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The Impact Of Indonesia's Sea Sand Export Policy To Singapore On Environment Security

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Abstract.*The export of marine sand from Indonesia to Singapore has been a controversial issue for decades, involving economic, environmental, and political interests. This study examines Indonesia's marine sand export policy, especially after the issuance of Government Regulation Number 26 of 2023, which reopened export permits after more than 20 years of prohibition. This policy aims to manage marine sedimentation to prevent disruption to ecosystems and shipping and meet domestic reclamation needs. However, there are many pros and cons that arise. On the one hand, this policy is expected to increase state revenue and open up employment opportunities. On the other hand , sea sand mining activities can cause serious environmental damage. This study uses qualitative methods with literature analysis to understand the impact of the policy. The results show that this policy provides more short-term benefits to the government and business actors, but poses long-term threats to the environment and society. Unsupervised marine sand mining has the potential to damage marine ecosystems, reduce fishermen's productivity, and threaten the sustainability of Indonesia's coastal areas. Therefore, more effective supervision and implementation of policies regarding this activity is needed.*

Keywords*: Indonesia, Singapore, Export, Sea Sand, Environment.*

Abstrak.Ekspor pasir laut dari Indonesia ke Singapura telah menjadi isu yang kontroversial selama beberapa dekade, melibatkan kepentingan ekonomi, lingkungan, dan politik. Penelitian ini mengkaji kebijakan ekspor pasir laut Indonesia, khususnya setelah dikeluarkannya Peraturan Pemerintah Nomor 26 Tahun 2023, yang kembali membuka izin ekspor setelah lebih dari 20 tahun pelarangan. Kebijakan ini bertujuan untuk mengelola sedimentasi laut guna mencegah gangguan ekosistem dan pelayaran serta memenuhi kebutuhan reklamasi domestik. Namun, terdapat banyak pro dan kontra yang muncul. Di satu sisi, kebijakan ini diharapkan meningkatkan pendapatan negara dan membuka lapangan kerja. Di sisi lain, aktivitas penambangan pasir laut dapat menyebabkan kerusakan lingkungan yang serius. Penelitian ini menggunakan metode kualitatif dengan analisis literatur untuk memahami dampak kebijakan tersebut. Hasilnya menunjukkan bahwa kebijakan ini lebih banyak memberikan keuntungan jangka pendek kepada pemerintah dan pelaku usaha, tetapi menimbulkan ancaman jangka panjang terhadap lingkungan dan masyarakat. Penambangan pasir laut yang tidak diawasi dengan ketat berpotensi merusak ekosistem laut, mengurangi produktivitas nelayan, dan mengancam keberlanjutan kawasan pesisir Indonesia. Oleh karena itu, diperlukan pengawasan dan implementasi kebijakan yang lebih efektif mengenai kegiatan ini.

Kata kunci: Indonesia, Singapura, Ekspor, Pasir Laut, Lingkungan.

1. LATAR BELAKANG

Export of sand from Indonesia to Singapore has been a controversial topic for the past few years. Singapore is an island nation that needs sand for land reclamation has become one of the main importers of sand from Indonesia, the Singaporean government needs exports of sea sand for the expansion of its coastal area which is estimated to reach 1.8 billion cubic meters in the next ten years (Firdaus & Mutmainah, 2020, p. 741). This is certainly an advantage as well as a threat to Indonesia, where it is certain that Singapore will continue to import sand

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from Indonesia and this can be one of the country's incomes. However, this activity can also be a threat to Indonesia, if Singapore continues to reclaim its coastal area will increase, if the coastal area increases, its EEZ will also be more advanced which could result in the overlap of Singapore's EEZ with Indonesia's EEZ.

Akhmad Fauzi, in his book titled "Fisheries and Marine Policy: Issues, Synthesis, and Ideas," highlights that Indonesia is the largest archipelagic nation of any country in the world, consisting of 17,504 islands. Its coastline spans 95,181 square kilometers, make it one of the countries with the longest coastline in the world, ranking fourth after Canada, the United States, and Russia (Ummah & Huda, 2023, p. 2524). This is a source of pride for Indonesia by having the longest coastline in the world, if sea sand mining for export purposes is continued, it will certainly have an impact on the length of the coastline, the dredging of sand along the coastline will result in the shrinking of Indonesia's coastline.

In a journal published by the United Nations Environment Programme, it was noted that sea sand mining has been linked to pollution, erosion, risk of natural disasters, and risk of environmental pollution, especially water and air. exploration activities often leave traces of pollution that can damage water quality and endanger marine life. One indicator can be seen from the turbidity of sea water which has a negative impact on the beauty and also the life of marine life in it (Beni & Atsari, 2023, p. 38). The export of sea sand has been associated with more negative impacts than positive ones, with local communities being the first to feel its detrimental effects. According to data from the Marine Affairs and Fisheries Service, sea sand mining in Indonesia has been conducted from 1970 to 2000 (Ummah & Huda, 2023, p. 2527). This mining activity has been going on for 30 years.

