

# Knowledge, perception and social acceptance of coastal dike construction plan among fishing communities in an erosion-prone coast of Indonesia

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**Abstract.** Coastal dikes address coastal erosion and tidal flooding in vulnerable areas. However, their effectiveness depends not only on technical performance but also on how coastal communities understand and respond to their development. This study examined the socioeconomic characteristics, knowledge, perceptions, and aspirations of fishing communities regarding a planned coastal dike in Wedung Subdistrict, Demak Regency, Indonesia, and assessed the relationship between knowledge and perception. A descriptive quantitative approach was applied to 64 fishermen selected through snowball sampling. Data were collected through questionnaires, interviews, field observations, and document reviews and analyzed using descriptive statistics and the Chi-square test. Most respondents (81.12%) had low knowledge of the planned coastal dike, while 60.16% had negative perceptions. Respondents recognized its potential to reduce coastal erosion and tidal flooding and protect coastal settlements, but 51.56% were concerned about access to fishing grounds, navigation routes, and livelihood sustainability. The Chi-square test showed a significant relationship between knowledge and perception ( $p < 0.05$ ), indicating that greater knowledge was associated with more positive perceptions. The findings suggest that coastal dike planning should involve clear, continuous communication with fishing communities and address their concerns about fishing access and livelihoods. Incorporating local knowledge and community aspirations may improve acceptance of coastal protection measures and help ensure that they address both coastal risks and community needs.

**Keywords:** coastal adaptation, coastal erosion, community engagement, Demak Regency, livelihood vulnerability, tidal flooding.

**Introduction.** Coastal regions worldwide are impacted by climate change, sea-level rise, land subsidence, coastal erosion, and more frequent tidal flooding. These pressures have accelerated shoreline retreat and increased the vulnerability of nearby communities, particularly in low-lying deltaic areas with dense residential areas and economic activities (Nicholls et al., 2021; IPCC, 2022). To address this problem, several countries have adopted coastal protection measures, including building sea dikes, coastal dikes, and hybrid engineering approaches. These interventions effectively reduce physical hazards, yet the engineering performance, community acceptance, stakeholder participation, and the integration of local knowledge into planning and implementation determine the long-term effectiveness (Sutton-Grier et al., 2015; Temmerman & Kirwan, 2015).

Indonesia is among the countries most vulnerable to coastal hazards because of its extensive coastline and large population living in coastal zones. Along the northern coast of Java, land subsidence, coastal erosion, sea-level rise, and tidal flooding degrade the environment and bring socioeconomic losses (Marfai et al., 2008; IPCC, 2022). Demak

Regency is one of the most severely affected coastal regions, where shoreline retreat, mangrove degradation, and recurring tidal inundation have threatened settlements, fisheries infrastructure, and local livelihoods. Fisher communities are the most affected, as their income, mobility, and access to fishing grounds become restricted. This situation also affects community welfare and the sustainability of capture fisheries (Setiyono et al., 2020; Hidayah et al., 2025).

As a measure, the Indonesian Government has planned the construction of a coastal dike in Demak Regency to protect the coastal area from climate change impacts. The dike protects settlements, public facilities, and economic activities in coastal areas from the impacts of environmental degradation. However, coastal protection measures often generate ecological and socioeconomic trade-offs. Changes in hydrodynamics, sediment transport, habitat connectivity, navigation routes, and access to fishing grounds may also influence the livelihoods of coastal communities (Temmerman & Kirwan, 2015; Airoidi et al., 2021). Therefore, it is necessary to investigate how local communities perceive and accept the coastal protection projects.

Previous studies have largely focused on the engineering effectiveness of coastal defense structures or on the physical impacts of coastal erosion and flooding. Unfortunately, fishing communities' perception and acceptance of the project, particularly during the pre-construction stage, have been rarely put into consideration. Individuals with greater access to information are able to evaluate environmental management policies more objectively and are more likely to participate in decision-making processes (Reed, 2008; Ostrom, 2009). On the other hand, inadequate communication and limited stakeholder engagement often reduce public trust and increase resistance to coastal development projects (Reed, 2008).

