# The Reclamation Impact on Livelihoods and Coastal Environment of Tanjung Uma, Batam

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## Abstract
Coastal settlements have an important role as an interface between land and sea are the main income's source for local residents. Their daily lives are strongly linked to the coastal environment, and that's why they are sensitive to environmental change and urbanization. The research aims to identify physical and social aspects of coastal villages, inspect their livelihoods, and evaluate the economic effects of land reclamation. The purpose of this study is to identify the physical and social characteristics of coastal villages, to study their livelihoods and to assess the economic impact of land reclamation. This study employs a qualitative descriptive method, including field observations, interviews with local residents and fishermen, and literature reviews of coastal settlements and environmental changes caused by reclamation. The results show that reclamation has had a large impact on the water quality of the coastal areas. There have been increases in turbidity, sedimentation and a decline in the quality of the marine ecosystem. These changes directly impact on fish catches and fishermen are faced with having to go out further to sea with increased operating costs and reduced productivity. This has led to a sharp decrease in the income and well-being of the populations of the coastal settlements, especially those whose main source of income is fishing. Finally, the social and economic viability of local populations has been affected by changes in the coastal environment. Therefore, Tanjung Uma needs a sustainable coastal environment management to reduce the conflict of urban development, environmental preservation, and the welfare of the coastal population.

**Keywords:** coastal settlement; livelihood; reclamation; Tanjung Uma.

## Introduction

Coastal settlements refer to residential areas that are formed in the transition zone separating land and sea (Indrasari, 2020). Coastal areas have characteristics that are vastly

different from those of inland settlements, as their conditions are influenced by specific coastal environmental factors such as tidal phenomena, sea breezes, and various economic activities related to the utilization of marine resources. Communities living in coastal areas generally have a very strong connection to the sea as a source of livelihood. The sea supplies valuable natural resources that support community livelihoods through fishing, aquaculture, and other marine-based economic activities. Additionally, coastal areas often serve as hubs for community economic activities, including the trade of marine products, fish preservation and processing, and various other supporting economic activities that sustain the livelihoods of coastal communities (Lilipory et al., 2025). Therefore, the ocean serves an important function in sustaining the livelihoods and well-being of coastal communities. (Anugrah et al., 2022).

Batam City, as a strategic economic hub in the Kepulauan Riau Province facing the Singapore Strait, has been largely influenced by the expansion of industrial and tourism activities. Despite this growth, the city's coastal settlement is increasingly affected by development pressures within the surrounding area. The coastal settlement in Tanjung Uma, Lubuk Baja District, is characterized by densely packed stilt houses built over the water, where the community relies on fishing and other marine activities to meet their daily needs (Hamidi et al., 2024). This area reflects the community's natural adaptation to the coastal environment.

Reclamation originates from the English term "to reclaim" means to re-establish something that is damaged. According to the English Indonesian Dictionary defines "reclaim" as "to reclaim land from the sea". And the term "reclamation" is translated as "the process of gaining land". Few experts have defined or provided a clear understanding of coastal reclamation (Putra & Epriadi, 2021).

Land reclamation activities around Tanjung Uma and other parts of the Batam coastline, such as Tanjung Tritip and Kampung Tua Panau, aim to expand land area for industrial use, but have led to sedimentation, water turbidity, and the loss of fish habitats. Studies in Batam show that land reclamation has led to a decline in fish catches, making it difficult for fishermen to earn a living. Local journals, such as those from Universitas Putra Batam, confirm the economic losses suffered by fishermen due to the loss of fishing grounds and ecosystem damage (Putra & Epriadi, 2021).

This study aims to identify the conditions of the Tanjung Uma coastal settlement, understand the community's livelihood activities, and analyze the impact of land reclamation on them. Theoretical benefits include; practical benefits in the form of recommendations for sustainable land management for the Batam government; social benefits through the empowerment of fishermen; and environmental benefits via the mitigation of ecosystem damage.

