

## Key Issues:

- **Indonesia aspires** to be a global maritime fulcrum. It needs to use complementary national and regional projects to leverage regional financing for maritime connectivity.
- **Disaster management performance is not optimal.** The government, community, and disaster management stakeholders do not coordinate or cooperate well during emergencies
- **Indonesia is committed** to increase research and innovation to support the national Plan of Action on Combating Marine Plastic Debris.

## Sustainable Marine Development

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*Indonesia has the largest economic exclusive zone in Asia, and Japan the second largest. Marine resources are their main development assets. Indonesia and Japan rely on marine logistics and fisheries, of which infrastructure and connectivity are important aspects. Both countries are prone to disasters, including tsunamis, and should improve their disaster management. And both countries should improve their waste management to eliminate marine debris and pollution.*

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## Background

The political, economic, and social importance of maritime resources is emphasised in Report of Project 2045: For 'Joint Partnership' towards Our Common Future – A Joint Project of Two Maritime Democracies (ERIA, 2018). Based on the report, this policy brief reviews the challenges in the maritime sector in Indonesia and discusses policies to overcome them. The Ministry of National Development Planning's (BAPPENAS's) Visi Indonesia 2045 (preliminary version, October 2018) envisions maritime economic contribution to gross domestic product increasing from 6.4% in 2015 to 12.5% in 2045 due to the development of maritime connectivity, sustainable and competitive fishing industrialisation, and investment in maritime tourism.

Lying between the Pacific and Indian oceans, Indonesia is highly important for marine logistics. The location of Indonesia and other Southeast Asian countries is a firm base for strengthening the links between East Asia and South Asia. Connecting to other countries, especially those with industry-based characteristics, and joining the global supply chain are important to promote manufacturing in Indonesia. Connectivity to production bases in neighbouring countries should be strengthened. Batam, for example, is turning into a national logistics centre because of its strategic position and supporting infrastructure.

Figure 1: Designated Ports in the ASEAN (47, including 14 in Indonesia) (%)



Source: Zen (2016).

Indonesia has the second-largest fishing industry in the world after China (FAO, 2016), making it the world's eighth most fish-dependent country (Bennett et al., 2018). In 2017, the sector contributed over US\$27 billion to the national economy, or around 3% of Indonesia's GDP (KKP, 2018). Making fishery sustainable and more profitable, however, remains a challenge. The most important step is to maintain fishery resources.

Indonesia's marine ecosystem faces several threats. Climate change harms the marine environment, such as through coral bleaching. Global warming heralds an era of extreme and unpredictable weather. The disruption of the marine environment is likely to affect fishery. Piles of plastic waste on beaches, for example, hurt tourism.

Indonesia is one of the countries most prone to earthquakes and tsunamis. It has been devastated by several tsunamis in recent years. After a 2004 tsunami swept a dozen countries and killed 230,000 people, more than half of them in the Indonesian province of Aceh, an international effort was launched to improve early tsunami warning, especially in the Indian Ocean. A high-tech system of seafloor sensors, data-laden sound waves, and fibre-optic cable was meant to replace the system set up after 2004, but it was disabled by vandalism or theft or just stopped working due to a lack of maintenance funds.

Maritime issues are linked with several Sustainable Development Goals:

- 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
- 12: Ensure sustainable consumption and production patterns
- 13: Take urgent action to combat climate change and its impacts
- 15: Protect, restore, and promote sustainable use of terrestrial ecosystems; sustainably manage forests; combat desertification; and halt and reverse land degradation and halt biodiversity loss

Promoting economic growth, environmental sustainability, and social inclusion, and strengthening ocean ecosystems were brought to the table at the United Nations Conference on Sustainable Development, Rio de Janeiro, in 2012.

## Key Questions

What common problem can bring Japan and Indonesia together to improve the maritime sector? How can they cooperate to solve the problem of marine pollution and environmental degradation? How can they develop sustainable and responsible tourism? Which maritime areas should they cooperate on first?

