



Sustainable Ocean for All Series

SUSTAINABLE OCEAN ECONOMY COUNTRY DIAGNOSTICS OF INDONESIA

Sustainable Ocean Economy Country Diagnostics of Indonesia

April 2021

This document is submitted for INFORMATION.

For more information on Sustainable Ocean Economy see

<https://www.oecd.org/ocean/topics/developing-countries-and-the-ocean-economy/>

Contacts:

Piera Tortora, Piera.TORTORA@oecd.org

Alberto Agnelli, Alberto.AGNELLI@oecd.org

JT03475041

Abstract

Indonesia is located in one of the world's richest regions in terms of ocean resources, as well as one of the most affected ones from increasing pollution and degradation of marine ecosystems. Ocean-based sectors - such as fisheries, marine aquaculture and tourism - have contributed to the country's economic dynamism over the past two decades. The impacts from COVID-19, however, are laying bare the need for Indonesia to enhance the resilience and sustainability of its ocean-based sectors as a way to set more solidly on a path of sustainable and inclusive development. This *Sustainable Ocean Economy Country Diagnostics of Indonesia* provides a compass for understanding the complexity of Indonesia's ocean economy and for enhancing the economic, social, and environmental benefits from a more sustainable ocean economy. It focusses on three analytical pillars: (i) Economic trends of Indonesia's ocean economy; (ii) Governance frameworks and policy tools to foster a more sustainable ocean economy; and (iii) Financing instruments and flows, with a focus on development finance. This *Sustainable Ocean Economy Country Diagnostics of Indonesia* is part of the OECD Sustainable Ocean for All Initiative, designed to support developing countries address the increasing pressures on marine and coastal ecosystems (e.g. from pollution, over-fishing, climate change, etc.) and chart a new course for sustainable development through the conservation and sustainable use of ocean and coastal resources.

Foreword

In 2019 the Secretary-General of the Organisation for Economic Co-operation and Development (OECD), launched the Sustainable Ocean for All Initiative to support a transition to a global ocean economy that is truly sustainable and that developing countries can benefit from. This initiative offers original evidence and a policy space that contribute to the ambition of the Agenda 2030 on Sustainable Development and the Sustainable Development Goal 14 on the “conservation and sustainable use of the oceans, seas and marine resources for sustainable development”.

The initiative is led by the OECD Development Co-operation Directorate (DCD), with inputs from across the OECD. The objectives of the Sustainable Ocean for All Initiative are to: (i) enhance the knowledge base and policy options available to developing countries for achieving sustainable ocean economies that accelerate progress against sustainable development; (ii) develop new evidence on development co-operation approaches to foster more effective and co-ordinated actions by international development co-operation actors; (iii) align finance to the sustainable ocean economy, both public, private, international and domestic, through adequate domestic policies as well as better aligned development finance and international co-operation efforts; and (iv) increase opportunities for dialogue and mutual learning across countries and within ocean-related communities around the world, including ministries, agencies, academia, foundations, non-governmental organisations (NGOs) and the private sector.

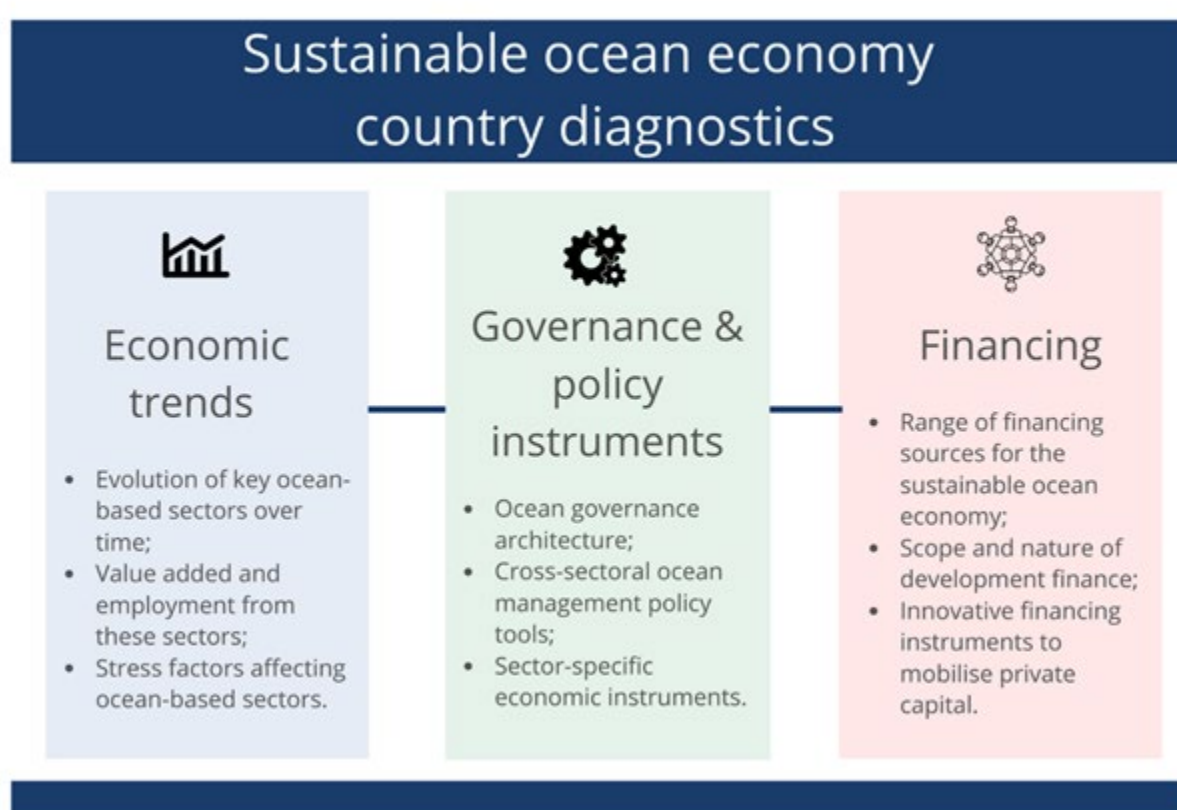
As part of the OECD Sustainable Ocean for All Initiative, the *Sustainable Ocean Economy Country Diagnostics* are designed to support developing countries address the increasing pressures on marine and coastal ecosystems (e.g. from pollution, over-fishing, climate change, etc.) and chart a new course for more sustainable development through the conservation and sustainable use of ocean and coastal resources. They are centred on a multi-dimensional understanding of sustainability, encompassing social, environmental and economic dimensions, and are founded on a holistic view of the ocean economy as a complex set of varied and highly interconnected sectors requiring co-ordinated and mission-oriented policy making.

The Sustainable Ocean Economy Country Diagnostics are articulated around three analytical pillars: (i) Economic trends; (ii) Governance and policy tools; and (iii) Financing, with a focus on development finance (Figure 1). To understand Indonesia’s sustainable ocean economy this compass is first applied to the country’s overall ocean economy (Chapter 2) and then applied to individual ocean-based sectors, which are particularly important for Indonesia’s welfare or critically affecting ocean health (Chapter 3). These are: (i) fisheries and aquaculture; (ii) tourism; (iii) marine plastics and waste management; and (iv) marine conservation.

This *Sustainable Ocean Economy Country Diagnostics of Indonesia* was informed by a number of OECD unique statistical sources and expertise on the sustainable ocean economy, including the OECD Experimental Ocean-Based Industries Database, developed by the Directorate for Science Technology and Innovation, and the new ocean economy official development assistance (ODA) figures, developed by the Development Co-operation Directorate. Further, the *Sustainable Ocean Economy Country Diagnostics of Indonesia* was informed by structured interviews and consultations with representatives from a range of relevant ministries (i.e. Coordinating Ministry for Maritime Affairs and Investments; Ministry of National

Development Planning; Ministry of Environment and Forestry; Ministry of Maritime Affairs and Fisheries; Ministry of Research, Technology and Higher Education; Ministry of Tourism; Ministry of Transportation; and Ministry of Finance), development partners representatives, think tanks and the private sector. Findings from these interviews and consultations informed *Sustainable Ocean for All: Harnessing the benefits of sustainable ocean economies for developing countries* (OECD, 2020^[1]). Emerging findings from this country diagnostics were also discussed with Indonesian government officials and representatives from other Southeast Asian countries during the Sustainable Ocean for All Policy Dialogue on the Sustainable Ocean Economy in the Southeast Asia region that took place in December 2019, for which financial support from the government of Sweden is kindly acknowledged.

Figure 1. OECD Sustainable Ocean Economy Country Diagnostics: analytical framework



Acknowledgements

This Sustainable Ocean Economy Country Diagnostics of Indonesia was written by Piera Tortora and Alberto Agnelli, with contributions from Carolyn Neunuebel, under the overall guidance of Jens Sedemund and Haje Schütte, and with strategic guidance by Jorge Moreira da Silva. Initial inputs to a previous version of this Diagnostics were provided also by Claire Jolly (Science Technology and Innovation Directorate - STI), notably for data and analysis from STI OECD Experimental Ocean-Based Industries Database, and by Will Symes (with the OECD Environment Directorate at the time) on economic instruments for the sustainable use and conservation of the ocean.

The Diagnostics was informed by an initial fact-finding mission of a cross-directorate team headed by Piera Tortora, with Will Symes (ENV), James Joliffe (STI) and Alberto Agnelli (DCD). During the mission structured interviews and consultations were held with representatives from a range of relevant ministries and government agencies that are here kindly acknowledged (i.e. Coordinating Ministry for Maritime Affairs and Investments, Ministry of National Development Planning, Ministry of Environment and Forestry, Ministry of Maritime Affairs and Fisheries, Ministry of Research, Technology and Higher Education; Ministry of Tourism, Ministry of Transportation, Ministry of Finance and Fiscal Policy Agency), as well as development partners representatives, think tanks and the private sector.

The authors would also like to thank Indonesian government officials, representatives from other Southeast Asian countries, and from other international organisations participating in the First Regional Ocean Policy Dialogue that took place in December 2019 for their comments to the emerging findings from this Country Diagnostic.

The authors would like to thank the following OECD colleagues for their useful comments: Fabiana Cerasa, Roger Martini, Emanuela Migliaccio, Kazuhiro Nomoto and Will Symes (OECD Trade and Agriculture Directorate); Claire Jolly (OECD Science, Technology and Innovation Directorate); Peter Borkey, Elena Buzzzi, Kiiskinen Eija, Laubinger Frithjof and Kate Kooka (OECD Environment Directorate); Peter Haxton (OECD Centre for Entrepreneurship, SMEs, Regions and Cities).

Delegates to the Development Assistance Committee (DAC) and their country offices, as well as delegates to the DAC Network on Environment and Development Co-operation (ENVIRONET) are gratefully acknowledged for their useful comments, as well as Rachmat Rekso Samudra and Rima Prama Artha (UNDP Indonesia); Robin Barakalla (Conservation International Indonesia); and Maria Corazon Ebarvia (PEMSEA).

The report was prepared for publishing by Stacey Bradbury and Sara Casadevall i Bellés.

Financial support from the government of Sweden is kindly acknowledged.

Table of contents

Abstract	3
Foreword	4
Acknowledgements	6
Executive summary	9
1 The urgency of transitioning to a sustainable ocean economy	12
2 A global view of Indonesia's sustainable ocean economy	14
Indonesia's ocean economy in the broader context of its economic development and the COVID-19 crisis	14
Economic trends: the composition and evolution of Indonesia's ocean economy	16
Institutional arrangements and policies for shaping a sustainable ocean economy	21
Finance for a sustainable ocean economy	26
3 A focus on selected sectors of Indonesia's sustainable ocean economy	36
Marine fisheries and aquaculture	36
Tourism	44
Marine plastics and waste management	52
Marine conservation	59
References	64

FIGURES

Figure 1. OECD Sustainable Ocean Economy Country Diagnostics: analytical framework	5
Figure 2.1. Ocean-economy value added in ASEAN countries in 2015	18
Figure 2.2. Share of value-added for six ocean-based industries in 2015	18
Figure 2.3. Employment in six ocean-based industries, 2005-15, by region and country grouping	19
Figure 2.4. Value added from six ocean-based industries: comparing trends in East Asia Pacific region and ASEAN with the rest of the world	20
Figure 2.5. Indonesia's ocean economy official development assistance (2013-18)	29
Figure 2.6. Indonesia's major external financing flows	30
Figure 2.7. Official development assistance to enhance ocean sustainability: sector-specific distribution	33
Figure 3.1. Marine fishing production in Indonesia (2008-18)	37
Figure 3.2. Aquaculture production in Indonesia (2008-18)	38
Figure 3.3. In Indonesia, 37% of fishery official development assistance is marked as sustainable	42
Figure 3.4. International tourism receipts	46

Figure 3.5. Official development assistance for waste management and disposal	57
Figure 3.6. Across ASEAN countries Indonesia received the largest official development assistance volumes for marine conservation	62

TABLES

Table 2.1. Ocean-related competencies across Indonesia's ministries	23
Table 2.2. Examples of development co-operation projects to promote a sustainable ocean economy in Indonesia	31
Table 3.1. The “10 new Balis”	48

Executive summary

Economic trends in Indonesia

Indonesia's ocean economy is expanding rapidly and it is the largest across ASEAN countries

Indonesia's ocean economy has more than tripled in the span of five years, contributing approximately USD 256 billion in annual gross value added (GVA) in 2013 up from USD 73 billion in 2008 (Ebarvia, 2016^[2]). Its contribution to GDP is estimated to be up to 28%. Original OECD estimates on six ocean-based industries¹ show that Indonesia has the largest ocean economy across ASEAN countries, producing 67% of the total value added from these industries across ASEAN members in 2015. Compared to other countries in East Asia Pacific, Indonesia has a somewhat different composition of its ocean economy, relying on the fisheries sector to a greater extent (i.e. 83% of its ocean economy value added vs 31% in the East Asia Pacific region); and on shipbuilding to a smaller extent. The expansion of Indonesia's ocean economy has contributed to the country's strong economic dynamism recorded since after the 1997 Asian financial crisis, which made Indonesia the largest economy in Southeast Asia and an upper middle-income country since 2019.

Opportunities lie ahead from regional integration and new ocean-based sectors and products

Indonesia's ocean economy stands to benefit from the economic dynamism in its region. The East Asia and Pacific region accounts for 47% of the world value added (USD 376 billion in 2015) from the six ocean-based industries under analysis and has experienced the largest growth in value added from these industries in 2005-15, from USD 150 billion to over USD 175 billion (OECD, 2020^[1]).

Emerging sectors, as well as innovations in existing sectors, are particularly promising for Indonesia's sustainable development through a sustainable ocean economy. Several governments in the region are exploring opportunities to harness marine renewable energy. Aquaculture and efforts to make it more sustainable are increasingly taking centre stage in many countries, with the industry supplying up to 60% of total fish consumption in Indonesia. Further, changes in seafood and energy markets, in maritime routes, types of cargo and types of vessel that will be required to support a growing ocean economy in this region will all shape the evolution of the ocean economy in the near future. As an estimated 40% of world production will be located in the People's Republic of China ("China"), India and Indonesia by 2030, the maritime transport sector in Indonesia and its surrounding region could likely increase in importance and become even more central in global transport networks (OECD, 2016^[3]).

¹ Marine fishing, marine aquaculture, marine fish processing, shipbuilding, maritime passenger transport, maritime freight

The COVID-19 crisis is laying bare the need for a sustainable and resilient ‘blue’ recovery

Due to the COVID-19 crisis, Indonesia's economy contracted sharply in 2020, with GDP estimates for 2020 pointing to a drop of 1.5% - 2.2%, marking the first recession since 1998. Within a few months, the pandemic reversed some hard-won advances in well-being, with poverty, malnutrition, and even hunger increasing. Some ocean-based sectors have been strongly affected and tourism is expected to be one of the hardest hit. The impacts from COVID-19 lay bare the need for Indonesia to enhance the resilience and sustainability of its ocean-based sectors as a way to set more solidly on a path of sustainable and inclusive development. In particular, it will be key that a blue recovery helps turn both traditional and emerging ocean-based sectors into catalysts for long-term shared prosperity.

In Indonesia, the ocean health index ranks 137 out of 221 countries indicating low sustainability, largely driven by unsustainable seafood harvesting practices and tourism. Ocean pollution – especially from plastics – is affecting the health of communities as well as the profitability of many economic sectors, including tourism and fisheries. In light of the emerging sustainability concerns related to various ocean-based industries to be fully harnessed, however, these opportunities require adequate policy dialogue and policy co-ordination across countries in the region to tackle shared challenges, find common solutions, and share best practices.

Institutional arrangements and policies for shaping a sustainable ocean economy

A sustainable ocean economy is high on the government agenda and led to the creation of dedicated policies, institutional structures and the adoption of integrated policy tools

The high political priority of the ocean agenda in Indonesia has led to a dedicated ocean policy strategy and the establishment of a Co-ordinating Ministry of Maritime Affairs and Investments to streamline ocean governance. The Co-ordinating Ministry co-ordinates the Ministry of Maritime Affairs and Fisheries, the Ministry of Energy and Mineral Resources, the Ministry of Transport, Ministry of Environment and Forestry, Ministry of Public Works and Housing and the Ministry of Tourism. Besides this, a number of ad hoc structures were created to enhance the country's ocean governance, particularly focused on illegal, unreported and unregulated (IUU) fishing. These were positive steps to increase co-ordination and enhance policy coherence on ocean matters across the administration, albeit the governance of the ocean remains somewhat fragmented both horizontally and vertically, reflecting the complex nature of Indonesia's national and local governments.

Indonesia has also adopted cross-sectoral policy instruments for the integrated management of ocean and coastal resources, such as Marine Spatial Planning and Integrated Coastal Management schemes, although the adoption of both is challenged by the availability of quality oceanographic data and conflicts on different uses of the ocean. In this context, harnessing the best ocean science and knowledge becomes essential.

Finance for a sustainable ocean economy

Indonesia has been experimenting a variety of innovative financing frameworks and policy instruments that can support a more sustainable ocean economy

The first sovereign Green *Sukuk*, issued in March 2018 raised USD 1.25 billion for green/blue investments, attracting both Islamic and non-Islamic investors as well as both green and conventional investors. 'Blue projects' funded through the proceeds from this first Green *Sukuk* include renewable energy sources for ocean-based industries such as the replacement of fossil fuel energy sources with solar photovoltaic (PV)-

powered batteries in sea navigation facilities like lighthouses (Indonesia Ministry of Finance, 2019^[4]). However, the proceeds were not used for other ocean-based sectors or for marine conservation.

Climate budget tagging was introduced in 2016 in Indonesia's National Budgeting and Planning Systems, aimed at tracking climate-related expenditures in the national budget and prioritising climate spending. Climate spending grew from USD 5.4 billion, or 3.5% of national budget, in 2016 to USD 8.5 billion, or 5.4% of national budget, in 2018 (OECD, 2019^[5]). While the Ministry of Public Works and Housing and the Ministry of Transport were among the most targeted, the Ministry of Maritime Affairs and Fisheries and other ministries relevant to a sustainable ocean economy still receive small shares of resources allocated for mitigation and adaptation.

Indonesia has developed a variety of options for the implementation of ecological fiscal transfers (EFT). These are a mechanism to compensate the actors involved in biodiversity conservation: thereby discouraging the conversion of high conservation value sites for industrial or commercial use. The Ecology-based National Budget Transfers (TANE), the Ecology-based Provincial Budget Transfers (TAPE) and the Ecology-based District Budget Transfers (TAKE) are also being discussed to allow for a transfer of funds from the provincial government to the district or from the district government to the village government based on the local government's performance in protecting the environment. Although most applications are terrestrial, the mechanism could be applied also to marine conservation to increase the total amount of marine biodiversity financing provided by the central, provincial and district governments. While for terrestrial ecosystems indicators on which EFT are based are well defined, discussion around what indicators should be considered for ocean-based EFT is currently under way.

Although still not deployed at scale, these instruments have the potential to be scaled up and represent an invaluable opportunity to steer the future of Indonesia's ocean economy towards greater sustainability.

Official development assistance is supporting Indonesia's transition to a sustainable ocean economy

Indonesia is the world's largest recipient of official development assistance (ODA) for the ocean economy, receiving USD 302.5 million on average a year in 2013-18 period. This is equivalent to 10.7% of ODA to the country, well above the share of ODA for the ocean economy to other coastal and island nations (1.9%) and regional peers (6.5%). Development partners have supported Indonesia's transition to a sustainable ocean economy by focusing primarily on: (i) curbing ocean pollution from land, (ii) green shipping and ports, (iii) ocean conservation, while less attention has been dedicated to sectors such as sustainable tourism, and no ODA support was provided towards marine renewable energy. Although projects targeting sustainable fisheries seem to receive low funding in comparative terms, several projects reported in marine conservation often promote sustainable fishery management practices.

The relatively high share of ODA that Indonesia receives for the ocean economy, however, needs to be understood in the overall landscape of Indonesia's access to external financial flows. As an upper middle-income country, Indonesia is gradually decreasing its dependence on ODA funding, with net ODA as a share of GDP progressively declining from 1.2% in 2000 to 0.3% in 2018. Over the past two decades development co-operation providers have been taking steps to recast partnerships with the country to go beyond existing resources and partners. Innovative financing schemes that support ocean sustainability through a blend of ODA and private finance are emerging globally and also in Indonesia. However, private finance mobilised by ODA for the ocean is comparatively low in Indonesia, at USD 23.9 million, or 2% of the private finance mobilised in Southeast Asia – mostly in support of flood prevention.

1 The urgency of transitioning to a sustainable ocean economy

A global transition to sustainable ocean economies is urgent and possible

A healthy ocean is at the heart of human well-being, a healthy planet and a prosperous economy. The ocean produces half the Earth's oxygen and absorbs more than 90% of heat from greenhouse gas emissions. It regulates the climate. Marine and coastal ecosystems offer flood control, protection from natural disasters, natural hazards, and from pollution. The ocean is also critical for the livelihoods of billions of people, as many economic sectors are either directly or indirectly dependent on ocean resources. They include traditionally exploited marine resources – either living resources (fish) or non-living resources (oil, and gas) – as well as the use of the ocean for tourism, research and shipping.

The ocean is also becoming the centre stage for a new range of economic activities, including off-shore wind energy, growing industrial-scale aquaculture, marine biotechnologies, deep seabed mining, and others. This trend is largely driven by the needs of a growing global population as well as by new possibilities from technological innovation. While the COVID-19 crisis is halting key ocean-based sectors, particularly marine and coastal tourism and cruise shipping, demands on marine resources for food, energy, minerals, leisure and other needs of a growing global population will persist (OECD, 2020^[11]), likely leading to a renewed acceleration in economic activity in the ocean. If pursued unsustainably, these demands will exacerbate the anthropogenic pressures that are already pushing the ocean to its limit causing unprecedented conditions of warming and acidification, decline in oxygen, and species decline (IPCC, 2019^[6]). This risks jeopardising the ocean-based sectors that depend on ocean and coastal ecosystems and resources, as well as irreversibly endangering the ocean's key life-support functions that make possible life on this planet as we know it.

Therefore, it is critical to turn the COVID-19 crisis into an opportunity to set ocean-based sectors on a sustainable footing, turning them into catalysts for long-term and inclusive sustainable development and enhancing systemic resilience. The conservation and sustainable use of marine and coastal ecosystems needs to be at the core of efforts to recover from the economic crisis caused by the pandemic. Policies designed to stimulate ocean economic activity provide an opportunity to fundamentally rethink and transform business models and economic models develop sources of clean, renewable energy, enhance society's resilience to climate and coastal changes, and deliver healthy food and livelihoods to billions. Sustainable ocean activity can contribute to achieving shared prosperity and wellbeing for all people, including the most vulnerable, ushering in a new era of sustainable development.

For developing countries, a transition to a more sustainable ocean economy is particularly important as it could act as an SDG multiplier with effects across multiple economic and social areas. The recent OECD report *Sustainable Ocean for All: Harnessing the benefits of sustainable ocean economies for developing countries* (OECD, 2020^[11]) shows that while the ocean is central to the welfare and prosperity of all of humankind, on average developing countries rely upon the ocean for jobs and their GDP to a greater extent than richer countries.

Data collected by the OECD for six ocean-based industries suggest that value added from these accounted for 11% of GDP in lower middle-income countries in 2015 on average, and less than 2% in high-income countries. Further, marine and coastal tourism alone accounts for over 20% of GDP in some small island developing states (SIDS) and low-income countries (OECD, 2020^[1]).

Ocean-based industries, such as tourism and fisheries, are the backbone of the economies of many developing countries. The way these and other ocean-based sectors develop could either accelerate progress towards sustainable development or exacerbate unsustainable trends. Too often already, these sectors have expanded with insufficient consideration for environmental and social sustainability, creating low paying jobs and leading to environmental degradation. These sectors are also suffering from the impacts of climate change, ocean pollution and overfishing. Because of their relative greater reliance on ocean-based sectors for their economies and the vast and often untapped ocean resources they possess (including fisheries, minerals, microorganisms that could be exploited for pharmaceutical uses), developing countries face growing opportunities from an expanding global ocean economy, as well as substantial risks from increasingly deteriorating ocean ecosystems and the unsustainable use of ocean resources. It is therefore essential that developing countries – just as well as countries of all income levels - use their ocean resources sustainably, are in a position to assess and balance the risks and rewards associated with new and existing ocean-based industries, and that international norms and regulations promote a global ocean economy that truly integrates sustainability and benefits developing countries.

Indonesia stands to benefit from a more sustainable management of its ocean economy

Indonesia is located in one of the world's richest regions for ocean resources, and ocean-based sectors, such as maritime tourism and fisheries, have significantly contributed to the country's economic dynamism the past two decades. However, the Ocean Health Index ranks Indonesia 137 out of 221 countries, indicating low sustainability of its activities, largely driven by unsustainable seafood harvesting practices and tourism (OHI, 2020^[7]). Multiple factors including pollution – especially from plastics – and the impacts of climate change are leading to marine ecosystem degradation, affecting the health of marine ecosystems and affecting key economic sectors such as tourism and fisheries.

Due to the COVID-19 crisis, Indonesia has entered its first recession since 1998, and the pandemic reversed some hard-won advances in well-being, with poverty, malnutrition, and even hunger rising fast.

Several ocean-based sectors have been strongly affected and tourism is expected to be one of the hardest hit. Therefore, the impacts from COVID-19 lay bare the need for Indonesia to enhance the resilience and sustainability of its ocean-based sectors as a way to set more solidly on a path of sustainable and inclusive development. In particular, it will be key that a blue recovery helps turn both traditional and emerging ocean-based sectors into catalysts for long-term shared prosperity.