Exporting sand from Indonesia to foreign countries has a complex legal status and depends on the type of sand exported and the applicable regulations. This legal status is said to be complex because the regulations that serve as a reference for the legal or illegal status of sea sand exports abroad continue to change. To address the adverse impacts, the government introduced various policies and regulations related to sand exports. In 2002, a Joint Decree (SKB) was issued by the Minister of Marine Affairs and Fisheries (Number SKB.07/MEN/2/2002), the Minister of Industry and Trade (Number 89/MPP/Kep/2/2002), and the Minister of State for the Environment (Number 01/MENLH/2/2002), imposing a temporary suspension on sea sand exports (Ummah & Huda, 2023, p. 2523). Starting in 2002, sea sand exports abroad had an Illegal status along with the issuance of a Joint Decree by the Minister of Marine Affairs & Fisheries, the Minister of Industry and Trade, and the Minister of State for the Environment.

Despite this temporary suspension, illegal mining activities persisted, prompting further regulatory actions. On February 28, 2003, the Minister of Industry and Trade, Rini M. Sumarno Soewandi, issued Decree No. 117/MPP/Kep/2/2003 to enforce a halt on sea sand exports. This regulation cited several reasons for the ban, including the prevention of environmental damage such as the sinking of small islands, the unfinished boundary disputes between Indonesia-Singapore, and the disruption of Indonesia's Export Reference Price (HPE) due to sea sand pirates. The regulation was intended to curb illegal mining activities and protect the environment (Ummah & Huda, 2023, p. 2523). This regulation was issued by detailing the reasons for the temporary closure of sand exports in the hope that illegal activities would not occur again.

However, despite these measures, data from the Central Statistics Agency recorded that sand exports from Indonesia continued between 2003 and 2019. The peak of Indonesia's illegal sand exports occurred from 2003 to 2006, and the highest in 2006 with a total of 3.3 million tons. The exported sand does not include silica and quartz sand which are included in the HS code 2505.90.000 (Beni & Atsari, 2023, p. 29). The high illegal sand exports in Indonesia that occurred in 2006 raised concerns about the recurrence of violations and non-compliance with the qualifications and procedures for managing marine products. In response, the government issued another regulation in 2007 through the Ministry of Industry and Trade (No. 02/M-DAG/PER/1/2007), which prohibited the export of sand, soil, and topsoil (including topsoil humus). This regulation emphasized that environmental damage resulted from uncontrolled sand, soil, and topsoil mining driven by the ongoing illegal export of sea sand (Republik Indonesia M. P., 2007, p. 1). The ban was re-issued in view of the rampant illegal mining and export of sand.

After 16 years, in 2023, President Jokowi reopened sea sand exports under Government Regulation No. 26 of 2023 concerning the Management of Sedimentation Results in the Sea. This regulation permits exports under the condition that domestic needs are fulfilled and all activities comply with the applicable laws and regulations (Presiden, 2023, p. 7). This regulation more or less explains that sea sand exports in Indonesia are allowed, if domestic needs have been met. This research will examines Indonesia's foreign policy in the context of sand exports to Singapore, examines the legality of this activity, and analyzes the impacts it has on environmental security. Through this case study, it is hoped that it can provide a comprehensive picture of the complexity of the sand export issue and its implications for Indonesia's foreign policy.

2. METODE PENELITIAN

The writing method used is a qualitative method , namely an analysis method carried out by understanding and arranging data that has been collected and arranged systematically and then drawing conclusions (Mahira & Hignasari, 2018). The author uses this method to understand data on Indonesian sea sand exports to Singapore and its impact on environmental security. Researchers use data sources in the form of literature reviews (articles, journals, news, websites). During the study, researchers conducted an analysis process on Indonesia's foreign policy regarding sea sand exports to Singapore as well as the impact of this sand export activity.

3. HASIL DAN PEMBAHASAN

Reopening of Sand Exports in Indonesia

The President of Indonesia, who was then held by Mr. Jokowi, reopened the export tap for sea sand through PP No. 26 of 2023 concerning Management of Sedimentation Products at Sea, May 15, 2023. It is written in the regulation that "Sedimentation results in the sea that can be utilized are: a. sea sand; and/or b. other sedimentation materials in the form of mud," is the text of Article 9 Paragraph 1 of Government Regulation No. 26 of 2023 (Presiden, 2023, p. 7). This regulation permits the export of sea sand as part of the utilization of sedimentation, provided domestic requirements are fully satisfied, such as for construction and cement production.