The coastal dike projects will also be implemented in Wedung Subdistrict, where communities whose livelihoods depend on capture fisheries might be affected. Taking into account fishermen's knowledge, perceptions, and aspirations before project implementation is critical for improving stakeholder engagement and reducing potential conflicts during project development. This study was then conducted to (1) analyze the socioeconomic characteristics of fishing communities, (2) assess fishers' knowledge, perceptions, and aspirations regarding the construction of a coastal dike, and (3) examine the relationship between knowledge and perceptions of the proposed coastal protection program. The findings contribute to participatory coastal conservation planning for more inclusive, socially acceptable, and sustainable coastal adaptation policies.

## Material and Method

**Study area.** The study was conducted in Wedung Subdistrict, Demak Regency, Central Java, Indonesia, which is highly vulnerable to coastal erosion, tidal flooding, and land subsidence. The Indonesian Government has proposed the construction of a coastal dike in this region as part of its coastal protection and climate adaptation strategy, covering four coastal villages: Wedung, Babalan, Bungo, and Kedungmutih. The community living in these villages mostly relies on capture fisheries as their primary livelihood.

**Research design and sampling.** A descriptive quantitative approach was employed to assess fishers' knowledge, perceptions, and aspirations regarding the planned coastal dike construction. Snowball sampling was used to select 64 fishers as the respondents. Eligible respondents were active capture fishermen residing in the study area who rely on fishing activities for their livelihoods.

**Data collection.** Primary data were collected between January-February 2026 through structured questionnaires, face-to-face interviews, and field observations. The questionnaire consisted of four sections: (1) respondents' socioeconomic characteristics, (2) knowledge of the planned coastal dike, (3) perceptions of the anticipated environmental and socioeconomic impacts of the project, and (4) aspirations and expectations regarding coastal dike construction. Secondary data were obtained from government reports, scientific publications, and other relevant documents describing coastal conditions and the

proposed coastal protection program in Demak Regency. Prior to implementation, the questionnaire was evaluated for content validity by experts with relevant expertise to assess the relevance and clarity of the items. Internal consistency was assessed using Cronbach's alpha, a statistical measure used to evaluate the reliability of items within each construct.

**Data analysis.** Socioeconomic characteristics, knowledge, perceptions, and aspirations were analyzed using descriptive statistics in IBM SPSS Statistics version 25 to see the frequencies, percentages, and cross-tabulations of the data. The economic feasibility of capture fisheries was evaluated based on the Revenue-Cost (R/C) Ratio, where values greater than one indicate economically viable fishing operations. The relationship between fishermen's knowledge and perceptions of the planned coastal dike was examined using the Pearson Chi-square test at a significance level of 5% ( $p < 0.05$ ).

**Ethical considerations.** All respondents voluntarily participated in this study and were informed of the objectives of the research before the interviews were conducted. Personal information and respondents' responses were kept confidential and were used solely for academic purposes.

## Results

**Socioeconomic characteristics of fishing communities.** Based on the socioeconomic characteristics, most respondents were within the productive age (89.06%) and almost all of them relied on the capture fisheries sector for their livelihoods (96.88%). This high dependence on the fisheries sector means that the sustainability of household income is heavily influenced by the condition of coastal resources and fishing activities. Although fishing is still economically viable, as shown by an R/C ratio greater than 1, reliance on a single livelihood sector creates livelihood vulnerability.

These socioeconomic characteristics also reflect the adaptive capacity of fishing communities. Their extensive experience at sea and the use of fishing gear show that they are adaptive to environmental dynamics. This adaptive capacity is an important factor that affects livelihood sustainability even when the conditions are dynamic. However, without strong institutional roles, the adaptive capacity will not be able to increase fishers' collective participation. Therefore, access to extension services, information, and relevant organizations should be strengthened for stronger coastal community resilience.

**Reliability and validity of the survey instrument.** The validity test showed that all 12 knowledge items and 14 perception items exceeded the critical  $r$  value of 0.2461, with item correlation coefficients obtained from the validity test ranging from 0.500 to 0.855 for the knowledge items and from 0.414 to 0.768 for the perception items, respectively. Therefore, all items were considered valid. The instrument demonstrated acceptable reliability, with Cronbach's alpha values exceeding 0.80 for both the knowledge and perception constructs. Cronbach's Alpha coefficients were 0.876 for the knowledge variable and 0.813 for the perception variable, both exceeding the commonly accepted threshold of 0.70 for adequate internal consistency. Thus, the research instrument exhibits good internal consistency and adequate reliability for measuring the level of knowledge and perceptions of the participants regarding the coastal dike construction program (Tavakol & Dennick, 2011; Hair et al., 2022; Field, 2024).

