

# Fisheries and Indonesia's Blue Economy: Advancing Sustainable Development as the World's Second-Largest Seafood Producer

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## Summary

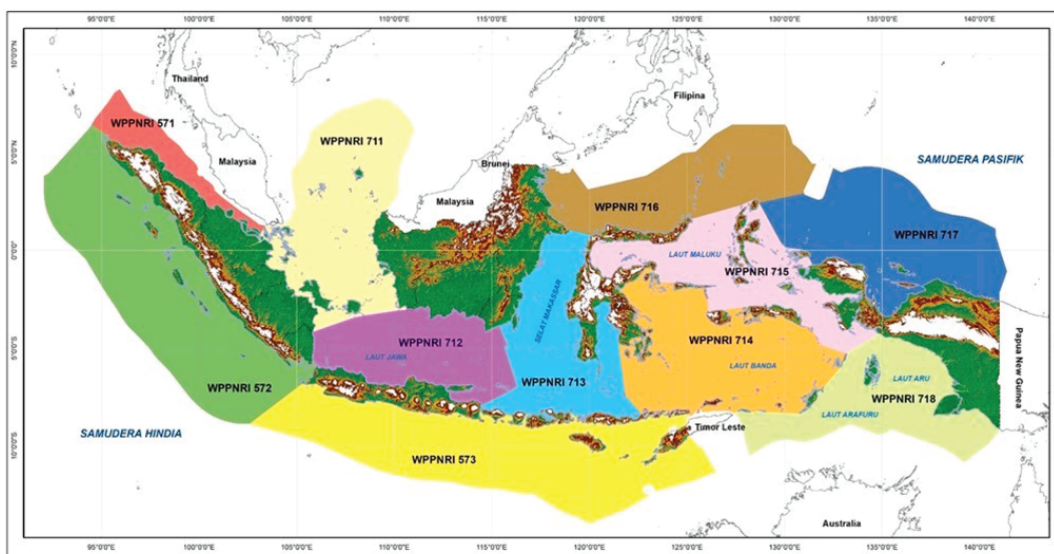
Despite being the world's second-largest fish producer, Indonesia is facing the challenge of tapping marine resources sustainably while ensuring food security and social equity, as outlined in its Blue Economy Roadmap. Fisheries and aquaculture are central to the economy and the Blue Economy; however, they are burdened by overexploitation and environmental degradation. Recent initiatives, such as the Blue Food Assessment, the Food System Dashboard, Blue Finance, and efforts toward quota-based management, highlight Indonesia's commitment to advancing the Blue Economy. To fully realise this potential, the country must strengthen labour protections, improve fisheries management and data systems, invest in cold chain logistics, engage the private sector through blended finance, and standardise blue financing criteria. By integrating economic, social, and environmental dimensions, Indonesia can balance growth with sustainability, harness its fisheries sector, and advance its long-term development goals.

## Indonesia and the Blue Economy Concept

As the world's second-largest fish producer, Indonesia depends on sustainable fisheries to bolster economic growth and sustain the livelihoods of millions. Known as the world's largest archipelagic nation, Indonesia comprises 17,508 islands, with coastlines stretching 80,791 kilometers and an exclusive economic zone of 3 million square kilometers. This vast maritime domain supports the livelihoods of 5.23 million people employed as fishers and fish farmers (ERIA, 2023). Recognising this potential, the Ministry of National Development Planning (*Badan Perencanaan Pembangunan Nasional/Bappenas*) and the Organisation for Economic Cooperation and Development (OECD) developed the Blue Economy Development Framework to guide Indonesia's blue economy transformation (Bappenas, 2021).

The blue economy emphasises the responsible

use of ocean resources to foster economic growth, improve livelihoods, and safeguard marine ecosystems. It promotes balanced development, ensuring that economic objectives do not compromise ecological sustainability or social well-being. In Indonesia, the blue economy encompasses traditional sectors such as marine capture fisheries, seafood processing, and coastal tourism, as well as emerging sectors like aquaculture, ocean renewable energy, and marine biotechnology (Bappenas, 2021). Among these, fisheries and aquaculture are particularly vital, carrying significant potential to support Indonesia's commitment to the Sustainable Development Goals (SDGs). A key feature of fisheries management is the division of national waters into 11 Fisheries Management Areas (*Wilayah Pengelolaan Perikanan/WPP*), which serve as the primary geographic units for planning and surveillance.