Sediment itself according to Pipkin in his book entitled " *Laboratory Exercises in Oceanography* " explains that sediment is organic material, fragments or minerals carried from various sources and deposited through air, wind, ice or water including materials deposited in water through floating materials or chemicals (Saputra, Arditha, Bahaj, Sarifah, & Sari, 2023, p. 244). Sediment is a form of sediment from air, wind, ice, water or chemicals.

Anwas in his book entitled "Bentuk Muka Bumi" wrote that Seimentation is a deposit of rock material carried by water or wind. When erosion occurs, water carries the rocks flowing into rivers, lakes until they end up in the sea. when its capacity decreases or runs out, rocks will settle in river basins (Saputra, Arditha, Bahaj, Sarifah, & Sari, 2023, p. 244). Anwas assumes that sediment is a deposit of rocks.

Sediment refers to material found on the seabed that forms marine layers. It results from natural processes such as weathering and erosion, distributed by oceanographic dynamics and deposited in the sea. This sediment can be extracted to prevent disruptions to marine ecosystems and shipping routes (Presiden, 2023, p. 2). Presidential regulations in Indonesia specify that marine sediment can be managed in the form of sand or other materials, such as

mud. These materials may be used for domestic purposes, including government infrastructure projects, private development initiatives, or exports, provided domestic needs are met.

Sea sand exploration involves mining sea sand, an activity overseen by the Ministry of Energy and Mineral Resources. However, the authority to conduct sea sand mining is delegated to regional administrations (Saputra, Arditha, Bahaj, Sarifah, & Sari, 2023, p. 247). Export of Indonesian sea sand is a mining activity whose implementation is the responsibility of the region where mining takes place.

The primary aim of Government Regulation No. 26 of 2023 is to manage natural processes that reduce the health and carrying capacity of coastal and marine ecosystems. The regulation seeks to optimize the use of Marine Sedimentation Products (PSM) for conserving coastal and marine environments. PP No. 26 of 2023 is prepared to control a series of natural processes that have the potential to disrupt the implementation of marine resource management and also to implement the provisions of the Coastal Area Management Law. PP No. 26 of 2023 is based on considerations of environmental protection and preservation. Normatively, this is stated explicitly in the articles of the Government Regulation (Beni & Atsari, 2023, p. 31). Through this regulation, the government intends to protect marine health and facilitate marine activities. As the government holds the responsibility of safeguarding the marine environment, improving marine health involves controlling natural processes that interfere with resource management, particularly sedimentation.

The existence of this regulation does not mean that the government will arbitrarily take sand from the beach or on the island for export, but will regulate its management, or in its utilization. The Regulation of the Minister of Trade No. 01/M-DAG/PER/1/2007 mandates that sedimentation removal must employ environmentally friendly methods and include facilities to separate valuable minerals. Article 7 states that sedimentation products, such as sea sand and mud, can only be used for domestic reclamation, for infrastructure projects of government, private development, and exports, provided domestic needs are satisfied and the activities adhere to existing laws and regulations. Article 10 further outlines that sedimentation cleaning and utilization, including sea sand, involves extraction, transportation, placement, use, and sale. The sale of sea sand is permissible only after obtaining a mining business permit (Republik Indonesia M. P., 2007, pp. 8-11). This regulation comprehensively addresses public concerns regarding sea sand exports. It explicitly states that the program will be discontinued if it leads to environmental harm or negatively affects aquatic life sustainability.

The Indonesian government has also stated its commitment to the Sustainable Development Goals *(SDGs)* , which are internationally recognized as sustainable development

goals in the National Medium -*Term Development Plan ("RPJMN")* for the period 2020 to 2024, which are relevant to the points including; (1) improving maritime and marine management; (2) restoring pollution, and damage to natural resources and the environment (Beni & Atsari, 2023, p. 32). However, this policy still gives rise to many pros and cons over its implementation.

Pros and Cons of Regulation/ Government Regulation No. 26 of 2023

In his article titled “Pembukaan Kembali Ekspor Pasir Laut Terus Menuai Polemik” Dzikry highlights the perspective of the National Coordinator of Destructive Fishing Watch (DFW) Indonesia, Moh Abdi Suhufan expressed concerns that reauthorizing sea sand exports could significantly harm the environmental ecosystem, particularly in coastal areas and small islands. Among the adverse effects is sea water abrasion, which could severely impact community livelihoods and damage local facilities and infrastructure (Hidayat & Taufik, 2024, p. 23). Sea water abrasion, as stated by Moh Abdi Suhufan, is the lowering of the surface of the coastline due to continuous sand extraction so that sea waves easily hit the coastal area, which of course damages and threatens people's lives.

