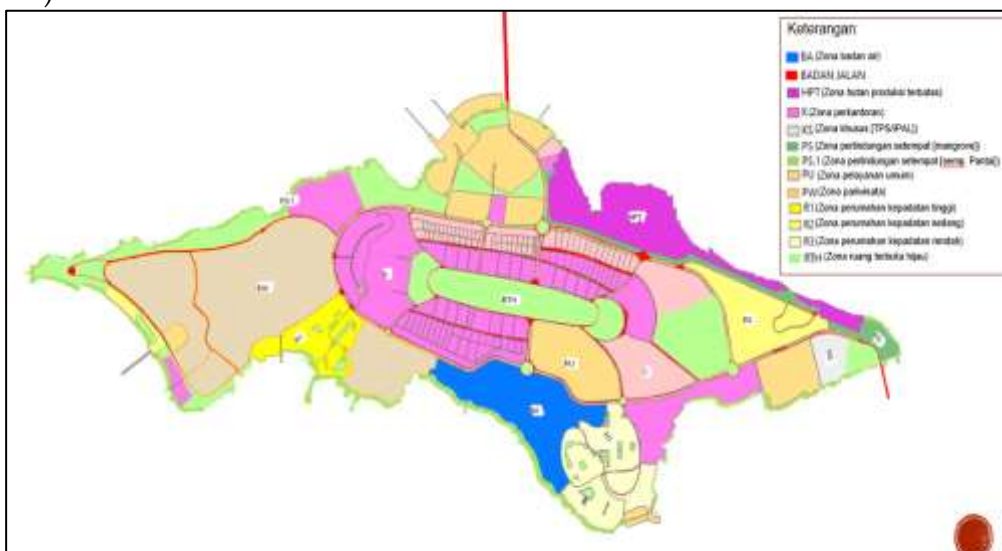
During the Riau Lingga Kingdom era, Dompak Lama Village was a hiding place for pirates who came from a number of ethnic groups, namely Chinese, Bugis, Malay, Thai and Javanese. The head of the pirates, who was an ethnic Chinese, named the area of the old Dompak village which at that time was not yet named "Kampung Lompak" but as time went by the Riau-Lingga Kingdom succeeded in eradicating and expelling the pirates and then the area was inhabited by Malays and changed the name of the area from "Kampung Lompak" became "Kampung Dompak". The original inhabitants of Dompak were Malays who came from Penyengat Island and the islands around Bintan Island with the first area inhabited being Kampung Lama. During its development, the population spread to Tanjung Siambang, Dompak Seberang, Dompak Laut, and Sei Jang Dompak Mainland which has now developed into one of the village areas in the Tanjungpinang City area.

Dompak Island is located at 0° 51' N-0° 59' N and 104° 23' E-104° 34' E. Administratively, Dompak Island is part of the Tanjungpinang City Area, namely within Dompak Village, Bukit Bestari District, Tanjungpinang City with an area of 997 Ha (according to the MOU) but based on the Land Office/BPN, the area of Dompak Island is approximately 1,050 Ha.



Figure 1. Location map of the Central Government Area of Riau Islands Province, Dompak Island.

In more detail, the allocation of space on Dompak Island has been regulated in Tanjungpinang City Regional Regulation Number 3 of 2018 which contains plans for the structure of intermediate spaces in the form of plans for transportation networks (road networks, ports), electricity networks, telecommunications, clean water and waste management sites. Meanwhile, in the spatial pattern plan, space allocations have been allocated including water bodies, roads, limited production forests (HPK), tourism, city open space (green lanes, city parks, cemeteries), housing (low to high density housing), offices, trade and services, tourism, public service facilities (transportation facilities, education, health, sports, worship) and special areas (TPS and IPAL).