**Figure 1.** Indonesia Fisheries Management Areas (WPP)

Source: Suherman, et al. (2025)

## The potential roles of fisheries sector in Indonesia's sustainable development

Indonesia relies heavily on its fisheries and aquaculture sectors for socio-economic development. In 2021, capture fisheries produced 7.22 million tonnes, while aquaculture yielded 14.65 million tonnes, positioning Indonesia as a major food supplier both domestically and globally. By 2022, the sector contributed approximately USD 32.11 billion to GDP, or 2.6 percent of the national economy (Bappenas, 2023). Fisheries provide livelihoods for about 7 million people, 60% in aquaculture, while millions more households depend on the sector for income. Women play an important role in artisanal fisheries, especially in processing, marketing, and trading, although participation in fish farming remains limited (OECD, 2021). These dynamics illustrate how fisheries contribute to economic growth, job creation, and gender inclusion, aligning with SDGs 1 (No Poverty), 5 (Gender Equality), and 8 (Decent Work and Economic Growth).

Beyond their economic and employment contributions, aquatic foods are increasingly recognised for their importance in food security and public health. Fish account for 52% of animal-sourced protein in the Indonesian diet, making the country highly fish-dependent (OECD, 2021). Between 2017 and 2022, national fish consumption steadily increased, supplying at least half of household animal protein intake. Rich in protein and micronutrients, fish and other aquatic animals (OAA) play a vital role in addressing stunting, a chronic form of malnutrition affecting children (Hapsari et al., 2023). In recognition of this, the technocratic draft of the National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional/RPJM*) 2025–2029 identifies aquatic foods as a key intervention to strengthen food security and nutrition. This underscores the urgency of refining current strategies, as the government has yet to reach its 2024 target of reducing stunting among children under five to 14% (Firdausi and Budiman, 2025). Strengthening aquatic food systems thus supports national food security, improves nutrition, and advances Indonesia's

SDGs commitments, particularly Goals 2 (Zero Hunger) and 3 (Good Health and Well-being).

Sustainable fisheries and aquaculture also offer significant ecological benefits, especially for mangrove ecosystems, which serves as critical habitats for many fish species. While aquaculture expansion has driven nearly half of mangrove loss in Indonesia, mangroves serve as refuges, nursery grounds, and nutrient sources for commercially valuable fish. According to the Food and Agriculture Organisation (FAO), 55% of Indonesia's total fish catch biomass, valued at approximately USD 825 million annually, depends on mangroves. The average economic contribution of mangrove-related fisheries services is estimated at USD 3,289 per hectare annually (World Bank, 2022). Integrating mangrove rehabilitation into fisheries development allows sustainable fisheries and aquaculture to grow alongside the restoration of one of the planet's most carbon-rich ecosystems, supporting biodiversity and climate resilience. These measures directly contribute to SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land).

### **Challenges in realising sustainability and blue economy in fisheries sector**

Although the Indonesian fisheries sector provides substantial employment, it remains vulnerable to human rights violations. The 2024 Survey on Decent Work in Marine Fishing, conducted by the International Labour Organization (ILO) and the Indonesia National Research and Innovation Agency (*Badan Riset dan Inovasi Nasional*/BRIN), found that only 9.3% of 3,551 fishers across 18 ports had written contracts, with the vast majority are facing irregular working conditions. Moreover, 71% of

fishers lacked social security coverage, while nearly 45% reported working in hazardous conditions, such as storms and extreme weather. Additionally, 1.5% were potentially trapped in forced labour, often experiencing withheld identity documents, an inability to report grievances without fear of retaliation, debt bondage, and even physical abuse (ILO, 2025). Against this backdrop, Indonesia's fisheries working conditions remain far from decent and sustainable.

Indonesia's fisheries sector, largely dominated by small-scale fishers, faces significant challenges in ensuring adequate supply and consistent product quality. Small-scale fisheries, which comprise roughly 90% of the sector, experience production losses of up to 30%, or approximately 75,000–125,000 tonnes annually (Firdausi and Budiman, 2025). While Indonesia produces large quantities of seafood, it is not among the world's top ten seafood exporters. Export revenues remain relatively low, partly due to quality issues. For example, frozen prawns exported to the United States frequently rejected due to contamination (Napitupulu et al., 2022). Insufficient infrastructure further constrains the efficient distribution of high-quality fish across the country (Robyn et al., 2020). These challenges underscore the need to address production efficiencies, improve product quality, and invest in infrastructure to fully realize the sector's potential for food security and economic growth.