Meanwhile, Siswanto Sunarso, in his article titled "Environmental Criminal Law and Dispute Resolution Strategy," discusses the regulatory framework for utilizing marine sedimentation products for export. He notes that President Jokowi requires entrepreneurs to secure business permits to support export managed by the minister responsible for trade. These permits are issued following ministerial recommendations and are subject to export duties as outlined in Article 15, paragraph (4) of the applicable laws.

In addition, business actors intending to process and utilize marine sedimentation products, such as sea sand, must first obtain a sea sand utilization permit. Activities related to cleaning and utilizing marine sedimentation, including the collection, transportation, placement, use, and sale are regulated. The sale of sea sand is only permitted once the business actor has obtained a mining business permit specifically for sales.

The issuance of such permits is overseen by the minister responsible for mineral and coal affairs or the governor, in line with current laws and regulations. All permits must be publicly announced to uphold government transparency and ensure accountability in the implementation of activities (Ummah & Huda, 2023, p. 2524). The government has clearly and in detail drawn up the regulations and conditions that must be met for the procurement of sea sand exports.

The Coordinating Minister for Maritime Affairs and Investment, Luhut Binsar Pandjaitan, asserts that the recent policy permitting the dredging and export of sea sand will not harm the environment. He explained that the use of global positioning system (GPS) technology ensures that the activities are environmentally controlled and do not disrupt the surrounding work environment. The reopening of sea sand exports is anticipated to generate substantial economic benefits for the nation. It is seen as a potential key source of foreign exchange, contributing to increased state revenues and fostering the growth of related industries such as construction and cement production. Additionally, sea sand exports are expected to make a both direct and indirect employment opportunities, particularly for coastal communities with abundant sand resources. This policy is viewed as a means to reduce unemployment and enhance societal well-being (Ummah & Huda, 2023, p. 2524). Indirectly, Luhut Binsar Pandjaitan explained that the reopening of sea sand export activities in Indonesia is not only beneficial for the country, but the community will also benefit from the existence of new jobs.

Minister of Energy and Mineral Resources Arifin highlighted that seabed sediments can cause shipping routes to become shallow and hazardous for vessels navigating through them. This issue is particularly prevalent in areas near key shipping lanes, such as the Malacca Strait leading to Batam and Singapore. Additionally, sediment, particularly mud, is considered more beneficial when sold internationally rather than left to accumulate in these waterways (Hidayat & Taufik, 2024, pp. 23-24). By selling this sediment abroad, it will be more profitable for the country with additional state income than just being left alone. From a business perspective this marine sand dredging activity can provides benefits for infrastructure development of the country. Marine sand can also increase the economic value of a region or country in the form of increased foreign exchange income from PNBP and taxes, especially from domestic sales and sea sand export activities.

Minister of Maritime Affairs and Fisheries (KP), Sakti Wahyu Trenggono, stressed that the regulation on managing marine sedimentation aims to safeguard coastal ecosystems and small islands from the risks posed by illegal sea sand extraction. The sedimentation management policy, outlined in PP 26/2023, encompasses planning, regulation, utilization, and oversight. These measures are crucial for preserving ecosystem sustainability while also delivering economic benefits to both society and the nation (Ummah & Huda, 2023, p. 2527). With the issuance of this regulation, with detailed requirements for actors who want to mine or export sea sand, it can be a solution or an obstacle to illegal sand export activities, because it must go through planning, control, utilization, and supervision.

Parid Ridwanuddin, an activist from the Indonesian Environmental Forum, opposes the government's policy of dredging sea sand for land reclamation projects. He contends that such a policy will harm the marine environment and negatively affect communities residing near sand mining sites. The resulting damage to marine ecosystems is expected to disrupt the local economy. Several fishermen have reported a 50% decline in their income since sea sand mining activities began. They fear that the new Government Regulation will lead to an increase in dredging vessels encroaching on their fishing grounds (Ummah & Huda, 2023, p. 2525). Sea sand mining, which is generally carried out in coastal areas, causes the sea water to become murky so that many fish that originally settled in the area swim away because of the murky sea water. This makes fishermen have to go the extra mile in their search, starting from fuel to get to the fish gathering area, to procuring fishing gear that is suitable for use in deep sea areas.

Zainal Arifin, the Coordinator at LIPI, acknowledged that allowing sea sand exports does contribute to the state budget (APBN). However, he emphasized the importance of not overlooking environmental considerations and the well-being of communities near mining areas. Similarly, Dani Setiawan, Director General of the Indonesian Traditional Fishermen Association, expressed concerns about the livelihoods of Indonesian fishermen. He highlighted the irony of their minimal welfare, given that Indonesia prides itself on being the world's largest maritime and archipelagic nation (Hidayat & Taufik, 2024, p. 28). The Indonesian nation proudly declares itself a maritime nation, but in reality there are still many business actors and officials who are selfish by not thinking about fishermen who are one form of a maritime nation.