2 A global view of Indonesia's sustainable ocean economy

Indonesia's ocean economy in the broader context of its economic development and the COVID-19 crisis

Indonesia has experienced high levels of economic growth in recent years but the COVID-19 crisis could jeopardise many of the development gains achieved so far

Indonesia has made remarkable strides in economic growth and poverty reduction since the 1997 Asian financial crisis, moving from lower middle-income to upper middle-income country status in 2019 (World Bank, 2020^[8]). Since 2000, GDP growth rates have maintained a relatively high and stable average of 5.3% and the share of individuals living below the national poverty line halved from 19.1% of the population to 9.4% in 2019 (World Bank, 2020^[9]).

Natural resources have played a significant role in the country's economic development, with a mix of land and ocean-based sectors such as mining, agriculture, forestry and fishing accounting for 20% of GDP and 50% of exports in 2017 (OECD, 2019^[5]).

Some provinces including East Kalimantan, Riau and Papua, derive more than 50% of GDP from natural-resource-based activities. The country has also improved upon other key development indicators in recent years such as financial inclusion, which increased from 36% to 49% in 2014-17 (Republic of Indonesia, 2019^[10]).

The country faces, nonetheless, significant challenges to meet its ambition to become a high-income country and achieve near-zero poverty levels by 2045 (Bappenas, 2019^[11]). The World Bank estimates that 20.6% of the Indonesian population remains only marginally above the poverty line and are vulnerable to shocks that may knock a significant portion back into poverty (World Bank, 2020^[12]). Further, development gains have been unequally distributed and are geographically concentrated despite the overall fall in poverty levels. The country's GINI coefficient increased from 30.2 in 2000 to 39.0 in 2018 (World Bank, 2020^[13]). A development divide persists between the western and eastern regions of the country. The island of Java, in particular, contributes almost 60% of the country's national GDP while representing less than 7% of Indonesia's landmass. Economic benefits from Indonesia's growth are especially vulnerable to natural hazards and climate change, and disasters have been shown to significantly increase both the poverty rate and poverty gap in the country (Rush, 2013^[14]).

The COVID-19 crisis could jeopardise Indonesia's recent development gains and is likely to cause disproportionate health and economic impacts on those who already live in poverty or are vulnerable to it.

At the beginning of the pandemic, Indonesia recorded one of the highest COVID-19 case fatality rates, but these have more recently become in line with the world average (Worldometers.info, 2020^[15]). Poverty in Indonesia is concentrated in children and the elderly, with the elderly in particular facing significant barriers to accessing social protection (OECD, 2019^[16]). As those over 60 years of age are considered a high risk category for COVID-19, Indonesia's rapidly aging population faces considerable health threats. In May, the case mortality rate for those over 45 years of age who had tested positive for the virus in the country was very high at 40% (Kemenko Marves, 2020^[17]).

As of 1 July 2020, Indonesia's government had announced fiscal stimulus packages worth 4.4% of GDP to soften the socioeconomic impacts of COVID-19 (IMF, 2020^[18]). This is significantly higher than the fiscal package deployed during the Global Financial Crisis, which amounted to 1.4% of GDP (Chatani and Ernst, 2011^[19]), and reflects the magnitude of the economic effects of the COVID-19 crisis.

The country has received international financial support for COVID-19. This support includes a combination of grants and loans totalling USD 1.5 billion from the Asian Development Bank (ADB) and two loans totalling USD 700 million for social assistance programmes from the World Bank (ADB, 2020^[20]; World Bank, 2020^[21]). The government of Indonesia has guaranteed USD 6.9 billion of COVID-19 stimulus packages to support working capital loans for micro, small and medium-sized enterprises (MSMEs) in the country in an attempt to prevent rising unemployment which is estimated to have increased by 2.6 million individuals in 2020 (BPS, 2020^[22]). It has also dedicated USD 69 million in stimulus to fisheries and aquaculture specifically, as production and prices are expected to decline around 8% (Parama, Fathur Rahman and Irfan Gorbiano, 2020^[23]). Indonesia has the lowest debt-to-GDP ratio in the East Asia and Pacific region, but its government debt may face greater vulnerability to shocks due to more foreign exposure and higher servicing costs (OECD, 2016^[24]).

The pandemic is hitting many ocean-based sectors hard, in particular the tourism industry, but the recovery can be an opportunity to build back bluer

The COVID-19 crisis and the consequent lockdown are resulting in an economic downturn, depressing several ocean-based sectors. Originally projected for overall GDP growth of 5.1% in 2020, the *IMF October Economic Outlook* projects that Indonesia's GDP will contract by 1.5% in 2020 (IMF, 2020^[25]). Impacts of the crisis vary significantly by sector, and tourism is expected to be one of the hardest hit with output projections much lower than pre-COVID-19 levels (World Bank, 2020^[26]). Due to coronavirus concerns, in March 2020 the island of Bali - one of the archipelago's most visited sites, welcoming up to 50% of total international arrivals - announced that it would halt visas for foreign visitors until 2021. Travel restrictions for foreign tourists are planned to remain in place until the health situation improves. Fisheries and aquaculture have already been severely impacted by lower demand and disrupted supply chains as a result of the pandemic (OECD, 2020^[27]) and early statistics show the average monthly income of fishers fell sharply to around a third of usual earnings (Parama, Fathur Rahman and Irfan Gorbiano, 2020^[23]). GDP growth is expected again in 2021, but at a lower rate than pre-COVID-19 estimates (World Bank, 2020^[28]).

It is critical to turn the COVID-19 recovery into an opportunity to set ocean-based sectors on a sustainable footing: turning them into catalysts for long-term and inclusive sustainable development and enhancing systemic resilience. Policies designed to stimulate ocean economic activity provide an opportunity to fundamentally rethink and transform business models and economic models, develop sources of clean, renewable energy, enhance society's resilience to climate and coastal changes, and deliver healthy food and livelihoods to billions.

This is crucial, as globally a number of indicators show that current ocean-related economic activities are not sustainable and could lead to the collapse of essential biophysical ocean functions, with repercussions on the outlook of the global economy and entire societies (Swilling, Ruckelshaus and Brodie Rudol, 2020^[29]; IPCC, 2019^[6]). In addition, estimates suggest the benefits of investment in the conservation and sustainable use of marine resources could outweigh the costs by more than three to one (Konar and Ding, 2020^[30]).

The Ocean Health Index ranks Indonesia 137 out of 221 countries, indicating low sustainability of its activities across ten widely accepted socio-ecological goals, largely driven by unsustainable seafood harvesting practices and tourism (OHI, 2020^[7]). Multiple factors including pollution – especially from plastics – and the impacts of climate change are leading to marine ecosystem degradation, affecting the health of marine ecosystems and reducing the attractiveness of touristic destinations. Data from the Commission on Stock Assessments show that about half of national stocks are overfished (World Bank, 2019^[31]). Mangroves and corals, which are key to coastal resilience and provide nurseries for commercially important fish species, are in especially dire condition: mangrove areas decreased from 4.3 million ha in the 1980s to 3.4 million today (OECD, 2019^[5]). Given the extent to which Indonesia relies on ocean-related activities, failure to reverse these trends poses substantial risks to the development gains that Indonesia has derived from its ocean economy thus far and envisions for its future.

The remainder of this chapter sheds light on Indonesia's sustainable ocean economy by providing an analysis of: (i) the key economic trends of the ocean economy in Indonesia with reference to developments in the Southeast Asia region and the rest of the world (section 0); (ii) the institutional arrangements and policy frameworks governing Indonesia's ocean economy (section 0); and (iii) the financing landscape for Indonesia's sustainable ocean economy, with a focus on the role of development finance in supporting a more productive and sustainable ocean economy in Indonesia (section 0).

Economic trends: the composition and evolution of Indonesia's ocean economy

Indonesia is located in one of the world's richest regions for ocean resources but is increasingly threatened by environmental degradation

With a coastline of 173 000 km, Southeast Asia is home to some 30% of world's corals, 35% of mangroves and 18% of seagrass meadows (Gamage, 2016^[32]). This abundance translates into significant economic, social and environmental benefits to countries in the region. The share of national GDP from ocean-based industries can be several times larger than the global average. In some cases, such as in Viet Nam and Indonesia, they represent more than 15% of GDP (PEMSEA, 2015^[33]). The region currently hosts six of the 25 busiest ports worldwide and six of the top 20 countries for marine fisheries. Many countries in the region are located on the Sunda Shelf, which is known to be home to rich subsea petroleum and natural gas deposits exploited in offshore operations by countries like Malaysia and Indonesia.

Governments in the region are increasingly recognising the need to secure long-term socio-economic benefits by stepping up actions to conserve and sustainably use their marine and coastal resources. Pressures on the ocean and the ecosystem services it provides are mounting rapidly and becoming increasingly apparent. Pollution, overfishing, and the impacts of climate change (e.g. declining levels of oxygen in the ocean due to ocean warming, ocean acidification, sea level rise, and more frequent extreme weather events) are leading to marine ecosystem degradation and pushing the health of the ocean to a point beyond which it might not recover (IPCC, 2019^[6]). Southeast Asian coastal areas have been recognised as among the most vulnerable to climate change and Southeast Asia is expected to lose one-third of its mangroves under a "business as usual" scenario, at an estimated cost of USD 2.2 billion (annual value in 2050) (Brander and Eppink, 2012^[34]). The cost of lost reef-related fisheries in the region is

estimated at USD 5.6 billion (annual value in 2050), with the highest loss in Indonesia and the Philippines (Brander and Eppink, 2012^[34]).

Ocean-based sectors contribute significantly to Indonesia's economy

As an archipelagic country consisting of more than 17 000 islands and representing the world's sixth largest exclusive economic zone (EEZ), Indonesia's ocean economy generates substantial income and employment and has the potential to provide further into the future. Depending on the methodology used and the sectors included, the share of ocean-related GDP in Indonesia ranges between 6.6% (Nurkholis et al., 2016^[35]) to 15% (Suparmoko, 2016^[36]). Estimates from PEMSEA (2018^[37]) and Ebarvia (2016^[2]) place it at an even higher 20% to 28%.

Estimates further indicate that in the span of only five years, Indonesia's ocean economy has more than tripled, contributing approximately USD 256 billion in annual gross value added (GVA) in 2013 up from USD 73 billion in 2008 (Ebarvia, 2016^[2]). These figures include the following ocean economic activities: marine construction (35% of GVA), marine industries (26%), sea mining (16%), marine fisheries and aquaculture (11%), marine tourism (10%), maritime shipping (1.3%) and maritime defence (0.4%). The ocean economy also provides an estimated 5.1% of total employment in 2013 (Ebarvia, 2016^[2]). The importance of the ocean economy is even more pronounced in small islands and in lesser developed regions in the eastern part of the country, where traditional ocean-based sectors are critical sources of livelihoods for local communities.

Zooming in on six ocean-based industries reveals the predominance of Indonesia's ocean economy in the region and its specific composition

Original OECD estimates constructed on an internationally comparable basis and focusing specifically on six ocean-based industries show that these ocean-based industries² contributed USD 31.7 billion (constant 2010) to Indonesia's global value added in 2015. Marine fishing, aquaculture and fish processing represented the most important ocean-based industries, accounting for 83% of the total value added from the six industries in 2015.

In 2015, Indonesia produced 67% of the total value added from the six industries across ASEAN members. In particular, 84% of the value added generated from marine fish processing in ASEAN countries in 2015 is attributable to Indonesia, as is 73% of marine fishing value added, and 54% of marine aquaculture value added. Indonesia also generated the largest value added from maritime freight (USD 2.6 billion) and maritime passenger transport (USD 2.2 billion) among ASEAN countries in 2015 (Figure 2.1).

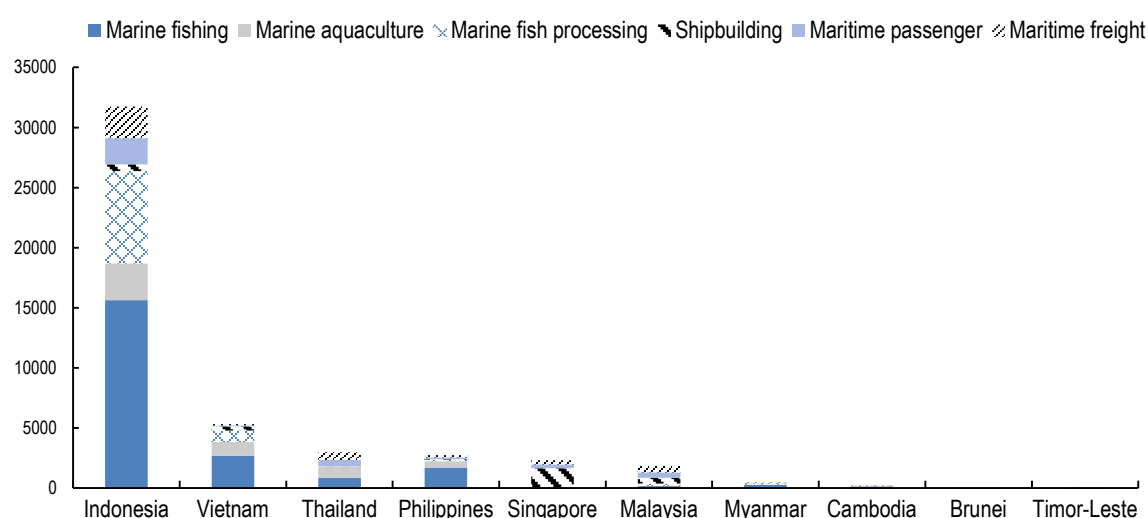
The composition of Indonesia's ocean economy differs from that of other ASEAN and East Asia Pacific region countries due to its greater reliance on marine fishing, aquaculture and fish processing. In Indonesia, these three industries account for 83% of the value added generated from the six ocean-based industries measured. This figure is 76% for ASEAN members and a significantly lower 31% in the East Asia Pacific region (Figure 2.2).

² Marine fishing, marine aquaculture, marine fish processing, shipbuilding, maritime passenger transport, maritime freight.

Compared to the East Asian region, Indonesia's shipbuilding sector contributed only USD 0.6 billion in value added in 2015 and, relative to GDP, it was surpassed by Malaysia, Singapore and Viet Nam (Figure 2.1). The sector is constrained by poor access to the necessary levels of finance, inadequate supply of appropriately skilled labour and a tax regime that incentivises the importation of whole ships rather than maritime parts for construction in domestic shipyards. Worldwide, shipbuilding employs approximately 16% of the workforce in these six ocean-based industries, representing the second largest ocean sector in terms of employment (Box 2.1) Indonesia stands to benefit from the expansion of its shipbuilding sector but structural reforms and investment in infrastructure will need to be implemented.

Figure 2.1. Ocean-economy value added in ASEAN countries in 2015

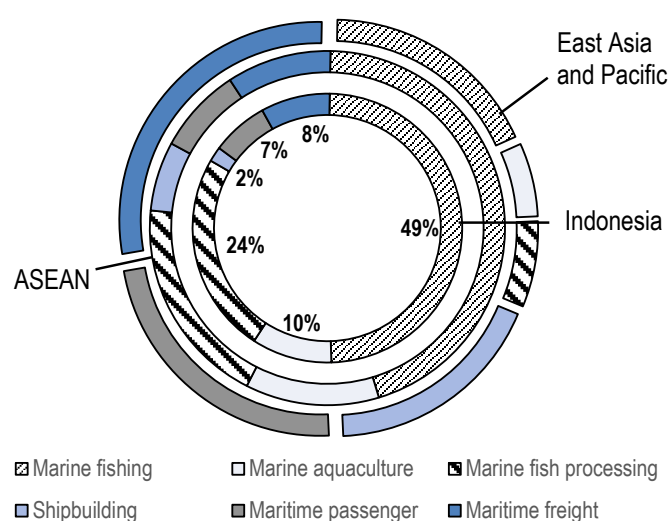
Total value-added in millions of constant 2010 USD



Source: Authors based OECD (2019^[38]), Experimental Ocean-Based Industries Database, extracted 25 November 2019.

Figure 2.2. Share of value-added for six ocean-based industries in 2015

As a percentage of total value-added in millions of constant 2010 USD



Source: Authors based OECD (2019^[38]), Experimental Ocean-Based Industries Database, extracted 25 November 2019.

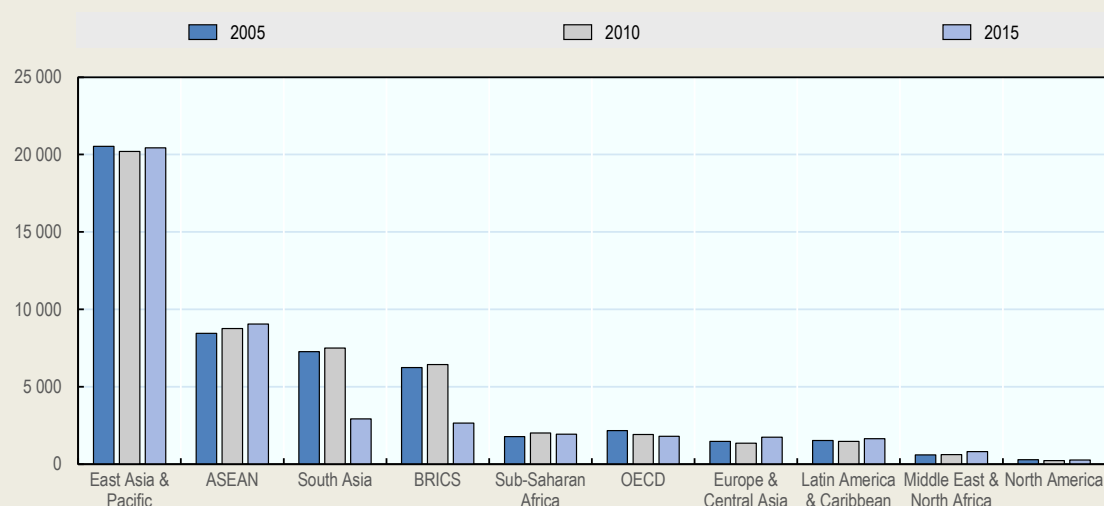
Other ocean-based sectors, such as tourism, are of paramount importance for Indonesia's economy, despite not being included among the OECD six ocean-based industries dataset. Including them in a strategy for the sustainable development of Indonesia's ocean economy will be key for promoting resilient and inclusive development in the country. For instance, OECD research suggests that the tourism industry in Indonesia currently provides the equivalent of 8.5% of GDP in direct and indirect contributions (Ollivaud and Haxton, 2019^[39]). As such, it was identified as one of the key pillars in the 2015-19 and 2020-24 national development plans (Republik Indonesia, 2020^[40]; 2014^[41]).

Box 2.1. Employment in ocean-based industries

Developing countries rely more heavily on the ocean economy as a source of jobs than OECD economies, despite generating less value-added overall. As shown in Figure 2.3 the six ocean-based industries under consideration provide the largest number of jobs in the East Asia and Pacific region and ASEAN. Across ASEAN members, the ratio between value added generated and jobs provided is by far the lowest. Value added per million workers in these six ocean-based industries totalled close to USD 109 million in OECD countries in 2015, whereas in ASEAN countries it was just USD 5 million and in the East Asia and Pacific region it was USD 9 million. This reflects the higher labour intensity of ocean-based industries in the region, and illustrates that the relative contribution of each industry varies significantly by region and income level. Across ASEAN members, the marine fisheries industry provides the largest share of jobs, in part driven by more reliance on labour intense sectors in these countries. In Indonesia, for instance, marine capture fisheries and aquaculture together employ around 7 million people, representing a crucial source of employment for coastal populations.

Figure 2.3. Employment in six ocean-based industries, 2005-15, by region and country grouping

Total employment in thousands of persons engaged (2005, 2010 and 2015)



Note: The drop for the South Asia and BRICS groupings in 2015 are caused by statistical lags. The ocean-based industries measured are marine fishing, marine aquaculture, marine fish processing, shipbuilding, maritime passenger transport and maritime freight transport. A country may belong to one or more country grouping. The values presented here are part of ongoing OECD experimental work in building up an ocean satellite account. Future estimates may vary for definitional reasons.

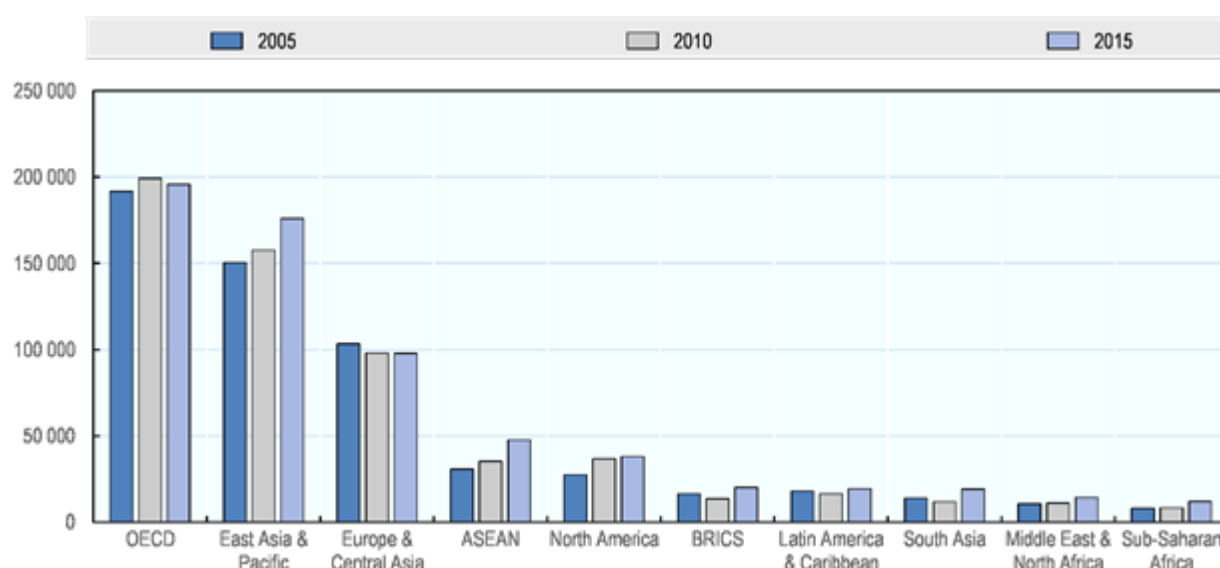
Source: Authors based OECD (2019^[39]), Experimental Ocean-Based Industries Database, extracted 25 November 2019.

Indonesia's ocean economy can benefit from greater regional integration and the sustainable expansion of traditional and emerging sectors

The East Asia and Pacific region, of which Indonesia is a part, experienced the largest growth in value added from the six ocean-based industries between 2005 and 2015, from USD 150 billion to over USD 175 billion (Figure 2.4). The East Asia and Pacific region also accounts for 47% of global value added (USD 376 billion) from the six ocean-based industries in 2015 (Figure 2.4).

Figure 2.4. Value added from six ocean-based industries: comparing trends in East Asia Pacific region and ASEAN with the rest of the world

Total value added in millions of constant 2010 USD (2005, 2010 and 2015)



Note:

Source:

Note: Value added is from the ocean-based industries of marine fishing, marine aquaculture, marine fish processing, shipbuilding, maritime passenger transport and maritime freight transport. A country may belong to one or more country grouping. The values presented here are part of ongoing OECD experimental work in building up an ocean satellite account. Future estimates may vary for definitional reasons.

Source: Authors based OECD (2019^[38]), Experimental Ocean-Based Industries Database, extracted 25 November 2019

New sectors, as well as innovations in existing sectors, could positively contribute to Indonesia's sustainable development. Sectors that are now only emerging will likely become more important in the near future and new ways of producing may be mainstreamed in traditional sectors.

Changes in seafood and energy markets, in maritime routes, types of cargo and types of vessel will be required to support a growing regional ocean in the near future. In addition to this, with an estimated 40% of world production to be located in China, India and Indonesia by 2030, the maritime transport sector in Indonesia and its surrounding region may become more central to global transport networks (OECD, 2016^[3]).

As such, governments and investors are carefully following these evolutions. Many governments in the region are actively shaping new markets. For instance, several are exploring opportunities to harness

marine energy and scaling up efforts to exploit its marine energy potential in terms of wave, tidal and ocean thermal energy conversion (Gamage, 2016^[32]). However, despite several feasibility studies have been conducted at various locations, these technologies are still a way from commercial application. If these opportunities are to be fully harnessed across the region, policy dialogue and policy co-ordination will be required to tackle shared challenges, find common solutions, and share best practices.

Institutional arrangements and policies for shaping a sustainable ocean economy

Achieving a sustainable ocean economy requires a cross-sectoral approach which looks at ocean management in an integrated fashion

Achieving a sustainable ocean economy requires aligning policies across multiple sectors, such as fisheries, tourism, ocean conservation, etc. This is necessary as sectors in the ocean economy are highly interconnected: with actions taken in one sector affecting others. If policy making across the ocean economy deals with sectors in isolation and without a coherent conceptual framework, multiple and sometimes conflicting policy goals can emerge. To bring about the urgent and systemic changes required for a sustainable ocean economy, a coherent, unified policy strategy is needed. The complexity of inter-sectoral interactions should be studied; environmental, social and economic values integrated; and, adequate resources mobilised. Holistic and integrated policy approaches are needed to ensure policy coherence, identify and manage trade-offs between sector-specific objectives, and take advantage of synergies where policies can deliver benefits to multiple sectors (OECD, 2020^[1]).

Both sector-specific and cross-sectoral instruments can steer ocean economies towards sustainability. These tools include marine spatial planning (MSP), integrated coastal zone management (ICZM), integrated tourism master plans, fisheries management plans and marine protected areas (MPAs) (OECD, 2020^[1]). If pursued effectively, such policies will align the development of the ocean economy with the need to conserve and sustainably use marine and coastal ecosystems and help to redirect commercial investment flows towards more sustainable practices.

From a ‘governance architecture’ perspective, ensuring such policy coherence and that the increasing uses of and pressures on the ocean are effectively managed, requires a whole-of-government approach. Responsibility for the ocean economy is often scattered across a country’s administration, making co-ordination across ministries and across different levels of government (i.e. central, provincial, municipal) necessary. Countries have developed different approaches to managing this, and a few have established a ministry with an overarching responsibility for ocean economy policy making (e.g. Barbados, Cabo Verde, Indonesia, Portugal). Given the relative novelty of these co-ordination mechanisms it is not yet possible to evaluate their effectiveness. However, the most effective institutional arrangements for the sustainable ocean economy will be country specific.

This section provides an overview of: (i) Indonesia’s policy strategies and plans on the sustainable ocean economy and their positioning in the country’s overall development strategy; (ii) Indonesia’s governance architecture around the ocean economy; and, (iii) cross-sectoral policy instruments Indonesia has adopted for the integrated management of ocean and coastal resources.

