

Indonesia's Mangroves for Prosperous Communities and a Healthy Planet

Protecting and restoring Indonesia's mangroves ecosystems help coastal communities, the national economy and the planet.

Indonesia's mangroves are mainly concentrated in¹ Sumatra, Kalimantan and Papua with a total of 2.67 million hectares of healthy mangroves in 2019.²



Indonesia holds **20%** of the world's mangroves (3.31 million hectares)³ and is the most diverse with



92 true mangrove species.⁴



Mangrove ecosystems contribute at least

US\$ 1.5 billion⁵

annually to the national economy by serving as nursery grounds for species that are essential for Indonesia's commercial catch and food security.

Mangroves also provide livelihood for coastal communities, among the most vulnerable population in the country.



Provide shoreline protection from climate-related and other disasters such as storms and tsunamis, and reduce risks from flood, inundation, and erosion. Mangroves protection is estimated to be worth around **US\$ 243 million** annually.⁶



Store significant amount of carbon and mitigate climate change. Mangroves hold around **3.1 billion metric tons of carbon, equivalent to GHG emissions from approximately 2.5 billion passenger vehicles** driven for one year, about five times more, per area, than tropical land-based forests.⁷



¹ Ministry of Environment and Forestry (MoEF), 2014

² MoEF, 2019

³ MoEF, 2019

⁴ Sukarjo & Alongi, 2012

⁵ Ministry of Marine Affairs and Fisheries (MMAF), 2015

⁶ Menendez et al., 2020

⁷ Murtidjarso et al., 2015

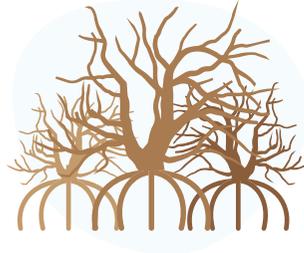
Current Challenges

Yet these assets are threatened by land conversion.

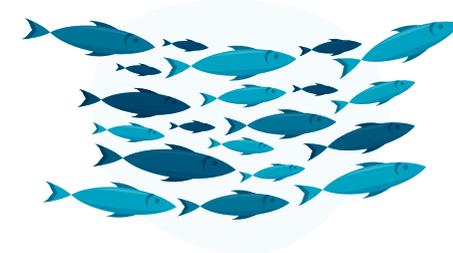


Indonesia loses over
50,000

hectares of mangrove per year (about three quarters of the size of Jakarta).⁸



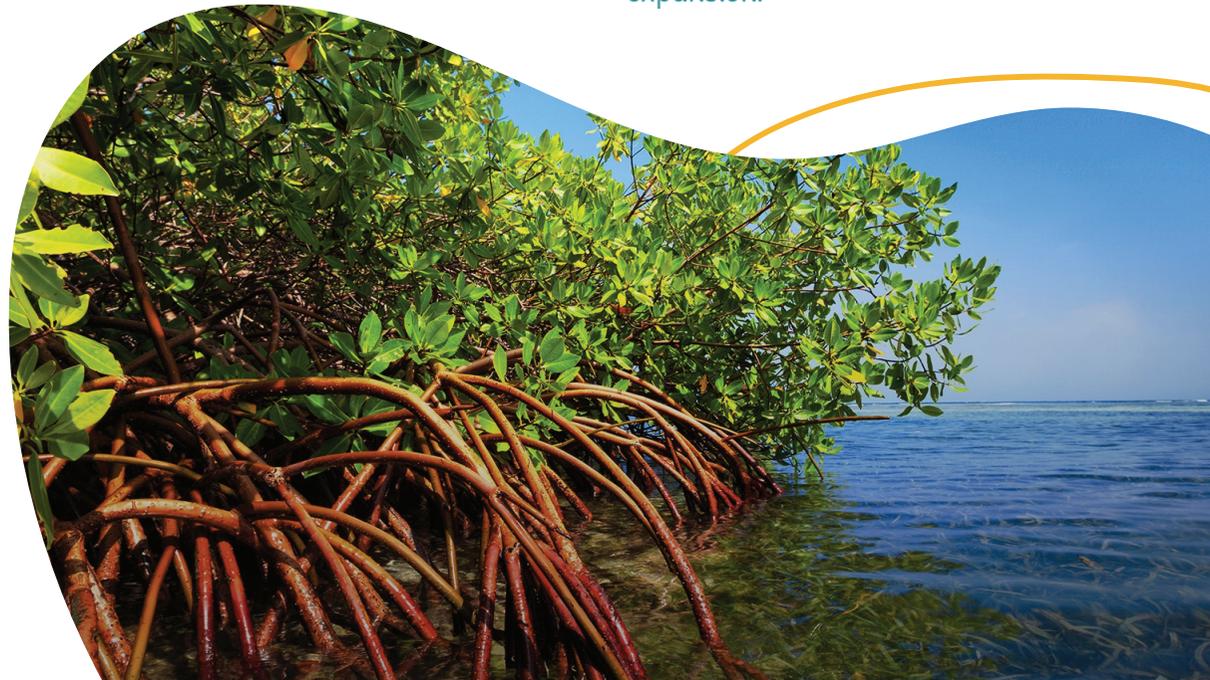
Over **50%**
of existing mangroves are degraded.⁹