Marine ecosystems serve multiple roles, including as a food source for fish, breeding grounds, habitats for diverse marine biodiversity, and high-value marine tourism destinations. These functions significantly contribute to state revenue, particularly through sectors such as tourism. However, damage to these ecosystems could negatively affect the country's income potential from various industries, including tourism. According to BPS data (2023), foreign exchange earnings from tourism increased by $4.26 billion in 2022. The tourism sector holds immense potential to become the top foreign exchange contributor, driving national progress (Hidayat & Taufik, 2024, p. 27). Rather than reopening sea sand exports which only contribute more to negative environmental impacts, it is better for the government to increase renewal and needs in the tourism sector which has greater foreign exchange earnings.

Nairul Huda, a researcher at the Institute of Economics and Financial Development (Indef), argued that the sea sand export policy has minimal impact on government revenue. While the policy comes with both advantages and disadvantages, it primarily benefits

entrepreneurs. The estimated potential value of sea sand exports is IDR 733 billion, yet the government's potential revenue from this policy amounts to only IDR 74 billion. Additionally, the issuance of sea sand export permits poses risks to marine ecosystems, especially considering the relatively low contribution to state revenue (Hidayat & Taufik, 2024, pp. 26-27). The income from sea sand exports only benefits entrepreneurs, while the state only gets a little plus the destruction of the ecosystem.

Numerous studies have highlighted the effects of sea sand dredging or mining, including research by Agustina, Andi Utomo Muhammad Djafar, and Damis at Galaseong Beach, Takalar District, South Sulawesi Province. Their findings reveal that sand mining has contributed to significant coastal erosion over four years (2016–2019). The analysis shows substantial changes in the coastline due to abrasion, with a retreat of 20.8 meters at the first station in Aeng Batu Batu Village, 18.1 meters at the second station in Tamalate Village, and 27 meters at the third station in Tamasaju Village during that period. (Agustina, Djafar, & Damis, 2023, pp. 14-17). Changes in the length of the coastline occurred due to high sand mining activities in the coastal area of North Galesong sub-district.

Similarly, a study by Zuleha Ernas, M. Hasroel Thayib, and Widodo S. Pranowo in Banten Bay, including the waters of Lontar Village in Tirtayasa District, Serang Regency, and Pulo Panjang Village in Pulo Ampel District, Serang Regency, found that sea sand mining has increased turbidity in the waters of Banten Bay. These results were derived from Total Suspended Solid (TSS) data, which showed that the turbidity levels in Banten Bay exceed the environmental quality standard limits (Ernas, Thayib, & Pranowo, 2018, pp. 38-40). As a result of the murky waters of Banten Bay, it has damaged the marine ecosystem, caused a decrease in fishermen's income, increased operational costs for going to sea, and caused the loss of fishing locations.

Government Regulation No. 26 of 2023, which addresses the management of marine sedimentation, aims to solve the issue of sediment buildup in shipping lanes. According to UNCLOS 1982, it is our responsibility to ensure safe and free navigation in the Indonesian Archipelagic Sea Lanes (ALKI) I, II, and III, which requires maintaining adequate depth in these routes according to global standards. The sea sand generated from sediment dredging also holds economic potential, which is regulated under PP No. 26 of 2023. The sediment can be used as a by-product in the form of sea sand, primarily for domestic use, and can be exported as long as domestic needs are met (Ummah & Huda, 2023, p. 2528). The government issued this regulation to address the problem of sediment in shipping lanes in accordance with the

regulations in UNCLOS 1982 that we must guarantee the safety and freedom of navigation in ALKI I, II and III.

This regulation is designed to address the problem of marine sedimentation that can interfere with international shipping and meet the demand for new domestic land reclamation. However, a significant issue lies in the limited government oversight, which has failed to provide strict technological standards, monitoring, and feasibility studies. If the government neglects these aspects, there is a risk of policy misuse by investors and powerful figures. If not properly addressed, this could lead to serious ecological damage (Ummah & Huda, 2023, p. 2526). The issuance of this regulation aims to overcome existing problems, but it is undeniable that many problems have arisen as a result of the government regulation.

In his article titled "Sea Sand Exports in the Eyes of Experts and Businessmen, What Do They Say?", Emir shared the opinion of Edy Putra Irawady, Special Staff of the Minister of Maritime Affairs and Fisheries for Foreign Relations. Irawady explained that managing sedimentation in the sea is a governmental responsibility to ensure the preservation of a healthy and clean marine environment, maintain ecological sustainability, support national interests, and fulfill international marine health mandates. He also emphasized the lack of reclamation standards, which has led to ongoing environmental damage. He noted that there has been no standardization for reclamation practices, pointing out that Batam has faced difficulties in sourcing materials for reclamation due to this lack of standards. He further compared this with Busan, Korea, where clear reclamation standards are in place, specifying the materials and their sizes used in the process (Ummah & Huda, 2023, p. 2528). Dredging sea sand is actually legal to do, but what must be paid more attention to is the tools, methods and reclamation standards that must be right, appropriate, and environmentally friendly.