## Recommendations

### **First, fishery in Indonesia should be made more sustainable and profitable.**

Fishing methods, volume of catch, and production should be controlled. Management methods should be improved. The Japan International Cooperation Agency project, Optimising Mariculture Based on Big Data with Decision Support System (2017–2022), is finding ways to better manage aquaculture by using big data. The fishery supply chain, cold chain, and temperature control supply chain should be strengthened. Cold chain starts from the fishing boat and proceeds to the fishing port, fish market, fish-processing factory, and shop. Indonesia can learn from Japan's experience in sustainable fishery and aquaculture and from its well-developed cold supply chain.

### **Second, the maritime environment should be protected as it is vital for sustainable fishery.**

Indonesia should mitigate climate change and contribute to the international discussion on climate change. Marine plastic waste is a threat. More marine plastic debris is generated on land than on the ocean. Indonesia generates the second-largest amount of marine plastic debris in the world (Jambeck, 2015) and has started to tackle this issue. The Presidential Decree on Marine Debris Management and its action plan (2018–2025) aim to raise stakeholder awareness, produce more biodegradable and recyclable plastics, and build facilities to receive waste at ports, amongst others. Waste management and wastewater treatment should be strengthened in marine-based tourist spots and their upper water catchment areas.

### **Third, resiliency to earthquakes and tsunamis should be strengthened**

The first risk-reduction measure is raising awareness. People should learn about the danger of tsunamis and what to do after an earthquake or early warning. Local governments should have in place evacuation plans and shelters. The national government has invested in early warning systems in some regions. In some areas, earthquake-detection devices have been installed to transmit information to disaster information centres. But a system to send early warnings to individuals is not well established. Such a system is widely used in Japan, with information sent to mobile phones. Indonesia should invest further in early warning systems for earthquakes, tsunamis, and other disasters.

### **Fourth, maritime connectivity should be strengthened because it is key to tackling the economic disparity between Java and other regions and to make Indonesia part of the global supply chain.**

The economic disparity between Java and other regions, especially eastern Indonesia, should be reduced and domestic marine connectivity increased. Although *Visi Indonesia 2045* mentions it and much progress has been made under President Jokowi Widodo, infrastructure to expand marine connectivity, such as seaports, should be further upgraded by, for instance, optimising the functions of maritime highways to connect the archipelago. The government should strengthen integration and take a more strategic approach to information, economic analysis, and incentives, and better harness technology and innovation.

### **Geopolitical outlook: Indonesia and Japan should be on the front line to tackle maritime challenges**

*In the geopolitics of the information revolution era, wealth and power remain, perhaps more so than before, structured around communication and connectivity. It was inevitable that the restructuring of the international order would take place in the maritime space.*

*Indonesia and Japan, both maritime and archipelagic nations, are on the front line facing the new geopolitical challenge. As regional maritime powers, both countries must lead in rearranging the global order. Achieving this strategic goal relies on whether the maritime space will become a zone of access and connectivity or one of confrontation and denial.*

*Indonesia and Japan define maritime security as defensive. They do not aim to annex other territories. Sovereignty is de-territorialised due to technological advancement and the interconnected global economy. Indonesia and Japan need to redesign maritime strategies to be more proactive. As economic development relies on connectivity, the accessibility of maritime space and security of communication lines are of paramount importance.*

## Conclusion

Maritime space is economically important for Indonesia. The marine ecosystem is the basis of fishery. Sea transport is important not only for economic activity but also for participation in the global supply chain and support for small fishermen to connect them to bigger industry. The marine economy faces several threats. Marine resources should be properly managed. Indonesia's Centre of Hydrography and Oceanography under the Naval Agency, established in 1951, aims to provide hydrography information for sea transport, marine fishery, marine tourism, energy and mining, telecommunication, and coastal resources. Indonesia and Japan should collaborate to strengthen the resources and capability of the centre to reinforce maritime development. Indonesia should learn from Japan's experience in sustainable fishery, data collection on marine debris, waste management, tsunami early warning systems, amongst others. Indonesia will learn from Japan how to tackle these problems by maximising already-existing resources.