Source: Tanjungpinang City RDTR Regional Regulation

Figure 2. Allocation of space on Dompak Island

Potency

Potential is a series of abilities, abilities, strengths, or powers that have the possibility of being developed again into a greater form. This form is usually obtained through development for welfare in community life (Danuwidjojo et al., 2021). According to Law Number 26 of 2007, territory is a space which is a geographical unit along with all related elements whose boundaries and systems are determined based on administrative and/or aspects. functional aspect. Based on this definition, regional potential can be interpreted as everything that is owned in the form of natural resources and human resources in a region that can support efforts to improve the welfare of the population in the region concerned or in other regions.

Dompak Island as a central area for government activity services makes this area a destination for various parties in provincial level government affairs. Dompak Island is located quite close to the Lagoi international tourism area which is located on Bintan Island, Bintan Regency and quite close to several neighboring countries so that it can become an alternative new tourist destination in Tanjungpinang City.

Infrastructure development which has started since the beginning of development in 2018 has succeeded in providing various facilities and infrastructure that support activities in the central government area. Currently, transportation infrastructure has been built such as a bridge connecting Dompak Island and Bintan Island, a road equipped with sidewalk facilities and a port that supports accessibility and movement of people to Dompak Island.



Figure 3. Overview of the condition of transportation facilities on Dompak Island

As a central government area, infrastructure has been built in the form of office buildings, including the governor's office, DPRD office, other service/institution

offices. The physical construction process of several office building facilities from various agencies is also currently underway.



Figure 4. Description of the condition of office facilities availability

To support community activities, public facilities such as sports stadiums, worship infrastructure in the form of large mosques, public facilities are also available, education, and the availability of reservoirs as raw water providers.

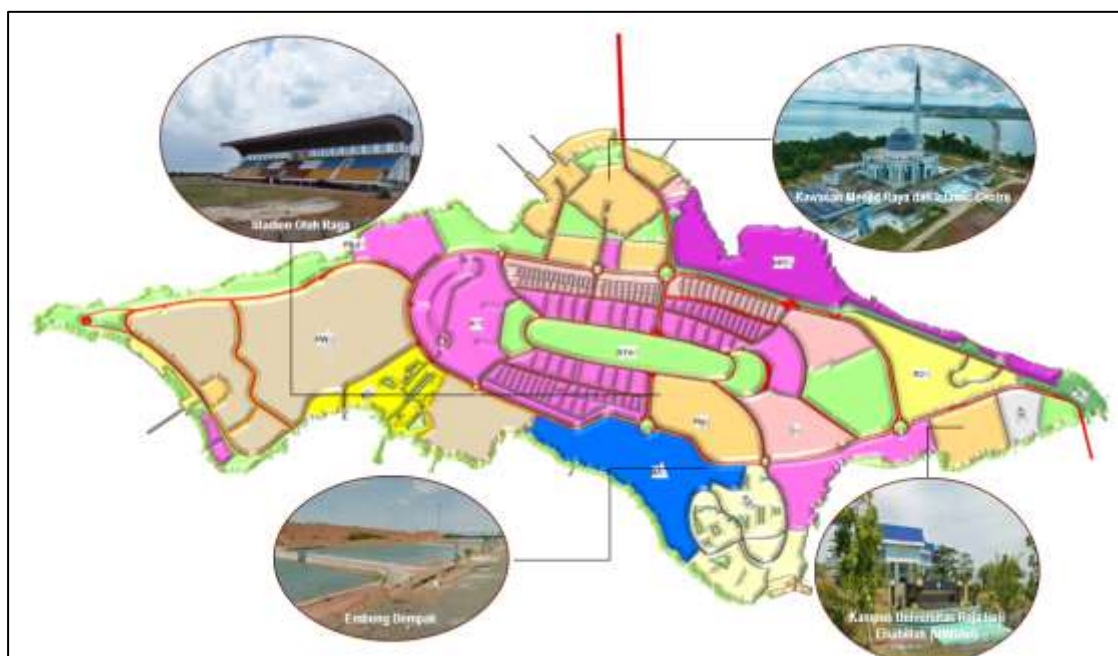


Figure 5. Description of the condition of availability of public facilities

Meanwhile, to support the realization of Dompak Island as a tourist destination, there are natural tourist attractions in the form of beaches, mangroves and several

monuments and parks have been built as regional land marks. Besides that, there are culinary tourism destinations, which are spread all over the island. The availability of a large amount of empty land and a relatively small population can minimize social conflict in development and regional development activities.