The high political priority of the ocean agenda in Indonesia has led to a dedicated ocean policy strategy and a co-ordinating Ministry of Maritime Affairs and Fisheries to streamline ocean governance

The development of a sustainable ocean economy has been a high-level political priority in Indonesia since President Joko Widodo promised to turn the country into a global maritime hub that links the Pacific and Indian Oceans in 2014. President Widodo outlined five major pillars to pursuing this vision of making Indonesia a Global Maritime Fulcrum: (i) rebuilding maritime culture, (ii) improving marine resource management, (iii) prioritising marine infrastructure and connectivity, (iv) resolving conflicts through maritime diplomacy, and (v) developing maritime defence for security and navigation safety (Sambhi, 2015^[42]). The Global Maritime Fulcrum has formed a key component to President Widodo's development strategy and enacted major reformation of Indonesia's ocean governance in recent years, though substantial work remains to achieving a sustainable ocean economy in the country.

In 2017, the government of Indonesia adopted an official policy document on maritime affairs: the Indonesian Ocean Policy (Republic of Indonesia, 2017^[43]). The ocean policy is a foundational document through which the government recognises the potential that the ocean holds for Indonesia's development while at the same time identifying a clear set of policy gaps and solutions to address the fragilities that are slowing down the country's progress in this domain. The document provides a guideline to direct the ocean policy of all the ministerial and non-ministerial government bodies and agencies, by providing broad policy targets that should guide all public efforts in the ocean space. The policy is based on seven pillars that reflect the building blocks of President Widodo's Global Maritime Fulcrum concept and for each one of them a detailed list of needed policy changes is put forward. The seven policy areas on which the ocean policy is built are (i) marine and human resources development, (ii) maritime security and law enforcement, (iii) ocean governance and institutions, (iv) maritime economy development, (v) sea space management and marine protection, (vi) maritime culture, and (vii) maritime diplomacy. A four-year Plan of Action (2016-2019), which outlines specific ocean policies and programmes complements the document (Republic of Indonesia, 2017^[43]).

The Ministry of Maritime Affairs and Fisheries (MMAF) has key responsibilities for regulating matters pertaining to the sea. Established in 1999, the ministry has overhauled the country's ocean governance structure by passing landmark legislation including the Law on Fisheries (2004; 2009), the Law on Coastal Zone and Small Island Management (2007; 2014), and the Law on the Ocean (2014). In particular, the 2014 Law on the Ocean serves as an umbrella legislation that lays the foundation for a more coherent approach to marine affairs (Ikrami and Bernard, 2018^[44]). Other laws and regulations that are key building blocks of Indonesia's ocean legislative framework, which were however developed by other ministries, are the Government Regulation on the Control of Marine Pollution and Degradation (1999), the Shipping Law (2008), and the Law on the Protection and Management of the Environment (2009).

Besides the Ministry of Maritime Affairs and Fisheries, several other ministries have competence on ocean-related matters, as illustrated in Table 2.1. At the national level, the MMAF, the Ministry of Tourism, the Ministry of Transport, the Ministry of Energy and Mineral Resources and the Ministry of Environment and Forestry all have some jurisdiction over various aspects of the ocean. Further, the Ministry of National Development Planning (BAPPENAS), the Ministry of Finance, the Ministry of Research and Higher Education and other non-ministerial bodies such as the Indonesian Institute of Science (LIPI) also play important roles in policy creation and monitoring of the ocean.

To enhance co-ordination and foster cross-sectoral synergies, the Coordinating Ministry of Maritime Affairs was re-established in October 2014 and entrusted the role of co-ordinating four ministries with ocean-related portfolios. In 2019, this became the Co-ordinating Ministry for Maritime Affairs and Investments (CMMAI). The Ministries linked to the CMMAI are the Ministry of Maritime Affairs and Fisheries, the Ministry of Energy and Mineral Resources, the Ministry of Transport, Ministry of Environment and Forestry, Ministry of Public Works and Housing and the Ministry of Tourism. Historically, Indonesian Cabinets have always

maintained three co-ordinating ministries focused on political-legal matters, economic matters and welfare matters. The establishment of this new structure in the cabinet architecture was an unprecedented move, signalling the new administration's political commitment to develop Indonesia's ocean-based sectors and to make the ocean central to the country's development strategy. The CMMAI was also given the role to co-ordinate, monitor and evaluate the implementation of the Ocean Policy.

Beside these permanent additions to the government architecture, the Widodo administration enhanced the country's ocean governance capacity by creating ad hoc structures particularly focused on illegal, unreported and unregulated (IUU) fishing. IUU fishing has been for a long time a major issue for Indonesia to address and this issue. The enforcement of the 2009 anti-IUU fishing regulations was initially spread out across a number of different agencies. Institutions authorised to carry out enforcement in this domain included the MMAF, the Indonesian Navy, the National Police and the newly established coast guard (Ikrami and Bernard, 2018^[44]). In recent years, IUU fishing has become a top political priority. In 2015, President Widodo established the ad hoc Presidential Task Force to Combat Illegal Fishing with the aim of bringing together all the involved institutions and of taking advantage of their respective advantages. Rather than being a new agency, the Task Force facilitated co-ordination among the institutions involved, enabling a better deployment of each institutions' assets and human resources and encouraging the exchange of information (Afriansyah, 2018^[45]). The strengthening of the institutional framework surrounding the issue, together with regulatory changes and a resolute political commitment at the top level, led Indonesia to significantly reduce IUU fishing and become a regional champion in this respect (Cabral et al., 2018^[46]). Indonesia has also played a leadership role in the development of shared practices on IUU fishing among ASEAN countries, including contributing to the Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain (Ikrami and Bernard, 2018^[44]). Indonesia also became the first nation (and the only nation in ASEAN) to share its Vessel Monitoring System (VMS) data with the Global Fishing Watch, an NGO platform working on the improvement of transparency on fishing activity around the world, with a view to addressing overfishing and IUU fishing (Global Fishing Watch, 2020^[47]).

Despite all the efforts to reduce IUU fishing, evidence shows that without effective fisheries management simply reducing IUU fishing will not make fisheries more sustainable in the long term (Cabral et al., 2018^[46]).

Table 2.1. Ocean-related competencies across Indonesia's ministries

Ministry/Agency	Competence
Indonesia Statistics	<ul style="list-style-type: none"> • Development of ocean accounting framework
Ministry of Defense	<ul style="list-style-type: none"> • Navy • Maritime defense policy
Ministry of Energy and Mineral Resources	<ul style="list-style-type: none"> • Offshore oil and gas • Marine energy development
Ministry of Environment and Forestry	<ul style="list-style-type: none"> • Marine conservation (some marine protected areas) • Reducing marine pollution • Mangrove ecosystem data custodian
Ministry of Finance	<ul style="list-style-type: none"> • Customs and excise from shipping industry • Fees and Taxes • Subsidies • Carbon related mechanisms
Ministry of Foreign Affairs	<ul style="list-style-type: none"> • Protect and advance Indonesia's maritime interests
Ministry of Home Affairs	<ul style="list-style-type: none"> • State boundaries • Coordination between provincial and municipal governments on marine affairs
Ministry of Law and Human Rights	<ul style="list-style-type: none"> • Drafting of ocean-related legislations

Ministry of Maritime Affairs and Fisheries	<ul style="list-style-type: none"> • Fisheries • Aquaculture • Fisheries resources surveillance • Coastal regions and small islands • Some marine protected areas
Ministry of National Development Planning (BAPPENAS)	<ul style="list-style-type: none"> • Strategic orientation for investment • Mid term development and planning (RPJMN) • Low Carbon Development Initiative
Ministry of Research	<ul style="list-style-type: none"> • Basic ocean research (through the Indonesian Institute of Science -LIPI) • Industry applicable R&D (through the Agency for the Assessment & Application of Technology - BPPT)
Ministry of Tourism	<ul style="list-style-type: none"> • Marine tourism
Ministry of Transport	<ul style="list-style-type: none"> • Shipping • Navigation • Ports • Sea and Coast Guard • IMO focal point

Some co-ordination challenges remain, including across different levels of the administration

Despite these positive steps to increase co-ordination and enhance policy coherence for ocean matters across the administration, the governance of the ocean remains somewhat fragmented both horizontally and vertically, reflecting the complex nature of Indonesia's national and local governments. To minimise the inefficiencies originating from the general fragmentation of ocean governance in the country, efforts have been made in recent years to reduce also vertical fragmentation within the administration, including through the transfer of competence to the provincial governments.

At state and municipal levels, governance has historically been fragmented and has recently been subject to profound reform. Until 2014, municipal governments had jurisdiction over the water within 4 nautical miles of the coast. The effectiveness of each municipal regulatory framework varied depending on the resources available to local governments, which determined the level of enforcement. Under Law 23 of 2014, the authority over the sea was withdrawn from municipal governments and moved to provincial governments. The provincial government now has jurisdiction over the near shore area (0 to 12 nautical miles from the shore), while the central government exercises jurisdiction on the area that goes beyond 12 nautical miles of the shore (Republic of Indonesia, 2014^[48]). Municipal authorities maintained their competence on coastal management and planning. The shift of competence to provincial governments reflects the idea that the transboundary nature of marine space requires coherent and coordinated management, rather than a fragmented and localised one. However, capacities and inclinations for management and sustainability remain highly variable between different provinces and largely dependent on the development priorities of each province. Further, homogenising municipal regulations which were previously in place and transferring assets and resources from municipal to provincial governments has proven challenging and is has acted to delay the emergence of an effective ocean governance framework in the country.

The Omnibus Law passed in 2020 created several regulatory changes in many ocean sectors. For the fisheries sector, it included a concentration of authority with the central government, the transformation of the licensing system and a shift from criminal to administrative sanctions for fisheries violations (Juwana, 2020^[49]). The Omnibus Law also included a broadening of the “fishers” definition, including all types of fisheries regardless of the scale at which they operate. Some observers argue that these changes could favour large fishing companies, while could be detrimental for small-scale fisheries (Gokkon, 2020^[50]). Benefits and subsidies previously allocated only to small scale fisheries (defined as those with boats smaller than 10 GT) will now also be available to large fleet operators (Gokkon, 2020^[50]).

The adoption of Marine Spatial Planning and Integrated Coastal Management is bringing both opportunities and challenges

To manage ocean-based industries in a more integrated and effective way, governments can adopt a number of policy tools. These tools can either be cross-cutting and multi-sectoral, like marine spatial planning, integrated coastal zone management, or sector specific, like integrated tourism master plans and fisheries management plan. This section will focus on multi-sectoral tools, while all other instruments will be addressed in the sector specific focus presented in Chapter 3.

In recent years, marine spatial planning (MSP) has become a popular and successful approach used by countries to sustainably manage their marine resources and address pressures from several different sectors of the ocean economy. According to the IOC-UNESCO definition, marine spatial planning “is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process” (IOC-UNESCO, 2020^[51]). By bringing together the different users of the ocean and collecting information on how marine space can be most appropriately used, MSP enables countries to implement co-ordinated and evidence-based decisions aimed at maximising the benefits of the ocean and to realising the conservation and sustainable use of marine ecosystems. This can be done by identifying valuable ecosystems that need to be conserved, understanding the potential conflicts that could arise by clashing uses of marine resources, and by allocating different marine and coastal areas to the most adequate designation for meeting environmental, economic and social objectives. An initial step in designing MSPs is the development of detailed knowledge of marine resources, their location in marine space, changes over time, and interactions with human activities. In most countries, this remains a challenging task.

In Indonesia, a mechanism to map and manage marine areas was introduced through Law No. 27/2007 on Coastal and Small Islands management and Law No. 32/2014 on the Ocean. These laws require provincial governments to develop Coastal and Small Islands Zoning Plans (RZWP3K). The Coordinating Ministry for Maritime Affairs is encouraging all provinces to realize RZWP3K. However, in 2016, only 5 provincial governments had developed the local regulation on Coastal and Small Islands Zoning Plan while the remaining 29 provinces were still in the process of developing one. In 2020, data from the Coordinating Ministry of Maritime Affairs and Investments shows that 27 provinces have now enacted regulations on coastal zoning. The remaining 7 provinces that are still in the process of drafting the final RZWP3K document and are targeted to be able to complete the process by 2020. The development of MSP in the provinces of Maluku, North Maluku, and West Papua Provinces has been supported by the USAID Sustainable Ecosystems Advanced (SEA) Project. USAID has also supported the establishment of an online platform, SEANODE, where all geospatial plans and regulations will be freely accessible to users.

The RZWP3Ks will become the main reference for marine natural resource management in Indonesian coastal areas and small islands. Maps that have been issued so far include four main use designations: conservation, sea lanes, specific national strategic areas, and public usage areas (Josse et al., 2019^[52]). The enactment of coastal zoning regulations will support local governments in their efforts to sustainably manage their marine resources, while providing legal certainty for investors in each location.

Two of the most challenging aspects of implementing MSP in Indonesia are the collection of good quality marine data and the conflicts that arise between different users of marine space. In this context, having the best marine and coastal science and knowledge is essential. Collecting good data on the marine environment on a regular basis requires commitment from central and local governments to ensure budget availability for the implementation of scientific programmes and activities. In addition to this, substantial community and stakeholder engagement is crucial to recognise the rights of marine users and promote simultaneously social benefits and sustainable economic activity. In particular, the recognition of customary laws and the rights of communities in the use of marine resources is of particular importance for Indonesia.

Finance for a sustainable ocean economy

Factoring in the value of ecosystems into economic decision-making frameworks, scaling up public finance in innovative ways, and investing these resources more efficiently and strategically are critical aspects for ensuring an effective management of marine resources for sustainable development. Globally, several economic instruments are being used to promote more sustainable production and consumption patterns across ocean-related sectors, but there is substantial scope to scale these up. These instruments also can generate revenue that could be channelled back into ocean conservation, can be used to fund sustainable investments directly or used to mobilise private finance, actively co-creating markets and tilting the playing field in the direction of sustainability (OECD, 2020^[1]).

Developing countries, however, often have limited access to the finance needed to invest in more sustainable ocean economies. Therefore, development co-operation has an essential role to play in facilitating access to finance, help align private finance to ocean sustainability, and contribute to a reset of international finance for the global ocean economy to truly integrate sustainability and benefit developing countries.

This section provides an overview of: (i) the innovative financing frameworks, including fiscal and economic instruments, that Indonesia has recently developed to support the sustainable ocean economy, (ii) the scope and nature of concessional finance from the international development community for a more sustainable ocean economy in Indonesia, and (iii) private finance mobilised via concessional finance.

Indonesia is equipped with innovative fiscal and economic instruments to support a sustainable ocean economy

In recent years, Indonesia has been experimenting with a variety of innovative financing frameworks and policy instruments that can support a more sustainable ocean economy, in the form of fiscal and economic instruments. Although not yet deployed at scale, these instruments have the potential to be scaled up and represent an invaluable opportunity to steer the future of Indonesia's ocean economy towards greater sustainability.

Green and Blue Sukuks

For Muslim-majority countries like Indonesia, Islamic finance is highly relevant in the overall financing landscape. In 2018, Islamic finance worldwide was estimated to be worth USD 2.5 trillion and its value is expected to grow to USD 3 trillion by 2020 (OECD, 2020^[53]). One of the most common Islamic finance instruments is the *Sukuk*, an asset-backed security which functions like a conventional bond. In recent years, the issuance of *Sukuk* market instruments specifically designed to finance projects connected to climate change and environmental conservation has increased (OECD, 2020^[53]). In particular, Malaysia – one of the largest markets for Islamic finance – has witnessed the issuance of the first corporate green *Sukuk* by Tadau Energy. The potential for Islamic finance to contribute to sustainable development goals is very large (OECD, 2020^[53]).

In March 2018, the government of Indonesia issued the world's first sovereign green *Sukuk*, a debt instrument that is both in compliance with green bond standards and Islamic law. The *Sukuk* raised USD 1.25 billion for green/blue investments, attracting both Islamic and non-Islamic investors as well as conventional investors not typically investing in green investments. The largest share of the issued

investment originated in the Islamic market at 32%, but the bond attracted a diverse pool of investors across regions – 25% from Asia, 18% from the EU and 15% from the United States and only 10% of the total investment originated in Indonesia (Indonesia Ministry of Finance, 2019^[4]). The issuance was oversubscribed, signalling a growing demand for sustainable and responsible investment in Indonesia and the potential of this instrument to be further deployed.

In order to be eligible, projects financed through the green *Sukuk* must comply with the *Green bond and Green Sukuk Framework* and “promote the transition to a low-emission economy and climate resilient growth, including climate mitigation, adaptation, and biodiversity” (Indonesia Ministry of Finance, 2017^[54]). The Green *Sukuk* framework identifies nine eligible sectors including renewable energy, green tourism, waste management, resilience to climate change and biodiversity conservation.

Proceeds from the first Green *Sukuk* financed a range of projects, though most were in the renewable energy sector. This includes renewable energy sources for ocean-based industries such as the replacement of fossil fuel energy sources with solar PV-powered batteries in sea navigation facilities like lighthouses (Indonesia Ministry of Finance, 2019^[4]). However, none of the proceeds were allocated for biodiversity conservation or other ocean-economy sectors.

Steps towards the creation of a blue *Sukuk*, whose proceeds would be entirely earmarked for the marine conservation and sustainable use, is currently being considered in Indonesia. Hariyanto (2020^[55]) found that the issuance of blue *Sukuk* in Indonesia would be feasible. The appetite and absorption capacity of both the domestic and the global market for this financial product, however, still remain to be determined. This could be the first ever Blue *Sukuk* and could incorporate lessons both from the Green *Sukuk* and from the Seychelles’ blue bond (OECD, 2020^[1]). A Blue *Sukuk* could help mobilise additional financing for the sustainable use and conservation of the ocean as well as increase the alignment of Islamic finance to the SDGs.

Ecological fiscal transfers

In the absence of adequate compensation to the actors involved in the biodiversity conservation efforts, the goods and services connected to natural capital tend to be underprovided. Ecological fiscal transfers (EFTs) aim to provide such compensation, thereby discouraging the conversion of high conservation value sites for industrial or commercial use (Kieft and Efriyanti, 2020^[56]). EFTs have been used by several countries to compensate sub-national governments for the cost of conservation (Mumbunan, Ring and Lenk, 2012^[57]). Brazil was the first country to pioneer EFTs, compensating local governments for economic losses occasioned by forest conservation efforts. In 2015, India announced EFTs to redistribute USD 6 billion a year to local governments, proportionate to the area of forest conserved (CGDEV, 2015^[58]).

In Indonesia, discussion about EFT have developed in recent years and a variety of options for the implementation of this scheme has emerged. For example, the Research Center for Climate Change at the University of Indonesia has developed a proposal to include forest area-variables in the formula used to decide the level of the General Allocation Fund (DAU) distributed to different regional governments (Mumbunan, 2018^[59]). The DAU is just one mechanism through which the central government distributes resources to regional governments in the form of grants. The Biodiversity Finance Initiative (BIOFIN) is advocating for a separate Regional Incentive Fund (DID) scheme for biodiversity (BIOFIN, 2018^[60]). Rather than assigning targeted resources, the DID is intended to incentivise good fiscal practice at the local level. The local government remains in charge of administering the budget directly, while the fund

distributes resources as a compensation for good behaviour and for the achievement of some measurable results.

Finally, The Asia Foundation (TAF) together with civil society networks promoted the introduction of EFTs through three schemes (TAF, 2020^[61]). The schemes depend on the level of government at which they are implemented and are named the Ecology-based Provincial Budget Transfers (TAPE), the Ecology-based District Budget Transfers (TAKE), and the Ecology-based National Budget Transfers (TANE). Some TAPE and TAKE schemes have started to be implemented. Papua, West Papua, East Kalimantan, Riau and Aceh are in advanced discussions for the implementation of the TAPE scheme, while Nunukan Regency, Bener Meriah Regency and Keerom Regency, Supiori Regency and Kubu Raya Regency are setting up TAKE schemes. These schemes take the form of a transfer of funds from the provincial government to the district or from the district government to the village government based on the local government's performance in protecting the environment. In the case of forest protection, for instance, EFTs would function in addition to a basic allocation and the amount transferred would depend on the area of forest cover change over a year.

Although EFTs have been mainly used to protect terrestrial ecosystems, the mechanism could be applied also to marine conservation. Some countries already have in place EFT schemes for marine conservation. France, for instance, has implemented small scale EFT schemes for towns that fall in the core zones of marine national parks (Borie et al., 2014^[62]). As an indirect implication, this system could increase the total amount of marine biodiversity financing provided by the central government.

Climate budget tagging

Since 2016, Indonesia has introduced in its National Budgeting and Planning Systems an innovative climate budget tagging scheme aimed at tracking climate related expenditures in the national budget (UNDP, 2019^[63]). This tool allows the government to monitor its climate spending, make informed decisions about future budgetary allocations and prioritise climate spending. In 2016 and 2017, only climate mitigation interventions were tagged. From 2018, data are also available for climate adaptation. Relevant data show that climate spending grew from USD 5.4 billion, or 3.5% of national budget, in 2016 to USD 8.5 billion, or 5.4% of national budget, in 2018 (OECD, 2019^[5]). Among the most targeted ministries, there is the Ministry of Public Works and Housing and the Ministry of Transport. The Ministry of Maritime Affairs and Fisheries received a negligible amount of the resources allocated for mitigation and adaptation, at smaller than 0.1% of the total.

The climate budget tagging initiative showcases the possibility to streamline the monitoring of certain policy areas. In the future, it could be expanded both in terms of the levels of government (i.e. subnational governments) and policy areas involved. In particular, the adaptation and mitigation markers could be complemented by a biodiversity marker or an ocean marker that could support the government in collecting more precise and current data on the government efforts to preserve biodiversity and to conserve marine ecosystems.

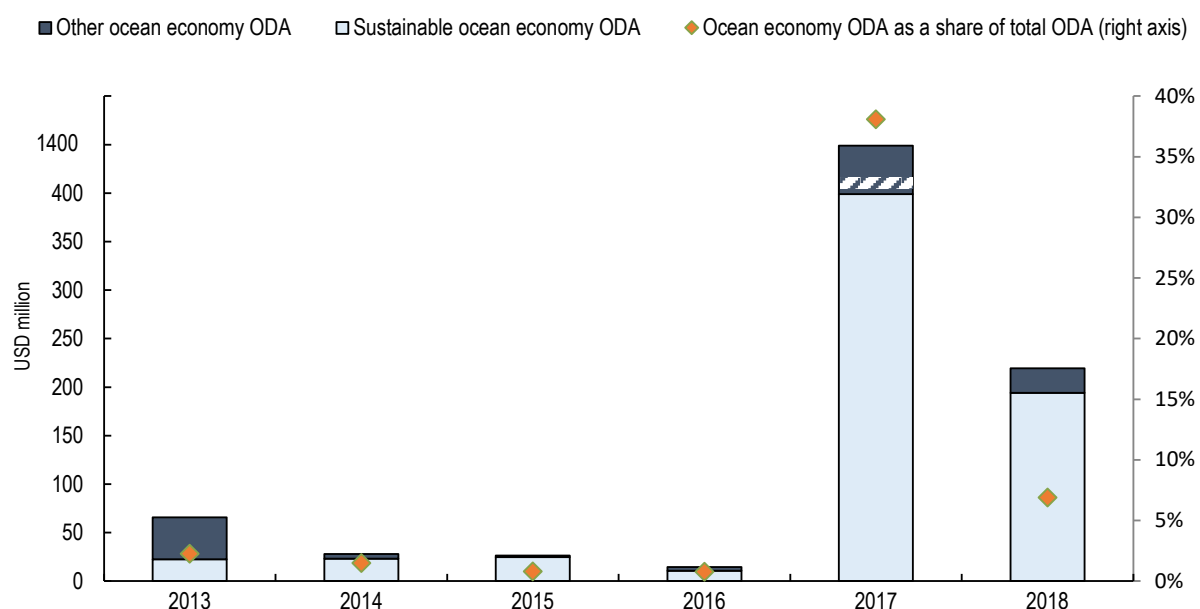
Official development assistance is supporting Indonesia's transition to a sustainable ocean economy

In recent years, Indonesia has been the most targeted country by ODA for the ocean economy

Indonesia is the world's largest recipient of ODA for the ocean economy, calculated as the sum of ODA for ocean conservation and for ocean-based industries. In the 2013-18 period, USD 302.5 million on average a year (2017 constant prices) were allocated towards Indonesia's ocean-based industries and the conservation of marine ecosystems. This represents 10.7% of total ODA to the country.

The large share underlines development partners' commitment to support the country's ambition to harness the potential of the ocean economy and become a global maritime hub. Indonesia's share of ODA for the ocean economy also exceeds that of other coastal and island nations (i.e. 1.9% on average) and regional peers (6.5% on average). Further, the volume of ODA resources allocated for Indonesia's ocean economy has increased dramatically in recent years, reaching USD 840 million on average a year in 2017-18, up from USD 47 million in 2013-14 and USD 20 million in 2015-2016. This impressive growth is shown in Figure 2.5 and for the year 2017 includes a USD 1 billion concessional loan from Japan for the construction of the port of Patimban.