*(This policy brief is based on the full version of the Report of Project 2045: A Joint Project of Two Maritime Democracies. The United Nations Development Programme Indonesia and the Economic Research Institute for ASEAN and East Asia implemented the project with funding from the Government of Japan. Project 2045 was initiated in March 2018 to commemorate the 60th anniversary of diplomatic relations between Indonesia and Japan)*


## References

- Bennett, A., P. Patil, K. Kleisner, D. Rader, D. Viridin, and X. Basurto (2018), Contribution of Fisheries to Food and Nutrition Security: Current Knowledge, Policy, and Research, NI Report 18-02, Durham, NC: Duke University.
- Bharat, S. S. (2019), 'A development-oriented Global Maritime Fulcrum'. <https://www.thejakartapost.com/academia/2019/03/05/a-development-oriented-global-maritime-fulcrum.html> (accessed 13 May 2019).
- Economic Research Institute for ASEAN and East Asia (ERIA) and United Nations Development Programme (2018), *Report of Project 2045 – A Joint Project of Two Maritime Democracies*. Jakarta: ERIA.
- Food Agriculture Organization. (2013), 'The state of world fisheries and aquaculture, 2012', Choice Reviews Online, 50. <https://doi.org/10.5860/CHOICE.50-5350> (accessed 10 May 2019).
- Jambeck, J.R. , R. Geyer, C. Wilcox, T. R. Siegler, M. Perryman, A. Andrady, R. Narayan, and K. L. Law (2015), 'Plastic waste inputs from land into the ocean', *Science*, 347(6223), pp.768–71.
- KKP [Indonesia Ministry of Marine Affairs and Fisheries] (2018), 'Kelautan dan Perikanan dalam Angka' (Maritime and Fisheries in Figures), 2018. <https://kkp.go.id/setjen/satudata/page/1453-kelautan-dan-perikanan-dalam-angka>. (accessed 24 September 2019)
- Negara, S. D. and S. B. Das (2017), 'Challenges for Indonesia to achieve its Maritime Connectivity Plan and Leverage on Regional Initiatives', ISEAS Yusof Ishak Institute, Perspective, 3, pp.1–11. [https://think-asia.org/bitstream/handle/11540/6742/ISEAS\\_Perspective\\_2017\\_3.pdf?sequence=1](https://think-asia.org/bitstream/handle/11540/6742/ISEAS_Perspective_2017_3.pdf?sequence=1) (accessed 13 May 2019).
- Park, K.S. and J.T. Kildow (2014), 'Rebuilding the Classification System of the Ocean Economy', *Journal of Ocean and Coastal Economics*, 14(1), pp.59–62.
- Press, A. (2019), 'Why Indonesia still lacks an adequate tsunami warning system'. <https://www.telegraph.co.uk/news/2018/10/01/indonesia-still-lacks-adequate-tsunami-warning-system/> (accessed 13 May 2019).
- Wada, M. and M. Natsir, 'Optimizing Mariculture based on Big Data with Decision Support System'. [https://www.jst.go.jp/global/english/kadai/h2810\\_indonesia.html](https://www.jst.go.jp/global/english/kadai/h2810_indonesia.html) (accessed 24 February 2019).
- WWF (2019), 'Marine Problems: Climate Change', [http://wwf.panda.org/our\\_work/oceans/problems/climate\\_change/](http://wwf.panda.org/our_work/oceans/problems/climate_change/) (accessed 13 May 2019).
- Zen, F. (2016). 'ASEAN Maritime Connectivity: Overview and Insights'. [http://www.lms.polyu.edu.hk/OBOR2016/files/slides/\(PS-A\)%20Zen,%20Fauziah.pdf](http://www.lms.polyu.edu.hk/OBOR2016/files/slides/(PS-A)%20Zen,%20Fauziah.pdf) (accessed 24 April 2019).

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