

## Tackling Offshore Oil Spills to Achieve Maritime Security in Indonesia

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**ABSTRACT:** *The increasing demand for and investment in energy production from offshore oil and gas sources in Southeast Asian countries, including Indonesia, has increased the risk of offshore oil spills. This study aimed to describe offshore oil spill response to achieve maritime security in Indonesia. This research is qualitative with findings without going through statistical testing and collecting data sources through library research. Data were analyzed through data condensation, data display, and conclusion drawing and verifying. Environmental, maritime security, mainly from pollution, is classified as the closest part to the marine safety dimension, which aims to protect the marine environment and the blue economy-related to aquatic resources. Oil spills can cause substantial economic losses and endanger ecological systems and community health. The shortcomings in handling the 2009 Montara case showed that offshore oil spill response to achieve maritime security in Indonesia is not optimal.*

Peningkatan kebutuhan serta investasi produksi energi sumber migas lepas pantai di negara-negara Asia Tenggara termasuk Indonesia, meningkatkan risiko *offshore oil spill*. Penelitian ini bertujuan menjabarkan pengamanan maritim Indonesia atas *offshore oil spill*. Penelitian ini termasuk jenis kualitatif dengan temuan tanpa menempuh pengujian statistik dan pengumpulan sumber data melalui studi pustaka. Data dianalisis melalui kondensasi data, penyajian data, serta penarikan dan verifikasi kesimpulan. Keamanan maritim di bidang lingkungan utamanya dari polusi tergolong sebagai bagian paling dekat dengan dimensi *marine safety* yang bertujuan melindungi lingkungan laut dan *blue economy* yang antara lain terkait pemanfaatan sumber daya. *Oil spill* dapat menyebabkan kerugian ekonomi yang sangat besar serta membahayakan sistem ekologi dan kesehatan komunitas. Kekurangan pada penanganan kasus Montara 2009 menunjukkan belum optimalnya pengamanan maritim Indonesia atas *offshore oil spill*.

**Keywords:** *Environment, Maritime Security, Offshore Oil Spill.*

## I. INTRODUCTION

The increasing demand for and investment in energy production from offshore oil and gas sources in Southeast Asian countries, including Indonesia, has increased the risk of environmental, maritime security threats caused by offshore oil spills (Varghese, 2014). Offshore refers to oil and gas exploration and exploitation activities carried out far from the mainland, with fixed and floating platforms (Widyawan & Adiputra, 2021).

The national-scale offshore oil spill response in Indonesia is carried out by National Command and Control Center (*Pusat Komando dan Pengendali Nasional* or PUSKODALNAS). It plays many roles starting from coordination between agencies until claim compensations. Marine pollution, including offshore oil spills, can be effectively handled by implementing existing regulatory instruments (Odeku & Paulos, 2017).

In Indonesia, several regulations regulate the handling of offshore oil spills. One of them is Regulation of the Minister of Transportation No. 58 of 2013 concerning pollution control in Waters and Ports. Also, Presidential Regulation No. 109 of 2006 concerning Mitigation of Oil Spill Emergencies at Sea. Some regulations underlie the performance of PUSKODALNAS. The first regulation is the Decree of the Minister of Transportation No. KP 355 of 2008 concerning the Establishment of the National Command and Control Center for Oil Spill Emergency Response Operations at Sea (PUSKODALNAS). The second is the Decree of the Minister of Transportation No. KP 263 of 2020 concerning Procedures for Combating Oil Spills (Tier 3) at Sea.

The International Tanker Owners Pollution Federation recognizes Presidential Regulation No. 109 of 2006 (which contains countermeasures for offshore oil spills) as Indonesia's National Oil Spill Contingency Plan (NOSCP). The Directorate General of Sea Transportation is the main body for executing NOSCP, which adopts a multilevel approach to achieve environmental, maritime security. Tier 1 will be handled by a third party, the oil company, which must have its offshore oil spill emergency plan. Tier 2 will involve a joint response between oil companies and relevant agencies, coordinated and commanded by the Port Authority. Tier 3 will be taken over by PUSKODALNAS (headed by the Director-General of Sea Transportation), responsible for coordinating thirteen ministries/agencies for emergency response operations (ITOPF, 2015).

However, there is still a shortage of PUSKODALNAS in realising its duties and functions contained in the Decree of the Minister of Transportation No. KP 355 of 2008. This can be seen from the Montara pollution case in 2009 by PT TEP Australasia in the Timor Sea (spilt 40 million litres of pollutants and damaged 65,000 hectares of coral reefs). In this case, the coordination of offshore oil spill response was incomplete, and advocacy for compensation claim in 2010 failed due to lack of evidence.