Figure 2.5. Indonesia's ocean economy official development assistance (2013-18)



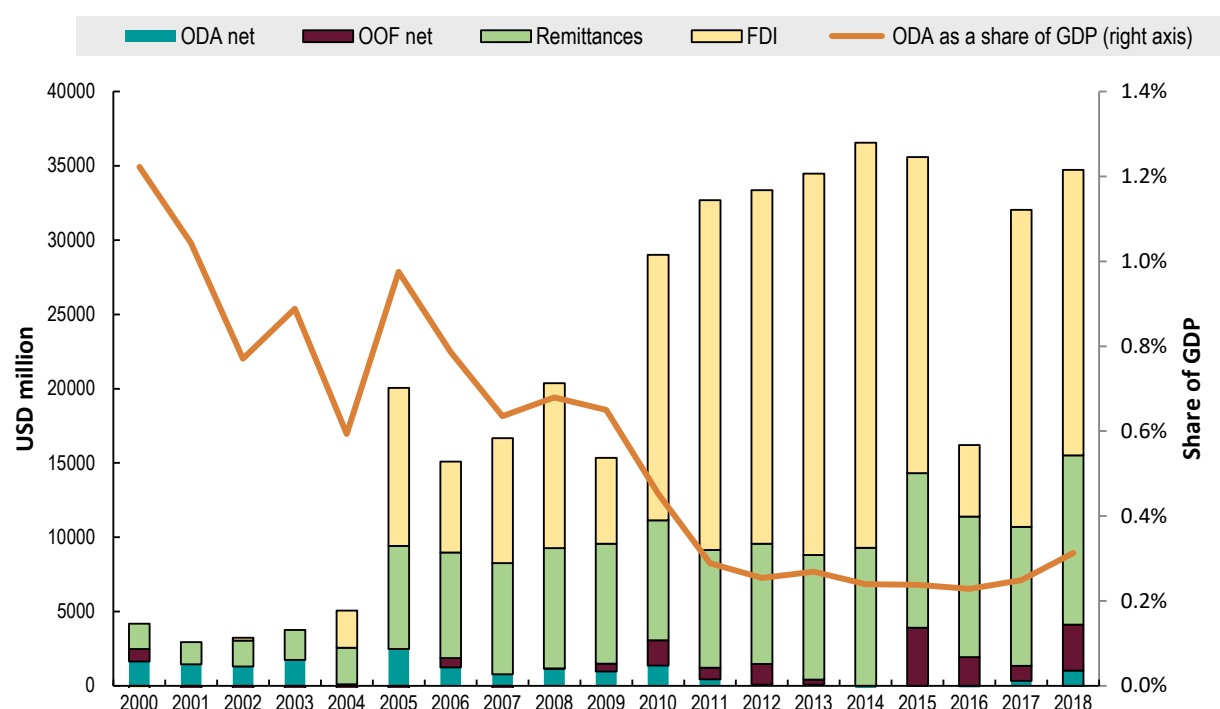
Source: Sustainable Ocean for All estimates on Sustainable Ocean Economy ODA based on OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

The high share of ocean economy ODA received by Indonesia should, however, be understood in the context of Indonesia's overall access to external financial flows. Indonesia is an upper middle-income country and as such several development partners have started to rethink their partnerships to transition away from development co-operation and grant funding and move to other forms of partnership.

As shown in Figure 2.6, net ODA as a share of GDP has progressively decreased in recent years from 1.2% in 2000 to 0.3% in 2018. ODA has also become the smallest external financial flow for Indonesia.

The external financing mix is increasingly dominated by foreign direct investment (FDI), which reflects Indonesia's steady economic growth and the increasingly important role of private investors. The enhanced importance of the private sector requires a rethinking of development co-operation practices and a renewed engagement of development partners with private stakeholders to ensure that investments respond to sustainability requirements. It also calls for a more active role of development partners to go beyond existing resources and partners, and to foster new alliances and collaborations that are able to mobilise a broader range of skills, resources and financing.

Figure 2.6. Indonesia's major external financing flows



Note: Negative values are not displayed

Source: Authors based on OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

Development partners can play a critical role in supporting Indonesia's access to and development of the knowledge, innovation, capacity and financial resources needed to achieve a more sustainable ocean economy.

The international community can provide critical support to crafting and adopting a holistic and strategic approach to the conservation and sustainable use of the ocean and for putting in place policies and regulations that can effectively generate economic and environmental long-term benefits. Table 2.2 highlights some of the most tangible contributions that development co-operation has provided to Indonesia's ocean in recent years.

Table 2.2. Examples of development co-operation projects to promote a sustainable ocean economy in Indonesia

Purpose	Project	Donor	Objective	Year
Curbing ocean pollution from land Annual financing in 2013-2018: USD 37.9 million	STOP Ocean Plastic	Norway	Pioneered in the city of Muncar, East Java, STOP is a project that aims at creating sustainable, low-cost waste management systems across Indonesia	2017
	Emission Reduction in Cities – Solid Waste Management	KfW	KfW is supporting the government of Indonesia to develop more effective solid waste management solutions in four locations: Malang, Jambi, Jombang and Sidoarjo	2019
	Monitoring and modelling the circulation of marine debris in Indonesia	AFD	AFD has partnered with the French National Research Institute for Sustainable Development (IRD) to support the Indonesian Ministry of Marine Affairs and Fisheries in better monitoring and modeling the circulation of marine debris in Indonesia	2020
	Circulate Capital	USAID	This fund finances companies, innovation and infrastructure projects that develop markets in waste management, recycling and other supporting aspects of a circular economy in the Indo-Pacific region. Exemplifying a blended finance approach, USAID has committed a USD 35 million, 50% loan-portfolio guarantee with Circulate Capital that improves the risk-return rate for investors and mobilises additional private capital.	2019
Greening ports, shipping and maritime transport Annual financing in 2013-2018: USD 28.3 million	Connectivity of outer islands	Japan	Develop infrastructure and promote the fishing industry on six outer islands	2018
Sustainable marine tourism Annual financing in 2013-2018: USD 3.4 million	Sustainable Tourism Destination Development (SUSTOUR) Project	Switzerland	Project in Labuan Bajo and Wakatobi aimed at developing a sustainable and inclusive tourism industry in Indonesia.	2019
	Tourism destination development (WISATA)	Switzerland	Advancing economic development through destination development and vocational education and training	2009-2018
Conserving and restoring the ocean Annual financing in 2013-2018: USD 13.1 million	Bali beach conservation Project	Japan	Rehabilitation of coastal areas vulnerable to coastal erosion, seawall collapse, coastline recession through coastal restoration and conservation plans such as sand nourishment, structural measures, and capacity building of coastal management system	2017
	Tomini Bay Sustainable Coastal Livelihoods and Management	Canada	Establish Tomini Bay ecosystem governance mechanisms; improve local capacity to manage coastal and marine resources sustainably and equitably; and introduce information systems to enhance sustainable natural resource management.	2007

	Coral Triangle Initiative	USAID	Improvement of the efficiency and effectiveness of conservation efforts in the Coral Triangle	2012
	Developing Resilient and Effective MPAs in the Lesser Sunda Ecoregion Restoring Coastal	Germany	Supports provincial and district governments in Indonesia in developing a network of marine protected areas (MPAs), improving land-use planning and effective fisheries management.	2012
	Conserving marine biodiversity in the Sulu-Sulawesi Seascape	Germany	Support to the Implementation of the Regional Plan of Action of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security in the Sulu-Sulawesi Seascape Countries	2012
Sustainable and traceable seafood Annual financing in 2013-2018: USD 2.8 million	Infrastructure Development of Space Oceanography (INDESO)	France	Ocean observation and monitoring	2011
	Support MMAF in fish stock assessment, aquaculture, and fish meal production.	Norway	Support MMAF in fish stock assessment, aquaculture, and fish meal production.	2013
	Global Quality and Standards Program	Switzerland	Increasing the market access of Indonesian fisheries and aquaculture products through improving compliance capacity with international quality standards.	2019
	USAID Sustainable Ecosystems Advanced	US	Supporting the Government of Indonesia to improve the governance of fisheries and marine resources and to conserve biological diversity.	2016-21

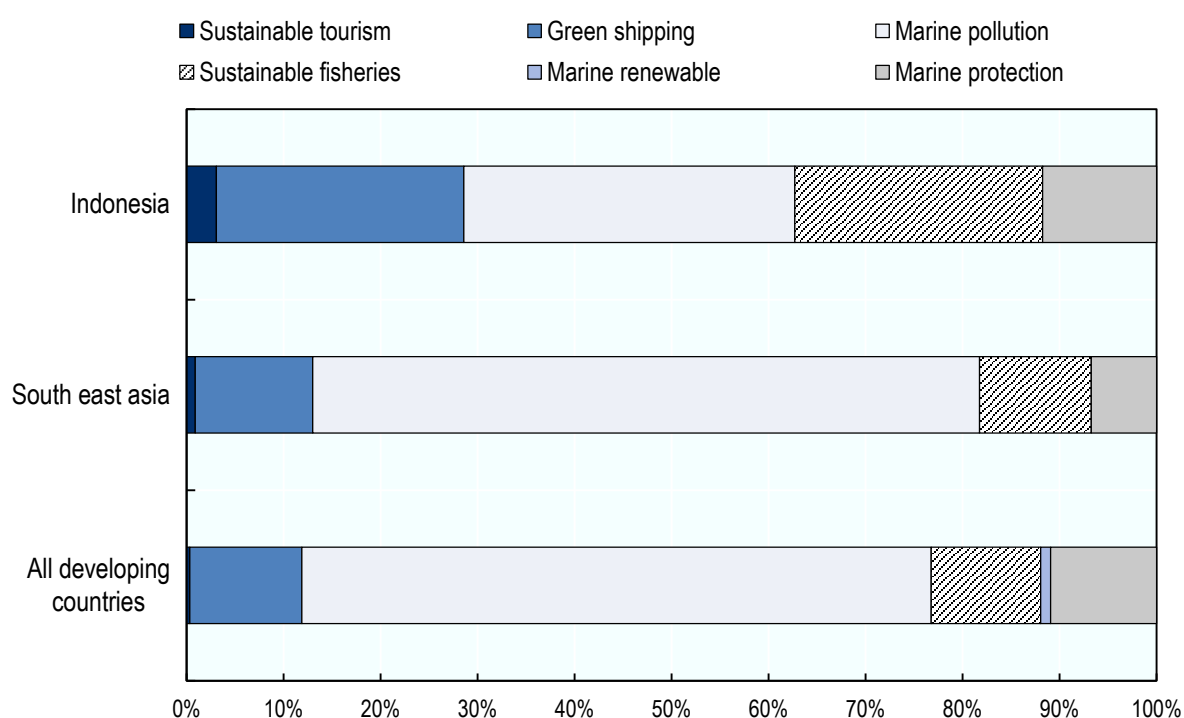
Source: Authors based on OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1> and Packard (2018^[65]), Trends in Marine Resources and Fisheries Management in Indonesia. A 2018 review, <https://www.packard.org/wp-content/uploads/2018/08/Indonesia-Marine-Full-Report-08.07.2018.pdf>

ODA has been instrumental in increasing the sustainability of a number of ocean-based industries

Development partners have supported Indonesia's transition to a sustainable ocean economy by focusing primarily on: (i) curbing ocean pollution from land, (ii) green shipping, and (iii) ocean conservation. Less attention has been dedicated to sectors such as sustainable tourism, and no ODA support was provided towards marine renewable energy. Although projects targeting sustainable fisheries seem to receive low funding in comparative terms, several projects reported in marine conservation often promote sustainable fishery management practices.

The OECD has identified six key areas of the sustainable ocean economy and detailed the volume and nature of ODA interventions in them (OECD, 2020^[1]). A comparison between these global benchmarks, Indonesia's ODA allocations, and the regions' reveals that Indonesia's ODA is comparatively more focused on green shipping and sustainable fisheries, while marine renewables and marine pollution are comparatively less targeted (Figure 2.7). Although Indonesia receives low ODA volumes targeting sustainable marine tourism, its share is larger than other countries due to the low prioritisation of the sector in overall global ODA allocations.

Figure 2.7. Official development assistance to enhance ocean sustainability: sector-specific distribution



Note: South East Asia includes: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Timor Leste and Viet Nam

Source: Sustainable Ocean for All estimates on Sustainable Ocean Economy ODA based on OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

Although across Southeast Asia Indonesia is the largest recipient of ocean economy ODA, the picture changes when this value is compared to the needs that Indonesia's unique conformation requires. In fact, if the total value of ocean economy ODA is adjusted by the coastal population size or the extension of the EEZ, Indonesia does not seem particularly more targeted than other Southeast Asian countries when the total value of ocean economy ODA is adjusted by population size or the extension of the EEZ. Cambodia, for instance, receives almost four times more ocean economy ODA per capita (coastal population only) than Indonesia, while Viet Nam and Timor Leste receive respectively 10 times and 4 times more ocean economy ODA than Indonesia, relative to their EEZ size.

Ocean economy ODA can support the transition to a more sustainable ocean economy by targeting the conservation and sustainable use of marine ecosystems or the mitigation of the negative environmental impacts of ocean based industries.

In 2013-18, approximately 37% of ocean economy ODA received by Indonesia targeted a more sustainable ocean economy.

This share is lower than the regional average at 42% and highlights the fact that some large infrastructural projects, despite advancing the economic development of the country, did not integrate particular environmental considerations into their design and implementation. Overall, Indonesia received an annual average of USD 112 million in sustainable ocean economy ODA between 2013 and 2018, which is approximately 4.0% of total ODA received over the period, a share 5 times larger than the global average

(0.8%). Figure 2.5 reports the trend of sustainable ocean economy ODA with respect to total ocean economy ODA.

The health of the ocean, especially in Southeast Asia, is also heavily impacted by the amount of pollution entering the sea due to inadequate waste management systems and water treatment infrastructure. In this context, development finance could play an increasingly important role, which will be further analysed in Section 0. At the moment, commitments to the sector have been small.

In the period 2013-18, approximately 0.1% of total ODA to Indonesia targeted waste management and waste disposal. This is the third smallest share in Southeast Asia, after Timor-Leste and Thailand. Across all recipients, in 2013-2018 Indonesia only ranks 30th for ODA received for waste management and disposal and 29th when the entire water supply and sanitation sector is considered.

ODA is playing a role in aligning and mobilising private finance

Placing ocean-based economic activities on a sustainable trajectory requires systemic and urgent change across a broad range of actors. Greater private finance will be needed towards sustainable activities as new and existing activities need to be aligned with a sustainable ocean economy. Together with national governments, development partners can play an active role in shaping and creating markets that foster novel business models and technology for the sustainable use of the ocean. This will mean supporting the policy environment and regulations needed to enable the private sector focus on sustainability, as well as using ODA resources catalytically to tilt the playing field towards sustainability, including through new and emerging blended finance arrangements.

Innovative financing schemes that support ocean sustainability through a blend of ODA and private finance are emerging globally but remain nascent.

Most notably, the Seychelles pioneered the world's first sovereign blue bond in 2018 and a debt-for-nature swap that enabled almost a third of its ocean to be protected from unregulated economic activities in 2020 (World Ocean Initiative, 2020^[66]). Innovative financing approaches for sustainable ocean economies have also been supported at subnational levels – such as in Mexico's state of Quintana Roo, which implemented parametric insurance schemes to protect their coral reefs. Globally, private finance mobilised through official development finance interventions contributed USD 2.96 billion to ocean-related activities in 2013-17, or an average of USD 593 million per year (OECD, 2020^[11]). The majority was mobilised for activities on land that reduce negative impacts on the ocean, and waste management and water treatment alone comprised USD 1.7 billion of this global total. The remaining USD 1.3 billion mobilised in 2013-17 supported ocean-based industries and ecosystems directly. Private finance mobilised for the ocean through development finance interventions utilised a range of financial instruments, including guarantees, direct investments in companies and special purpose vehicles (SPVs), shares in collective investment vehicles, credit lines, syndicated loans, and simple co-financing schemes.

There are relatively few blended finance transactions supporting the ocean economy in Southeast Asia. Two countries comprise the vast majority of the USD 23.9 million of private finance mobilised by official development finance interventions in the region in 2013-17. Over 80% of this total was mobilised in the Philippines at USD 19.4 million, followed by Viet Nam at USD 3.9 million.

Private finance mobilised for the ocean is comparatively low in Indonesia, but blended finance schemes that support the ocean economy do exist. In 2013-17, Indonesia accounted for 2% of the USD 23.9 million mobilised by official development finance interventions for ocean-related projects in Southeast Asia – mostly in support of flood prevention, mobilised through co-financing instruments.

BAPPENAS and Rare are exploring the implementation of a blended finance project for marine conservation and sustainable fisheries in the country, although this remains early stage. At COP24 in Katowice, BAPPENAS and Rare announced the creation of new Marine Financing Authorities (MFAs), establishing the first blended finance structure in the country to support coastal management and sustainable fisheries. Rare is already involved in projects in several fishing communities in south east Sulawesi which engage local communities to adopt sustainable fisheries practices that simultaneously promote marine conservation and strengthen the livelihoods of fishers.

The government of Indonesia has taken a lead, in recent years, in enabling the mobilisation of private finance for development objectives.

In 2018, Indonesia and the OECD co-launched the “Tri Hita Karana Roadmap for Blended Finance”, which established a shared framework for blended finance activities in support of sustainable development and received signatories across a range of actors, including governments, development financing institutions and private sector entities (OECD, 2018^[67]). Since then, the government of Indonesia has launched two additional initiatives for enabling blended finance in infrastructure financing: “SDG Indonesia One” and “PT Penjaminan Infrastruktur (PTPII)”. SDG Indonesia One supports blending through an integrated funding platform for combining public and private finance in support of infrastructure projects that fulfil the SDGs, while PTPII is an Infrastructure Guarantee Fund which helps to mitigate the perceived risks of private investors (Merchant, 2020^[68]). Neither of these blended finance initiatives is focused exclusively on the ocean economy, but both have the potential to support infrastructure that contributes to its sustainability.

3 A focus on selected sectors of Indonesia's sustainable ocean economy

This chapter applies the compass of 'trends, policies, and financing' of the OECD Sustainable Ocean Economy Country Diagnostics to four key sectors of Indonesia's ocean economy to further examine their economic relevance and the environmental pressures they are under, and to discuss the policy tools and financing schemes and instruments that can help develop these sectors more sustainably to enhance their social, economic and environmental value. A special focus is placed on the tracking and analysis of concessional finance, building on the Sustainable Ocean for All Initiative's Data Platform on Development Finance for the Sustainable Ocean Economy.

The four sectors considered in this chapter are two industries: (i) fisheries and aquaculture and (ii) tourism; and two cross-cutting sectors: (iii) marine plastics and waste management; and (iv) marine conservation and restoration. While each sector is examined individually, the positive and negative effects of one sector on others are referenced throughout in accordance to the interconnected nature of the sustainable ocean economy. Although not an all-encompassing take of the sustainable ocean economy, these ocean-based sectors already contribute substantially to Indonesian society at all levels – making the long-term sustainability of each of them critical to setting on an inclusive and resilient development trajectory in the country.

Marine fisheries and aquaculture

Indonesia's share of GDP originating from the fishery sector amounts to 2.6% (World Bank, 2019^[31]). As approximately 70% of Indonesians live in coastal areas, the sector also plays a crucial role for food security and employment in some of the most disadvantaged regions and islands. The long-term prosperity of the sector depends on the sustainable management of marine resources, through more reliable stock assessments, optimal harvesting strategies and reduction in IUU fishing. The government has put forward major reforms and policies to enhance the sustainability of the sector, but further action is needed in terms of data collection and monitoring, fisheries management and financing.

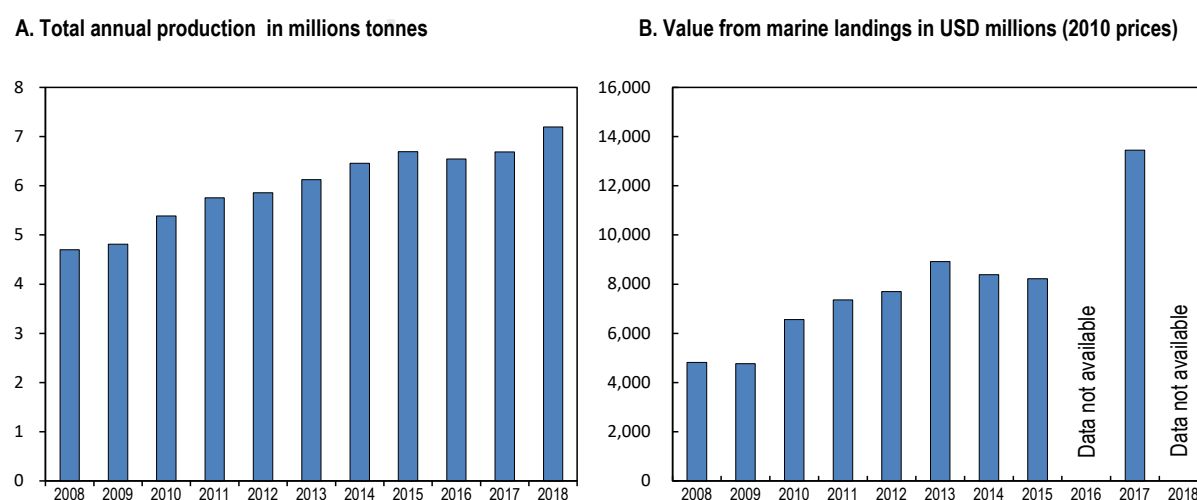
Key economic trends in marine fisheries and aquaculture

Indonesia is a major global producer of marine fish

Indonesia is the second-largest marine fish producer globally equivalent to 8% of global captures in 2018 (FAO, 2020^[69]). Marine landings in Indonesia have increased over the last decade (Figure 3.1. A), reaching the 7.2 million tonnes in 2018 up from less than 5 million tonnes in 2009 (+50%) (OECD, 2020^[70]), although this increase may be partially due to improvements in the country's data collection and reporting (FAO,

2020_[69]). Between 2008 and 2017, value from marine landings increased too, from USD 5.4 billion to USD 9.5 billion (OECD, 2020_[70]) (Figure 3.1.B).

Figure 3.1. Marine fishing production in Indonesia (2008-18)

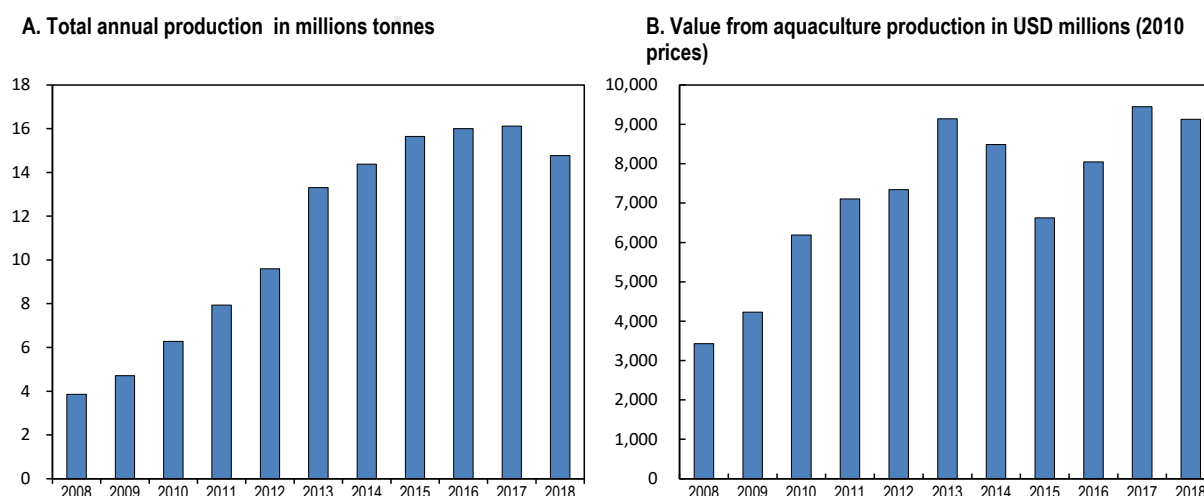


Note: Nominal revenues have been deflated using the World Bank Consumer Price Index (1 = 2010)

Source: OECD (2020_[70]), Fisheries and aquaculture statistics database <https://stats.oecd.org/>

Marine aquaculture significantly contributes to fish production in Indonesia

Aquaculture production in Indonesia accounts for approximately 42.9% (FAO, 2020_[69]) of fish production and is worth over USD 6 billion per year in value added. Indonesia's aquaculture sector has almost tripled production in a ten-year period, from 4.7 million tonnes in 2009 to 14.8 million tonnes in 2018 (Figure 3.2.A). Value from aquaculture also increased significantly from USD 3.4 billion in 2008 (2010 prices) to USD 9.1 billion in 2018 (Figure 3.2.B). Since 2013, however, inflation-adjusted value from the aquaculture sector have been volatile and have not significantly increased (Figure 3.2.B). Indonesia's large aquaculture sector is also a source for several export goods, namely seaweed, shrimp, blue-swimmer crab and other finfish. Seaweed cultivation is a fast growing area in the country's aquaculture sector, increasing from under 4 million tonnes in 2010 to nearly 10 million tonnes in 2017, and accounting for over 35% of global production (World Bank, 2019_[31]). Indonesia's largest export markets in the aquaculture sector are China (seaweed), the United States and Japan. However, while seaweed makes up the largest share of aquaculture by area and volume produced, it is of relatively low marginal value when compared to other products such as shrimp, crab and finfish. Shrimp contributed USD 1.7 billion to Indonesia's export earnings in 2018 alone, making it the country's most valuable aquaculture product (World Bank, 2019_[31]).

Figure 3.2. Aquaculture production in Indonesia (2008-18)

Note: Nominal value has been deflated using the World Bank Consumer Price Index (1 = 2010)

Source: OECD (2020_[70]), Fisheries and aquaculture statistics database <https://stats.oecd.org/>.

Fisheries and aquaculture are a key source of jobs and food security but face increased environmental pressures

Fisheries and aquaculture play an important socio-economic role in Indonesia as a key source of jobs and food security. Around 7 million people are employed in these two sectors, 60% in aquaculture. Indonesian fishing industry's employment levels have remained relatively stable in recent years, moving from 2.7 million people in 2008 to 2.6 million in 2018 (OECD, 2020_[70]).

Employment in aquaculture, on the other hand, has grown with more than 1.4 million jobs added between 2008 and 2018 (from 2.8 million in 2008 to 4.2 million in 2018) (OECD, 2020_[70]). Women play a prominent role in fish processing, marketing and trading in artisanal fisheries, but much less so in fish farms, having access to a smaller range of potential buyers and processing opportunities (FAO, 2020_[71]).

Despite providing a large number of jobs, the Indonesian fishery sector has nonetheless been vulnerable to chronic human rights abuses due to instances of poor working conditions, exploitation and human trafficking (IOM, 2016_[72]). In 2017, the Ministry of Maritime Affairs and Fisheries through Ministerial Regulation No. 2/2017 created a certification mechanism to free the fishing industries from human rights abuses. Measures included insurance schemes, written fishers' work agreements, the establishment of a remediation mechanism, and other mechanisms to facilitate due diligence (ILO, 2019_[73]).

In terms of the fishery's contribution to food security, Indonesia is the eighth most fish-dependent country in the world as fish comprise 52% of animal sourced protein in the Indonesian diet. (Bennett et al., 2018_[74]).

If current management trends continue, the Indonesian fishery and aquaculture sector will increasingly need to face the constraints of decreasing fish stocks and the uncertainties generated by climate change and environmental degradation.

According to the National Commission on Stock Assessments, approximately half of Indonesia's fishery stocks are deemed to be overexploited. Over-exploitation of fish stocks is expected to limit the expansion of the sector in as many as 7 out of the 11 fishing management areas (Packard, 2018^[65]). Aquaculture, which has expanded the volume of its production at a steady rate, also faces several challenges to future growth. These include but are not limited to ecological limits to land use in coastal areas and ecosystem degradation. If not effectively addressed, these environmental as well as technical constraints might bear large costs in terms livelihoods and food security.

