

Blue Carbon Ecosystems

in Asia and the Pacific

Asia and the Pacific and Nature-Based Solutions (NbS)

Asia and the Pacific contributes to **>30%** of global nature-based credits



However, NbS remained restricted with a predominant focus on terrestrial ecosystems.

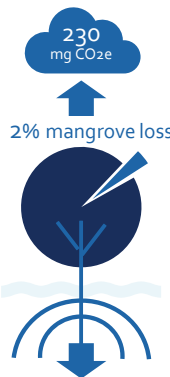
Opportunities & benefits of Blue Carbon

Globally coastal ecosystems remove **300 - 900 million** metric tons of CO₂ annually.



These ecosystems also provide critical ecosystem services to coastal communities, fisheries, and other sectors.

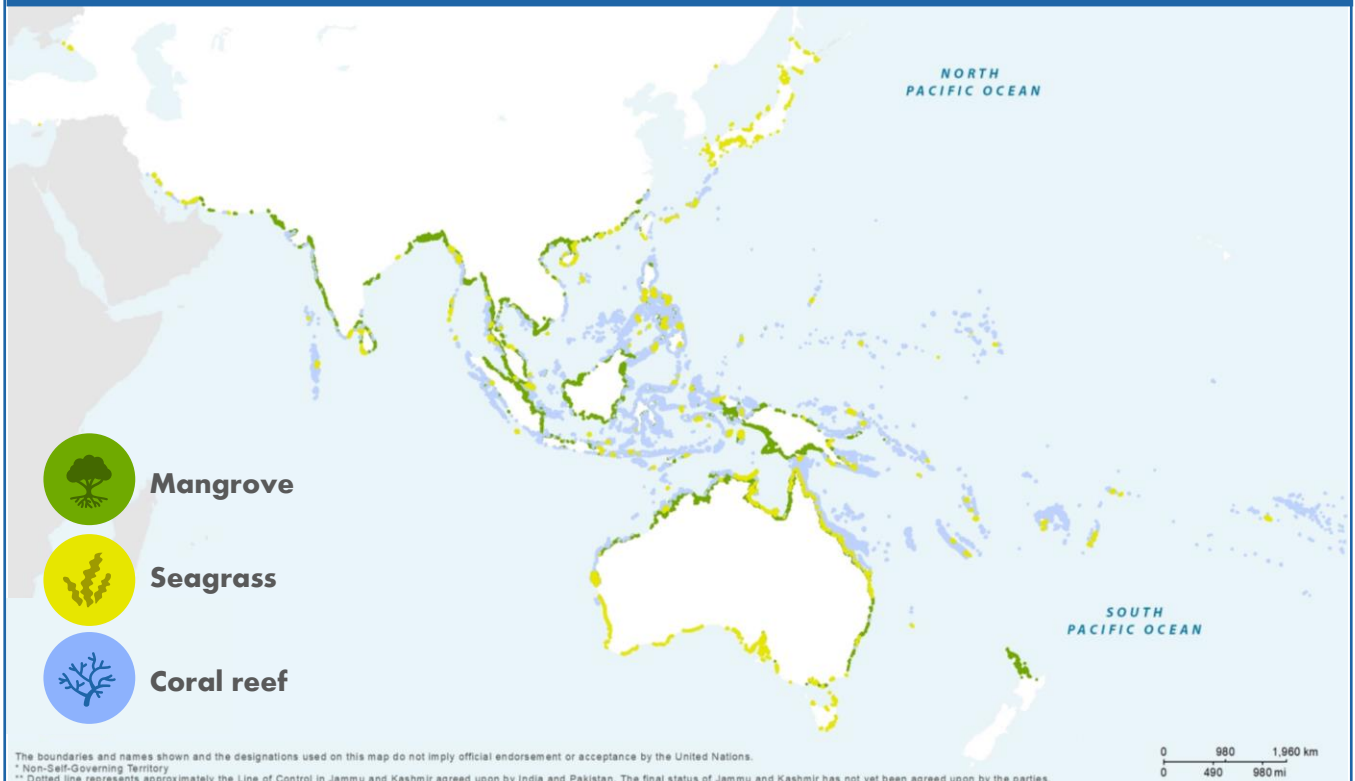
Consequences of overlooking Blue Carbon



The loss of **2%** of mangroves in Asia and the Pacific, could lead to the emission of **230 megatons** of CO₂e from the stored carbon in mangroves.