**Fishermen's knowledge of the planned coastal dike.** The findings indicate that most fishermen in Wedung Subdistrict (81.12%) have limited knowledge of the coastal dike construction plan, as presented in Table 1. Their understanding is largely confined to the project's purpose, while information on the construction site, implementing agency, potential environmental and socioeconomic impacts, compensation, and complaint mechanisms remains insufficient. This limited knowledge suggests that information dissemination has not fully addressed the information needs of coastal communities. Consequently, fishermen lack sufficient information to assess the potential benefits,

impacts, and implications of the coastal dike for their fishing activities and livelihood sustainability. From an environmental communication perspective, these findings highlight the need for more transparent, accessible, and sustained communication to improve public understanding of coastal development objectives and potential consequences (Ostrom, 2009; IPCC, 2022).

Table 1

Frequency distribution of participants' level of knowledge

| No | Question                                                                                                                                                                                                                       | Category |        |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|
|    |                                                                                                                                                                                                                                | Low      | High   |
| 1  | I understand the main purpose of building a coastal dike                                                                                                                                                                       | 29.69%   | 70.31% |
| 2  | I am aware of the plans for the construction of a coastal dike in my area                                                                                                                                                      | 87.50%   | 12.50% |
| 3  | I know which agency, institution, or entity is implementing the coastal dike construction program                                                                                                                              | 93.75%   | 6.25%  |
| 4  | I am aware of the impact of coastal dike construction on ocean currents and sedimentation                                                                                                                                      | 62.50%   | 37.50% |
| 5  | I understand the potential socioeconomic impacts resulting from the construction of the coastal dike                                                                                                                           | 59.38%   | 40.62% |
| 6  | I understand that coastal dikes can affect fishers' catch                                                                                                                                                                      | 70.31%   | 29.69% |
| 7  | I understand the role of fishermen in the planning or public outreach for the coastal dike construction project                                                                                                                | 70.31%   | 29.69% |
| 8  | I am aware of the existence of a compensation or support policy for affected fishermen                                                                                                                                         | 100.00%  | 0.00%  |
| 9  | I know which relevant parties to contact in the event of negative impacts from the construction of the coastal dike                                                                                                            | 100.00%  | 0.00%  |
| 10 | I know that there are various types of coastal dikes (they come in many different types)                                                                                                                                       | 100.00%  | 0.00%  |
| 11 | I am familiar with the design of the coastal dike that will be built along the Demak coastline                                                                                                                                 | 100.00%  | 0.00%  |
| 12 | All I know is that coastal dikes are physical structures consisting of concrete walls built along the coast, as well as other types of structures (soft structures or hybrid structures, which combine concrete and mangroves) | 100.00%  | 0.00%  |

The inadequate knowledge reflects suboptimal risk communication, where the community does not understand the risks of coastal environmental changes, their impacts on fishing activities, and the socioeconomic conditions of their households. As shown in Figure 1, 81.12% of respondents had a low level of knowledge.

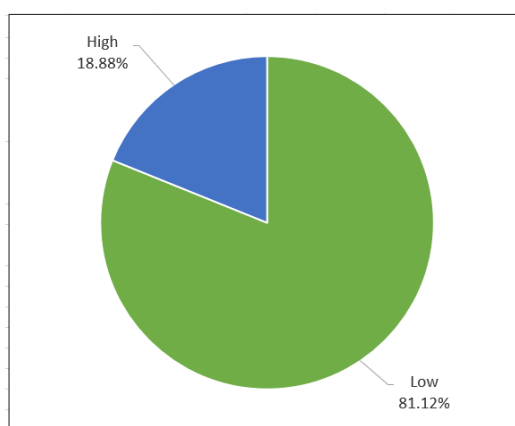


Figure 1. Frequency distribution of knowledge levels.

This study also found that stakeholder engagement among the government, fisher groups, and coastal communities should be strengthened through participatory outreach, two-way discussions, and feedback mechanisms to improve access to information and encourage community involvement. The engagement of the community during the planning and decision-making processes will ensure that the construction of the dike will be more inclusive to the needs of the affected community (Reed, 2008). Strengthened

communication and community participation also build the trust of the community, thereby reducing the chance of conflicts due to unclear information dissemination from multisectoral collaboration and legitimacy.