Policy tools, including regulatory and economic instruments to increase the sustainability of the fisheries and aquaculture sector

In recent years, the government of Indonesia has taken a number of steps to enhance the effectiveness and sustainability of policies and management approaches for its fisheries sector. In particular, the government has been working to enhance the data and evidence base necessary for a more effective management of fisheries, including the improvement of catch data monitoring, the collection of data on small-scale fisheries, the establishment of an evidence-based governance framework for target-setting and access allocation and the enhancement of impact assessments for the aquaculture sector (OECD, 2017^[75]). The government has established fisheries management authorities to decentralise and improve fisheries management. It implemented an aggressive and successful policy against IUU fishing. It started to use a number of economic instruments – including fees and charges– to enhance sustainable use of resources, and it has taken steps to adopt marine spatial planning. These measures are briefly outlined below.

Indonesia has had some notable success with introducing new regulatory approaches to fisheries, particularly for addressing IUU fishing. The most visible success has been the sinking of 318 fishing vessels in 2014-18 which resulted in a 25% reduction in total fishing efforts driven largely by a reduction in large trawlers (>100GT) (Cabral et al., 2018^[46]).

In an attempt to discourage foreign IUU fishing and promote domestic fisheries, the government restricted the use of larger scale vessels. This policy combined with government incentives favouring small scale fisheries led to greater over-exploitation of near-shore fisheries. Overexploitation of near-shore fishery stocks remains a key issue that the government and stakeholders are trying to address through various approaches (Box 3.1).

Following upon this prominent campaign to combat foreign IUU fishing, the government is now addressing issues connected to the sustainable management of domestic fisheries and aquaculture. In particular, the recognition that also legal fishing can lead to fisheries overexploitation and the need to adopt consequential policies aimed at improving management practices are two aspects that require prioritisation (Packard, 2018^[65]). In particular, concerns have been raised with regards to the Omnibus Law Regulation (2020) which has extended many of the benefits and subsidies previously extended only to small scaler fishers also to larger fleets (Gokkon, 2020^[50]).

Indonesia has taken steps to decentralise and improve the management of fisheries through the application of ecosystem-based approaches. In 2009, 11 Wilayah Pengelolaan Perikanan (WPP), or fisheries management areas were created with broad responsibility to set catch quotas, issue licences and monitor fish stocks. Resource constraints, however, limit their ability to effectively monitor fisheries, so much remains to be done in order to turn these units from forums for stakeholder engagement to more effective management authorities. Some observers have also underlined that WPP still lack the capacity

to effectively engage stakeholders and implement an “evidence-based, adaptive management at appropriate geographic scales” (Packard, 2018^[65]), signalling a lack of investment to put in place an effective fisheries management system.

Indonesia made progress towards better marine spatial planning in 2019, though the fragmentation of the country’s governance requires a decentralised approach where provinces independently develop and regulate respective marine spatial plans. Of the 34 provinces that comprise the country, 21 currently have created marine spatial plans while the remaining 13 are progressing toward finalisation (USAID, 2019^[76]). To facilitate access to these plans, the MMAF, in partnership with USAID SEA, has developed a marine geoportal database for spatial and non-spatial data on marine spatial planning and zoning in support of the “One Map Policy Geoportal” (USAID, 2019^[76]).

Overall, Indonesia makes use of economic instruments in fisheries, most notably through fees and charges on fishers for licences but much remains to be done to ensure that these instruments promote sustainable fishing practices. Economic instruments are now mainly in the form of an upfront licence fee and a royalty based on the productivity of the boats. These can generate significant revenue, for example the non-tax revenues from fisheries in Indonesia was RP 448 billion (USD 31 million) in 2018, slightly below the expected RP 600 billion. Indonesia currently does not use individual tradable quotas (ITQs) for fisheries, but these instruments can both generate revenue and effectively control access fisheries, particularly for high value pelagic species. However, while ITQs might represent an opportunity for Indonesia to develop the fisheries sector sustainably in the future, they rely on effective monitoring of catches and good data for stock assessment, both of which are currently challenging in Indonesia.

Box 3.1. Making near-shore fish stocks more sustainable through improved fisheries management and capacity building

In 2018, USAID partnered with Rare (an international conservation organisation) and the Indonesian government to establish the world’s largest Territorial Use Rights in Fisheries (TURF) network. Under this framework, 58 local leaders in Dampier Strait signed an agreement for the establishment of 21 in-shore marine waters protected areas. Near-shore marine ecosystems in Indonesia are the most critically endangered from overfishing and ecosystem degradation, but 90% of fishers operate in these areas. The establishment of these new protected areas came both with exclusive fishing rights granted to local communities and a new fishery regulatory framework, which included a number of conservation measures such as fish minimum size limits, prohibition of destructive fishing, and seasonal restrictions. Besides combining social and environmental components, this project also enables fishers to access credit and upgrade their fishing equipment and techniques. Through improved marine conservation and coastal fisheries management, this project will increase the environmental sustainability of the fishery sector, while at the same time strengthening the livelihoods and food security of fishers. This project is part of a larger effort of USAID to support marine ecosystems in Maluku, North Maluku and West Papua, through its five-year Sustainable Ecosystems Advanced Project (USAID SEA).

A number of measures could grow the sector sustainably

Despite some progress, there is insufficient monitoring of fisheries resources. This is especially the case for most inshore fisheries, with uncertainty surrounding official estimations of either stock or catch. Therefore, scaling up investment in monitoring and assessment is required to establish effective harvest strategies and sound fisheries management plans.

Improvement of harvest strategies in the fisheries sector could greatly benefit Indonesia and increase gains from the sector in the medium term. Strengthening fisheries management in Indonesia will be critical to maintaining the value of the sector, and future development. Estimates show that Indonesia could gain

USD 3 billion in annually under an economically optimal harvesting strategy when compared to a business-as-usual scenario, second only to China (Costello et al., 2016^[77]). The vast majority (90%) of fishers in Indonesia operate near shore, and near-shore marine ecosystems are also most at risk from overfishing and ecosystem degradation.

Implementing optimal harvesting strategies in Indonesian fisheries would increase the economic, social and environmental sustainability of the sector, however such strategies require increased capacity for the monitoring, control and surveillance.

Further, Indonesia stands to benefit from expanding sustainably its aquaculture sector, especially if due consideration will be given to expanding the value rather than the quantity produced by the sector. Indonesian aquaculture can help meet a growing global demand for fish. An estimated 80% of the area potentially suitable for aquaculture is not currently exploited. Further assessments are needed, however, to determine what share of this area could be used for aquaculture purposes without disproportionate impacts on mangroves and coral reef habitats. As expansion will likely have significant environmental impacts, it is important to shift from a high volume-low value model to one that focusses more on increasing the value of products. This would enable the sector to expand its economic importance while minimising the environmental footprint. At the same time, aquaculture, particularly shrimp ponds, often comes at the expense of coastal habitat (e.g. mangroves) so the feasibility of shifting to higher value products needs to be further investigated. It is possible that the sector would benefit more from increasing intensification in Indonesia's current aquaculture farms, as three-quarters use traditional production techniques (World Bank, 2019^[31]).

Indonesia may wish to consider a number of future developments to making marine fisheries and aquaculture more sustainable. For example, in order to grapple with the complexities of sustainable fisheries management in such a vast country, Indonesia needs to increase its effectiveness in fisheries monitoring, control and surveillance (MCS) through an integrated MCS strategy and more investment in the sector. Good MCS is a key enabler of effective fisheries management.

Overall, Indonesia would benefit from a comprehensive, cross-sectoral vision and strategy around the sustainable ocean economy that sees fisheries plans and activities in relation to other sectors to balance trade-offs across stakeholders and enhance the positive returns of this sector for the environment and for the people of Indonesia.

For example, a comprehensive, cross-sectoral vision and strategy around the sustainable ocean economy would help to optimise trade-offs across stakeholders and maximise the health of the ocean. This would require significant reform of the country's fishery management architecture, however, which currently lacks an effective co-ordination mechanism across jurisdictions and negatively impacts capacity to ensure management plans effectively align with scientific recommendations.

Streamlining regulations and bureaucracy to support business development and harness the benefits of improved maritime connectivity could increase entrepreneurship and innovation that supports the sustainable ocean economy. Mitigating some of the adverse impacts of recent fishing policies (for example increased pressure on near-shore fisheries from subsidised small-vessels acquisition and restrictions on larger scale vessels) and increasing the value captured from fisheries and aquaculture products, especially seaweeds, could help to reduce pressures in these areas. Harnessing the increasing interest of investors on the ocean through innovative uses of blended finance that can de-risk investments and crowd in private finance can help to align ocean-related activities and increase the resources available for achieving sustainable outcomes in these areas.

Development finance and support for fisheries and aquaculture

ODA towards Indonesia's fisheries sector is small and only partially focused on sustainability

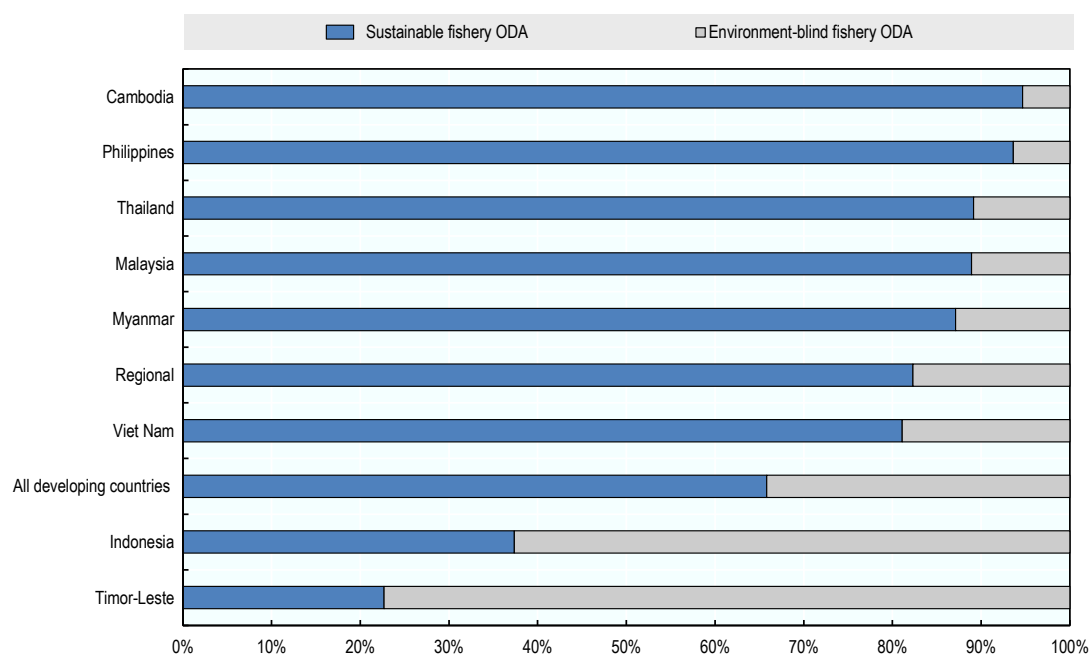
Indonesia is the second largest marine capture fish producing country in the world after China; however, total ODA to the Indonesian fisheries sector represents less than 1% of global ODA to the fishery sector. ODA to the fishery sector averaged USD 7.6 million a year in 2013-18 (constant 2017 prices), accounting for 2.5% of Indonesia's total ocean economy ODA and less than 0.3% of total ODA.

ODA to Indonesia's fisheries sector is also significantly lower than the regional average, where fisheries ODA represents 0.4% of total ODA and 7.5% of ocean economy ODA. Indonesia receives 14% of fisheries ODA to Southeast Asia. The lower targeting with respect to regional peers can be due to the financial and business viability of the sector, which does not require ODA financing but rather attracts more private investment. As a comparison, the value of foreign direct investment in the fishery sector over the same period averaged USD 37.6 million a year (BPS, 2020^[78]).

While there is a widespread awareness of fish stocks over-exploitation and a multitude of pressures impacting the sector, the integration of sustainability into ODA support for the sector remains limited. Only 37% of ODA towards Indonesia's fisheries was invested to increase the sustainability of the sector in 2013-18 (as calculated according to the OECD ODA for Sustainable Ocean Economy indicator). This is in contrast with the need for more investment in sustainable fisheries, including for monitoring, control and surveillance. The share of fisheries ODA that addresses the sustainability of the sector is also a significantly lower share than regional peers, where on average about 80% of ODA to the fisheries sector aims to enhance the sustainability of the sector (Figure 3.3).

Figure 3.3. In Indonesia, 37% of fishery official development assistance is marked as sustainable

2013-18 averages



Note: Sustainable ODA refers to ODA marked to help the environment, biodiversity, climate change mitigation or adaptation or that explicitly mentions "sustainable fisheries" in the project description

Source: OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

Although small, support from development co-operation providers helped enhance the sustainability of Indonesia's fishery and aquaculture sectors in a number of ways.

ODA investments supported the enhancement of aquaculture techniques, the fight against IUU fishing, the establishment of sustainable fisheries management projects involving local communities across the country, support in fish stock assessments and the upgrade of ports and fish markets facilities.

A portion of projects counted into the marine conservation category also address sustainable fishery management practices. For instance, the USAID Sustainable Ecosystem Advanced supports the Government of Indonesia to improve the governance of fisheries and marine resources and to conserve biological diversity in the Provinces of West Papua, Maluku, and North Maluku.

Further, dedicated programmes and funds were recently created, including the World Bank *Indonesia's Sustainable Oceans Program (ISOP)*, which has recently launched a coastal fisheries initiative through the Indonesia Challenge Fund to support rural coastal livelihoods, strengthen marine resource management and promote private sector investment in sustainable fisheries.

Looking ahead, development partners could consider focusing their support to the country fishing sector in those areas that are more relevant for a transition to more sustainable fisheries management. This would include making sure that support to the fishery sector does not contribute to increasing fishing pressure, but rather advances good fisheries management. Moreover, more engagement and support for Fisheries Improvement Projects (FIP) in the country could greatly contribute to increase development cooperation effectiveness in the sector and to forge partnerships with the private sector.

Mechanisms and instruments to mobilise private finance for the fisheries and aquaculture sector are in their infancy

While a range of mechanisms and instruments have emerged to mobilise private finance for the sustainable ocean economy in Indonesia (see Section 0), specific applications to the fisheries sector remain limited. A first blended finance structure in support of coastal management and sustainable fisheries was announced by BAPPENAS and Rare at the UNFCCC pre-COP24 in Krakow but never implemented. The project strived to finance community-led conservation at scale by blending a mix of financing sources, including development finance and private capital.

Establishing an enabling environment for the private sector also plays a critical role in bringing blended finance to scale, however, and development partners are engaging private sector actors in the fisheries sector through policy support and capacity building (See Box 3.2).

Other blended finance approaches are being put forward by international NGOs. These include the Meloy Fund for Sustainable Community Fisheries by Rare and the Blue Halo S initiative by Conservation International. The Meloy Fund for Sustainable Community Fisheries is an impact investment fund owned by the NGO RARE, which engages in debt and equity investment to support enterprises active in the recovery of coastal fisheries in Indonesia and the Philippines. The fund has recently partnered with a number of development finance providers including USAID, the GEF and FMO. In particular, the GEF has provided a non-grant equity investment and USAID a partial debt guarantee. This partnership aims at

catalysing more private sector investment in sustainable fisheries. In addition to this, Conservation International is advancing discussion with the government of Indonesia to pilot its Blue Halo S initiative. The Blue Halo system is an attempt to generate revenues streams from marine protected areas through the issuance of sustainable fisheries concession on fishing grounds surrounding an MPA. Fishers benefitting from increased catch originating from the MPA would then contribute to the MPA management by reinvesting a fraction of the additional profit. To catalyse private sector involvement, donor/public funding would be required at least in the initial phase.

Box 3.2. Enhancing private sector engagement via policy support and capacity development

In line with its ambition to increase the value of its fishery products, the Ministry of Maritime Affairs and Fishery is also involved in a project called “Sustainable Market Access through Responsible Trading of Fish in Indonesia” (SMART) in partnership with UNIDO and the Swiss Development Cooperation. The USD 1.8 million project aims at creating a sustainable fisheries export development strategy that will help local fishing communities to move away from the “high volume-low value” paradigm towards more high value products through increased access to profitable trade networks. Key barriers were identified, including a lack of mainstreaming for sustainable maritime resource management in Indonesia’s national policies and a lack of technology to realise the value-added potential of fishery export products. The project aimed to provide policy support for mainstreaming more sustainable fishery management practices and promote the conservation of marine biodiversity. It also supported technical co-operation and capacity development with increased eco-labelling and traceability, improvements in product quality and the provision of adequate business services to entrepreneurs. The pilot projects are being carried out in four Indonesian provinces, i.e. Jambi, East Java, South Sulawesi and East Nusa Tenggara and are now focused on the value chains of three major Indonesian production, i.e. pole and line tuna, pangasius and seaweed.

Tourism

The OECD estimates that in 2020 international tourism has fallen by around 80% as a result of the pandemic (OECD, 2020^[79]). Prior to the COVID-19 crisis, global tourism expanded steadily for over six decades, and was expected to continue to grow, driven by high demand for coastal tourism and cruise tourism by growing middle classes in OECD and emerging countries (OECD, 2016^[3]). The tourism sector had also been expanding in Indonesia, with the number of foreign tourist arrivals more than tripling in the past 20 years (from approximately 5 million in 2000 to 16 million in 2019) (World Bank, 2020^[80]). However, mass tourism and the concentration of tourism flows in a few destinations have generated impacts on local communities and the environment (World Bank, 2019^[31]). Habitat degradation, increased waste and pollution, and high energy consumption have added pressures to the ecological, physical and social capacity of popular destinations to manage tourism sustainably. The tourism sector in Indonesia has recently started to be directly affected by these impacts, especially as plastic waste and marine litter have reduced the attractiveness of a number of key touristic destinations in the country. Tourism was identified as a key priority both in the 2015-19 and 2020-24 National Medium Term Development Plans of Indonesia (Republik Indonesia, 2014^[41]) (Republik Indonesia, 2020^[40]). The government aims to increase the total number of tourist arrivals while easing pressures on key tourist destinations through a diversification plan. As the crisis is putting a halt on the sector globally, Indonesia can take this as an opportunity to redesign policies affecting the sector and ensure that tourism will be on more sustainable grounds once the recovery begins.

Key economic trends in the tourism sector

Tourism is expanding globally including in Indonesia

Prior to the COVID-19 crisis, the global tourism industry, of which marine and coastal tourism is a major component, was fast-growing and expected to continue to expand. The sector as a whole currently accounts for approximately 5% of global GDP (UNWTO, 2011^[81]). Within the global ocean economy, in 2010 the tourism sector was the second largest ocean-based industry after oil and gas, accounting for 26% of total value added in the global ocean economy (OECD, 2016^[3]). Its importance in terms of global employment was also substantial as it provided approximately one quarter of all ocean based jobs, surpassed only by fishery and aquaculture (36%). Prior to the COVID-19 pandemic, projections suggested that the importance of tourism in terms of value added and employment would continue to grow, surpassing oil and gas as the largest ocean industry in 2030, and accounting for approximately one fourth of total ocean economy value added. According to these estimates, value added from marine and coastal tourism would double between 2010 and 2030 and employment would increase by 22% (OECD, 2016^[3]). Key drivers of this expected expansion of the tourism sector were ageing populations, rising incomes and the increasingly low cost of transportation, all making marine destinations increasingly attractive.

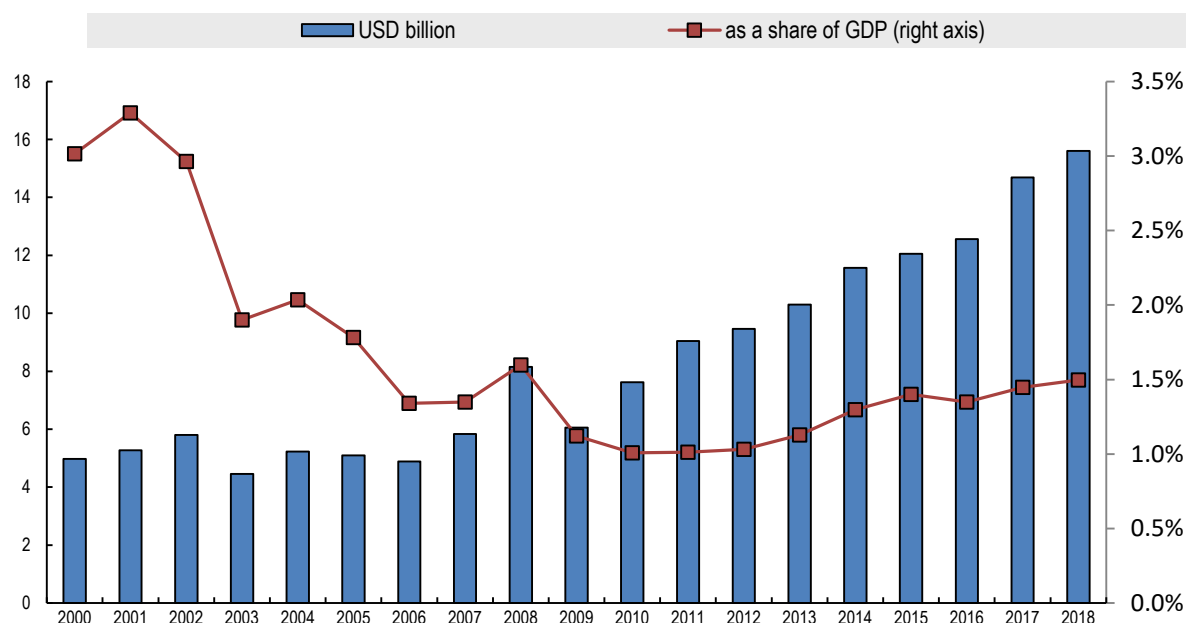
In Indonesia the tourism industry was growing fast before COVID-19. The number of foreign tourist arrivals had grown from approximately 5 million in 2000 to 16 million in 2019 (World Bank, 2020^[80]). China was the country's main international source market (16% of tourists), followed by Singapore (13.2%), Malaysia (10.6%) and Australia (9.7%). (OECD, 2020^[79]). The government set the objective of reaching 20 million arrivals by 2019 but, despite a 6 million increase between 2014 and 2019, arrivals fell short of the objective by 4 million (World Bank, 2020^[80]). International tourism receipts have also surged substantially, at an average rate of 8% per year since 2000.

The tourism sector is an important source of income and jobs in Indonesia. In 2017, the direct contribution of the tourism sector to Indonesia's GDP was estimated at 4.1%, while the indirect contribution – which includes also downstream revenues - can be even higher (OECD, 2020^[79]). In the same year, it also provided 12.7 million jobs, representing 10.5% of total employment, significantly higher than the OECD average (6.9%) (OECD, 2020^[79]).

Given the fact that tourism's share of employment is more than twice its share of value added, expanding the tourism industry has the potential of producing a significant number of jobs in the sector. The tourism sector also represents a valuable source of foreign exchange, providing USD 12 billion in foreign currency in 2017 and representing the fourth largest source of foreign exchange after raw materials.

Tourism in Indonesia is predominantly focused on culture and nature, with the two categories representing 60% and 35% of total tourism flows respectively (Ollivaud and Haxton, 2019^[39]). The two largest categories of nature-based tourism are eco-tourism (45%) and marine tourism (35%) (Ollivaud and Haxton, 2019^[39]). Marine tourism represents a large share of total arrivals and it has been estimated that approximately 29% of total tourism takes place in coastal, non-urban locations (Spalding et al., 2017^[82]).

Figure 3.4. International tourism receipts



Source: World Bank (2021^[83]), World Bank Open Data, <https://data.worldbank.org/>

The tourism sector could drive development in many peripheral areas of the country but currently flows are heavily concentrated in a handful of destinations. Data from the Indonesia statistics authority (BPS) and the World Bank show that most of the tourism industry has focused on two major destinations for marine tourism. Bali and Lombok together account for approximately 50% of all foreign arrivals. In 2018, foreign visitors to Bali reached a record number of 6 million people, up from 2 million in 2008 (World Bank, 2019^[31]). This dramatic surge has been the main driver of the tourism industry boom in Indonesia, while other locations, which are often more difficult to reach, have not witnessed similar surges in arrivals. This lack of diversification is among the key factors limiting the potential expansion of the sector which, despite the growth in recent years, still contributes a smaller share of GDP than in neighbouring countries like Thailand and Malaysia (World Bank, forthcoming^[84]). The concentration of tourism in a few locations has also created a problem of overcrowding of the most popular tourism destinations, which have been found unprepared to manage such large flows of people. This has been detrimental to the health and the attractiveness of the island's natural capital (Benge and Neef, 2018^[85]).

Increasing environmental degradation risks jeopardising future benefits from the sector

The attractiveness of Indonesia's marine and coastal tourism resides in the wealth of its marine biodiversity, which appeals to tourists from all over the world. Indonesia is one of the world's 17 'megadiverse' countries. Its coral reef area was estimated at 50 875 km², representing approximately 18% of the global coral reefs (Wilkinson, 2008^[86]). The country is also home to a number of world-renowned marine biodiversity hotspots, including the Coral Triangle, the Bird's Head Seascape and the Sunda Banda Seascape. The Coral Triangle site alone, which is shared by six countries but whose area is predominantly in Indonesian territory, contains 76% of the world's coral reef species and 37% of the world's coral reef fish species (WWF, 2020^[87]). This richness in biological diversity generates significant economic value by attracting tourists and contributing to enhance the external image of Indonesia as a prestigious touristic site.

This wealth and diversity in natural capital is increasingly threatened by tourism-induced environmental degradation. According to the WEF Travel and Tourism Competitiveness ranking, Indonesia sits 17th

worldwide in terms of the richness of its natural resources but 135th out of 140 countries in terms of the environmental sustainability of its tourism sector. This indicator captures the change in forest cover, the scarce prevalence of wastewater treatment, the high number of threatened species, and other measures that reflect the overall level of unsustainability of the sector (WEF, 2019^[88]). In many destinations, including Nusa Penida (Bali), unsustainable tourism itself has been shown to be responsible for the degradation of coral reefs (Tito and Ampou, 2020^[89]).