A previous study (Putra & Epriadi, 2021). examined the coastal reclamation activities carried out by the Sumatra IV Water Resources Agency on Putri Island, Batam City. This reclamation was deemed suboptimal and failed to meet standards due to a lack of coordination between relevant parties and the local community. Consequently, the project has had significant negative impacts on the socioeconomic conditions of local fishermen. The narrowing of marine areas and damage to aquatic ecosystems have made

it increasingly difficult for fishermen to catch fish, causing their incomes to drop drastically and leaving them unable to afford their children's education.

Another study (Sherina et al., 2025) has also discussed how the rapid transformation of Batam City (an industrial hub and free trade zone) has triggered various pressures that threaten the livelihoods of traditional fishermen in its coastal areas. Rapid coastal development and reclamation have contributed the loss of local fishermen's fishing grounds; threatening fishermen's catches through increased industrial contamination and damage to marine ecosystems. Furthermore, this community is facing transformation in its social and cultural structure, as an increasing number of younger individuals seeking work in factories, threatening the preservation of local traditions and maritime identity. In response to these issues, this journal highlights the importance of implementing, comprehensive, inclusive, and intergenerational empowerment strategies. Such, ranging from climate adaptation training and circular economic diversification to digital literacy. The long-term attainment of achieving sustainable coastal development depends on effective collaboration between local governments, academics, non-governmental organizations, and the private sector through CSR programs.

Another study also discussed the impact of reclamation on the social and economic conditions of the community in the Kampoeng Air Jangkang area, Bangka Regency (Dwi Mardyanti, 2023). The results showed that reclamation can affect the lives of coastal communities, particularly in social aspects and changes in livelihood patterns. Although the economic impacts have not yet been felt, residents have begun to adapt their work by shifting to other sectors such as agriculture, plantations, and the processing industry due to changes in the surrounding environmental conditions. Furthermore, the study also showed that the lack of community involvement in the reclamation process means that the benefits of development have not yet been fully felt by the local community. This study suggests that reclamation activities can impact the sustainability of coastal community livelihoods if not supported by management that takes into account local social and economic conditions.

Although there have been previous general studies on the impacts of land reclamation along the Batam coast, a research gap remains because there has been no in-depth analysis specifically focused on Tanjung Uma that combines the conditions of informal settlements with recent changes in livelihoods following the 2025–2026 reclamation. The uniqueness of this study lies in its comprehensive, field-observation-based approach to developing a sustainable adaptation model for local fishermen, a topic that has not been extensively addressed in previous literature.

## Research Method

The research location is Kampung Tua Tanjung Uma, Lubuk Baja District, Batam City (Figure 1). This location was chosen based on its relatively densely populated coastal settlement, which has grown naturally, and relies heavily on marine resources for its primary income. Furthermore, this area has experienced transformations in its

surrounding conditions and spatial planning due to ongoing coastal reclamation activities in parts of Batam's coastal areas.




**Figure 1.** *Research Location in Tanjung Uma, Batam (Source: Google Maps)*

In observing the facts on the ground, this study employed a descriptive qualitative approach (Marselina, 2023). This method was chosen because this study intended to further examine the characteristics of settlements and the social conditions of the community in Kampung Tua Tanjung Uma. A descriptive qualitative approach is deemed appropriate for studying social facts more comprehensively and visualizing the research object naturally based on facts occurring on the ground (Afrizal, 2024). Through this approach, this study presents a realistic and valid picture of how coastal development activities directly relate to the daily activities of the local community.

To maintain the quality and analytical capacity of this study, two main data categories were used. Primary data comprises all information obtained directly on-site through interviews and visual observations of the surrounding residential environment. All information obtained from this data is classified as primary data (Klingebiel et al., 2024). To strengthen the primary data collected, supporting data, namely secondary data, is also needed. This data is used as supplementary data or additional information. Secondary data can be found in written citations, such as books, scientific articles, and official documents relevant to the research topic. Researchers supplemented the data obtained by reviewing various academic references, recent scientific publications, and official documents directly related to the issue of coastal transformation and the Tanjung Uma region as a whole.