**Perceptions of coastal dike construction.** Most of the community in Wedung Subdistrict had a negative perception of the construction plan (60.16%), as shown in Figure 2. Although they understood that the dike would reduce coastal erosion (98.44%), as presented in Table 2, they could not yet accept the plan since they were concerned with the possible impacts on fishing activities, coastal environmental quality, and the sustainability of their incomes. These findings indicate that communities assess both the benefits of physical protection and the social, economic, and ecological consequences for the sustainability of their livelihoods. A similar situation occurred in Netherlands, where public acceptance of coastal protection infrastructure increased after the construction plan integrated ecological aspects and engaged stakeholders through the “Building with Nature” concept (de Vriend & van Koningsveld, 2012; van Slobbe et al., 2013).

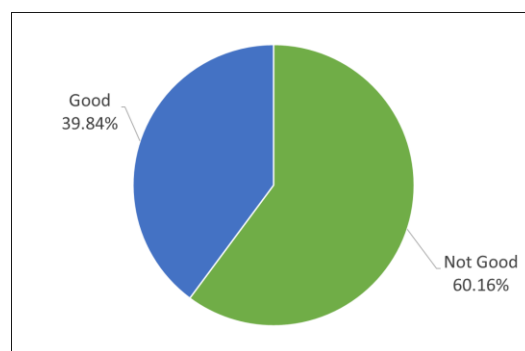


Figure 2. Frequency distribution of perception levels.

Table 2

Frequency distribution of perceptions

| No | Question                                                                                                                                                            | Category |        |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|
|    |                                                                                                                                                                     | Not good | Good   |
| 1  | The coastal dike will help combat coastal erosion                                                                                                                   | 1.56%    | 98.44% |
| 2  | The coastal dike will help mitigate tidal flooding                                                                                                                  | 6.25%    | 93.75% |
| 3  | The construction of coastal dikes can alter ocean current patterns around fishing grounds                                                                           | 73.44%   | 26.56% |
| 4  | Coastal dikes can affect the availability of fish in the waters and the habitats of marine life                                                                     | 76.56%   | 23.44% |
| 5  | Once the coastal dike is in place, water quality in the surrounding area will deteriorate due to the disruption of connectivity between the mangroves and the ocean | 79.69%   | 20.31% |
| 6  | Fishermen's income will increase once the coastal dike construction project is completed                                                                            | 59.38%   | 40.62% |
| 7  | The coastal dike construction program is creating new job opportunities for coastal communities                                                                     | 35.94%   | 64.06% |
| 8  | Coastal dikes can help protect port facilities or boat moorings from erosion                                                                                        | 71.88%   | 28.12% |
| 9  | The construction of coastal dikes has an impact on a reduction in fishing grounds                                                                                   | 82.81%   | 17.19% |
| 10 | Fishermen's income will decline once the coastal dike construction project is completed                                                                             | 84.38%   | 15.62% |
| 11 | The government is involving fishermen in the public awareness phase of the coastal dike construction project                                                        | 76.56%   | 23.44% |
| 12 | Information regarding the coastal dike has been communicated clearly and transparently                                                                              | 81.25%   | 18.75% |
| 13 | I feel that the voices or concerns of fishermen have been taken into account by the government                                                                      | 81.25%   | 18.75% |
| 14 | I believe that the coastal dike project will bring long-term benefits to fishermen                                                                                  | 31.25%   | 68.75% |

In Bangladesh (Mou et al., 2026), Vietnam (Yu et al., 2022), and the Philippines (Ratio et al., 2020), social acceptance of coastal infrastructure programs is influenced by the amount of benefits perceived by the community, transparency of information, trust in the government, and community involvement in the decision-making process. Whereas, limited information, inadequate community participation, and concerns about economic and ecological impacts lower the social acceptance of coastal infrastructure development programs. Transparent communication and public engagement can strengthen trust and social acceptance.

In the present study, most fishermen were skeptical about the impact of development on the sustainability of their livelihoods. Therefore, a new approach that prioritizes coastal protection, environmental communication, risk communication, and stakeholder engagement through the transparent dissemination of information, community involvement in the planning process, and the formulation of mitigation strategies for socioeconomic and ecological impacts should be designed.