Offshore oil spill response regulation related to PUSKODALNAS is essential for maritime security because environmental damage is a contemporary threat, which is broader and

deeper than the traditional focus on war (Bueger & Edmunds, 2017). Several studies have been conducted about the tackling of oil spills comparison among countries (Veiga, 2004), negotiation in oil pollution compensation (Purwendah, 2017), and relation of sea pollution problem with regulatory implementation (Odeku & Paulos, 2017). However, few have analyzed it in the context of maritime security. Therefore, research is needed to describe the tackling of offshore oil spills to achieve maritime security in Indonesia.

## II. METHOD

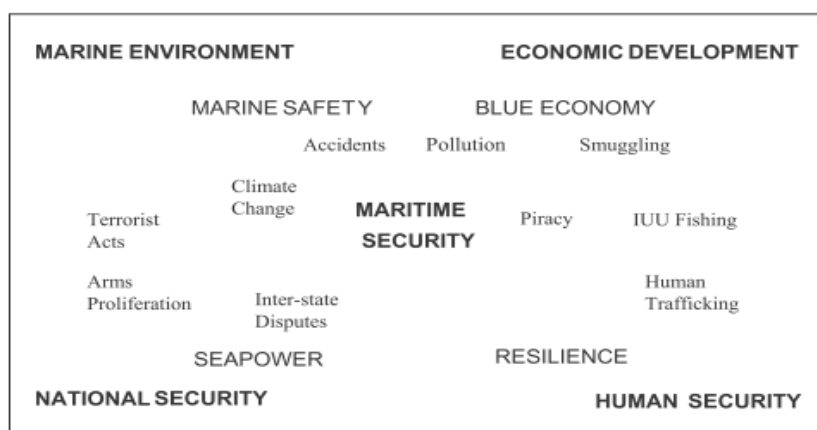
This research is a qualitative type. Qualitative research is a type of research with findings without statistical testing to reveal a holistic-contextual symptom and enable researchers to explore problems (Sugiarto, 2015). The collection of data sources was done by literature study. The literature study is a survey of sources on a particular topic that provides an overview of current knowledge.

The data were analyzed through the following three activities. First, data condensation refers to selecting, focusing, simplifying, and transforming data from documents and empirical materials. The second is data display, namely organizing information, for example, forming a graph. Finally, drawing and verifying a conclusion, where the researcher raises decisions, then verifies the judgment in the form of a brief analysis of the researcher (Miles, Huberman, & Saldana, 2014).

## III. RESULT AND DISCUSSION

### Maritime Security

According to Bueger (2015), the concept of maritime security is often defined as the absence of threats (including disputes between countries and crimes against the environment) in the maritime domain. However, this definition does not adequately describe how to determine the relevance of priority issues and threats. Therefore, Bueger expressed one of the review frameworks that the concept of maritime security has dimensions related to four main concepts (described as a matrix), which include sea power, marine safety, blue economy, and human resilience.



**Figure 1.** Maritime Security Matrix (Source: Bueger, 2015)

Based on this matrix, environmental maritime security from pollution is classified as the closest part to marine safety, which aims to protect the marine environment and the blue economy related to the use of marine resources. Achieving environmental maritime security is vital because of maritime roles as transportation, economic activity, and tourism. Also, environmental, maritime security is related to human security, which includes social, economic, energy, and economic aspects. In the end, it cannot be separated as part of national security. Environmental degradation is a new maritime security issue that is broader and deeper than the traditional focus on war. Maritime security in the ecological field affects many actors that are not limited to the state and is characterized by a multi sectored response (Bueger & Edmunds, 2017). Focusing on the sensitive and high-value coastal areas, the impact of pollution will significantly influence the survival of humans and other organisms (Sari, Mukhtasor, & Zikral, 2021).

### **Tackling Offshore Oil Spills**

Offshore refers to oil and gas exploration and exploitation activities carried out far from land using fixed and floating platforms (Widyawan & Adityaputra, 2021). According to Othumpangat & Castranova (2014), the oil spill releases raw hydrocarbons / liquid petroleum into the environment, especially to the sea. In the Presidential Regulation of the Republic of Indonesia No. 109 of 2006, an oil spill at sea is the release of oil directly or indirectly into the marine environment originating from shipping activities, oil and gas company activities, or other activities.