To obtain comprehensive and valid data, this study employed a number of comprehensive data collection methods. The first part involved a direct field survey of the Tanjung Uma area to verify in detail the physical condition of the settlement, including the distinctive characteristics of the stilt houses, building density, and supporting facilities such as drainage systems and waste management (Marselina, 2023). This process was further strengthened by in-depth interviews with local residents and fishermen to gain a better understanding of their perspectives on changes to the sea conditions and how these adjustments have affected their economic activities and livelihoods (Klingebiel et al., 2024). The findings from the survey and interviews were supplemented by

documentation, depicting the relationships and architectural conditions within the settlement area, captured through photographs as original evidence of the research process (Marselina, 2023). Furthermore, the researchers conducted a theoretical study by examining various written sources to strengthen their explanations of the socio-economic impacts of coastal changes (Klingebiel et al., 2024).

The data analysis procedure in this study was carried out through several systematic stages to obtain valid and core findings. Referring to the interactive analysis model, the first section includes data condensation, where initial findings obtained directly from the field are carefully filtered and supplemented to identify elements closely related to residential architecture and the economic impacts of reclamation activities (Afrizal, 2024). The findings are then grouped and presented using a systematic and narrative structure. This section includes an explanation of the distinctive characteristics of stilt houses and the transition from traditional wooden structures to concrete structures, complemented by field documentation photographs (Marselina, 2023). The next important section links the integrated analysis by linking various findings gathered during the research process. For example, the researcher linked field observations regarding increasingly muddy sea conditions with complaints from fishermen about shrinking fisheries catches. Likewise, theories and findings regarding the impacts of reclamation are studied and compared with conditions directly experienced by local communities in order to assess the level of influence of reclamation on the social and economic lives of coastal communities (Afrizal, 2024).

# Results and Discussions

## Spatial Adaptation and Settlement Conditions in Tanjung Uma

Based on site observations, Tanjung Uma shows characteristics of a coastal settlement that have been developed naturally with a very high population density. The unstructured settlement pattern is a reflection of the natural evolution of this area in accordance with the needs of the coastal community. One of the characteristics is those houses firmly stand on stilts above the water. This is not from architectural tradition but the result of community adaptation for tidal fluctuations. In previous research, they already found the coastal areas need a specific development approach due to their dynamic nature, differing from inland areas (Lilipory et al., 2025).

Some residents have begun renovating their houses, combining traditional materials like mangrove wood with modern concrete structures to enhance the building's structure. This transformation shows the ability of local residents to adapt to their developments at the surrounding situation, including the pressures of high development and coastal reclamation. But these physical changes have not been accompanied by the provision of adequate environmental infrastructure. An unintegrated drainage system and mismanagement of domestic waste, which still flows directly into the sea, have a big impact on decreasing the coastal environment's quality, especially if reclamation is still carried out without sustainable planning. If reclamation is carried out without considering the environmental carrying capacity and social conditions of coastal communities, the

risk of damage to the marine ecosystem, decreased water quality, and even disruption to the lives of the residents of Tanjung Uma could increase. Therefore, reclamation must not only focus on the physical development but also need to consider the impact to the marine ecosystem, community settlements, and long-term sustainability of the coastal environment.

## Impacts of Reclamation: Ecological Threats and Local Economic Crisis

Local residents interviewed confirmed that the sea is the lifeblood of Tanjung Uma's economy. Marine resources are the livelihood for most of the coastal communities. Primary activities include fishing, aquaculture and seafood processing. The fishermen also work in supporting sectors such as seafood trading, fish processing and fishery product distribution (Aguspriyanti Dinar Carissa et al., 2021). But since reclamation activities began in the area, this balance has been altered. Reclamation is the process of turning water bodies into land by filling them up or draining them out. This makes the land available for a variety of development activities (Sinlae et al., 2024).

Reclamation is generally carried out in shallow coastal areas or areas considered less productive (Syahrul et al., 2025). Reclamation also serves as a solution to obtain new land that can be utilized to support development and meet the increasing demand for space in urban areas (Augustina et al., 2024). In addition, reclamation can also be used for infrastructure development such as ports, industrial areas, and tourism areas (Anugrah et al., 2022).