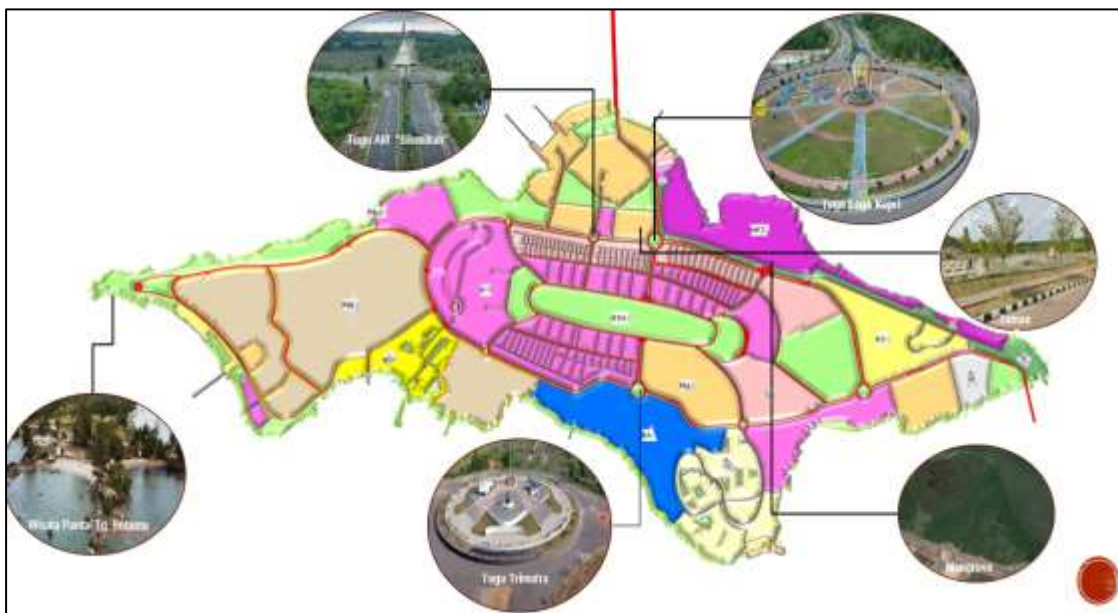


Figure 6. Overview of tourism potential conditions

Constraint

In developing quality facilities and infrastructure in the Dompak Island area, several obstacles are still faced, including: (1) There are still land conflicts; (2) Insufficient availability of clean water due to minimal potential availability of shallow water; (3) Floods still occur during extreme heavy rain due to the drainage system not being optimal; (4) The availability of parking spaces in public places and office areas is not yet optimal; (5) There is still unequal distribution of lighting on several public roads; (6) Limited budget for maintaining infrastructure that has been built on Dompak Island; (7) Lack of integrated public transportation facilities between Tanjungpinang city center and the Central Government Office Area of the Riau Islands Province on Dompak Island; (8) Lack of availability of tourism supporting facilities such as commercial areas, accommodation (guesthouses/hotels) and so on; (9) The management of Dompak Island is not yet optimal, which is currently in the form of a Technical Implementation Unit (UPT) in one of the technical OPDs; (10) Lack of promotion and cooperation with third parties in developing infrastructure development on Dompak Island.

SWOT analysis

SWOT analysis is an analysis based on logic that can maximize strengths and opportunities, but can simultaneously minimize weaknesses and threats. Meanwhile, (Kotler & Keller, 2008) defines SWOT analysis as an evaluation of overall strengths,

weaknesses, opportunities and threats. This analysis assumes that an effective strategy will minimize weaknesses and threats.