Overlooking blue carbon ecosystems may result in the **underestimation of GHG sinks** and **inaccurate reporting of GHG emissions** at the national level.

Spatial distribution of coastal ecosystems (mangrove, coral reef, and seagrass) in Asia-Pacific



Mangrove



Seagrass

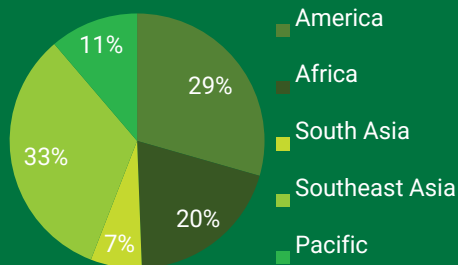


Coral reef

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
* Non-Self-Governing Territory
** Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

MANGROVES

51% of global mangroves can be found in the Asia-Pacific region



1.5 trillion USD value of ecosystem services are generated by mangroves annually in the region

equivalent to the 14th world's biggest economy

Benefits of mangroves



Store **3-4 times** more carbon than other forested environments



Home to a **rich fauna**, including 341 global threatened species



80% of small-scale fishers rely on mangroves in many countries

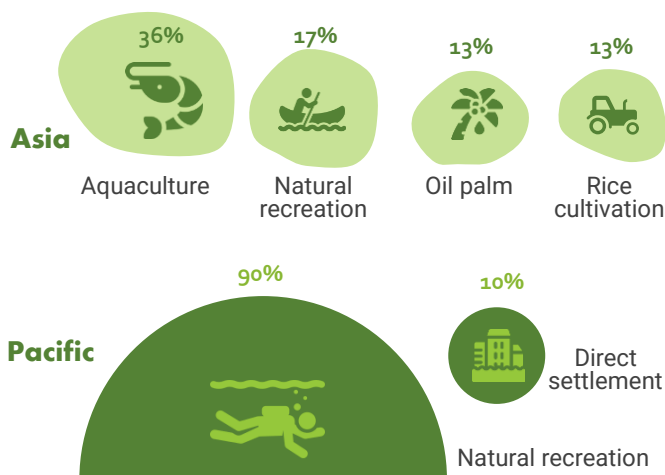


Prevent over **\$65 billion** annual property damages

Mangrove cover is declining fastest in the Asia-Pacific region among all global regions

63% of global losses in mangrove are in Asia and the Pacific since 1996. The rate of loss has decreased in the past decade.

Drivers of mangrove loss (% = relative importance)



The Asia-Pacific was responsible for 70% of the global net loss of carbon stored in mangrove forests in the last 25 years



Net gain: **314 Mt CO₂e**

Top net gain countries:

- 1st: Bangladesh
- 2nd: Philippines

88% of mangroves under protection



Net loss: **616 Mt CO₂e**

Top net loss countries:

- 1st: Indonesia
- 2nd: Australia

Only 25% of mangroves under protection

Protecting another **40%** of existing mangroves in the Asia-Pacific region by 2030 can contain potential emissions of **4.65 Gt CO₂e** and help ensure commercial fish productivity worth **143-183 billion USD** annually

CORAL REEFS

77%



of global coral reefs were found in the Asia-Pacific region in 2019

Coral reefs provide

7.1 trillion USD value of ecosystem services annually in Asia and the Pacific

equivalent to the GDP of Japan and France combined (2022)