In its implementation, the stages of reclamation include the construction of retaining embankments, gradual material filling, land leveling, and soil compaction processes so that the land becomes stable and can be used for development activities (Bagusti, 2024). Although it aims to support development, reclamation can also cause various impacts on the environment and surrounding coastal communities. Environmental impacts include changes in sea currents, the loss of important ecosystems, and increasingly severe flooding (Putra & Epriadi, 2021). Such ecosystem damage can lead to a decline in fish populations and marine products that serve as the main source of livelihood for coastal communities (Munawaroh & Setyaningsih, 2021). Therefore, reclamation must pay attention to maintaining ecosystem balance so that all components remain dynamically interconnected (Anugrah et al., 2022).

Based on interview results, the coastal community of Tanjung Uma stated that the waters of Tanjung Uma have become murky and muddy due to the reclamation processes of surrounding development projects. This condition not only disrupts the ecological balance of the waters but also causes fish habitats to shift to more distant areas, forcing fishermen to travel farther distances for fishing with increasingly uncertain results (Aswandi, 2024). This directly impacts the community, for example through a significant decline in fishermen's catches. This actual condition strengthens previous research presented by Bagusti (2024) regarding the impacts of permits for large projects that often fail to adequately consider the sensitivity of coastal ecosystems. In addition to decreased income, fishermen also experience difficulties in moving their boats during low tide due to changes in the seabed contours caused by reclamation (Rahman et al., 2024). This

phenomenon reflects an imbalance in coastal spatial planning policies. As discussed, land expansion ojects often neglect the long-term economic conditions of coastal communities caused by changes in the functions of their environment (Sinlae et al., 2024).



**Figure 2.** *View of the Reclamation Area in the Coastal Waters of Tanjung Uma, Batam*

(Figure 2) illustrates the physical condition of the reclamation area in Tanjung Uma, where changes in the coastline and seabed are visible during low tide. The exposed seabed observed during low tide indicates environmental changes associated with reclamation activities. These changes have affected fishermen's mobility and access to marine resources, particularly during fishing operations.

## Synthesis of Findings: Community Resilience vs Land Expansion

Overall, this study found that the impacts of reclamation in Tanjung Uma are not limited to the aquatic environment but have also created serious threats to the economy of coastal communities. There is an increasing demand for land due to the focus on development in the Batam City area. According to the BP Batam report (2023), around 35% of traditional fishing areas in coastal waters have been converted into industrial zones, ports, and new residential areas. This condition has affected the lives of fishermen, where their income in several areas has decreased by up to 40% compared to before the reclamation projects were carried out (Sianipar et al., 2025). Development should not only pursue the expansion of new land areas but must also provide real protection for the living spaces of coastal fishermen. If the quality of the marine environment declines or ecosystem damage occurs, then fish catches and other marine resources may also decrease, thereby affecting the economic conditions of coastal communities (S., Azhar Syam, 2024). This is important so that the welfare of coastal communities is not lost amid the rapid modernization of urban Batam.