Based on the definition above, it can be concluded that SWOT analysis is a method for describing and comparing conditions and ways to evaluate a problem based on external and internal factors, namely Strength, Weakness, Opportunity and Threat. Analysis of internal and external factors in the development of physical infrastructure to optimize environmental quality is described in table 1 and table 2.

Table 1. Analysis of internal strategic factors

No.	Factor	Weight	Mark	Weight X Value
Strength				
1.	Dompak Island is located in a strategic position, close to the international tourist destination "Lagoi" in Bintan Regency and near several neighboring countries (Malaysia and Singapore)	0.3	3	0.9
2.	Availability of adequate facilities and infrastructure	0.2	4	0.8
3.	There is natural potential in the form of beaches and mangrove forests as well as buildings as "land marks" for tourism development	0.2	4	0.8
4.	The availability of public facilities includes educational infrastructure (UMRAH campus), worship and sports infrastructure	0.2	3	0.6
5.	Availability of culinary tourism attractions	0.1	3	0.3
Amount		1		3,4
Weakness				
1.	The availability of clean water is insufficient due to the minimal potential availability of shallow water on Dompak Island.	0.2	4	0.8
2.	Floods still occur during extreme heavy rain due to the drainage system not being optimal.	0.1	3	0.3
3.	The availability of lighting is still uneven on several public roads	0.1	3	0.3
4.	The availability of parking spaces in public places and office areas is not yet optimal	0.1	3	0.3
5.	Limited budget for maintaining infrastructure that has been built on Dompak Island	0.2	4	0.8
6.	The institutional management of Dompak Island is not yet optimal, which is currently in the form of a UPT in one of the technical OPDs	0.1	3	0.3
7.	Lack of promotion and cooperation with third parties in developing infrastructure development on Dompak Island.	0.2	4	0.8
Amount		1		3,6

Table 2. Analysis of external strategic factors

No.	Factor	Weight	Mark	Weight X Value
Opportunity				
1.	In the Spatial Planning Plan, Dompok Island is designated as a provincial strategic area as the center of government, service center, new growth center and tourism activities in the province as a regional icon with Malay cultural nuances.	0.6	4	2,4
2.	There is still a lot of empty land and the population is still relatively small, making it easier to develop the area in the future, such as developing facilities to support trade and service activities as well as tourism.	0.4	4	1.6
		Amount	1	4
Threat				
1.	There are still land conflicts on Dompok Island	0.2	3	0.6
2.	Space utilization activities that do not have permits and are not in accordance with the spatial plan.	0.3	3	0.9
3.	As a coastal area, there is potential for disasters such as extreme weather, abrasion and flooding	0.3	3	0.9
4.	There is no integrated public transportation route between the central government area and Tanjungpinang City Center.	0.2	3	0.6
		Amount	1	3


In table 1 and table 2, the weighting is based on the degree of importance of each internal and external factor, while the scoring is based on a Likert scale, which is a scale used to measure the attitudes, opinions and perceptions of a person or group of people about a phenomenon (Sugiyono, 2017). The criteria for giving grades based on the Likert scale in this study include: 1 (strongly disagree); 2 (disagree); 3 (sufficient); 4 (agree) and 5 (strongly agree). The calculation results obtained the following total values:

$$\begin{aligned} \text{Total Internal} &= \text{Strengths} - \text{Weaknesses} \\ &= 3.4 - 3.6 = -0.2 \end{aligned}$$

$$\begin{aligned} \text{Total External} &= \text{Opportunities} - \text{Threats} \\ &= 4 - 3 = 1 \end{aligned}$$

Based on the condition (-0.2 ; 1), it is included in quadrant II so that the strategy carried out is strategy (WO), namely creating a plan that minimizes weaknesses to take advantage of opportunities so that the policy strategy for optimizing environmental quality on Dompok Island in terms of physical aspects is described in the table 3.