Mainly due to clearing for aquaculture accounting for **nearly half** of its removal (concentrated in Kalimantan and Sulawesi),¹⁰ clearing for palm oil contributing a further **16%** (concentrated in Sumatra)¹¹ and coastal development for urban expansion.

With these threats, the urgent need is to **stop further loss of mangroves** and to **manage mangroves sustainably**.

In addition to conservation, Indonesia has committed to restoring degraded mangroves. Indonesia already has ambitious targets to do **large-scale mangrove restoration**. Indonesia is committed to restoring **600,000** hectares of mangrove over four years.¹²



⁸ Adi et al., 2020
⁹ MoEF, 2015

¹⁰ Richards and Friess et al., 2016

¹¹ Richards and Friess et al., 2016

¹² Presidential Regulation No 120/2020 on Peatland and Mangrove Restoration Agency

How Can We Protect Mangroves Better?

Investment and Policy Recommendations

Stop further loss of mangroves



Prevent further conversion with proper implementation of spatial planning, marine protected areas.

Scale-up restoration projects



Scale-up restoration projects through community engagement and partnership with the private sector.

Monitor and report on mangroves and calculate their value



Use latest spatial mapping technology to monitor and report on mangrove cover and field data to monitor their conditions (biodiversity, hydrology parameters, etc.)



Assess the monetary value of mangroves through natural capital account so that mangroves are properly considered in decision making.

Strengthen institutional coordination



Proper institutional coordination by clarifying roles, institutional arrangements, and ensuring policies and mandates are aligned and enabling efficient coordination on mangrove management.

Involve communities



Meaningful participation of the community for better informed decisions and approaches on restoration and livelihoods. Communities can benefit from mangroves through tourism, silvo-aquaculture or sustainable use of mangrove fruits such as honey and fruits.

Leverage innovative financial solutions



Sustainable financing for mangrove restoration projects to prevent future mangrove conversion through management plans and regulations.



Innovative financial mechanisms such as carbon trade for blue carbon (carbon stored in mangrove), flood insurance schemes, payment for ecosystem services (carbon stored in mangroves) by private sectors, and other performance-based mechanisms such as carbon funds can offset costs and provide additional income for communities.

World Bank's engagement leads to successful mangrove management, including reduction in losses and restoration of degraded areas.

World Bank has been supporting Indonesia in mangroves management through the Oceans MDTF and the COREMAP Project. These efforts are laying the groundwork for successful mangrove management, including the development of the mangrove health index through COREMAP, and studies on natural capital accounting and valuation, private sector financing, marine spatial planning, strengthening of traditional fisheries governance systems and livelihood programs, and social support options for addressing poverty and vulnerability.

As part of the COREMAP-CTI, the Indonesian Institute of Sciences (LIPI) developed web-based and android-based technology to monitor and collect community data on mangrove (citizen science). The data is used to enhance the Mangrove Health Index.

World Bank is now preparing the Oceans for Prosperity project to enhance mangrove management and scale-up mangrove restoration.



For more information: Kus Prisetiahi, Assistant Deputy for Climate Change and Disaster Management, Ministry of Maritime and Investment Affairs | kus.prisetiahi@maritim.go.id

Andre Aquino, Senior Environmental Specialist, World Bank | adeaquino@worldbank.org