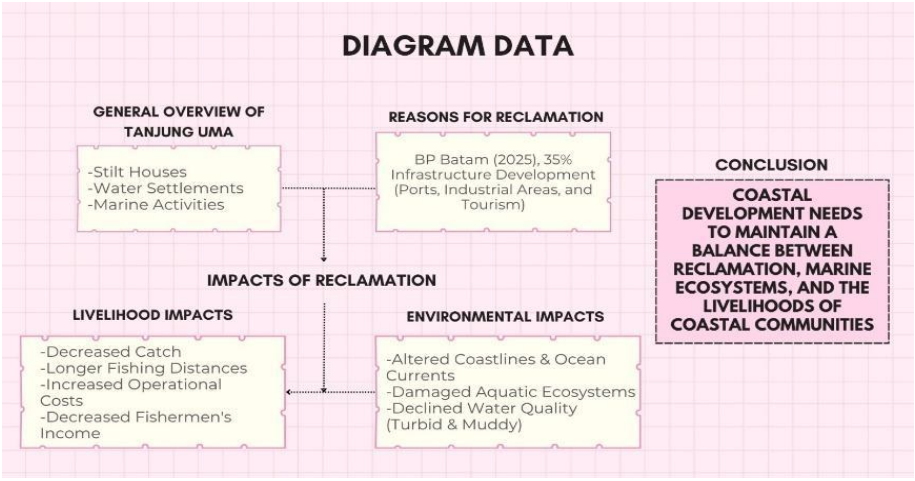



**Figure 3.** *Reclamation Impacts in Tanjung Uma, Batam*

# Conclusion

Based on the findings of this study, the coastal settlement in Kampung Tua Tanjung Uma reflects an organically developed area characterized by high population density and dominated by stilt houses as a form of adaptation to tidal sea conditions. In this settlement, the physical development marked by a shift in building material. There is evolution from the traditional timber to concrete, though it has not yet been matched by adequate infrastructure such as drainage systems and waste management. To maintain the local economy, the people in this area are very dependent on the condition of the waters because it directly affects the livelihoods and daily activities of the people. However, land reclamation activities in this coastal area have had several negative impacts that directly impact fishing activities. After the reclamation, the water in the area has become murkier and sedimentation has occurred. Consequently, the livelihoods of local communities have declined. Based on these findings, it can be seen that land reclamation affects the physical aspects of buildings or the environment and also threatens the resilience and economic sustainability of coastal communities. Therefore, the planning and management of coastal areas must be more inclusive and sustainable by considering the balance between development, environmental conservation, and protection of local livelihoods.

## References

Afrizal; (2024). *Metode Penelitian Kualitatif*.

Aguspriyanti Dinar Carissa, Wilarso Setiawan Angga, & Ariansyach Budhi Hary. (2021). Analisis Tipologi Arsitektur Permukiman PesisirKampung Tua Belian. *Conference on Management, Business, Innovation, Education and Social Science*, *1*(1), 1805–1814.

Anugrah, A. S., Karmilah, M., & Rahman, B. (2022). Potret Krisis Sosio-Ekologi Kawasan Pesisir Dampak Reklamasi. *Uniplan: Journal of Urban and Regional Planning*, *3*(1), 9–21. https://doi.org/10.26418/UNIPLAN.V3I1.52818

Aswandi, K. (2024). *ANALISIS DAMPAK PROYEK REKLAMASI CENTRE POINT OF INDONESIA (CPI) TERHADAP KEHIDUPAN SOSIAL EKONOMI MASYARAKAT NELAYAN DI KELURAHAN PANAMBUNGAN MARISO MAKASSAR = THE ANALYSIS ON IMPACT OF CENTER POINT OF INDONESIA (CPI) RECLAMATION PROJECT ON SOCIO-ECON…*.

Augustina, J., Wattimena, Y., & Leatemia, W. (2024). Kerusakan Ekosistem Pesisir: Reklamasi Wilayah Jawabannya? *Uti Possidetis: Journal of International Law*, *5*(1), 138–154. https://doi.org/10.22437/UP.V5I1.28199

Bagusti, H. &. (2024). *IMPLEMENTASI PERIZINAN PELAKSANAAN REKLAMASI PANTAI DAN PULAU-PULAU PESISIR DINEGARA KESATUAN REPUBLIK INDONESIA*. *7*(1), 180–203.

Dwi Mardyanti, T. M. S. (2023). 4364-4375 (1) (1). *Journal Of Social Science Research*, *3*(5), 4364–4375. https://j-innovative.org/index.php/Innovative

Hamidi, K., Prajati, G., Adicita, Y., & ... (2024). Clean Up Day di Kawasan Pesisir Tanjung Uma. *... Journal of Loyality ...*, *1*(1), 63–69.