Most of the recorded oil spills occurred because of sea transportation and offshore oil and gas operations. Meanwhile, offshore oil platforms have caused severe pollution damage over the past decade. However, the limited information regarding the extreme offshore oil and gas operation accidents undoubtedly caused difficulties in dealing with the affected areas (Yang, 2017).

Oil spills can cause enormous economic losses and endanger ecological systems, public health, and communities. Environmental impacts include the death and degradation of mangroves, marine invertebrates, seabirds, marine mammals, and the composition and activity of microbial communities. The economic impact can be reflected in the total compensation by statutory regulations. Socio-economic impacts can also be observed from the disruption of trade, fisheries, and coastal tourism. Public health can also be affected by oil transfer to the food chain (Zhang, Matchinski, Chen, Ye, Jing, & Lee, 2019).

Tackling offshore oil spills that include equipment, personnel, logistics, communication, and coordination procedures is required for integrated incident management (IPIECA-OGP, 2013). The prevention of offshore oil spills requires the government's involvement because it is very detrimental to the nation's economy and the preservation of marine and coastal ecosystems (Wasono, 2018). Based on a comparative analysis of several countries in Europe and North America, offshore oil spill response faces obstacles, including the lack of expertise in operating emergency response and the low efficiency of cleaning equipment in heavy currents (Veiga, 2004). Thus, the success of countries such as the US and Canada in tackling offshore oil spills is determined by standards in overcoming obstacles related to emergency response plans, including conducting exercises and mapping sensitivity.

The tier-based emergency preparedness and response approach becomes the basis for offshore oil spill mitigation planning by categorizing potential incidents according to severity and scale related to the required response capabilities. Tier 1 tends to be relatively small and affect local areas to handle it with local resources. Tier 2 can involve a broader range of impacts and stakeholders, including mutual assistance agreements between industry operators or collaborations with local/provincial government levels. Tier 3 requires local, regional, and even national resource capabilities because it requires fast movement in an organized and coordinated response (IPIECA-OGP, 2013).

### **Tackling Offshore Oil Spills to Achieve Maritime Security in Indonesia**

In Indonesia, several large-scale offshore oil spill cases have occurred. In 2009, the Montara case due to the burning of oil drilling in Australian waters polluted up to 90,000 km<sup>2</sup> of the Indonesian Timor Sea. As for what happened recently was an oil pipeline leak in 2018 in Balikpapan Bay. In addition, in 2019, there was an offshore oil spill in Karawang (Arvirianty, 2019).

According to Zhang, Matchinski, Chen, Ye, Jing, & Lee (2019), environmental regulation is essential in tackling oil spills quickly. The rule regarding oil spills tackling varies greatly depending on the location of the incident and the institution responsible for the incident. Meanwhile, the implementation of regulation can contain several factors: the characteristics of how complex the problem is, the features of the procedures formulation, and the external environment (Mubarok, Zauhar, Setyowati, & Suryadi, 2020).

Overcoming offshore oil spills in Indonesia is regulated in several regulations. In the Regulation of the Minister of Transportation No. 58 of 2013 concerning Control of Pollution in Waters and Ports, each manager of Special Terminals (Tersus), Terminals for Self Interest (TUKS), Port Business Entities (BUP), as well as other activity units such as oil and gas companies and oil reservoirs in waters must have procedures, trained personnel, and equipment, and are required to carry out pollution control exercises in waters and ports (Wasono, 2008).

Based on Presidential Regulation No. 109 of 2006 concerning Mitigation of Oil Spill Emergencies in the Sea, a National Team was formed in the context of integrated tier-3 mitigation. The team later developed and fostered PUSKODALNAS, which consists of representatives from National Team agencies. Furthermore, the performance of PUSKODALNAS is based on the following regulations. Based on the Decree of the Minister of Transportation No. KP 355 of 2008 concerning the Establishment of the National Command and Control Center for Oil Spill Emergency Response Operations at Sea, PUSKODALNAS is headed by the Director-General of Sea Transportation from the Ministry of Transportation; deputy runs I: Deputy for Control of Natural Resources Conservation and Environmental Damage Control from Ministry of Environment and Forestry, deputy head II: Director General of Oil and Gas from Ministry of Energy and Mineral Resources; secretary: Law Office of the Ministry of Transportation; members: 13 agencies.