**Relationship between knowledge and perception.** Of 64 respondents, 59% of fishermen had a low level of knowledge and 41% had a high level of knowledge. Fishermen with a low level of knowledge mostly expressed negative perceptions (89%), while those with a high level of knowledge tended to have positive perceptions (77%). Based on the results of the Chi-Square test presented in Table 3, a significance value of 0.000 ( $< 0.05$ ) indicated a significant relationship between the level of knowledge and the perceptions of the fishing community regarding coastal dike construction.

Table 3

Chi-Square test results

| Level of knowledge | Perception |           | Total      | Pearson Chi-square (p) |
|--------------------|------------|-----------|------------|------------------------|
|                    | Not good   | Good      |            |                        |
| Low knowledge      | 34<br>89%  | 4<br>11%  | 38<br>100% | 0                      |
| Advanced knowledge | 6<br>23%   | 20<br>77% | 26<br>100% |                        |

In reference to the concept of environmental perception, environmental perception may vary according to individuals' values and life experiences, while their relationship with coastal areas can influence their perception of the environment (Barradas & Ghilardi-Lopes, 2020). Communities with a better understanding of the functions, benefits, and potential impacts of coastal dikes tend to be able to make more objective assessments, whereas limited information can lead to concerns about potential risks, such as changes in fishing grounds, ecosystem conditions, and the sustainability of livelihoods. In terms of social acceptance, the level of knowledge determines public acceptance of coastal infrastructure development. Community acceptance of coastal schemes is influenced by knowledge, trust, perceived effectiveness, and stakeholder engagement (Apine & Stojanovic, 2026). Social acceptance includes acceptance of the technical benefits and the extent to which the public understands the development objectives, trusts the program managers, and feels involved in the decision-making process.

The findings of this study suggest that public acceptance of coastal dike construction needs to be strengthened through more intensive communication and use of proper education strategies. Information transparency regarding the benefits, potential risks, and mitigation measures for the impacts of construction on fishing activities should be enhanced. It is also necessary to employ a stakeholder engagement approach, where communities are more engaged in the planning, outreach, and evaluation processes of the project that they develop a sense of belonging to the program.

**Fishing community's aspirations and implications for coastal conservation.** The results of this study showed that the community had diverse aspirations. In general, they understood the function of the dike in addressing coastal erosion and tidal flooding (50%) and its potential effects on costs and fishing activities (47%), as shown in Figure 3. These

concerns regarding the physical and livelihood impacts of the dike were reflected in the community's expectations that the construction would maintain the sustainability of coastal areas and the economic activities of fishing communities.

The community's concerns also highlight the importance of constructing coastal dikes that take into account the sustainability of fishing activities and the condition of the coastal ecosystem. The community expects that the construction will not hinder boat navigation to fishing grounds, reduce fishing areas, or decrease the productivity of the waters that serve as their source of livelihood. Therefore, navigation access must be a primary consideration in the planning and design of coastal dikes.

The community also hopes that construction will not disrupt the ecological connections between the ocean, mangroves, estuaries, and other coastal ecosystems. Maintaining ecological connectivity preserves the quality of the aquatic environment, marine habitats, and the sustainability of fishery resources utilized by coastal communities. The community does not object to the construction of coastal dikes, but they expect that the project protects the sustainability of their livelihood. Therefore, community acceptance of development is rather determined by how the projects accommodate the needs of the community than by the physical protection for coastal areas.