Indrasari, D. (2020). Identifikasi Masalah Dan Model Pengelolaan Wilayah Pesisir: Studi Kasus Provinsi Dki Jakarta. *Jurnal Kajian Teknik Sipil*, *5*(1), 43–56. https://doi.org/10.52447/jkts.v5i1.4114

Klingebiel, S., Hartmann, F. L., Madani, E., Paintner, J., Rohe, R. A., Trebs, L., & Wolk, T. (2024). Exploring the Effectiveness of International Knowledge Cooperation: An Analysis of Selected Development Knowledge Actors. In *Exploring the Effectiveness of International Knowledge Cooperation: An Analysis of Selected Development Knowledge Actors*. https://doi.org/10.1007/978-3-031-55704-0

Lilipory, I., Breemer, J., Pengembangan, S., Dalam, P., & Pelestarian, M. (2025). STRATEGI PENGEMBANGAN PANTAI DALAM MENDUKUNG PELESTARIAN LINGKUNGAN PESISIR DI DESA TAWIRI KECAMATAN TELUK AMBON KOTA AMBON. *JURNAL SIMETRIK*, *15*(1), 1–7. https://doi.org/10.31959/JS.V15I1.2967

Marselina, S. (2023). PROBLEMATIKA PENGUNAAN METODE PEMBELAJARAN BERBASIS MASALAH DALAM PEMBELAJARAN BAHASA INDONESIA. *Sitasi Ilmiah*, *2*(1), 75–81. https://ejournal.unma.ac.id/index.php/si/article/view/8257

Munawaroh, L., & Setyaningsih, W. (2021). Adaptasi Masyarakat Pesisir dalam Menghadapi Perubahan Garis Pantai di Pesisir Kecamatan Sayung. *Geo-Image*

*Journal*, *10*(2), 164–174. https://journal.unnes.ac.id/sju/geoimage/article/view/48983

Putra, E. E., & Epriadi, D. (2021). Dampak Reklamasi di Kawasan Pesisir Pulau Batam Terhadap Keberlangsungan Hidup Nelayan Sekitar. *Jurnal Ilmiah Mahasiswa*, *3*(4), 1–10. https://forum.upbatam.ac.id/index.php/scientia_journal/article/view/3128

Rahman, A., Nur, S., & Maruf, A. (2024). Regulations on Protection of Fishermen's Rights and the Environment in Reclamation Projects in Indonesia: Peraturan Perlindungan Hak Nelayan dan Lingkungan dalam Proyek Reklamasi di Indonesia. *Mendapo: Journal of Administrative Law*, *5*(3), 281–297. https://doi.org/10.22437/MENDAPO.V5I3.35845

S., Azhar Syam, A. . (2024). Literasi digital mahasiswa dalam penggunaan media sosial. *Jurnal Ilmu Sosial Dan Humaniora*, *13*(1), 15–28.

Sherina, J., Mustofah, A., & Devy Pramudiana, I. (2025). Pemberdayaan Nelayan Tradisional Di Kota Batam Dalam Menghadapi Tekanan. *Multidisciplinary Journal Of Sciences*, *01*(02), 184–200.

Sianipar, N., Sisrian, N., Bela, R., Raja, M., & Haji, A. (2025). Dampak Reklamasi Pesisir Terhadap Kehidupan Sosial Ekonomi Nelayan di Batam. *Humaniora Dan Seni (JISHS)*, *4*(3), 248–251. https://doi.org/10.62379/jishs.v4i3.3756

Sinlae, E. S. P., Syahda, I. F., Syafa, T. S., & Mahipal. (2024). Analisis Tata Ruang Terhadap Reklamasi Teluk Jakarta; Pelanggaran Undang-Undang Nomor 1 Tahun 2014 Serta Implikasinya Terhadap Kebijakan Lingkungan. *Al-Zayn : Jurnal Ilmu Sosial & Hukum*, *2*(2), 119–127. https://doi.org/10.61104/ALZ.V2I2.370

Syahrul, M., Syah, F., Siam, M., & Nugroho, P. (2025). Reklamasi: Analisis Teori dan Implementasi dalam Penyediaan Lahan Hunian Jakarta Utara. *Prosiding (SIAR) Seminar Ilmiah Arsitektur*, 1265–1278. https://proceedings.ums.ac.id/siar/article/view/6160