Table 3. Dompok Island Development Strategy

	S	1. Dompok Island is located in a strategic position, close to the international tourist destination "Lagoi" in Bintan Regency and near several neighboring countries (Malaysia and Singapore).
	W	1. The availability of clean water is insufficient due to the minimal potential availability of shallow water on Dompok Island. 2. Floods still occur during extreme heavy rain due to the drainage system not being optimal. 3. The availability of lighting is still uneven on several public roads.

	<ol style="list-style-type: none"> 2. Availability of adequate facilities and infrastructure. 3. The availability of lighting facilities on several public roads is still uneven. 4. The availability of public facilities includes educational infrastructure (UMRAH campus), worship and sports infrastructure. 5. Availability of culinary tourism attractions 	<ol style="list-style-type: none"> 4. The availability of parking spaces in public places and office areas is not yet optimal. 5. Limited budget for maintaining infrastructure that has been built on Dompak Island. 6. The institutional management of Dompak Island is not yet optimal, which is currently in the form of a UPT in one of the technical OPDs. 7. Lack of promotion and cooperation with third parties in developing infrastructure development on Dompak Island.
<p style="text-align: center;">O</p> <ol style="list-style-type: none"> 1. In the Spatial Planning Plan, Dompak Island is designated as a provincial strategic area as the center of government, service center, new growth center and tourism activities in the province as a regional icon with Malay cultural nuances. 2. There is still a lot of empty land and the population is still relatively small, making it easier to develop the area in the future, such as developing facilities to support trade and service activities and tourism. 	<p style="font-size: 2em; color: #D9534F;">I</p>	<p style="text-align: center;">WO Strategy</p> <ol style="list-style-type: none"> 1. Development of a Drinking Water Supply System Network (SPAM) with raw water sources from outside Dompak Island in accordance with the spatial plan. 2. Increased drainage capacity, especially at flood-prone points. 3. Provision of public street lighting infrastructure in accordance with regional standards as the center of government. 4. Provision of green open space (RTH) 5. Maintenance of physical infrastructure that has been built. 6. Utilization of empty land for construction of parking lots. 7. Establish cooperation with other parties including the private sector in regional development, especially the trade, services and tourism sectors to optimize the availability of existing land in accordance with spatial plans. 8. Strengthening regional infrastructure management institutions
<p style="text-align: center;">Q</p> <ol style="list-style-type: none"> 1. There are still land conflicts on Dompak Island. 2. Space utilization activities that do not have permits and are not in accordance with the spatial plan. 3. As a coastal area, there is potential for disasters such as extreme weather, abrasion and flooding. 4. There is no integrated public transportation route between the central government area and Tanjungpinang City Center. 	<p style="font-size: 2em;">III</p>	<p style="font-size: 2em;">IV</p>

D. Conclusion

The results of research regarding Dompak Island as the Government Center of the Riau Archipelago Province show that the development of the Dompak Island area is

one of the government's priorities. The following conclusions can be drawn: (1) The development of regional facilities and infrastructure in the future must be carried out by paying attention to environmental aspects so that quality the environment can be maintained optimally. (2) Maintenance of physical infrastructure that has been built needs to be carried out on an ongoing basis so that the quality of the infrastructure can function optimally and not cause an impact on the environment. (3) Intensive efforts need to be made to realize cooperation with other parties including the private sector in optimizing the potential that exists on Dompak Island as the central area of the provincial government.

E. Acknowledgment

The researcher would like to thank the Universitas Batam for supporting the implementation of the research Environmental Quality Development Strategy in Central Government Areas: Case Study of Dompak Island, Riau Islands Province.