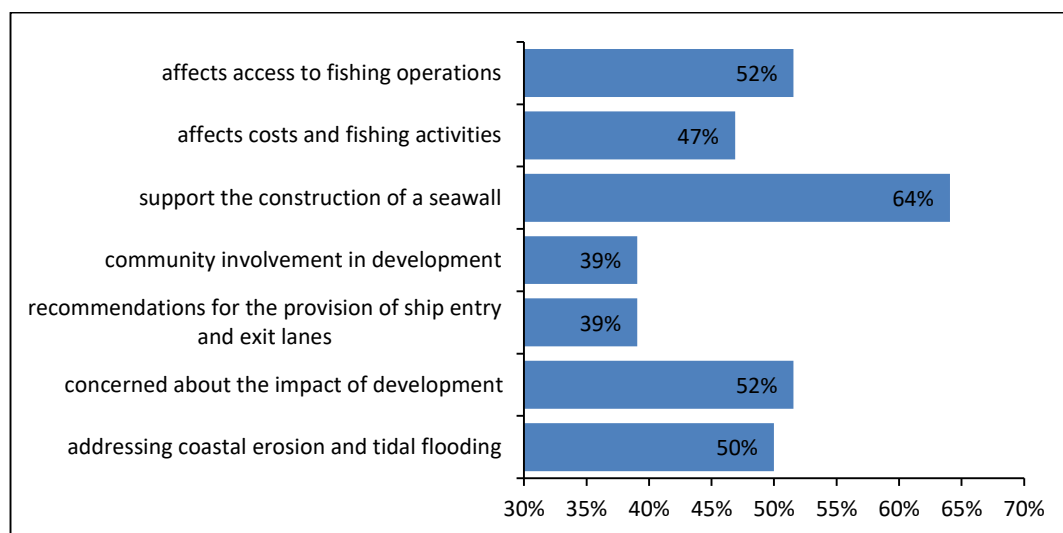


Figure 3. Community's concerns.

Local coastal communities are concerned by both environmental threats of coastal erosion and the economic sustainability of coastal resources. Therefore, measures addressing environmental issues should engage the community throughout the planning, implementation, and evaluation of the program. Local communities will communicate their needs, thereby potential conflicts will be reduced.

In the context of coastal zone management, the Integrated Coastal Zone Management (ICZM) highlights the need to integrate environmental, social, economic, and institutional aspects. ICZM promotes coastal infrastructure development that prioritizes physical protection, ecosystem sustainability and community welfare. Therefore, an adaptive coastal management is essential to ensure that the sea dike construction project is adjusted to environmental dynamics, climate change, and the needs of the community over time. Through a participatory, adaptive, and integrated approach, the sea dike development project will bring long-term benefits for the protection of coastal areas and livelihood sustainability of the local communities.

**Conclusions.** Fishing community in Wedung Subdistrict generally showed inadequate knowledge of the coastal dike construction plan, where most of them developed negative perceptions toward the project. On the other side, they recognized the potential benefits of the coastal dike in reducing coastal erosion and tidal flooding and protecting coastal settlements. At the same time, they expressed concerns regarding the possible impacts on access to fishing grounds, navigation routes, coastal ecosystems, and the sustainability of

their livelihoods. The significant relationship between knowledge and perception indicates that improving community understanding through effective communication and information dissemination can enhance public acceptance of coastal protection initiatives.

The implementation of the sea dike construction plans depends on engineering-related factors as well as the engagement of the local communities in the planning and implementation processes. To gain social acceptance, reduce potential conflicts, and support sustainable coastal conservation, it is necessary to identify the needs of the local community and engage the community in the decision making process. The findings indicate that future coastal protection programs should adopt participatory planning, provide transparent and continuous public communication, and ensure that infrastructure design maintains access for fishing activities while minimizing ecological and socioeconomic impacts on coastal communities.

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**Authors Contributions.** NTM, as the main contributor, was responsible for data collection, data analysis, and drafting the manuscript; KEP contributed to the research design, methodology, and supervision; TDH contributed to data analysis, interpretation of the results, and manuscript revision; AS contributed to the study conceptualization, supervision, interpretation of the findings, and critical revision of the manuscript; M contributed to the interpretation of coastal and marine environmental aspects and manuscript revision; OPD contributed to field activities, community engagement, and interpretation of local conditions; KDR contributed to the interpretation of regional development and policy aspects; UM contributed to the interpretation of fisheries policy and socioeconomic aspects and manuscript revision. All authors contributed to the finalization of the manuscript and approved the final version.

**Conflict of Interest.** The authors declare that there is no conflict of interest.

**Data Availability.** The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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## References

- Airolidi, L., Beck, M. W., Firth, L. B., Bugnot, A. B., Steinberg, P. D., & Dafforn, K. A. (2021). Emerging solutions to return nature to the urban ocean. *Annual Review of Marine Science*, 13, 445-477. DOI: 10.1146/annurev-marine-032020-020015
- Apine, E., & Stojanovic, T. (2026). Community acceptance of nature-based solutions for coastal flood risk management. *People and Nature*, 8(1), 21-36. <https://doi.org/10.1002/pan3.70182>
- Barradas, J. I., & Ghilardi-Lopes, N. P. (2020). A case study using the New Ecological Paradigm scale to evaluate coastal and marine environmental perception in the Greater São Paulo (Brazil). *Ocean and Coastal Management*, 191, 105177. DOI: 10.1016/j.ocecoaman.2020.105177
- de Vriend, H. J., & van Koningsveld, M. (2012). Building with nature: thinking, acting and interacting differently. *EcoShape*, Dordrecht, 39 pp.
- Field, A. (2024). *Discovering statistics using IBM SPSS Statistics*. 6th edition. SAGE Publications, 1144 pp.