Indonesian Sand Export Rules and Regulations

The Republic of Indonesia has included regulations regarding sand exports in various regulations. Here are some regulations regarding Indonesian sand exports :

- Presidential Decree of the Republic of Indonesia No. 260 of 1967 concerning the affirmation of the duties and responsibilities of the Minister of Trade in the Field of Foreign Trade. This regulation discusses the duties and authorities of the minister in the field of export and import, such as setting export/import restrictions, compiling export/import targets, supervising marketing, and fostering and guiding export traders (Presiden, 1967, pp. 2-3). The duties and authorities of the minister are fully explained in the regulation issued in 1967.

- Additionally, the Decree of the Minister of Industry and Trade No. 558/MPP/Kep/12/1998 outlines general provisions for exports and revokes previous decrees, including:
    a) Decree No. 182/MPP/Kep/4/1998 concerning export provisions.
    b) Decree No. 442/MPP/Kep/9/1998 regarding amendments to the previous decree.
    c) Decree No. 350/MPP/Kep/7/1998 that restricts exports of certain goods subsidized by the government.
    d) Decree No. 438/MPP/Kep/9/1998 concerning amendments to the decree on export restrictions for subsidized goods (Indonesia M. P., 1998, pp. 1-3). This regulation decides to establish and revoke previous regulations.
- Furthermore, the Presidential Decree No. 33 of 2002 addresses the control and supervision of the sea sand business, acknowledging that uncontrolled mining, dredging, transportation, and trading of sea sand has caused damage to coastal and marine ecosystems, negatively impacted fishermen and fish farmers, and led to a decline in sea sand prices. This decree establishes a Sea Sand Business Control and Supervision Team (Indonesia P. R., 2002, pp. 1-3). This regulation discusses the provisions for Indonesian sea sand export mining business in the form of control and supervision.
- Joint Decree of the Minister of Industry and Trade Number 89/MPP/Kep/2/2002, Minister of Marine Affairs and Fisheries SKB.07/MEN/2002, and Minister of State for the Environment No. 01/MENLH/2/2002. Which considers that "in order to avoid damage to the environment, ecosystem, and wider marine life habitat due to the arrangement of a more coordinated sea sand business and export system, while implementing the arrangement of the sea sand business and export system, it is deemed necessary to stop the export of sea sand ..." and decided "what is meant by sea sand is all types of sand originating and mined from the sea which are included in the tariff post/HS Ex 2504.90.000 ..." (Perdagangan, Perikanan, & Lingkungan Hidup, 2002, pp. 1-2). The export of sea sand was first temporarily stopped on February 14, 2002 in this regulation.
- The Decree of the Minister of Industry and Trade No. 117/MPP/Kep/2/2003 temporarily halts sea sand exports from all areas of Indonesia, specifying that sea sand refers to materials mined from Indonesian waters without significant mineral elements. The halt will be revisited once a program to prevent coastal damage and small island erosion, as well as the resolution of the maritime boundaries between Indonesia and Singapore, is completed (Republik Indonesia M. d., 2003, p. 3). This regulation explains the types of

Indonesian sea sand that may not be exported, and also states that this regulation will be changed if the program to prevent damage to the coast and small islands is prepared, as well as the resolution of the sea boundary dispute between Indonesia and Singapore.

- Lastly, the Regulation of the Minister of Trade No. 01/M-DAG/PER/1/2007 prohibits the export of sea sand, soil, and topsoil. For exporting other types of sand, companies must present original sales contracts and supporting documents required for customs registration (Republik Indonesia M. P., 2007, pp. 3-4). offices that have implemented it . This regulation was issued as the final regulation regarding the closure of sand exports.
- Government Regulation No. 26 of 2023 concerning Management of Sedimentation Results in the Sea. This regulation contains about the results of sedimentation in the sea that can be taken to prevent disruption to the ecosystem and shipping. Utilization of marine sedimentation results is a series of transportation, placement, use, and sales activities. And used for export as long as domestic needs are met (Presiden, 2023, pp. 2-7). This regulation clearly reopens the tap for Indonesian sea sand exports through its utilization.

Singapore's Response

In mid-2002, Singapore successfully completed the addition of 100 square kilometers of coastal land as part of its coastal reclamation project. This ongoing project still requires an additional 260 square kilometers of coastal area, which is estimated to need 1.8 billion cubic meters of sand. Indonesia has been a major supplier of sea sand to Singapore for land reclamation, with sand mined from the islands around the Riau Islands (Hidayat & Taufik, 2024). For the expansion with a requirement of 1.8 billion cubic meters, Singapore does it by importing sand.