Other negative effects from unsustainable tourism activities include but are not limited to the depletion of natural resources, an increase in mismanaged solid waste, litter and sewage, the destruction or degradation of precious natural habits, and an increase in air and noise pollution. In Bali, for instance, a lack of adequate waste management infrastructures has led to several issues regarding water and waste. Here, the water use of tourists is generally significantly higher (up to 200 l/day) when compared to residents (up to 60l/day (rural) and 120L/day (urban)), placing a strain on local infrastructure (Bali, 2015^[90]). Waste management infrastructures have also failed to keep up with the rapidly growing tourism industry and this has led to increasing amounts of marine litter ending up in the ocean or on local beaches (World Bank, 2018^[91]). Although tracing the origins of beach pollution is complex, a significant portion of marine pollution in Bali is believed to be generated on the island itself due to ineffective waste management practices. Only 48% of waste on the island is properly disposed either through recycling or landfills, while the remaining part is either burned or contributes to pollution of land and waterways (Systemiq, 2019^[92]). This problem was compounded by increasing numbers of tourists arriving on the island each year, producing up to triple the waste of local inhabitants (National Geographic, 2019^[93]). As a result, in December 2017 the Bali local government declared a “garbage emergency” as the island’s most popular beaches were inundated by a tide of plastic.

The impacts of climate change are adding further pressures on marine ecosystems and risk undermining the long-term prospect of the tourism industry. If the global average temperature rises by 1.5°C, the IPCC estimates that 70-90% of all coral reefs would be lost while 99% would be lost in a 2.0°C scenario (IPCC, 2019^[6]). Biodiversity loss, including from coral reef degradation, strongly affects the attractiveness of tourism destination and can therefore reduce tourism flows. Considering both reef-adjacent tourism and on-reef tourism, it was estimated that coral reef tourism alone generates approximately USD 3 billion in revenues in the country, representing 8.6% of the value of coral reef tourism worldwide (Spalding et al., 2017^[82]). Moreover, other climate change-related phenomena are already directly affecting the industry. In a recent study of a sample of 115 Indonesian domestic tourists, approximately 50% claimed that they directly felt the impacts of climate change during their tourism activities in the form of sea level rise and extreme weather events (Wijaya and Furqan, 2018^[94]).

Policy tools, including regulatory and economic instruments to increase the sustainability of the tourism sector

Diversifying tourist destinations can contribute to harness tourism potential and reduce pressure on tourism hotspots

To ease pressure on the main tourist destinations, the government of Indonesia is aiming to geographically diversify the tourism industry in the country. The 2015-2019 and 2020-2024 Development Plans propose the creation of “10 new Balis” in order to replicate the success of Indonesia’s most famous international tourist destinations. These new destinations are spread across the country and engage 10 of the 34 Indonesian provinces typically not found on major tourism circuits. The government is currently focusing on developing the first four sites, namely Toba Lake (North Sumatra), Borobudur (Central Java), Mandalika (Lombok), and Labuan Bajo (Flores). Four others (Mandalika, Tanjung Lesung, Tanjung Kelayan and Morotai) have been designated as special economic zones.

Of the “10 New Balis”, 7 include marine and coastal locations which require a special focus on environmental sustainability and the conservation of natural capital.

Replicating the Bali model across the country could provide an impetus for the development of previously underutilised or marginalised regions. As shown in Table 3.1, estimations of the growth in tourist arrivals in these areas compared to 2013 levels is remarkable. However, investment plans need to carefully incorporate environmental considerations and closely engage local communities so as to maximise sustainable socio-economic benefits.

Table 3.1. The “10 new Balis”

Destination	2013 arrivals	2019 exp. arrivals	Marine/Terrestrial
Borobudur	227,337	2 million	Terrestrial
Mandalika	125,307	1 million	Marine
Lake Toba	10,680	1 million	Terrestrial
Labuan Bajo	54,147	0.5 million	Marine
Morotai	500	0.5 million	Marine
Mount Bromo	33,387	1 million	Terrestrial
Tanjung Kelayan	451	0.5 million	Marine
Tanjung Lesung	1739	1 million	Marine
Thousand Islands	16,384	0.5 million	Marine
Wakatobi National Park	3,315	0.5 million	Marine

Source: Ministry of Tourism, as reported in Ollivaud and Haxton (2019^[39]), Making the most of tourism in Indonesia to promote sustainable regional development, <https://dx.doi.org/10.1787/c73325d9-en>

The country is experimenting with a number of additional tools to increase the sustainability of the industry

Diversifying destinations will need to be part of a more comprehensive strategy for enhancing the social and environmental sustainability of the tourism sector. Efforts in this area were led by the Ministry of Tourism and crystallised in the Ministerial Decree number 14/2016 on Sustainable Tourism Destination Guidelines. The approach aims to establish sustainable tourism destinations across the archipelago and provides guidance for local governments and other stakeholders that decide to develop new sustainable tourism destinations.

To guide the development of these destinations the government outlined 41 criteria and 104 indicators to monitor and assess the sustainability of tourist destinations. The criteria are divided into 4 broad categories pertaining to the management of sustainable tourism destinations, the economic benefits to the local population, cultural preservation and environmental conservation. To assess the monitoring of sustainable tourism, the plan envisages the establishment of 5 Sustainable Tourism Observatories under the framework of the International Network of Sustainable Tourism Observatories. These 5 observatories monitor the sustainability of major tourism destinations and can provide recommendations to local governments to implement mitigation plans to counter environmental degradation (Ollivaud and Haxton, 2019^[39]). These observatories are located in some of the most popular destinations, including one in Bali,

Lombok, Sumatra and two on the island of Java. Although Indonesia has established the highest numbers of observatories in comparison to other countries, this model could be replicated across the whole country and their role could be institutionalised and given a more central role in the elaboration of local tourism policies. Moreover, observatories could be involved in the development plans of the “10 new Balis” so that the principles and criteria set out in the Sustainable Tourism Destination Guideline will be adhered to.

The tourism industry can contribute to protect marine natural capital

When built upon broad stakeholder engagement and sustainable development principles, tourism can raise awareness of environmental values, and help finance the protection and management of protected and sensitive areas. Tourism can also play an important role in demonstrating the economic value of environmental conservation and maintaining the authenticity of a destination, primarily through the level of activity that it can stimulate in the local, regional, and national economy (OECD, forthcoming^[96]).

Examples of how the tourism sector can become a precious ally for the conservation of marine ecosystems across the archipelago already exist. The introduction of fees for access to high value marine areas in several marine protected areas (MPAs) across the country generated revenue for the management and conservation of those sites. The number of visitors has also been controlled. A good example of operationalising fees for MPAs in Indonesia is Raja Ampat in West Papua (Box 3.3), where an entrance fee was collected and reinvested in the management of the park and in several local community projects.

Box 3.3. Marine Protected Area management in Raja Ampat, West Papua

MPA co-management and concession approaches have been successful at increasing the level of funding available to individual sites around the globe. A notable Indonesian example is in Raja Ampat in West Papua. In this MPA a long running collaboration between environmental NGOs, local government and the community has created a Regional Public Service Agency (BLUD). BLUD has the ability to collect an entrance (or ‘green fee’) which it can then spend on the management of the park. The green fee is USD 70 for foreigners and USD 35 for Indonesians. The money collected is used to fund the management of the park and engage with the local community on several projects through the community welfare fund. The community welfare fund allocates at least IDR 1.5 billion (~USD 100 000) annually to villages in and adjacent to the conservation area and the money is used to fund economic, social and environmental development programmes. Consequently, relations between the park authorities and the local communities has improved and local fishers now help enforce the park regulations.

However, Raja Ampat is the first and, so far, only area in Indonesia to use the BLUD instruments. This is partly because there are significant regulatory hurdles to creating a BLUD, which include the need to establish a technical management authority first. The process requires several separate pieces of legislation at different levels of government, and it required strong leadership of the local authorities in Raja Ampat and collaboration with NGOs. Scaling-up this kind of approach, particularly in areas with MPAs containing high-value ecosystems is a good opportunity to generate finance available for the conservation and sustainable use of marine ecosystems. However, local stakeholders from governments, community and business, are likely unaware of these co-management approaches or unable to operationalise them successfully. Further, while the Raja Ampat example demonstrates these approaches are possible, reducing the regulatory hurdles would facilitate their uptake.

Source: Raja Ampat Marine Park (2020^[95]), MPA Management Unit, <https://rajaampatmarinepark.com/mpa-managment-unit/>

A number of steps can be taken to further enhance the sustainability of the sector

To avoid the negative impacts of environmental degradation, new and old tourism destinations need to be expanded through development strategies that integrate sustainability requirements. Plans to build the “10 new Balis” are particularly focussed on improving the international connectivity of destinations, mainly through the creation of airports. Although improving connectivity is essential to attracting a larger number of tourists to these peripheral areas, transport infrastructures alone do not guarantee that growth is sustainable. These projects could be conditioned on investment in other types of infrastructure that will reduce the ecological impact of larger tourism flows.

Assessments should be carried out that take into account the impacts that larger arrivals will have on other services, including waste management and sanitation. In particular, the government should ensure that supporting infrastructure is calibrated with the expected future tourist flows and that investors include effective environmental provisions in their development plans. Generally, Indonesia uses a range of subsidies to encourage new development in areas through the creation of special economic zones. The subsidies take the form of tax holidays, excise and import duty exemptions, and other tax allowances designed to reduce the cost of development. However, the expected pace and extent of the tourism expansion in the “10 new Balis” raises concerns regarding the sustainability of this growth (Ollivaud and Haxton, 2019^[39]).

Tourism carrying capacity studies should be conducted in order to guide local authorities and ensure that tourism growth does not happen at the expenses of the environment. Tourism carrying capacity assessments have proven effective tools in other destinations to reconcile the need to maximise tourism flows and the need to preserve environmental assets, cultural heritage, local population’s needs and the quality of visitors’ experience. Assessments should be deployed both in developed and underdeveloped areas, with the aim of maintaining tourism flows at a level that is manageable.

Economic instruments can help promote the sustainable development of tourism and other sectors. For example, Indonesia identifies marine and coastal tourism as a key asset for attracting visitors. However, unrestricted access to high value areas can lead to issues of overcrowding and degradation. When a destination can accommodate tourism activity, visitors should be granted access but entrance fees should be levied and set high enough to cover the cost of basic infrastructures *and* conservation efforts.

Ensuring the effective management of key natural assets is important for developing the tourism sector and requires a shift away from large tourism volumes and towards more tourism value. Often the benefits associated with large volumes of tourists do not outweigh the long-term costs to local populations. In 2018, Indonesia denounced “zero-dollar tourism” – a practice among Chinese tour operators of diverting money spent by Chinese tourists in Indonesia directly back to China. Harnessing the full value of well-managed tourism would involve the employment of local populations and generate income for conservation efforts to protect local natural capital. Several options are available to reconcile the development of the tourism industry with the conservation and sustainable use of marine ecosystems.

Development finance and support for the tourism sector

ODA focussing specifically on the tourism sector in Indonesia has been small, in line with global ODA trends. ODA financing for the tourism sector in Indonesia averaged USD 3.4 million a year (2017 constant prices) in the 2013-18 period, equivalent to 0.1% of total ODA received by Indonesia over the period. In absolute terms, this figure is higher than the average across all ODA recipients (USD 1.4

million) but lower than some regional peers, including Viet Nam (USD 5.1 million per annum) and Myanmar (USD 4.5 million).

Globally, tourism receives only a small share of ODA: 0.1% in 2013-18, at an average of USD 200 million per year. The amount of ODA specifically targeting marine tourism is estimated to be even smaller, representing a fraction of that at approximately USD 10 million a year. The small volume of ODA to this sector is partly explained by the strong reliance of the sector on large private investments.

Despite these small amounts, development partners have supported Indonesia's tourism sector with a few successful projects. These projects have been aligned with government strategies to develop new tourism destinations and to train local hospitality sector personnel through vocational education and training. These projects are briefly outlined in Box 3.4.

Box 3.4. Sustainable tourism projects in Indonesia

Sustainable tourism destination development (Sustur)

This project supported by Switzerland is based on two pillars. The first pillar is the support for local stakeholders to establish a tourism policy framework that is conducive to more sustainable development. The project will support the enhancement of the monitoring and reporting capacity of the local Sustainable Tourism Observatories and the establishment of effective mechanisms of sustainable tourism planning. In this context in 2020 the University of Halu Oleo in collaboration with local stakeholders will develop an observatory framework for selected sustainable priority issues in Wakatobi. The second pillar will support the local community to develop sustainable tourism products. This includes direct support to the private sector and tourism vocational training schools to integrate sustainable tourism in their operations and teaching-learning process. Through the involvement of the private sector, the project has promoted a co-operation scheme to develop new tourism products in Flores based on community-based tourism activities and sustainability-focused training and advisory services in Flores and Wakatobi.

Bali beach conservation project

Climate change is also particularly relevant for coastal tourism and development co-operation has been mobilised to address it. Issues connected to sea level rise and coastal erosion are threatening the survival and attractiveness of some destinations, such as Northeast Bali (Husrin et al., 2016^[97]). Development partners have already been engaged in dedicated projects to support local populations in facing these threats. In 2013, JICA launched the Bali beach conservation project for the rehabilitation of coastal areas vulnerable to coastal erosion, seawall collapse, and coastline recession. These projects aim to conserve economic activities whose potential would otherwise be wasted.

WISATA programme

Since 2009, the Swiss State Secretariat for Economic Affairs has joined forces with the Indonesian Ministry of Tourism in supporting the WISATA project aimed at contributing to economic development through sustainable tourism, creating employment and income to improve the livelihood of the local population. The project has provided support to different destinations across the archipelago including Flores, Tanjung Puting, Toraja and Wakatobi. WISATA supported local Destination Management Organisations (DMOs) through marketing and branding enhancements, business development

opportunities to local SMEs, community involvement, dedicated vocational education and training, and interventions to make the tourism industry more sustainable. Under the WISATA programme, Switzerland supported local governments in improving the environmental sustainability of the sector by raising awareness on environmental risks, such as plastic pollution, and supporting their mitigation.

Vocational education and training

As the country still struggles with a skills mismatch, which requires more investment in human resources in the tourism industry, development co-operation is providing support through vocational education and training in the sector. In 2018, the Swiss State Secretariat for Economic Affairs has joined forces with the Lombok Tourism Polytechnic and launched a training programme aimed to improve the curriculum and teacher qualification. This programme came after another successful experience of collaboration between Switzerland and Indonesia through the WISATA programme, offering support to the education sector, including nine vocational education schools for tourism in four destinations and three higher education institutions in Bandung, Bali, and Makassar.

Development co-operation supported Indonesia's tourism sector also by providing assistance to other key sectors which are strongly interrelated with the industry, including through support to transportation and marine conservation.

In recent years, development partners have committed significant resources to the expansion of Indonesia's connectivity through projects in road transport and maritime transport. In 2017-18, Indonesia has been the world's third largest recipient of concessional finance for the transport sector after India and Bangladesh and received USD 2 billion over the biennium. Approximately 60% of this financing went to develop maritime transport infrastructures.

The example of other countries shows that boosting the tourism sector while protecting the environment, so-called eco-tourism, can be effective and is beneficial to local incomes. In this context, support for the establishment of new MPAs or the maintenance of already existing ones through ODA can greatly benefit the tourism attractiveness of many destinations.

Marine plastics and waste management

Concerns over marine pollution in Indonesia are growing as pollution becomes more visible each year and has increasingly profound effects on economic sectors. Estimates based on 2010 show that in Indonesia 1.3 million tonnes of plastic a year are estimated to enter the ocean, compounded by a rising population and shifting consumption patterns (Jambeck et al., 2015^[98]). The fishing industry is particularly vulnerable to the effects of pollution, but the tourism and shipping sectors too are increasingly facing the economic costs of a more polluted sea (World Bank, 2019^[31]). In this context, the government of Indonesia has set a national target to reduce plastic pollution by 70% by 2025 compared to a baseline of 620 000 tonnes in 2017 (NPAP, 2020^[99]). To achieve this ambitious goal several policy changes will be required as envisaged in the new marine debris action plan. This will include larger investment in waste management infrastructures, improved waste collection and management capacity, and the redirection of consumption patterns away from plastic products and towards non-plastic biodegradable solutions (NPAP, 2020^[99]).

Key trends in marine plastics and waste management

Marine plastics pollution is a growing issue both globally and for Indonesia

Some of the largest impacts of the global surge in plastic pollution are in the ocean. Each year, 300 million tonnes of plastic are produced worldwide and since the 1950s the annual production of plastic has increased 200-fold (LI, TSE and FOK, 2016^[100]). It is estimated that each year between 8 and 12 million tonnes of plastic end up in the ocean, and that 150 million tonnes might already be in the ocean (Ocean Conservancy, 2015^[101]). The vast majority of plastic enters the ocean via rivers, as around 80% of plastic pollution is generated by land-based activities (Eunomia, 2016^[102]). Plastics enter the ocean largely from uncollected waste and 25% is derived from formal municipal solid waste management systems (Ocean Conservancy, 2015^[101]). Littering and dispersal by wind and storms of mismanaged waste are also relevant pathways for how plastic enters the ocean, especially in coastal areas.

Plastic pollution is curtailing the health of marine ecosystems as well as human health. The amount of plastic waste present in Indonesia's waterways has been estimated by the World Bank to be between 20% and 38% of all debris extracted from city waterways (World Bank, 2018^[91]). Plastic pollution in the marine environment has been estimated to cost between USD 3 300 and USD 33 000 per tonne per year (Beaumont et al., 2019^[103]). The issue has attracted increasing attention in recent years and the number of publications on marine debris globally have passed from 1 in 1978 to 579 in 2018 (Purba et al., 2019^[104]), although relatively few of these publications are specific to Indonesia in comparison to other countries in the region such as China (Purba et al., 2019^[104]).

Indonesia lies at the epicentre of a global ocean plastics pandemic. East Asia is the region where waste production is growing fastest, largely due to growing populations, booming economies, and rapidly shifting consumption patterns (Jambeck et al., 2015^[98]). A 2015 study, estimated that more than 50% of plastics in the ocean originated from just five countries in East Asia: China, Indonesia, Viet Nam, Philippines and Thailand (Jambeck et al., 2015^[98]). These estimates, however, do not account for illegal dumping by high income countries or the import and export of waste internationally (Miedzinski, Mazzucato and Ekins, 2019^[105]). Another study that looked at the stock of plastic entering the ocean through rivers showed that between 1.15 and 2.41 million tonnes of plastics flows from the riverine system to the oceans every year (Lebreton et al., 2017^[106]). Out of the 20 top polluting rivers, 4 are in Indonesia and include river Brantas, Solo, Serayu and Progo (Lebreton et al., 2017^[106]).

Solutions for reducing plastic pollution exist that have the potential to reverse this course. For instance, it was estimated that reducing 75% of land-based pollution in the four most polluting countries in East Asia could reduce up to 45% of global waste entering the ocean (Ocean Conservancy, 2015^[101]).

Several factors have been identified as sources of ocean pollution in Indonesia

The lack of adequate waste collection and management systems could be the top factor behind the 0.6 and 1.3 million tonnes of plastics that each year leak into the ocean in Indonesia (Jambeck et al., 2015^[98]).

Average waste collection rates are estimated between 45% and 50% but this share varies significantly. In West Jakarta the share of uncollected waste can be as low as 2% but in other areas it can reach 85% such as in South Tangerang (World Bank, 2018^[91]). Overall, each year approximately 70% of Indonesia's waste, or 4.8 million tonnes, is mismanaged and burned, dumped on land, or leaked into the ocean through waterways (NPAP, 2020^[99]). Currently, no commercial scale incineration or waste-to-energy facilities exist in the country, although several are planned. Whilst incineration can avoid plastic leakage, recycling and

material recovery should be strived for as ultimate goal. To achieve this goal, more investment is needed to replace waste dumps with sanitary landfills, as well as to develop municipal waste sorting and recycling facilities.

Despite a general recognition of the seriousness of the problem, obstacles that slow down progress against reductions in marine pollution remain. A recent World Bank study focusing on 15 cities in western and central Indonesia highlights as the most significant impediments the poor and infrequent access to waste collection, inadequate and often malfunctioning infrastructures to capture waste on waterways, a lack of community awareness on good waste management behaviour, and the lack of financing for the sector, which remains unattractive to private investors and receives insufficient budget allocations (World Bank, 2018^[91]).

Poor access and infrequent waste collection has been identified as a major risk for illegal dumping, eventually contributing to the pollution of waterways (World Bank, 2018^[91]). In particular, when temporary disposal sites are located far from residential areas or when waste management equipment such as bins or trash carts are unavailable, residents tend to dispose of their waste through illegal dumping, burning, or direct disposal in waterways. In areas where temporary disposal sites are not available due to inaccessibility (e.g. along rivers or in coastal areas), residents often tend to create informal temporary disposal sites, which can leak into waterways. Finally, in some areas the frequency of waste collection is low and encourages residents to dispose of their trash in alternative ways. This behaviour has been detected in densely populated areas, like Kali Anak in Surabaya (World Bank, 2018^[91]).

Ocean pollution generates cross-sectoral impacts, undermining the prosperity of several ocean-based industries

In Indonesia, marine pollution has a number of economic repercussions, particularly in the fishery, tourism, and shipping industry.

In a recent report, it was estimated that between 2009 and 2015 the annual cost of marine pollution to APEC economies surged from USD 1.26 billion to USD 10.8 billion (McIlgorm, Raubenheimer and McIlgorm, 2020^[107]), an eight-fold increase over 2009 estimates. For Indonesia, estimates of the direct damage cost from marine debris amounted to USD 458 million in 2015.

While being vulnerable to the negative effects of marine pollution, the fishing industry is also a significant contributor to marine debris through the impacts of the so-called “ghost gears”, i.e. “discarded, lost, or abandoned, fishing gears in the marine environment” (NOAA, 2020^[108]). In areas with intensive fishing activities this phenomenon can be particularly problematic for wildlife (including protected species), the sustainability of fisheries, habitats, as well as for navigational safety.

In the shipping sector marine debris poses a risk for the navigation of recreational, commercial and fishing vessels (Gregory, 2009^[109]). Although no systematic review on the impacts of marine debris on the Indonesian shipping industry has been carried out, insights can be found by looking at regional peers. By evaluating the insurance claims made by ships in APEC economies, it was estimated that marine debris cause an estimated economic cost to the shipping sector of USD 2.9 billion in 2015 (McIlgorm, Raubenheimer and McIlgorm, 2020^[107]). For Indonesia, this estimate stands at USD 22 million.

The impact is estimated to be slightly lower for fisheries, where economic losses due to marine debris in APEC economies reached USD 1.5 billion in 2015 (McIlgorm, Raubenheimer and McIlgorm, 2020^[107]). On

the contrary, for Indonesia impacts in the fisheries sector are estimated to be higher than in the shipping sector, at USD 147 million in 2015.

The fishery sector is also vulnerable to other types of impacts from marine pollution, including threats to the safety of fishery products. In a study conducted in a market of Makassar (South Sulawesi) researchers found traces of plastics in 28% of sampled fish and in 55% of all sampled species (Rochman et al., 2015^[110]). This shows that plastics have already substantially infiltrated food webs through seafood.

Finally, the impacts of mismanaged waste are also quite relevant in the tourism sector. According to some researchers, tourism is the economic sector most affected by marine pollution through the loss of attractiveness of marine and coastal destinations. Aesthetic pollution and beach closures have also occurred due to increasingly frequent garbage crises. In APEC economies, marine pollution was estimated to cause USD 6.4 billion in economic losses in 2015 (McIlgorm, Raubenheimer and McIlgorm, 2020^[107]). The figure for Indonesia stands at USD 290 million.

Policy tools, including regulatory and economic instruments to reduce marine pollution

Indonesia has committed to reduce plastic pollution and new initiatives are conducted at every level of government to achieve the targets

Steps have been taken in the direction of reducing marine pollution, including the recent publication of the National Plastic Action Partnership Action Plan, which details a set of actions to achieve the ambitious objectives to reduce marine pollution by 70% by 2025 and to achieve near zero plastic pollution by 2040 (NPAP, 2020^[99]). To curb marine pollution, the government recognises the need to face upstream issues requiring systemic change in production and consumption patterns, an upgrade of waste collection and waste management systems, as well as a shift in individual behaviours. Improving waste management is given high priority, while efforts towards reducing waste generation and enhancing recycling will be the focus of the following phases. The plan envisages five systemic interventions, including reducing plastic usage, redesigning plastic products and packaging with reuse and recycling in mind, doubling plastic waste collection to 80% by 2025 (currently 15%), and building or expanding safe waste management facilities capable of managing an additional 3.3 million tonnes of plastic waste per year (NPAP, 2020^[99]).

Through Law 18/2008 on Waste Management the government attempted to reduce the amount of waste entering landfills by favouring recycling. One of the programmes launched for the purpose of advancing the reduce, re-use, recycle concept (3R) was the creation of solid waste banks through which people can dispose of their waste in exchange for money (Khair, Rachman and Matsumoto, 2019^[111]). Although an effective system of waste banks could reduce the volume of waste disposed of in landfills (Budihardjo et al., 2019^[112]), the amount of waste managed by 3R facilities is still less than 1% (Lestari and Trihadiningrum, 2019^[113]).

Several cities and provincial governments have pioneered policies, such as the ban on plastic bags or the use of single-use plastic products that, despite being politically costly in the short term, will prove beneficial in the longer term. The popular tourist destination of Bali decided in 2019 to ban single use plastics, aiming at a 70% reduction in plastic waste in the marine environment within a year. In Surabaya, the city government has established the Suroboyo Bus programme, through which passengers can receive bus tickets by disposing of plastic waste at Waste Banks or handing it in to bus drivers themselves (Lestari and Trihadiningrum, 2019^[113]). The city of Jakarta has decided to ban the use of plastic bags in local markets, minimarkets and large supermarkets. The Jakarta Environmental Agency estimated that of the daily 7 700 tonnes of trash disposed of in Jakarta's largest landfill, 34% were plastic bags (Jakarta Post, 2020^[114]). This move came after several similar policies had been implemented in other cities including Bogor (West Java), Denpasar (Bali), Banjarmasin (South Kalimantan), and Balikpapan (East Kalimantan). Questions remain on the capacity of local government to enforce the ban and to resist the political pressures that

could come after such a decision. This decision came after two failed attempts to impose an excise on plastic bags in 2016 and 2018, which were abandoned following opposition from manufacturers.

Some notable challenges to tackling plastic pollution remain

Institutional fragmentation seems to be an obstacle to the emergence of an effective waste management system in the country. Horizontally, governance is fragmented across four line ministries:

- The Ministry of Environment and Forestry supervises policies, regulations and co-ordinates efforts pertaining to pollution control;
- The Ministry of Public Works is in charge of building large waste management facilities and landfills and promoting pilot projects;
- The Coordinating Ministry of Maritime Affairs and Investments is in charge of co-ordinating issues on marine conservation, tourism and shipping; and,
- The Ministry of Home Affairs is in charge of the administrative aspects of waste management.