According to the Decree of the Minister of Transportation No. KP 355 of 2008, the duties of PUSKODALNAS in dealing with oil spills include coordinating and providing advocacy support to victims. The functions of PUSKODALNAS in dealing with Tier 3 include compiling Fixed Procedures (PROTAP); implementing PROTAP; supervising the availability of facilities, infrastructure, and trained personnel; preparing minimum requirements for the readiness of facilities, infrastructure and personnel at ports, terminals or platforms; qualify minimum requirements for the willingness of facilities, infrastructure and personnel in the regions; submit reports to the National Team.

Meanwhile, the Decree of the Minister of Transportation No. KP 263 of 2020 concerning Procedures for Mitigating Oil Spill Emergencies (Tier 3) at Sea stipulates:

- a. Operational arrangements (sharing of responsibilities & duties): agencies are required to provide support to the OSC (On Scene Commander) appointed by the Head of PUSKODALNAS as MC (Mission Coordinator).
- b. Emergency response procedure arrangement: Indonesia establishes bilateral and multilateral oil spill response cooperation; also carry out IMO training (levels 1 to 3) headed by the Director-General of Sea Transportation as well as carry out several oil spill response exercises and follow-up to the incident report which includes checking and review before response operations.
- c. Reporting and communication system arrangements: PUSKODALNAS is equipped with telephones and a 24-hour radio communication system; the harbormaster and the head/person in charge of the oil and gas unit and other activities are required to report monthly or when an incident occurs.
- d. Arrangement and coordination of the application for operational compensation: the person in charge of the activities causing the oil spill is obliged to pay the costs of the mitigation to the loss of the community and the damage to the affected environment; The Directorate General of Sea Transportation forms a Compensation Team that reviews and forwards the claim file (from the plaintiff or OSC with a Protest Letter, Oil Spill Incident Report, and Countermeasures Report) to the polluter.

The Decree of the Ministry of Transportation No. KP 263 of 2020 concerning Procedures for Mitigating Oil Spill Emergencies (Tier 3) at Sea regulates the division of agency responsibilities included in the coordination of the PUSKODALNAS membership structure. The duties of each agency can be described as follows.

**Tabel 1. Responsibilities of Agencies in PUSKODALNAS**

Agency	Responsibilities
Ministry of Transportation	operations coordination; implementation of oil spill response strategies and operations to protect sensitive areas near the coast
Ministry of Environment and Forestry	provide technical input for coastal operations and the calculation of the cost of compensation for environmental damage
Indonesian Navy	provide technical input on national security; air surveillance



	assistance, air transportation, dispersant deployment
BPH MIGAS	coordination of equipment assistance mobilization & handling of KKKS personnel
SKK MIGAS	provide additional technical assistance equipment and personnel
Ministry of Energy and Mineral Resources	provide technical input on oil spill response
Ministry of Home Affairs	provide technical input on the location of the oil temporary storage place
Ministry of Foreign Affairs	give input; coordination with other countries if necessary
Ministry of Finance	provide financial assistance providing operational funds
Ministry of Maritime Affairs and Fisheries	provide technical input for the protection of the fishing industry as well as the calculation of the cost of compensation for fishermen
Ministry of Health	provide technical assistance for oil spill victim health
Ministry of Law and Human Rights	provide technical input on claims, including assistance in the mobilization of foreign personnel for oil spill response
Republic of Indonesia Police	provide technical input on security at oil spill locations

Source: the Decree of the Minister of Transportation No. KP 263 of 2020

In the United States (US), oil spill regulations include OPA'90 (Oil Pollution Act of 1990), Outer Continental Shelf Lands Act, Clean Water Act, and National Environmental Policy Act. The NRT (National Response Team) consists of 16 members with the EPA (Environmental Protection Agency) as chair and USCG (US Coast Guard) as vice-chair. Thirteen PRC (Regional Response Teams) were formed for the ten federal territories, Alaska, the Caribbean, and the Pacific Basin. The NRT is responsible for the National Oil and Hazardous Pollution Contingency Plan, while the PRC is responsible for developing regional contingency plans and providing guidance for regional contingency plans (ITOPF, 2012).

From the US oil spill response description, it can be learned that the country already has an oil spill legal instrument in the form of a law. The government also has a National Environmental Protection Agency. In addition, the US has established national and regional response teams. Meanwhile, in Indonesia, in the Coordinating Ministry for Maritime Affairs and Investment (2016) portal, there are recommendations from the Coordination and Facilitation Meeting for Marine Environmental Protection Policy "Oil Pollution Control," which has not yet been followed up. Among the recommendations are reviewing Presidential Regulation 109/2006 about Ministries/Agencies that have not been accommodated in oil spill national team response such as Coordinating Ministry of Maritime Affairs and Bakamla and the formation of teams along with tier 2 and 1 procedures also team operational financing.