Singapore has succeeded in reclaiming a coastline that juts out 12 miles into Indonesian waters, disrupting the agreement between the two countries on the decision to determine this territorial boundary. With the coastal reclamation that has been carried out, Singapore has succeeded in expanding its territorial coverage rapidly. Coastal reclamation by Singapore itself is an alarm that Indonesia should be aware of to prevent erosion of areas that are still within the scope of the State or disputed areas with Singapore (Firdaus & Mutmainah, 2020, p. 740). Because of this relamation process, Indonesia's territorial waters are also threatened.

Between 1997 and 2002, an average of over 53 million tonnes of sand were exported annually. However, in 2007, Indonesia imposed a ban on sea sand exports to Singapore. Prior

to the ban, about 250 million cubic meters of sand were exported annually at a price of S$1.30 per cubic meter, which could rise to around S$4, causing Indonesia to lose about S$540 million or Rp 2.7 trillion each year (Hidayat & Taufik, 2024). Before knowing that its territory was under threat, Indonesia was the main supplier of Singapore's sand imports. Starting in 1997, Indonesia exported sea sand to Singapore with an average of more than 53 million tons each year.

The marine sand mining and export business in Indonesia began in 1970 and was temporarily halted in 2002, resulting in a loss of an estimated Rp 50.35 trillion annually. The reasons for halting the exports were unresolved maritime boundary issues with Singapore, environmental damage, and failure to meet the benchmark price for sand exports, which led to financial losses. As reclamation projects both locally and internationally increased, so did the demand for sea sand. This surge in demand is believed to have driven the creation of Government Regulation Number 26 of 2023 on Managing Sedimentation in the Sea (Purwarka, 2014, p. 385). In 2007, sea sand exports to Singapore were officially closed.

Over time, many reclamation projects at home and abroad have triggered a surge in sea sand. The height The demand for sea sand is thought to be the basis for the issuance of Government Regulation Number 26 of 2023 on Management of Sedimentation Results in the Sea (Ummah & Huda, 2023, p. 2527). After officially issuing a ban on sand export activities in 2007, Indonesia has reopened the tap for sea sand exports through Government Regulation number 26 of 2023 on Management of Sedimentation Results in the Sea.

Deputy Prime Minister and Minister of Finance of Singapore Lawrence Wong, in the Indonesian Journalist Visit Program (IJVP) initiated by the Ministry of Information and Communications (Kominfo) of Singapore, gave a response as Singapore's response to Indonesia's decision to reopen the export tap for sea sand in 2023 after a ban of two decades. Belio said "Singapore's approach has always been like this: for us, sand imports are done commercially, and every importer must comply with the laws and regulations of the source country," "It's not up to us; it's up to the country. So Indonesia decides." "From our perspective, as long as someone has a commercial interest - purely commercial, not done at the government level - then we will ensure that the importer complies with the laws and regulations of their country. That is our consistent and long-standing position, ". On another occasion , Singapore's Second Minister for Foreign Affairs, Maliki Osman, when asked by Indonesian journalists at one of the Singapore Ministry of Foreign Affairs buildings also had a similar view. "We tell our private sector to make sure whatever you do is in accordance with the laws of the country where you operate, and in international law," "We will not allow any private sector to operate

in violation, or even disobedience to the laws of the host country where they operate, or international law for that matter," "If there is a potential violation of international law, then private sector companies should know that they should not carry out such activities," (Indonesia C. , Singapura Buka Suara soal RI Kembali Izinkan Ekspor Pasir Laut, 2023). In this *News* , the Deputy Prime Minister and Minister of Finance of Singapore emphasized that Singapore in responding to the export and import activities of sea sand carried out by the government and the private sector, they guarantee that these activities will be carried out by implementing all protocols and requirements given by the exporting country to Singapore.

Impact of Sea Sand Export Mining

Dredging sand sedimentation can cause significant damage to coastal ecosystems. The collection, stockpiling, and transportation of sediment increase Total Suspended Solids (TSS), leading to higher water turbidity, decreased sunlight penetration, and harm to seagrass beds and coral reefs. Coastal erosion and abrasion could lead to shallowing of fishing and boating channels, changes in coastal vegetation, and altered sediment characteristics, causing long-term environmental degradation. This would reduce biodiversity, decrease fish resources, and harm marine tourism. Pollution and changes in coastline dynamics could result in conflicts over land use, with negative impacts on local communities, including the destruction of fishing grounds and reduced catches (Ummah & Huda, 2023, pp. 2529-2530). The murky sea water due to sea sand mining can have an impact not only on the marine ecosystem but also on the tourism sector.