The actual waste collection and management operations are delegated to different levels of local government, including district and city governments. According to the Waste Management Act (2008), city and district governments hold ultimate responsibility over solid waste management, although this responsibility is often not matched by resources and technical skills (World Bank, 2018^[91]). Moreover, collection and transport of household waste to temporary disposal sites is often entrusted to community organisations. In addition, the informal sector plays a primary role as it collects approximately 15% of total plastic waste or 1 million tonnes each year (NPAP, 2020^[99]). This decentralisation of the collection, transport and disposal process translates into a strong fragmentation of accountability that is hard to identify and, as a result, makes enforcement difficult.

Scarce financing for the waste management sector is slowing down private sector involvement, further aggravating industry inefficiencies. On average only 2.6% of regional expenditure budget is allocated for waste management, which translates into USD 5 per capita per annum against an international benchmark of USD 15/20 per capita (World Bank, 2018^[91]).

The lack of public funding stunts investment in much needed facilities and discourages the involvement of the private sector, which struggles to find value by engaging in waste management projects in the country. A large informal sector of workers dependant on collecting, sorting and selling waste for their income is another element that limits investment in the sector.

Finally, community awareness and changes in waste management behaviours are key aspects in creating an effective waste management system. In the city of Medan, for instance, it was shown local government fees for trash collection act as a deterrent to compliance and encourage illegal dumping (Khair, Rachman and Matsumoto, 2019^[111]). Burning trash along riversides is a common practice in many areas of the country and the unburnt material often leaks into waterways and eventually reaches the sea (World Bank, 2018^[91]). Actions to raise awareness in the population on the correct waste management behaviours and on the direct impacts that mismanaged waste have could help reduce problematic behaviours. In Bali for instance, an assessment study of the Gianyar Waste Recovery Project highlighted that the involvement of local stakeholders can act as a bridge between the community and waste facilities, facilitating the acceptance of new norms and behaviours (Zurbrügg et al., 2012^[115]).

Development finance and co-operation to curb marine pollution

Development finance is small compared to the magnitude of the issue

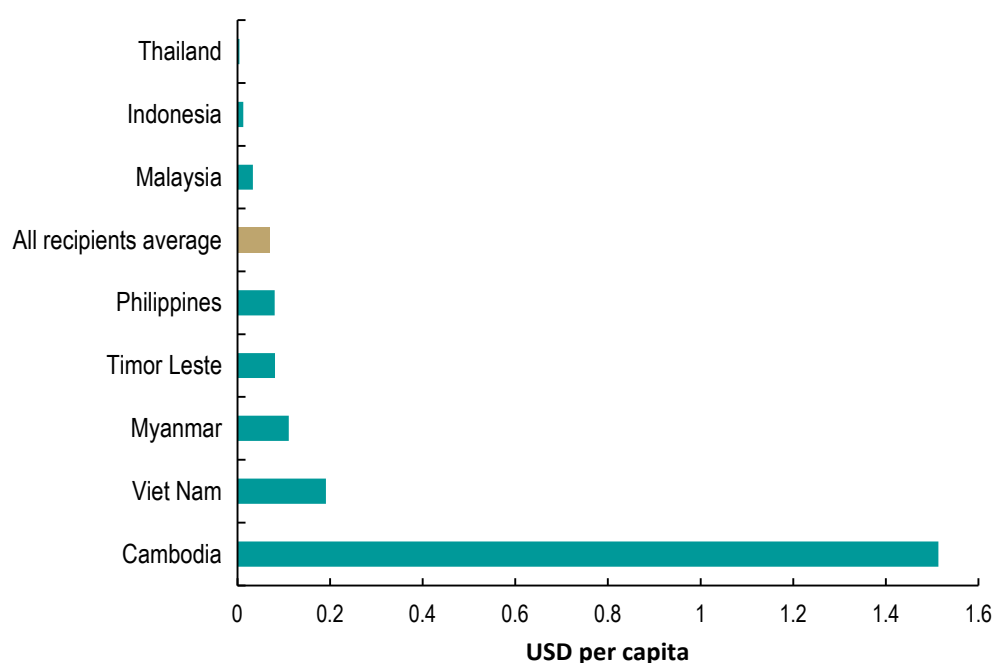
The number of initiative focusing on marine pollution are increasing, and yet Indonesia's waste management and sanitation sector is not particularly targeted by development finance yet.

Between 2013 and 2018, the number of projects reported through the OECD Creditor Reporting System mentioning a focus on marine pollution has increased from less than USD 1 million (2013, 2017 constant prices) to USD 5.8 million (2018). However, despite being a top political priority, ODA to waste management in Indonesia underperforms compared to its regional peers. In 2013-18, ODA directly targeting waste management and disposal amounted to USD 3.3 million a year, approximately 0.1% of total ODA to Indonesia. This is the third smallest share in Southeast Asia, after Timor Leste and Thailand. If all types of land-based pollution including wastewater are considered, in 2013-18 Indonesia received an estimated USD 37.9 million a year to curb ocean pollution from land.

Across ODA recipients, Indonesia ranks 30th out of 134 countries in terms of ODA received for waste management and disposal and 29th when the entire water supply and sanitation sector is considered. In terms of ODA per capita for waste management and disposal, Indonesia ranks below the global average and receives approximately USD 0.01 a year per inhabitant (Figure 3.5).

Figure 3.5. Official development assistance for waste management and disposal

2013-18 annual average



Source: OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

Some development partners are supporting successful projects to improve waste handling and involving the private sector

Some development partners are already active in the country in support of the central government or local municipalities. Norway, in partnership with Systemiq and Borealis, is assisting Indonesia with reducing plastic pollution through its STOP Ocean Plastic Program.

Pioneered in the city of Muncar, East Java, STOP is a project that aims to create sustainable, low cost waste management systems across Indonesia. STOP partners with local governments and offers experts in waste management, investment, plastic recycling, solid waste management, behaviour change, and programme management to enable local communities to gain technical knowledge and initiate their own waste management projects. All profits made from the sale of recycling projects are kept by the local community, which then reinvests them into the project enabling waste management systems to become economically and financially sustainable beyond the launch phase. In 2019, 47 500 people gained access to the waste collection services provided by the facilities set up by the project (Jambeck, Moss and Dubey, 2020^[116]).

The World Bank has also recently launched a USD 4.2 million Multi-Donor Ocean Trust Fund (OMC-MDTF) to support the country's ocean agenda. Among its multiple goals, the fund aims at providing technical assistance in the development of policies aimed at the reduction in marine debris and the improvement of coastal resilience. Currently, Norway and Denmark are the only two donors that have contributed to the fund.

Another relevant initiative that is currently under way is the USAID Clean Cities, Blue Ocean, which aims at combatting ocean plastic pollution by incentivising re-cycling, building capacity and promoting innovation.

Efforts are being made to leverage private sector finance and develop bankable projects in the waste management sector. To mobilise alternative sources of finance, including private sector resources, the United States Agency for International Development (USAID), in partnership with the impact investment firm Circulate Capital, has launched a fund to attract private capital and develop markets in waste management, recycling and other supporting aspects of the circular economy in the Indo-Pacific region.

USAID will use blended finance strategies by providing a USD 35 million, 50% loan-portfolio guarantee with Circulate Capital to improve the risk-return rate for investors and mobilise additional private capital.

At least 50% of the total investment of Circulate Capital will be allocated in Indonesia, Philippines, Viet Nam and Sri Lanka, some of the world's largest contributors to marine plastic pollution. In 2019, the fund attracted USD 100 million in commitments from some of the world's leading businesses. To date, the fund has evaluated 200 projects and the first investments should be made in 2020.

Looking forward, new initiatives on marine pollution could be leveraged to enhance Indonesia's waste management sector

Global efforts to reduce plastic pollution have spurred many international initiatives from development cooperation providers. In 2019, the Asian Development Bank (ADB) launched a USD 5 billion plan for

Healthy Oceans which will focus in particular on pollution control and reduction in land-based sources of marine pollution, including plastics, wastewater and agricultural runoff. In 2018, the European Investment Bank, the Agence Française de Développement (AFD) and KfW launched the Clean Ocean Initiative, with the aim of financing EUR 2 billion in public and private sector projects to reduce ocean pollution by 2023. In 2020, the Italian Cassa Depositi e Prestiti and the Spanish Instituto de Crédito Oficial joined the initiative as new partners. All these initiatives could support Indonesia's central and local governments in their efforts to make the country's waste management systems more effective. The support could take the form of technical assistance, technological cooperation, and grants and concessional loans to build infrastructures and deploy successful projects across the country. Moreover, as the country is looking at the possibility of mobilising additional sources of capital, including private capital, development partners could support Indonesia in exploring blended finance schemes aimed at unlocking investment in innovation at the scale needed to solve Indonesia's problem with waste management.

Marine conservation

Marine conservation is at the heart of a sustainable ocean economy and the social and economic benefits derived from it. As the largest archipelago in the world and one of 17 “megadiverse” countries, Indonesia's natural-resource-based production comprises a significant portion of its economy – one-fifth of value added in 2017 (CBD, 2020^[117]; OECD, 2018^[118]). Indonesia has the largest area of mangroves in the world, accounting for 22.6% of the global total (Giri et al., 2011^[119]). The country's coral reefs alone account for 18% of the world's total (UNEP-WCMC, 2014^[120]). Indonesians depend on ocean biodiversity for both food and livelihoods but the rate at which these resources are used combined with impacts from the changing climate mean that biodiversity is being lost at a rate higher than can be replenished. These changes impact most ocean-based industries, making marine conservation a cross-cutting topic for ensuring sustainability within these sectors. An estimated 40 million Indonesians living in rural areas depend on biodiversity for survival and wetland ecosystems in Indonesia's small islands provide key ecosystem services for local communities, especially fishers (CBD, 2020^[117]). As mentioned above, much of Indonesia's tourism also relies on the country's marine and terrestrial biodiversity.

Key trends in marine conservation

Indonesia has increased its coverage of conservation areas substantially, but still falls short compared to its peers and with respect to targets set under the Convention on Biological Diversity (CBD) to which it is party. Indonesia fulfilled its commitment to establish 10 million hectares of marine protected areas (MPAs) in 2010, which has more than doubled to 22.7 million hectares in 2018 (Marine Conservation Institute, 2020^[121]; Rahman and Haryati, 2019^[122]). However, MPAs comprised only 2.8% of Indonesia's EEZ in 2020 which is significantly lower than the 17.1% average across G20 countries³ and some way short of the 10% stipulated under Aichi target 11 (OECD, 2020^[123]).

Alarming trends in marine biodiversity loss have been recorded both regionally and nationally. Southeast Asia is expected to lose one-third of its mangroves between 2000 and 2050 under a “business as usual” scenario, resulting in losses estimated at USD 2.2 billion annually in 2050 (Brander and Eppink, 2012^[34]).

³ Data are not available for Turkey or the EU and are not included in the average.

The cost of losses in reef-related fisheries in the region is estimated at USD 5.6 billion (annual value in 2050), with Indonesia bearing amongst the highest of these losses (Brander and Eppink, 2012^[34]). Coastal development is a major threat to the country's mangroves, which risk being converted into settlements, roads, ports and other infrastructure. Illegal logging is also a significant threat to maintaining the health of these carbon sinks and natural coastal barriers. In 2006, an estimated 23% of Indonesia's mangroves were damaged, 48% slightly damaged and only 27% remain in good condition (CBD, 2020^[117]). At the same time, an estimated 40% of Indonesia's coral reefs were estimated to be damaged (CBD, 2020^[117]) due to a myriad of reasons such as inappropriate fishing methods, mining, sedimentation, boats and tourism activities (World Bank, 2019^[31]). Unsustainable use of marine ecosystems results in economic costs from lower coastal protection, reduced reproduction in fishery nurseries, and other reductions in ecosystem services.

Policy tools, including regulatory and economic instruments to support marine conservation

The government of Indonesia is committed to establishing 30 million ha of MPAs by 2030. In 2020, there were 196 MPAs managed either by national or local governments. The governance of MPAs in Indonesia is fragmented, further exacerbating a lack of capacity to effectively manage these areas. The Ministry of Maritime Affairs and Fisheries (MMAF) manages the administration of MPAs, which can be established by national, provincial and/or district governments under the country's fisheries and spatial planning laws (Wilson et al., 2011^[124]). This means that MPA governance is shared between the MMAF, the Ministry of Environment and Forestry (MEF) and provincial governments.

Out of the 23,146,374.81 ha of MPAs, Indonesia's MMAF is responsible 23% of them, the Ministry of Environment and Forestry for 20% of them, while provincial governments manage 57% of them (Green et al., 2020^[125]).

The vast majority of individual MPAs, 156 out of 196, is locally managed. In addition to this, local communities have also established 51 Locally Managed Marine Areas, often used to enhance traditional conservation methods, particularly in eastern Indonesia (Green et al., 2020^[125]).

Multiple uses are allowed within Indonesian MPAs through the application of zoning (including "no go", "no-take" and "sustainable use" zones) and management plans (Wilson et al., 2011^[124]). Indonesia's MPAs are designed to conserve biodiversity, but also to ensure sustainable benefits for local communities that depend on coral reefs and coastal habitats. As with all protected areas in Indonesia, terrestrial or marine, significant funding shortfalls place the effectiveness of MPAs into question. Further, as the MMAF remains a relatively new institution without the benefit of long established systems for effective MPA management. In a study conducted in 2012, Burke et al. (2012^[126]) found that out of 175 Indonesian MPAs less than 2% were fully effective in managing fishery pressures, while 34% of them were not effective. Amongst others, inadequate institutional capacity, technical capacity and governance mechanisms have been identified as some of the leading factors that still inhibit effective MPA management in Indonesia (White et al., 2014^[127]).

Indonesia has committed to enhancing MPA management and exploring innovative management and financing models that combine environmental conservation with revenue generation for local communities. Resources available for enforcing, managing and implementing MPAs from the provincial to national levels are insufficient and pose a challenge to demonstrating benefits (Wilson et al., 2011^[124]). Fees are not collected in many MPAs and the MMAF does not have systems in place to collect fees, suggesting that developing such a system could represent an untapped revenue stream. Where fees are collected, they generally do not stay on site but are sent back to head office for redistribution. In Raja Ampat, a long

running collaboration between Conservation International, The Nature Conservancy and the local government has created system whereby tourism revenues generated from MPAs are directly channelled to the BLUD, the regional conservation authority. The BLUD which is an autonomous management authority for a network of MPAs. Entrance fees (or 'green fees') collected from the MPA can then be channelled to the BLUD and spent on the management of the park. Stakeholders suggest, however, that spending these revenues is difficult due to significant administrative hurdles.

While MPAs are the primary form of marine conservation in Indonesia, other established approaches include biodiversity offsets and locally managed marine areas (LMMAs). Indonesia already has several laws in place which make provisions for offsetting the adverse impacts of development, and the law on environmental protection and management provides an overarching legal framework for offsets. Biodiversity offsets, however, are only mandatory for some types of development in forestry concession areas and voluntary in all other circumstances. The lack of mandatory offsetting for coastal developments means that the degradation of valuable ecosystems like mangroves and coral reefs is not properly accounted for. Indonesia has a number of established LMMA systems. One of the better known is a local conservation method that regulates the use of a specific resource called *Sasi*, a traditional fishery management system commonly used in small islands in East Indonesia envisaging the temporary closure of certain marine areas to allow fish and other marine resources to replenish. These methods have increased community awareness for which species are regulated and the value of sustainable managing them. However, they also rely on a sufficient amount of trust in local institutions, which has been undermined by national policies in recent years (LMMA Network, 2016^[128]).

Marine and coastal biodiversity also plays a key role in the blue carbon landscape. Blue carbon is carbon stored in coastal and marine ecosystems. Indonesia has large potential to develop blue carbon as it has the world's largest mangrove area. Indonesia was the first country to receive a certification for blue carbon through the Clean Development Mechanism (Vanderklift et al., 2019^[129]). BAPPENAS has been including blue carbon as one of the sectoral studies under its Low Carbon Development Initiative. Coordinating Ministry for Maritime Affairs and Investments also has an extremely ambitious commitment on 637 000 Ha mangrove restoration within four years. The Ministry of Environmental and Forestry is also in the process of revising its Forest Reference Emission Level (FREL) to include soil carbon, in which the biggest carbon pool is found in blue carbon ecosystem. Since setting up blue carbon projects is quite costly, administratively burdensome and revenue might not cover the set up cost in the short term, there is the need to scope other innovative financing mechanisms to enable and scale up projects.

Development finance and support for marine conservation

Indonesia received USD 78 million (2017 constant prices) in ODA targeting marine environmental protection in 2013-18, or USD 13 million a year. This represents 4.4% of Indonesia's ocean ODA and 51% of the regional ODA for marine environmental protection (Figure 3.6).

ODA for ocean conservation fluctuates considerably in Indonesia and comprises a small part (0.5%) of total ODA to the country. At the same time, development partners have demonstrated an increased attention to resilience and disaster risk reduction in Indonesia, allocating approximately 34% of disaster risk reduction support for coastal areas (USD 100 million in 2013-18). This figure represents a large portion (38%) of all coastal disaster risk reduction provided to the region in 2013-18.

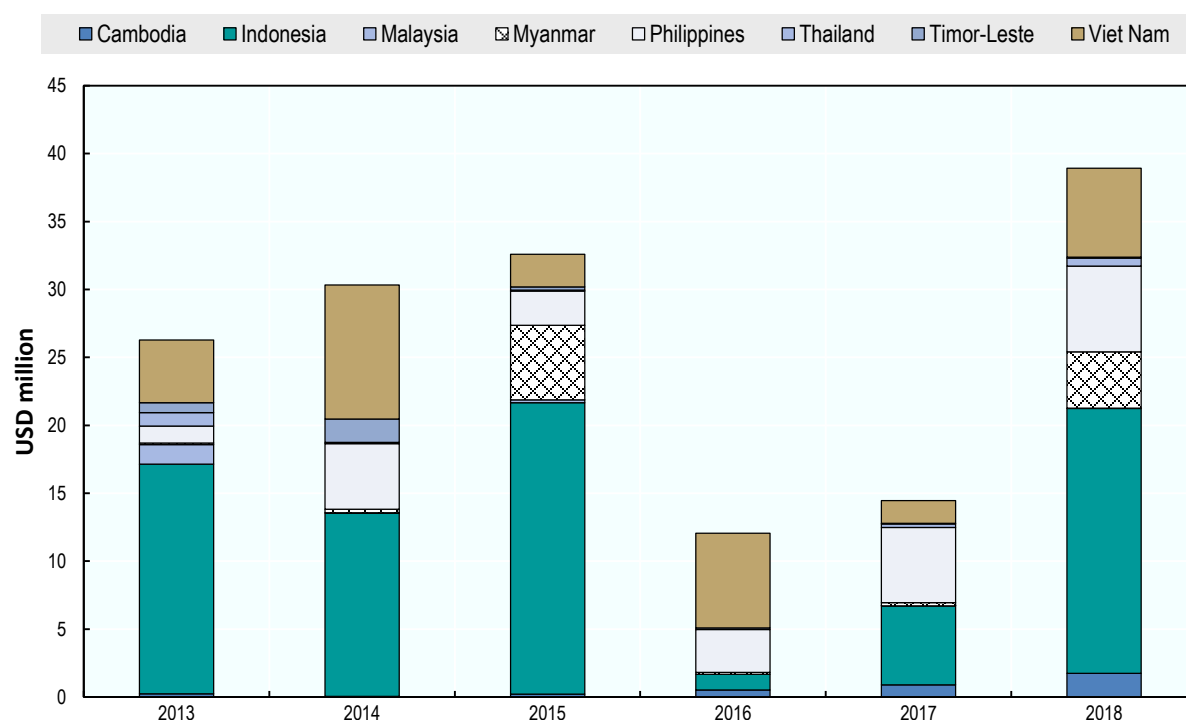
Indonesia's ODA figures indicate scope for increasing support for the conservation of marine resources, including for restoring natural assets such as mangroves and coral reefs that are key to climate change mitigation and thriving ocean-based industries. This includes cross-cutting projects that strive to support

industries such as marine fishing through conservation (Box 3.5). Anthropogenic pressures and climate change are growing stressors for Indonesia's marine and coastal natural assets and have become a pressing concern among policy makers.

Box 3.5. Supporting wildlife biodiversity through marine conservation

Japan has also been engaged since long time in a project for the restoration of mangroves on the island of Bali. Mangroves are recognised as being important to protect shorelines from erosion and to create nursery areas for many fish species and invertebrates. Over the period 1992-2014, the Japan International Cooperation Agency (JICA), in co-operation with the government of Indonesia, implemented a project on the rehabilitation and sustainable management of mangroves in Bali. The project consisted of restoring a total of 253 hectares of mangroves in the islands of Bali and Lombok which had previously been destroyed for fishponds. It also established a Mangrove Information Centre to promote ecotourism and environment education. These rehabilitated mangrove forests provide critical fishery resources like mangrove crabs and fish, amongst other benefits.

Figure 3.6. Across ASEAN countries Indonesia received the largest official development assistance volumes for marine conservation



Note: Marine protection comprises the CRS Sector "General Environmental Protection" and applies an keyword search for ocean-related words
Source: OECD (2020^[64]), Creditor Reporting System (database), <https://stats.oecd.org/Index.aspx?DataSetCode=crs1>

Decreasing fish stocks and loss of marine biodiversity in general highlight the importance of improving conservation efforts in Indonesia. Globally, an estimated USD 300-400 billion is needed every year to preserve healthy terrestrial and marine ecosystems and only USD 52 billion currently supports conservation – indicating a clear need to shift private capital to fill this gap (GEF, 2018^[130]). Conservation can be difficult to finance beyond the use of grants, however, and efforts to use blended finance

approaches for conservation are incipient and largely limited to multilateral institutions with specialised mandates for financing climate or environmental issues. This includes multilateral efforts that enable risk-sharing to successfully finance conservation in Indonesia (Box 3.6). Though the successful mobilisation of private finance toward marine conservation is not yet proven in the country, the inclusion of the Asian Development Bank in supporting marine rehabilitation in the region suggests that public financial institutions recognise the potential returns of conservation efforts in the ocean.

Box 3.6. Multilateral approaches to conservation in the Coral Triangle

The Global Environment Facility has committed to advancing coral reef rehabilitation projects in the framework of the Coral Triangle Initiative (CTI). CTI is a partnership between the Governments of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste, which aims to address crucial issues surrounding coral reefs, fisheries and food security in the transboundary marine area denominated as the “Coral Triangle.” This area contains more than 75% of the known coral species and, thanks to the support of national Governments and development partners such as the GEF, Australia, the United States and the Asian Development Bank, it is becoming a powerful tool in the region’s effort to sustainably manage marine and coastal resources.

There is clear scope for development co-operation to increase support for marine conservation through policy reform, capacity development and innovative financing approaches that increase the effectiveness of Indonesia’s MPAs.

As these regulatory instruments are designed to conserve biodiversity and ensure sustainable benefits for local communities, they play a critical role in enabling a sustainable ocean economy that benefits all. Other effective area-based conservation measures (OECM) such as LMMAs could also be further explored, whether as a subset of MPAs or as a complementary facet. MPA governance in Indonesia is highly fragmented and would benefit from increased capacity and a clearer approach to how the roles of various governmental levels complement one another. An overarching sustainable ocean economy framework aligned with scientific recommendations may also prove beneficial. As development co-operation providers already engage in key areas related to the ocean economy such as fishing, tourism and waste management, there is also a role to align these activities with the conservation and sustainable use of marine ecosystems. The challenge of financing conservation in its own right reiterates the need to integrate the value of conservation into key sectors, as this could be easier to achieve than financing for conservation alone, and the potential for multilateral approaches to innovative financing models.

References

- ADB (2020), *ADB Approves \$1.5 Billion for Indonesia's COVID-19 Response*, [20]
<https://www.adb.org/news/adb-approves-1-5-billion-indonesias-covid-19-response>.
- Afriansyah, A. (2018), "Indonesia's Practice in Combatting Illegal Fishing: 2015–2016", in *Asian Yearbook of International Law*, Brill | Nijhoff, http://dx.doi.org/10.1163/9789004379633_015. [45]
- Bali (2015), *Sustainable Tourism on Bali*, http://www.bali.com/news_Sustainable-Tourism-on-Bali-161.html (accessed on 2019). [90]
- Bappenas (2019), *Indonesia Vision 2045*, Kementerian Perencanaan Pembangunan Nasional, <https://www.bappenas.go.id/id/berita-dan-siaran-pers/jakarta-menteri-ppnkepala-bappenas-bambang-brodjonegoro-berbicara-mengenai-pentingnya-penyelarasan-visi-indonesia-2045-dengan-vi/>. [11]
- Beaumont, N. et al. (2019), "Global ecological, social and economic impacts of marine plastic", [103]
Marine Pollution Bulletin, Vol. 142, pp. 189-195,
<http://dx.doi.org/10.1016/j.marpolbul.2019.03.022>.
- Benge, L. and A. Neef (2018), "Chapter 2 Tourism in Bali at the Interface of Resource Conflicts, Water Crisis and Security Threats", in *The Tourism–Disaster–Conflict Nexus, Community, Environment and Disaster Risk Management*, Emerald Publishing Limited, [85]
<http://dx.doi.org/10.1108/s2040-726220180000019002>.
- Bennett, A. et al. (2018), "Contribution of Fisheries to Food and Nutrition Security: Current Knowledge, Policy and Research", *NI Report*, Vol. 18/02, [74]
https://nicholasinstitute.duke.edu/sites/default/files/publications/contribution_of_fisheries_to_food_and_nutrition_security_0.pdf.
- BIOFIN (2018), *Ecological Fiscal Transfer incentives for Indonesia's local governments*, [60]
<https://www.biodiversityfinance.net/news-and-media/ecological-fiscal-transfer-incentives-indonesias-local-governments>.
- Borie, M. et al. (2014), "Exploring the Contribution of Fiscal Transfers to Protected Area Policy", [62]
Ecology and Society, Vol. 19/1, <http://dx.doi.org/10.5751/es-05716-190109>.
- BPS (2020), *August 2020: Open Unemployment Rate of 7.07 percent*, Badan Pusat Statistik, [22]
<https://www.bps.go.id/pressrelease/2020/11/05/1673/agustus-2020--tingkat-pengangguran-terbuka--tpt--sebesar-7-07-persen.html>.