Tabel 2. Offshore Oil Spill Response in Indonesia and US

Coordination	Advocacy
<b>PUSKODALNAS Regulations in Indonesia (Montara Case 2009):</b> Presidential Regulation No. 109 of 2006 and Decree of the Minister of Transportation No. KP 355 of 2008	
<p>There was no standard procedure, so PUSKODALNAS that headed by the Director General of Sea Transportation and members including Ministry of Environment and Forestry, Ministry of Energy and Mineral Resources, Ministry of Home Affairs, Ministry of Foreign Affairs, Ministry of Maritime Affairs and Fisheries, Ministry of Health, Ministry of Law and Human Rights, TNI, Polri, SKK Migas, BPH Migas, and Local Government coordinated slowly; also reporting in 2010 was not complete.</p>	<p>There was no regulation on the calculation of compensation and limited evidence caused the 22 trillion rupiah claim to be unsuccessful in 2010, until 2021 the affected people have not received compensation, while the polluters appealed the 252 million rupiah litigation penalty.</p>
<b>Oil Spill National Response Team in US (Mexico Gulf Case 2010):</b> OPA'90 (Oil Pollution Act of 1990), Outer Continental Shelf Lands Act, Clean Water Act, and National Environmental Policy Act	
<p>The Environmental Protection Agency lead the Coast Guard, Department of Agriculture, Department of Defense, Department of Defense, Department of Energy, Department of Health and Human Services, Department of Home Affairs, Department of Justice, Department of Manpower, Department of Transportation, Department of Finance, Department of Foreign Affairs, Federal Emergency Management Administration, General Services Administration, National Oceanic and Atmospheric Administration, Nuclear Regulatory Commission responded and calculated oil spill damages quickly (6 months).</p>	<p>Polluters paid \$42 billion in clean-up costs, damages, and penalties in 2010. Polluters paid \$4.5 billion in fines and other penalties for 14 criminal charges, as well as settlement of more than 100,000 claims for loss of money and property of affected communities with estimation \$7.8 billion in 2012. The government sued that polluters' negligence could double the penalty under the Clean Water Act, based on an impact calculation of 3.19 million barrels of oil spill, until \$18.7 billion claim was approved in 2015.</p>
<i>Source: Wasono, 2008; Hikam, 2021; API Energy, 2021; Reuters, 2015</i>	

The results of the data analysis from the literature study on the national scale Montara offshore oil spill case response in 2009 to achieve maritime security in Indonesia compared to another country, namely the US, showed a gap between *das sein* or *sein* reality and *das sollen* or expectations. *Das sein* referred to is a shortage in the Montara offshore oil spill case response in 2009, considering that at that time, there were no fixed



procedure (PROTAP) and calculation of losses regulations. Meanwhile, das sollen is the optimal performance of PUSKODALNAS.

Other country regulations taught lessons that, from the oil spill, it should be enough to take the necessary action before another bad experience, as the US enacted OPA'90 (Oil Pollution Act of 1990) after the Exxon Valdes oil spill occurred. In addition, a comprehensive legal framework is essential to address the problem of marine pollution. After OPA'90 came into effect, the legal framework factors for preparedness, emergency response, and compensation caused oil spills in the US to decrease. Another lesson is that considering large offshore oil spills, which generally don't often happen so that emergency preparedness and response capacity can decline over time, it is essential to implement regular oil spill response exercises. The US has a more effective system to prevent oil spills and protect the environment than the international regime, considering that the US applies a compensation and obligation system different from the global framework. The high effectiveness is caused by liability limits and fund schemes with higher maximum compensation amounts for damage, expansion of the scope of damage to natural resources that can be recovered, and the option to impose unlimited liability (Turan, 2009).

#### IV. CONCLUSION

The implementation of the regulatory duties of PUSKODALNAS in tackling offshore oil spills is essential to achieving maritime security in Indonesia. The comparison of PUSKODALNAS regulatory implementation with other country's oil spill response organizations such as the US National Response Team showed that offshore oil spill response in Indonesia was not optimal. The underlying regulatory factors determine the optimal role of PUSKODALNAS. Therefore, the shortcomings in the national scale Montara offshore oil spill case response in 2009 to achieve maritime security in Indonesia need to be followed up by strengthening regulations and compliance. Therefore, agencies in PUSKODALNAS need to review the rules to synchronize their coordination relationship. In addition, the offshore oil drilling units must fulfil the requirements for tackling oil spills set by regulations.

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