The Expertise Agency, Secretariat General of the Indonesian House of Representatives conducted a study on the negative impacts of reopening the sea sand export tap. In this study, it was found that sea sand export activities have the potential to violate territorial boundaries, many outer islands which are border islands of Indonesia are threatened with sinking (Indonesia C. , Kajian DPR Ungkap Dampak Negatif Ekspor Pasir Laut, 2024). This could trigger the loss of Indonesia's territorial boundaries due to the sinking of the islands that form its boundaries.

Mining sediment from the seabed disrupts the biota that sustain the ecosystem, affecting water quality by increasing turbidity and reducing biodiversity. As the sediment transport patterns and coastal dynamics change, erosion accelerates, which negatively impacts the community by causing loss of land, infrastructure, and access to clean water. The degradation of coastal ecosystems, including the destruction of habitats for shellfish farming and small-scale fisheries, as well as tourism, further threatens the economic welfare of coastal

communities (Ummah & Huda, 2023, p. 2529)Marine ecosystems are composed of marine biota that balance this ecosystem. The presence of marine sand mining (in this case sediment) can cause the displacement of these biota, thus affecting the quality of sea water and the release of pollutants that will disrupt the health of coastal residents.

In 2007, Tae Goun Kim's study in Korea highlighted the significant environmental and economic impacts of sea sand extraction, including the loss of seabed species, disruption of habitats, and shoreline erosion. The Indonesian Environmental Forum (Walhi) warns that by 2023, over 13,000 coastal villages and hundreds of small islands are at risk of sinking, including those in the Seribu Islands. Nearly 90% of Indonesia's coastal villages rely on agriculture, fisheries, and other natural resources for their livelihoods (Ummah & Huda, 2023, p. 2530). Sea sand mining is an activity that destroys marine life.

In 2020, more than 15 percent of the approximately 84 thousand village-level administrative areas were geographically located on the coast. Thus, the increase Sea level will directly threaten the lives of 12,879 coastal villages throughout Indonesia (Ideas, 2022). Of these 12,879 coastal villages, there is the potential to sink or lose their search land.

The Indonesian Environmental Forum (Walhi) warns that by 2023, over 13,000 coastal villages and hundreds of small islands are at risk of sinking, including those in the Seribu Islands. Nearly 90% of Indonesia's coastal villages rely on agriculture, fisheries, and other natural resources for their livelihoods (Ummah & Huda, 2023, p. 2531). If the sea level continues to rise, it will also submerge the search land for coastal villagers (rice food crops, plantations, capture fisheries, fisheries cultivation, livestock, and forestry) which are their main sources of income.

The destruction of coral reefs and seaweed beds from mining activities could decrease fish populations and disrupt the marine food chain, thus affecting the livelihoods of fishermen. The economic benefits of sand exports mostly flow to large companies and the government, while coastal communities, who bear the brunt of the negative impacts, receive little or no benefit (Hidayat & Taufik, 2024, p. 29). Marine sand mining activities and exports only have a negative impact on the community, while the benefits can only be felt by large companies and the government.

The shrinking coastline and the sinking of small islands is a form of environmental damage that cannot be repaired. This means that the benefits of sand exports are only temporary. On the other hand, the environmental impacts felt will last forever. If this happens and the characteristics of the Socio-Economic Structure (SSE) of coastal communities have shifted from fishermen and farmers to sand miners, there will be disruptions to the chain of life

and welfare in the demographics of coastal communities. The human rights of coastal communities to live in a healthy and comfortable environment are also threatened by the reduction in the coastline. This reduction is caused by the high rate of mining and exploitation of sea sand which is not balanced by appropriate and ecologically intelligent monitoring and restoration measures (Beni & Atsari, 2023, p. 42). This makes sea sand export activities not provide justice for the Indonesian people.

4. KESIMPULAN DAN SARAN

From the analysis of the sea sand export policy implemented through Government Regulation Number 26 of 2023, there are a number of important implications that need to be considered. This policy aims to manage marine sedimentation to support domestic reclamation needs and generate state revenue through sand exports. However, this policy has sparked various criticisms, especially from environmental activists, academics, and coastal communities.

The positive impacts of this policy include the potential for increased state revenue, job creation, and support for reclamation projects, such as in Singapore. However, the negative impacts are much more significant in the long term. Sea sand mining carries the risk of causing environmental damage, such as coastal abrasion, reduced marine biodiversity, and disruption to coastal ecosystems. In addition, the socio-economic impacts on coastal communities, especially fishermen, are greatly felt through decreased fish catches, increased operational costs, and threats to food security.

With this policy, the government faces a major challenge in ensuring that sea sand mining activities do not exceed limits that could damage the ecosystem and community welfare. Therefore, strict supervision, transparency in policy implementation, and firm law enforcement are needed to minimize negative impacts. In the long term, a more sustainable approach needs to be prioritized to maintain a balance between economic benefits and environmental preservation.

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