- BPS (2020), *Statistical Yearbook of Indonesia 2020*, Badan Pusat Statistik, [78]
<https://www.bps.go.id/publication/2020/04/29/e9011b3155d45d70823c141f/statistik-indonesia-2020.html>.
- BPS (2017), *Number of Foreign Tourist Arrivals to Indonesia by Entrance, 1997-2015*, [131]
<https://www.neliti.com/publications/51830/number-of-foreign-tourist-arrivals-to-indonesia-by-entrance-1997-2015>.
- Brander, L. and F. Eppink (2012), *The Economics of Ecosystems and Biodiversity for Southeast Asia (ASEAN TEEB)*, <http://lukebrander.com/wp-content/uploads/2013/07/ASEAN-TEEB-Scoping-Study-Report.pdf>. [34]
- Budihardjo, M. et al. (2019), "The role of waste banks in the reduction of solid waste sent to landfill in Semarang, Central Java, Indonesia", *IOP Conference Series: Earth and Environmental Science*, Vol. 337, p. 012028, <http://dx.doi.org/10.1088/1755-1315/337/1/012028>. [112]
- Burke, L. et al. (2012), *Reefs at Risk Revisited in the Coral Triangle*, World Resources Institute, Washington, D.C., <https://www.wri.org/publication/reefs-risk-revisited-coral-triangle>. [126]
- Cabral, R. et al. (2018), "Rapid and lasting gains from solving illegal fishing", *Nature Ecology & Evolution*, Vol. 2/4, pp. 650-658, <http://dx.doi.org/10.1038/s41559-018-0499-1>. [46]
- CBD (2020), *Indonesia - Main Details*, <https://www.cbd.int/countries/profile/?country=id#facts>. [117]
- CGDEV (2015), *India's Big Climate Move*, <https://www.cgdev.org/blog/indias-big-climate-move>. [58]
- Chatani, K. and C. Ernst (2011), "Fiscal Stimulus Package: Its impact on employment creation", *Key Lessons from the Crisis and Way Forward* International Labour Organisation, pp. 1-9, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/genericdocument/wcms_192374.pdf. [19]
- Costello, C. et al. (2016), "Global fishery prospects under contrasting management regimes", *Proceedings of the National Academy of Sciences*, Vol. 113/18, pp. 5125-5129, <http://dx.doi.org/10.1073/pnas.1520420113>. [77]
- Ebarvia, M. (2016), "Economic assessment of oceans for sustainable Blue Economy development", *Journal of Ocean and Coastal Economics*, Vol. No. 2:7, <https://cbe.miiis.edu/joce/vol2/iss2/7/>. [2]
- Eunomia (2016), *Plastics in the Marine Environment*, Eunomia Research & Consulting, [102]
<http://file:///C:/Users/AGNELL~1/AppData/Local/Temp/Plastics-in-the-Marine-Environment.pdf>.
- FAO (2020), *National Aquaculture Sector Overview*, Food and Agriculture Organization of the United Nations, http://www.fao.org/fishery/countrysector/naso_indonesia/en. [71]
- FAO (2020), *The State of World Fisheries and Aquaculture 2020*, FAO, [69]
<http://dx.doi.org/10.4060/ca9229en>.
- Gamage, R. (2016), "Blue economy in Southeast Asia: Oceans as the new frontier of economic development", *Maritime Affairs: Journal of the National Maritime Foundation of India*, Vol. 12:2, pp. 1-15, <http://dx.doi.org/10.1080/09733159.2016.1244361>. [32]

- GEF (2018), *Conservation Finance*, Global Environment Facility, [130]
https://www.thegef.org/sites/default/files/publications/GEF%20Assembly_ConsevationFinance%20Factsheet_6.19.18.pdf.
- Giri, C. et al. (2011), *Status and distribution of mangrove forests of the world using earth observation satellite data*, Global Ecology and Biogeography, [119]
<http://dx.doi.org/10.1111/j.1466-8238.2010.00584.x>.
- Global Coral Reef Monitoring Network and Reef and Rainforest Research Centre, T. (ed.) [86]
 (2008), *Status of coral reefs of the world: 2008*.
- Global Fishing Watch (2020), *Indonesia VMS*, <https://globalfishingwatch.org/programs/indonesia-vms/>. [47]
- Gokkon, B. (2020), *Indonesia's new deregulation law to hurt small fishers, coastal communities*, Mongabay, [50]
<https://news.mongabay.com/2020/10/indonesias-new-deregulation-law-to-hurt-small-fishers-coastal-communities/>.
- Green, A. et al. (2020), *A Guide, Framework and Example: Designing Marine Protected Areas and Marine Protected Area Networks to Benefit People and Nature in I*, [125]
<https://www.sea-indonesia.org/wp-content/uploads/2017/07/AGuide-Framework-and-Example-in-Designing-MPA.pdf>.
- Gregory, M. (2009), "Environmental implications of plastic debris in marine settings—entanglement, ingestion, smothering, hangers-on, hitch-hiking and alien invasions", *Philosophical Transactions of the Royal Society B: Biological Sciences*, Vol. 364/1526, pp. 2013-2025, [109]
<http://dx.doi.org/10.1098/rstb.2008.0265>.
- Hariyanto, E. (2020), "Potensi dan Strategi Penerbitan Blue Sukuk", *Indonesian Treasury Review Jurnal Perbendaharaan Keuangan Negara dan Kebijakan Publik*, Vol. 5/2, pp. 151-170, [55]
<http://dx.doi.org/10.33105/itrev.v5i2.216>.
- Husrin, S. et al. (2016), "The Mechanisms of Coastal Erosion in Northeast Bali", *Jurnal Segara*, [97]
 Vol. 12/2, <http://dx.doi.org/10.15578/segara.v12i2.7681>.
- Ikrami, H. and L. Bernard (2018), "Indonesia's Maritime Governance", *The Korean Journal of International and Comparative Law*, Vol. 6/2, pp. 134-171, [44]
<http://dx.doi.org/10.1163/22134484-12340110>.
- ILO (2019), *Indonesia's fisheries human rights certification system: assessment, commentary, and recommendations*, International Labour Organisation, [73]
https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_713924.pdf.
- IMF (2020), *Policy Responses to COVID-19*, International Monetary Fund, [18]
<https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#l>.
- IMF (2020), *World Economic Outlook, October 2020: A Long and Difficult Ascent*, International Monetary Fund, [25]
<https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020>.
- Indonesia Ministry of Finance (2019), *Green Sukuk Issuance, Allocation and Impact Report*, [4]
<https://www.sdgphilanthropy.org/system/files/2019-02/Green%20Suku%20Issuance%20-%20Allocation%20and%20Impact%20Report%20.pdf>.

- Indonesia Ministry of Finance (2017), *Green bond and green sukuk framework*, [54]
<https://www.djppr.kemenkeu.go.id/uploads/files/dmodata/in/6Publikasi/Offering%20Circular/ROI%20Green%20Bond%20and%20Green%20Sukuk%20Framework.pdf>.
- INE (ed.) (2019), *Indonesia achieves marine protected area expansion target in 2018*, Antara, [122]
<https://en.antaranews.com/news/135559/indonesia-achieves-marine-protected-area-expansion-target-in-2018>.
- IOC-UNESCO (2020), *Marine spatial planning*, Intergovernmental Oceanographic Commission, [51]
<http://msp.ioc-unesco.org/about/marine-spatial-planning/>.
- IOM (2016), *Report on Human Trafficking, Forced Labour and Fisheries Crime in the Indonesian Fishing Industry*, International Organization for Migration, [72]
<https://www.iom.int/sites/default/files/country/docs/indonesia/Human-Trafficking-Forced-Labour-and-Fisheries-Crime-in-the-Indonesian-Fishing-Industry-IOM.pdf>.
- IPCC (2019), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, The [6]
 Intergovernmental Panel on Climate Change, <https://www.ipcc.ch/srocc/>.
- Jakarta Post (2020), *Jakarta begins new chapter in plastic waste reduction*, [114]
<https://www.thejakartapost.com/news/2020/07/01/jakarta-begins-new-chapter-in-plastic-waste-reduction.html>.
- Jambeck, J. et al. (2015), "Plastic waste inputs from land into the ocean", *Science*, [98]
 Vol. 347/6223, pp. 768-771, <http://dx.doi.org/10.1126/science.1260352>.
- Jambeck, J., E. Moss and B. Dubey (2020), *Leveraging Multi-Target Strategies to Address Plastic Pollution in the Context of an Already Stressed Ocean*, Washington DC: World [116]
 Resources Institute., <https://oceanpanel.org/sites/default/files/2020-06/Addressing%20Ocean%20Pollutants%20Full%20Report%20Final.pdf>.
- Josse, T. et al. (2019), *Marine Spatial Planning: Resolving or entrenching conflicts over and in ocean space?*, Transnational Institute, [52]
https://www.tni.org/files/publication-downloads/msp_en_web.pdf.
- Juwana, S. (2020), *How Indonesia's omnibus bill may impact fisheries compliance and enforcement (commentary)*, Mongabay, [49]
<https://news.mongabay.com/2020/05/how-indonesias-omnibus-bill-may-impact-fisheries-compliance-and-enforcement-commentary/>.
- Kemenko Marves (2020), *Perkembangan Pandemi Virus Corona (COVID-19) di Indonesia*, [17]
 Kementerian Koordinator Bidang Kemaritiman, <https://covid19.maritim.go.id/nasional/>.
- Khair, H., I. Rachman and T. Matsumoto (2019), "Analyzing household waste generation and its composition to expand the solid waste bank program in Indonesia: a case study of Medan City", *Journal of Material Cycles and Waste Management*, Vol. 21/4, pp. 1027-1037, [111]
<http://dx.doi.org/10.1007/s10163-019-00840-6>.
- Kieft, J. and R. Efriyanti (2020), *Fiscal Transfer Incentives in Indonesia*, UN-REDD, [56]
<https://www.un-redd.org/post/fiscal-transfer-incentives-in-indonesia>.
- Konar, M. and H. Ding (2020), *A Sustainable Ocean Economy for 2050 Approximating Its Benefits and Costs*, Secretariat of the High Level Panel for a Sustainable Ocean Economy, [30]
 World Resources Institute, https://oceanpanel.org/sites/default/files/2020-07/Ocean%20Panel_Economic%20Analysis_FINAL.pdf.

- Lebreton, L. et al. (2017), "River plastic emissions to the world's oceans", *Nature Communications*, Vol. 8/1, <http://dx.doi.org/10.1038/ncomms15611>. [106]
- Lestari, P. and Y. Trihadiningrum (2019), "The impact of improper solid waste management to plastic pollution in Indonesian coast and marine environment", *Marine Pollution Bulletin*, Vol. 149, p. 110505, <http://dx.doi.org/10.1016/j.marpolbul.2019.110505>. [113]
- LI, W., H. TSE and L. FOK (2016), "Plastic waste in the marine environment: A review of sources, occurrence and effects", *Science of The Total Environment*, Vol. 566-567, pp. 333-349, <http://dx.doi.org/10.1016/j.scitotenv.2016.05.084>. [100]
- LMMA Network (2016), *Indonesia: Using the LMMA's Learning Network Framework as a Guide to Enhance Sasisen*, The Locally-Managed Marine Area (LMMA) Network, <https://lmmanetwork.org/indonesia-using-the-lmmas-learning-framework-as-a-guide-to-enhance-sasisen/>. [128]
- Marine Conservation Institute (2020), *Atlas of Marine Protection: Indonesia*, <http://www.mpatlas.org/region/country/IDN/>. [121]
- McIlgorm, A., H. Campbell and M. Rule (2011), "The economic cost and control of marine debris damage in the Asia-Pacific region", *Ocean & Coastal Management*, Vol. 54/9, pp. 643-651, <http://dx.doi.org/10.1016/j.ocecoaman.2011.05.007>. [132]
- McIlgorm, A., K. Raubenheimer and D. McIlgorm (2020), *Update of 2009 APEC report on Economic Costs of Marine Debris to APEC Economies. A report to the APEC Ocean and Fisheries Working Group by the Australian National Centre for Ocean Resources and Security (ANCORS)*, University of Wollongong, Australia, <https://www.apec.org/Publications/2020/03/Update-of-2009-APEC-Report-on-Economic-Costs-of-Marine-Debris-to-APEC-Economies>. [107]
- Merchant, A. (2020), *Indonesia - A Hub for Blended Finance in the Asia-Pacific*, Convergence, <https://www.convergence.finance/news-and-events/news/2JxHe7gu4yCImhQa4RFcRy/view>. [68]
- Miedzinski, M., M. Mazzucato and P. Ekins (2019), *A framework for mission-oriented innovation policy roadmapping for the SDGs: The case of plastic-free oceans*. [105]
- Mumbunan, S. (2018), *Dana Alokasi Umum (DAU) untuk Kabupaten Kaya Hutan*, Disampaikan pada Konferensi Transfer Fiskal Kabupaten Kaya Hutan Akademi Ilmu Pengetahuan Indonesia (AIPI), Jakarta, 18 September 2018, <https://komunikecikini.org/wp-content/uploads/2018/10/DAU-Final-Version.pdf>. [59]
- Mumbunan, S., I. Ring and T. Lenk (2012), *Ecological fiscal transfers at the provincial level in Indonesia*, UFZ Discussion Papers, <https://www.econstor.eu/bitstream/10419/55837/1/687842077.pdf>. [57]
- National Geographic (2019), *Bali fights for its beautiful beaches by rethinking waste, plastic trash*, <https://www.nationalgeographic.com/science/2019/10/bali-fights-for-its-beautiful-beaches-by-rethinking-waste-plastic-trash/>. [93]
- NOAA (2020), *What is ghost fishing*, NOAA Marine Debris Program, <https://oceanservice.noaa.gov/facts/ghostfishing.html>. [108]

- NPAP (2020), *Radically Reducing Plastic Pollution in Indonesia: a Multistakeholder Action Plan*, Global Plastic Action Partnership in collaboration with the Indonesia National Plastic Action Partnership, https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April-2020.pdf. [99]
- Nurkholis, D. et al. (2016), "The Economic of Marine Sector in Indonesia", *Aquatic Procedia*, Vol. 7, pp. 181-186, <http://dx.doi.org/10.1016/j.aqpro.2016.07.025>. [35]
- Ocean Conservancy (2015), *Stemming the Tide: Land Based Strategies for a Plastic Free Ocean*, <https://oceanconservancy.org/wp-content/uploads/2017/04/full-report-stemming-the.pdf>. [101]
- OECD (2020), *Creditor Reporting System (database)*, <https://stats.oecd.org/Index.aspx?>. [64]
- OECD (2020), *Fisheries and aquaculture statistics database*, <https://stats.oecd.org/>. [70]
- OECD (2020), *Fisheries, aquaculture and COVID-19: Issues and policy responses*, OECD Policy Responses to Coronavirus (COVID-19), <http://www.oecd.org/coronavirus/policy-responses/fisheries-aquaculture-and-covid-19-issues-and-policy-responses-a2aa15de/>. [27]
- OECD (2020), "How Islamic finance contributes to achieving the Sustainable Development Goals", *OECD Development Policy Papers*, No. 30, OECD Publishing, Paris, <https://dx.doi.org/10.1787/ac1480ca-en>. [53]
- OECD (2020), *OECD Tourism Trends and Policies 2020*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/6b47b985-en>. [79]
- OECD (2020), *Protected areas (indicator)*, <https://dx.doi.org/10.1787/112995ca-en> (accessed on 15 July 2020). [123]
- OECD (2020), *Sustainable Ocean for All: Harnessing the Benefits for Developing Countries*, The Development Dimension, OECD Publishing, Paris, <https://dx.doi.org/10.1787/bede6513-en>. [1]
- OECD (2019), *Experimental Ocean-Based Industry Database*, Directorate for Science, Technology and Innovation. [38]
- OECD (2019), *OECD Green Growth Policy Review of Indonesia 2019*, OECD Environmental Performance Reviews, OECD Publishing, Paris, <https://dx.doi.org/10.1787/1eee39bc-en>. [5]
- OECD (2019), *Social Protection System Review of Indonesia*, OECD Development Pathways, OECD Publishing, Paris, <https://dx.doi.org/10.1787/788e9d71-en>. [16]
- OECD (2018), "Regional income inequality is high in Indonesia", in *OECD Economic Surveys: Indonesia 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-idn-2018-en. [118]
- OECD (2018), *OECD Economic Surveys: Indonesia 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-idn-2018-en. [133]
- OECD (2018), *Tri Hita Karana Roadmap for Blended Finance. Blended Finance & Achieving the Sustainable Development Goals*. [67]
- OECD (2017), *Building Food Security and Managing Risk in Southeast Asia*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264272392-en>. [75]

- OECD (2016), *OECD Economic Surveys: Indonesia 2016*, OECD Publishing, Paris, [24]
https://dx.doi.org/10.1787/eco_surveys-idn-2016-en.
- OECD (2016), *The Ocean Economy in 2030*, OECD Publishing, Paris, [3]
<https://dx.doi.org/10.1787/9789264251724-en>.
- OECD (forthcoming), *Managing tourism development for sustainable and inclusive recovery*. [96]
- OHI (2020), *Ocean Health Index*, <http://www.oceanhealthindex.org/>. [7]
- Ollivaud, P. and P. Haxton (2019), "Making the most of tourism in Indonesia to promote sustainable regional development", *OECD Economics Department Working Papers*, No. 1535, OECD Publishing, Paris, <https://dx.doi.org/10.1787/c73325d9-en>. [39]
- Packard (2018), *Trends in Marine Resources and Fisheries Management in Indonesia. A 2018 review*, <https://www.packard.org/wp-content/uploads/2018/08/Indonesia-Marine-Full-Report-08.07.2018.pdf>. [65]
- Parama, M., D. Fathur Rahman and M. Irfan Gorbiano (2020), *Ministry proposes \$69m stimulus for fisheries, aquaculture*, The Jakarta Post, <https://www.thejakartapost.com/news/2020/05/28/ministry-proposes-69m-stimulus-for-fisheries-aquaculture.html>. [23]
- PEMSEA (2018), *National State of Oceans and Coasts 2018: Blue Economy Growth*, Partnerships in Environmental Management for the. [37]
- PEMSEA (2015), *Blue Economy for Business in East Asia: Towards an Integrated Understanding of Blue Economy*, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), http://www.pemsea.org/sites/default/files/Blue_Economy_for_Business_in_East_Asia.pdf. [33]
- Purba, N. et al. (2019), "Marine debris in Indonesia: A review of research and status", *Marine Pollution Bulletin*, Vol. 146, pp. 134-144, <http://dx.doi.org/10.1016/j.marpolbul.2019.05.057>. [104]
- Raja Ampat Marine Park (2020), *MPA Management Unit*, <https://rajaampatmarinepark.com/mpa-managment-unit/>. [95]
- Republic of Indonesia (2019), *Voluntary National Reviews: Empowering People and Ensuring Inclusiveness and Equality*, High Level Political Forum on Sustainable Development, https://sustainabledevelopment.un.org/content/documents/2380320190708_Final_VNR_2019_Indonesia_Rev3.pdf. [10]
- Republic of Indonesia (2017), *Indonesian Ocean Policy*, https://maritim.go.id/konten/unggah/2017/07/offset_lengkap_KKI_eng-vers.pdf. [43]
- Republic of Indonesia (2014), *Law of the Republic of Indonesia Number 23/2014 about Local Government*, <http://extwprlegs1.fao.org/docs/pdf/ins160168.pdf>. [48]
- Republik Indonesia (2020), *Rencana Pembangunan Jangka Menengah Nasional Tahun 2020-2024*, <https://peraturan.bpk.go.id/Home/Details/131386/perpres-no-18-tahun-2020>. [40]
- Republik Indonesia (2014), *Rencana Pembangunan Jangka Menengah Nasional*, <http://extwprlegs1.fao.org/docs/pdf/ins183392.pdf>. [41]

- Rochman, C. et al. (2015), "Anthropogenic debris in seafood: Plastic debris and fibers from textiles in fish and bivalves sold for human consumption", *Scientific Reports*, Vol. 5/1, <http://dx.doi.org/10.1038/srep14340>. [110]
- Rush, J. (2013), *The Impact of Natural Disasters on Poverty in Indonesia*, University of Hawaii, <https://pdfs.semanticscholar.org/8888/ebd41d4d478caaeb5b762ede0e67eda9174.pdf>. [14]
- Sambhi, N. (2015), "Jokowi's 'Global Maritime Axis' Smooth Sailing or Rocky Seas Ahead?.", *Security Challenges*, Vol. 11/2, pp. 39-56. [42]
- Spalding, M. et al. (2017), "Mapping the global value and distribution of coral reef tourism", *Marine Policy*, Vol. 82, pp. 104-113, <http://dx.doi.org/10.1016/j.marpol.2017.05.014>. [82]
- Suparmoko, M. (2016), "The Role of the Ocean Economy in the National Income Accounts of Indonesia", *Journal of Ocean and Coastal Economics*, Vol. 2/2, <http://dx.doi.org/10.15351/2373-8456.1057>. [36]
- Systemiq (2019), *Bali Governor Announces Initiative to End Ocean Plastic Pollution*, <https://www.systemiq.earth/bali-governor/>. [92]
- TAF (2020), *Mengenalkan Skema Insentif Fiskal Berbasis Ekologi Di Indonesia: TAKE, TAPE DAN TANE*, The Asia Foundation, <https://programsetapak.org/wp-content/uploads/2020/01/Naskah-Kebijakan-EFT-FINAL-1.pdf>. [61]
- Tito, C. and E. Ampou (2020), "Coral reefs ecosystem degradation at Nusa Penida, Bali", *IOP Conference Series: Earth and Environmental Science*, Vol. 429, p. 012053, <http://dx.doi.org/10.1088/1755-1315/429/1/012053>. [89]
- UNDP (2019), *Indonesia Climate Budget Tagging*, United Nations Development Programme, <https://climatefinancenetwork.org/publications/indonesia-climate-change-budget-tagging-2019/>. [63]
- UNEP-WCMC (2014), *Review of corals from Indonesia (coral species subject to EU decisions where identification to genus level is acceptable for trade purposes)*, UNEP-WCMC, Cambridge, [https://ec.europa.eu/environment/cites/pdf/reports/Review%20of%20corals%20from%20Indonesia%20\(public\).pdf](https://ec.europa.eu/environment/cites/pdf/reports/Review%20of%20corals%20from%20Indonesia%20(public).pdf). [120]
- UNWTO (2011), *Tourism Towards 2030 / Global Overview - Advance edition presented at UNWTO 19th General Assembly - 10 October 2011*, World Tourism Organization (UNWTO), <http://dx.doi.org/10.18111/9789284414024>. [81]
- USAID (2019), *National Symposium on Marine Spatial Planning Implementation for Indonesia*, USAID SEA, <https://www.sea-indonesia.org/national-symposium-on-marine-spatial-planning-implementation-for-indonesia/>. [76]
- Vanderklift, M. et al. (2019), "Constraints and opportunities for market-based finance for the restoration and protection of blue carbon ecosystems", *Marine Policy*, Vol. 107, p. 103429, <http://dx.doi.org/10.1016/j.marpol.2019.02.001>. [129]
- Washington, D. (ed.) (2020), *The Ocean Transition: What to Learn from System Transitions.*, <https://oceanpanel.org/sites/default/files/2020-06/The%20Ocean%20Transition%20Full%20Paper.pdf>. [29]

- WEF (2019), *The Travel & Tourism Competitiveness Report 2019*, [88]
http://www3.weforum.org/docs/WEF_TTCR_2019.pdf.
- White, A. et al. (2014), "Marine Protected Areas in the Coral Triangle: Progress, Issues, and Options", *Coastal Management*, Vol. 42/2, pp. 87-106, [127]
<http://dx.doi.org/10.1080/08920753.2014.878177>.
- Wijaya, N. and A. Furqan (2018), "Coastal Tourism and Climate-Related Disasters in an Archipelago Country of Indonesia: Tourists' Perspective", *Procedia Engineering*, Vol. 212, [94]
 pp. 535-542, <http://dx.doi.org/10.1016/j.proeng.2018.01.069>.
- Wilson, J. et al. (2011), *Scientific Design of a Resilient Network of Marine Protected Areas*, [124]
<https://www.conservationgateway.org/Documents/LSE%20MPA%20Design-%2014%20April.pdf>.
- World Bank (2021), *World Bank Open Data*, <https://data.worldbank.org/>. [83]
- World Bank (2020), *East Asia and Pacific in the Time of COVID-19*, World Bank, [26]
<http://dx.doi.org/10.1596/978-1-4648-1565-2>.
- World Bank (2020), *GINI index (World Bank estimate) - Indonesia*, [13]
<https://data.worldbank.org/indicator/SI.POV.GINI?locations=ID>.
- World Bank (2020), *Global Economic Prospects*, World Bank, <http://dx.doi.org/10.1596/978-1-4648-1553-9>. [28]
- World Bank (2020), *Indonesia*, <https://data.worldbank.org/country/indonesia>. [9]
- World Bank (2020), *International tourism, number of arrivals - Indonesia*, World Bank Group, [80]
<https://data.worldbank.org/indicator/ST.INT.ARVL?locations=ID>.
- World Bank (2020), *The World Bank Approves Financing to Support Indonesia's Social Assistance System and COVID-19 Response*, <https://www.worldbank.org/en/news/press-release/2020/05/15/world-bank-approves-financing-to-support-indonesias-social-assistance-system-and-covid-19-coronavirus-response>. [21]
- World Bank (2020), *The World Bank in Indonesia: Overview*, The World Bank, [12]
<https://www.worldbank.org/en/country/indonesia/overview>.
- World Bank (2020), *World Bank Country and Lending Groups*, The World Bank, [8]
<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.
- World Bank (2019), *Indonesia Economic Quarterly: Oceans of Opportunity*, [31]
<https://openknowledge.worldbank.org/handle/10986/31993>.
- World Bank (2018), *Indonesia Marine Debris Hotspot: Rapid Assessment Synthesis Report*, [91]
<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/983771527663689822/indonesia-marine-debris-hotspot-rapid-assessment-synthesis-report>.
- World Bank (forthcoming), *Oceans of opportunity: reforms for a sustainable blue economy in Indonesia*. [84]

- World Ocean Initiative (2020), *Seychelles swaps debt for nature*, The Economist Group, [66]
<https://www.woi.economist.com/seychelles-swaps-debt-for-nature/>.
- Worldometers.info (2020), *Indonesia*, [15]
<https://www.worldometers.info/coronavirus/country/indonesia/>.
- WWF (2020), *Coral Triangle*, [87]
https://wwf.panda.org/discover/knowledge_hub/where_we_work/coraltriangle/?src=footer.
- Zurbrügg, C. et al. (2012), “Determinants of sustainability in solid waste management – The Gianyar Waste Recovery Project in Indonesia”, *Waste Management*, Vol. 32/11, pp. 2126-2133, <http://dx.doi.org/10.1016/j.wasman.2012.01.011>. [115]