25%

of all known global marine species' habitat

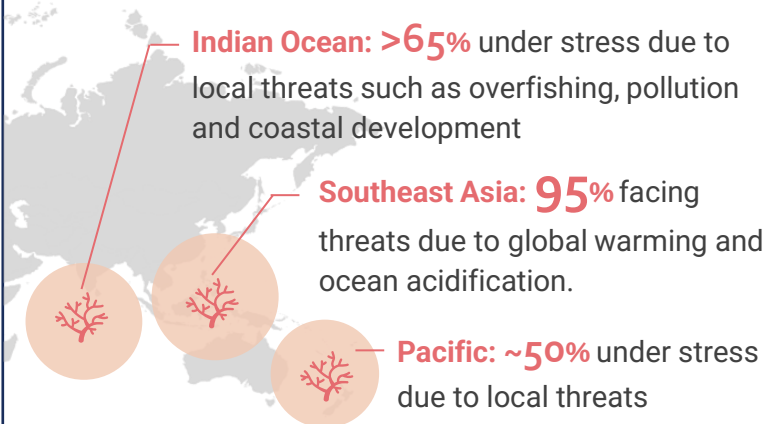
Net carbon sinks



Nearly **1/4** of coral reef cover in Asia and the Pacific has declined in the last 15 years

The annual rate of coral loss accelerated from **3.4%** to **18.7%** over the past decades in Asia and the Pacific

Drivers of coral reef loss:



Global warming and ocean acidification are major drivers of widespread coral bleaching and harm reefs' ability to store carbon

By 2050, in Asia and the Pacific"

RCP 4.5 emission scenario:

50% of coral reefs will experience 10X annual bleaching

RCP 8.5 emission scenario:

85% of coral reefs will experience 10X annual bleaching

Urgent recovery plans are essential to protect the coral reefs in Asia and the Pacific

By 2030, **60%** of coral reefs in the Asia-Pacific region will be **at risk** of combined local and global pressures.

Conserving and restoring these high-risk coral reefs could ensure ecosystem services of

4.1 trillion USD by 2030 (from 11.5 mil ha of coral reefs)

5.1 trillion USD by 2050 (from 14.6 mil ha of coral reefs)



Safeguard coral reef ecosystems:

- ✓ monitoring efforts aimed at mitigating local human-induced pressures, land-based & marine pollution, overfishing, and destructive fishing practices
- ✓ addressing global climate change, including ocean acidification

SEAGRASSES

1/4 of world's seagrass meadows can be found in the Asia-Pacific region

2.1Gt carbon are stored in the seagrass meadows in the region

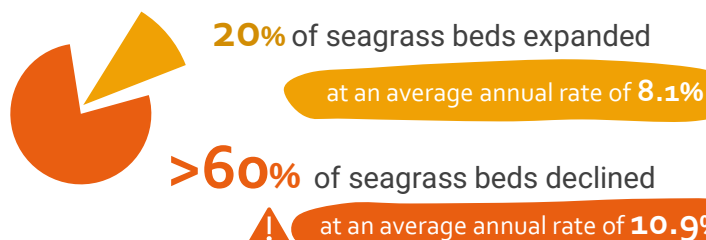
Seagrass meadows can store up **40** times more carbon than land-based forests

432 billion USD value of ecosystem services are generated by seagrasses annually in the region

Natural buffer against coastal erosion caused by storms and other climate impacts

Oceania and Southeast Asia faced significant seagrass losses

In Southeast Asia, over the past two decades:



In Viet Nam & the Philippines, the rate of decline is over **20%**

Drivers of seagrass degradation



Coastal development



Fisheries



Aquaculture



Extreme climate events

Seagrass beds offer significant carbon storage benefits & can release substantial carbon dioxide when disturbed

~0.15Pg of CO₂ is emitted annually from disturbed seagrass ecosystems globally

equivalent to **3%** of the annual global CO₂ emissions from deforestation.

Half of these emissions come from seagrass disturbance in **Asia and the Pacific**

Way forward:

- ✓ Encouraging carbon credit markets for seagrass preservation
- ✓ A systematic assessment of ecosystem services and coastal habitats is necessary to guide effective conservation and management efforts in the Asia-Pacific region.