From an environmental perspective, overexploitation, pollution, and ecosystem degradation continue to threaten the sustainability of Indonesia's fisheries sector. The 2021 national assessment reported that about

35% of capture fisheries, covering nine major species groups across 11 WPP, were overexploited, with catches exceeding the allowable limit. Another 54% were fully exploited, while only around 10% were underexploited, producing below the maximum sustainable yield (World Bank, 2024). Beyond overfishing, marine ecosystems face further threats from degradation and pollution. Marine plastic debris alone causes annual economic losses exceeding USD 450 million to fisheries, coastal tourism, and commercial shipping (ERIA, 2023). Aquaculture expansion has also driven mangrove loss in coastal regions. In addition, many aquaculture farmers discharge untreated wastewater into the same water sources they rely on, leading to contamination and ecosystem damage. Clear regulations on aquaculture wastewater management are still lacking (Napitupulu et al., 2022)

### **Policies on the ground to advance the Blue Economy agenda in fisheries sector**

Indonesia has adopted laws and regulations to promote decent work in the fishing sector, including ratifying ILO Conventions on forced labour and child labour. At the national level, the Ministry of Maritime Affairs and Fisheries issued Regulation No. 2 of 2017, establishing a certification system with measures such as insurance, formal contracts, remediation, and accountability mechanisms to prevent human rights abuses. However, challenges remain due to overlapping jurisdictions and weak enforcement of labour standards, particularly in small-scale and distant-water fleets (ILO, 2025).

Bappenas recently released the Blue Food Assessment, which evaluates the current state of aquatic foods and their role in the national food system. The assessment covers five dimensions, including nutrition, environmental

sustainability, small-scale fisheries and aquaculture, social justice and productivity, and value creation with export potential. Supporting regional food system planning, the Indonesia Food System Dashboard (*Dashboard Sistem Pangan Indonesia/DSPI*), together with data from the Ministry of Marine Affairs and Fisheries (*Kementerian Kelautan dan Perikanan/KKP*), provides insights into blue food value chains at both provincial and district levels (Firdausi and Budiman, 2025). Despite these efforts, nearly 40% of fish harvested in Indonesia is lost or wasted due to inadequate fisheries management (GAIN, 2023).

In 2021, Indonesia proposed a quota-based policy to curb overexploitation, but it faced backlash for favoring large companies. Small-scale fishers, who operate nearly 90% of vessels, received only a small share, raising concern of widening income inequality (Napitupulu et al., 2022). Hence, the decree on quota-based policy issued in November 2023 was annulled in December 2024 (ILO, 2025). Fisheries management still relies mainly on input controls, yet many stocks remain overexploited (Suherman et al., 2025). At the same time, official development assistance (ODA) for fisheries is low at 0.4% of total ODA, with only 37% supporting sustainability between 2013 and 2018. The National Plastic Action Partnership targets a 70% reduction in marine plastic pollution by 2040, however, enforcement remains weak, with just 2.6% of regional budgets allocated to waste management (OECD, 2021). In 2023, Indonesia launched its first Blue Bond and the Indonesia Blue Economy Index (IBEI) to monitor SDGs progress. However, the first blended finance instrument for coastal management and sustainable fisheries has not yet been implemented (Bappenas, 2023).

## The way forward

In the era of climate change, the Blue Economy can drive growth while fostering sustainable practices, building resilient fishing communities, ensuring food security, and supporting climate resilience. To transform Indonesia's fisheries sector, several steps are essential.

**Labor and Governance:** Harmonising domestic laws with international labour standards and developing a consolidated database is crucial. Indonesia has yet to ratify the 2014 ILO Protocol to the Forced Labour Convention (No. 29), which includes enhanced labor inspections, victim identification, and access to justice. Stronger coordination between national and local authorities, combined with a centralized database integrating vessel registrations, employment records, port authorities, and enforcement systems, would improve monitoring, formalisation, and protection for fishers.

**Blue Food Systems:** Strengthening the cold value chain and pooling data on production, trade, and consumption through DSPI will be key to navigating the blue food market. Partnerships with private actors in the distribution process can reduce fish losses caused by inadequate distribution infrastructure. Moreover, integrating food system and blue food data into DSPI would provide a useful reference for evidence-based policymaking and resource management. Ultimately, ensuring comprehensive documentation of the sector is a vital starting point for advancing the Blue Economy agenda.

**Sustainable Fisheries Management:** In the coming future, the government should ensure equitable quota-based fishing and stronger supporting infrastructure. Allocating specific zones for small- and large-scale fishers and deploying rapid data collection teams across Indonesia's 11 WPP can improve monitoring and reduce conflicts. Engaging the private sector through blended financing could further overcome limited ODA, supporting capacity building, marine conservation, and waste management. Lastly, establishing clear standards for blue economy projects is also essential to prevent "bule-washing", the superficial or misleading portrayal of initiatives as sustainable.

## Disclaimer

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