References

- Bibri, S. E., Krogstie, J., & Kärrholm, M. (2020). Compact city planning and development: Emerging practices and strategies for achieving the goals of sustainability. *Developments in the Built Environment*, 4, 100021. <https://doi.org/10.1016/j.dibe.2020.100021>
- Budiati, M., Sidabutar, Y. F., & Hadi, G. T. (2022). Independent Road Corridor as a Cultural Reservation Area in the Old Town of Tanjungpinang. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 5(4). <https://doi.org/10.33258/birci.v5i4.7042>
- Cai, F., Wang, D., & Du, Y. (2002). Regional disparity and economic growth in China: The impact of labor market distortions. *China Economic Review*, 13(2), 197–212. [https://doi.org/10.1016/S1043-951X\(02\)00072-X](https://doi.org/10.1016/S1043-951X(02)00072-X)
- Chen, P., & Kong, X. (2021). Tourism-led Commodification of Place and Rural Transformation Development: A Case Study of Xixinan Village, Huangshan, China. *Land*, 10(7), Article 7. <https://doi.org/10.3390/land10070694>
- Coenen, J., Bager, S., Meyfroidt, P., Newig, J., & Challies, E. (2021). Environmental Governance of China's Belt and Road Initiative. *Environmental Policy and Governance*, 31(1), 3–17. <https://doi.org/10.1002/eet.1901>
- Danuwidjojo, J., Iood, F., & Sidabutar, Y. F. (2021). Local Malay Wisdom as The Identity of Batam City. *Jurnal Potensi*, 1(2). <https://doi.org/10.37776/jpot.v1i2.770>
- Ding, C., Liu, C., Zheng, C., & Li, F. (2022). Digital Economy, Technological Innovation and High-Quality Economic Development: Based on Spatial Effect and Mediation Effect. *Sustainability*, 14(1). <https://doi.org/10.3390/su14010216>
- Giles-Corti, B., Lowe, M., & Arundel, J. (2020). Achieving the SDGs: Evaluating indicators to be used to benchmark and monitor progress towards creating healthy and sustainable cities. *Health Policy*, 124(6), 581–590.

- <https://doi.org/10.1016/j.healthpol.2019.03.001>
- Kotler, P., & Armstrong, G. (2010). *Principles of Marketing*. Pearson.
- Kotler, P., & Keller, K. L. (2008). *Marketing Management*. PT. Index.
- Massikki, M. N. (2012). Analysis of the Availability of Facilities and Infrastructure in Residential Environments. *MEKTEK*, 7(3).
<http://jurnal.untad.ac.id/jurnal/index.php/Mektek/article/view/390>
- Morita, K., Okitasari, M., & Masuda, H. (2020). Analysis of national and local governance systems to achieve the sustainable development goals: Case studies of Japan and Indonesia. *Sustainability Science*, 15(1), 179–202.
<https://doi.org/10.1007/s11625-019-00739-z>
- Nawawi, H., & Martini, M. (1996). *Applied research*. Gadjah Mada University Press.
- Newton, A., Icelly, J., Cristina, S., Perillo, G. M. E., Turner, R. E., Ashan, D., Cragg, S., Luo, Y., Tu, C., Li, Y., Zhang, H., Ramesh, R., Forbes, D. L., Solidoro, C., Béjaoui, B., Gao, S., Pastres, R., Kelsey, H., Taillie, D., ... Kuenzer, C. (2020). Anthropogenic, Direct Pressures on Coastal Wetlands. *Frontiers in Ecology and Evolution*, 8. <https://doi.org/10.3389/fevo.2020.00144>
- Palomares, I., Martínez-Cámara, E., Montes, R., García-Moral, P., Chiachio, M., Chiachio, J., Alonso, S., Meleró, F. J., Molina, D., Fernández, B., Moral, C., Marchena, R., de Vargas, J. P., & Herrera, F. (2021). A panoramic view and swot analysis of artificial intelligence for achieving the sustainable development goals by 2030: Progress and prospects. *Applied Intelligence*, 51(9), 6497–6527.
<https://doi.org/10.1007/s10489-021-02264-y>
- Permatasari, D., Dompok, T., Salsabila, L., & Khairina, E. (2023). The Effectiveness of Community Food Barns in Batam City's Food Diversification Program. *Conference on Business, Social Sciences and Technology (CoNeSciNTech)*, 3(1), 115–124. <https://doi.org/10.37253/conescintech.v3i1.8367>
- Purwasih, H. D., Sidabutar, Y. F., Suciati, H., & Fauzan, F. (2023). Modernization of "Transport" As Public Transportation to Reduce Personal Vehicle Ownership in the City of Tanjungpinang. *JMKSP (Jurnal Manajemen, Kepemimpinan, Dan Supervisi Pendidikan)*, 8(1). <https://doi.org/10.31851/jmksp.v8i1.10932>
- Purwasih, H. D., Wartono, W., & Indera, E. (2021). The Characteristic Value of Dompok Island as the Image of the Government Center of the Riau Islands Province in Tanjungpinang City. *Jurnal Potensi*, 1(2), 40–45.
<https://doi.org/10.37776/jpot.v1i2.773>
- Rohmadiani, L. D., & Dede, F. R. (2017). Gresik Regency Hinterland Area Development Strategy. *WAKTU: Jurnal Teknik UNIPA*, 15(2).
<https://doi.org/10.36456/waktu.v15i2.731>
- Ru, S., Liu, J., Wang, T., & Wei, G. (2020). Provincial Quality of Economic Growth: Measurements and Influencing Factors for China. *Sustainability*, 12(4).
<https://doi.org/10.3390/su12041354>
- Saragih, A. R., Astawa, I. B. M., & Sarmita, I. M. (2021). Diversification of the Potential and Function of Green Open Space (RTH) of City Parks in the Singaraja City Area. *Jurnal Pendidikan Geografi Undiksha*, 9(1).
<https://doi.org/10.23887/jjpg.v9i1.30480>