- Hair Jr., J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2022). *Multivariate data analysis*. 8th edition. Cengage Learning, 813 pp.
- Hidayah, R. N., Sriyanto, & Suharini, E. (2025). [The impact of rob on the socio-economic and community adaptation of Ulujami Sub-District, Pemalang Regency, 2020-2024]. *Geo-Image Journal*, 14(2), 120-128. <https://doi.org/10.15294/geoimage.v14i2.26432> [in Indonesian]
- IPCC (2022). *Climate change 2022: impacts, adaptation and vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Pörtner, H. O., Roberts, D. C., Tignor, M., Poloczanska, E. S., Mintenbeck, K., Alegría, A., Craig, M., Langsdorf, S., Löschke, S., Möller, V., Okem, A., & Rama, B. (eds). Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp. DOI: 10.1017/9781009325844
- Marfai, M. A., King, L., Singh, L. P., Mardiatno, D., Sartohadi, J., Hadmoko, D. S., & Dewi, A. (2008). Natural hazards in Central Java Province, Indonesia: an overview. *Environmental Geology*, 56(2), 335-351. DOI: 10.1007/s00254-007-1169-9
- Mou, A. T., Aruga, K., & Islam, M. M. (2026). Investigating the socioeconomic determinants of solar pump adoption among respondents in Bangladesh: a Firth's penalized likelihood logistic regression approach. *Sustainability*, 18(5), 2562. <https://doi.org/10.3390/su18052562>
- Nicholls, R. J., Hanson, S. E., Lowe, J. A., Slangen, A. B. A., Wahl, T., Hinkel, J., & Long, A. J. (2021). Integrating new sea-level scenarios into coastal risk and adaptation assessments: an ongoing process. *WIREs Climate Change*, 12(3), e706. <https://doi.org/10.1002/wcc.706>
- Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, 325(5939), 419-422. <https://doi.org/10.1126/science.1172133>
- Ratio, M. A., Gabo-Ratio, J. A., & Fujimitsu, Y. (2020). Exploring public engagement and social acceptability of geothermal energy in the Philippines: a case study on the Makiling-Banahaw Geothermal Complex. *Geothermics*, 85, 101774.
- Reed, M. S. (2008). Stakeholder participation for environmental management: a literature review. *Biological Conservation*, 141(10), 2417-2431. DOI: 10.1016/j.biocon.2008.07.014
- Setiyono, H., Helmi, M., Prasetyawan, I. B., Yusuf, M., & Rifai, A. (2020). [Morphological changes in river estuaries along the Semarang coast in flood and tidal surge mitigation]. *Indonesian Journal of Oceanography*, 2(2), 113-120. <https://doi.org/10.14710/ijoce.v2i2.7984> [in Indonesian]
- Sutton-Grier, A. E., Wowk, K., & Bamford, H. (2015). Future of our coasts: the potential for natural and hybrid infrastructure to enhance the resilience of our coastal communities, economies and ecosystems. *Environmental Science and Policy*, 51, 137-148. DOI: 10.1016/j.envsci.2015.04.006
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55. DOI: 10.5116/ijme.4dfb.8dfd
- Temmerman, S., & Kirwan, M. L. (2015). Building land with a rising sea. *Science*, 349(6248), 588-589. DOI: 10.1126/science.aac8522
- van Slobbe, E., de Vriend, H. J., Aarninkhof, S., Lulofs, K., de Vries, M., & Dircke, P. (2013). Building with nature: in search of resilient storm surge protection strategies. *Natural Hazards*, 66(3), 1461-1480. <https://doi.org/10.1007/s11069-013-0612-3>
- Yu, Y., Yamaguchi, K., Thuy, T. D., & Kittner, N. (2022). Will the public in emerging economies support renewable energy? Evidence from Ho Chi Minh City, Vietnam. *Renewable and Sustainable Energy Reviews*, 169, 112942. DOI: <https://doi.org/10.1016/j.rser.2022.112942>

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