- Sidabutar, Y. F. D., & Indera, E. (2021). Study of Regional Planning Potential for the City of Binjai, North Sumatra. *Jurnal Potensi*, 1(1), 36–49. <https://doi.org/10.37776/jpot.v1i1.656>
- Skjærseth, J. B. (2021). Towards a European Green Deal: The evolution of EU climate and energy policy mixes. *International Environmental Agreements: Politics, Law and Economics*, 21(1), 25–41. <https://doi.org/10.1007/s10784-021-09529-4>
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta. <https://pustaka.unm.ac.id/opac/detail-opac?id=35458>
- Suharno, Pambudi, N. A., & Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review*, 115, 105092. <https://doi.org/10.1016/j.childyouth.2020.105092>
- Wang, C.-H., Kao, Y.-T., & Huang, J.-T. (2021). Riverfront as a re-territorialising arena of urban governance: Territorialisation and folding of the Xindian River in Taipei metropolis. *Urban Studies*, 58(6), 1245–1261. <https://doi.org/10.1177/0042098020911875>
- Wang, X., & Wang, Q. (2021). Research on the impact of green finance on the upgrading of China's regional industrial structure from the perspective of sustainable development. *Resources Policy*, 74, 102436. <https://doi.org/10.1016/j.resourpol.2021.102436>
- Wulandari, S. N., & Afriyanni. (2021). Tourism Development Policy and Their Impact on the Regional Economy in the Riau Islands Province. *Jurnal Bina Praja: Journal of Home Affairs Governance*, 13(2). <https://doi.org/10.21787/jbp.13.2021.293-305>
- Zerbe, S. (2022). Global Land-Use Development Trends: Traditional Cultural Landscapes Under Threat. In S. Zerbe (Ed.), *Restoration of Multifunctional Cultural Landscapes: Merging Tradition and Innovation for a Sustainable Future* (pp. 129–199). Springer International Publishing. https://doi.org/10.1007/978-3-030-95572-4_4