INDONESIA CORAL REEF RISK AND RESILIENCE

Within the management of MPAs and Ocean

Firdaus Agung

Directorate for Marine Conservation and Biodiversity

Jakarta, 28 Februari 2024

Unfair protection

Risks Caused by Human and Nature

Merdeka.com

Pulihkan Terumbu Karang Akibat Kapal Kandas, Balai Karimunjawa Gelontorkan Rp3,5 Miliar

Pemulihan terumbu karang dikerjakan seluas 3.817 meter persegi yang sebarannya ada di tujuh perairan.

12 Dec 2023

Tribunpapuabarat.com

KDC Manokwari Siap Bawa Kasus Kerusakan Terumbu Karang Teluk Doreri ke Meja Hijau

TRIBUNPAPUABARAT.COM, MANOKWARI – Komunitas Menyelam Ketapang atau Ketapang Dive Community (KDC) mendorong perusahaan pemilik Kapal Mitra...

19 Sept 2023

detikcom

Kapal Kargo Inggris Kandas di Daerah Konservasi Raja Ampat, Tim Ahli Selidiki

Kapal kargo berbendera Inggris, Indian Patnership London ternyata kandas di daerah konservasi Perairan Misool, Kabupaten Raja Ampat,...

26 Apr 2023

Kompas.id

Lambatnya Penanganan Tumpahan Aspal Nias Utara Bisa Sebabkan Kerusakan Lingkungan Permanen

Tumpahan aspal dari kapal kandas bermuatan 3.595 ton aspal tidak hanya mencemari pantai. Aspal mencemari padang lamun hingga terumbu karang...

15 Mar 2023

Kapal Kandas di Selat Alas Lombok NTB, Terumbu Karang Rusak 1.900 Meter Persegi

TEMPO.CO, Jakarta - Sebuah kapal feri kandas di perairan Selat Alas bagian utara, Kabupaten Lombok Timur, Nusa Tenggara Barat (NTB).

17 Oct 2021

CNN Indonesia

Kapal Iran Disebut Kandas Bukan di Area Terumbu Karang Batam

Lokasi kandasnya kapal berbendera Iran, MV Shahraz, di Perairan Batu Berhenti, Batam, disebut bukan area terumbu karang.

11 Jun 2020

Kompas.com

Kapal Kandas di Pulau Pari, Terumbu Karang 1,000 Meter Persegi Rusak

'Berdasarkan investigasi kapal, sementara ada sekitar 51 x 20 meter terumbu karang yang mengalami kerusakan,' kata Wahyu kepada wartawan,...

8 May 2018

- Examples on ship accident – very useful to see trend, frequency, and cost
- Only 10% of ship routes have been designated by the Ministry of Transportation

Risks caused by….

Analysis of the mapping model shows that chlorophyll levels are the biggest factor, 57.5 percent, compared to temperature which is only 6.1 percent in determining the optimal area for coral reefs in 2050

Dr. Hedi Indra Januar
Peneliti
Periset Bidang Ekologi Perairan pada Pusat Riset Ekologi dan Etnobiologi BRIN

Kompas.com

Modeling predictions show that coastal pollution could be a much more significant factor than climate change

Risks caused by...

A rapid survey was carried out at 19 locations around the areas of Kupang City, Kupang Regency and Rote Ndao Regency after the Seroja Cyclone event in 2021.

Tropical Cyclone Seroja caused considerable damage to coral reefs, although it was not evenly distributed in all places.

- **Tropical cyclones** in the southern waters of Indonesia will **have a greater impact on the southern coastal areas of Java, Bali and Nusa Tenggara**, compared to the eastern coast of Sumatra or the coast of Kalimantan.
- Meanwhile, **tropical cyclones in northern Indonesia** will cause heavier rain **around Sulawesi and Kalimantan** so that the disasters caused by each region will also be different.

Dr. Emilya Nurjani, S.Si., M.Si

https://ugm.ac.id/id/berita/20962-potensi-bencana-siklon-tinggi-sosialisasi-bencana-perlu-digalakkan/

Resilience of Coral Reef

Threat Addressed	Example Interventions
Fishing impacts	Marine reserves, fishing gear modifications, size and catch limits, limits on industrial fishing, outreach and education, rights-based management.
Non-point source pollution	Ridge to reef protected areas, best practice land use management, catchment restoration, strengthening of environmental laws, capacity strengthening for legal action, plastic recycling schemes.
Wastewater pollution	Wastewater treatment infrastructure, protection of coastal vegetation for natural filtration, strengthening environmental laws, capacity strengthening for legal action, cross-sectoral collaboration.
Coastal development	Eco-engineering of infrastructure, best practice management for dredging, ballast water treatment facilities, marine biodiversity offset policies, capacity strengthening for legal action.
Climatic stress	Protection of herbivores, climate-smart marine spatial planning, reef resto-ration with climate-smart corals, assisted evolution, adoption of climate change policies, outreach and education.

Source: 50reefs.org

- 17 sites or 34% of total BCUs are in Indonesia.
- Major threats are mostly from human activities.
- Coral reefs may survive form ocean warming but will not survive from human.

Study on coral reef damage - Sulsel

Stasiun	Tipe Karang Mati	Kategori	Tutupan (%)		Perkiraan Penyebab Dominan
			3 m	10 m	
1	*Dead Coral*	DC	0	12,38	Pemanasan Global
	Dead Coral Algae	DCA	14,87	24,97	Bius, penyakit
	Rubble	R	47,93	10,14	Wisata, Bom ikan,
2	*Dead Coral*	DC	0,73	12,38	Pemanasan Global
	Dead Coral Algae	DCA	33,8	0,20	Bius, penyakit
	Rubble	R	11,67	10,14	Wisata, Bom ikan,
3	*Dead Coral*	DC	0,07	0	Pemanasan Global
	Dead Coral Algae	DCA	23	3,67	Bius, penyakit
	Rubble	R	20,47	44,47	Wisata, Bom ikan,
4	*Dead Coral*	DC	0,07	1,33	Pemanasan Global
	Dead Coral Algae	DCA	5,93	5,67	Bius, penyakit
	Rubble	R	32,87	16,8	Wisata, Bom ikan,
5	*Dead Coral*	DC	0	2,2	Pemanasan Global
	Dead Coral Algae	DCA	2,87	4,67	Bius, penyakit
	Rubble	R	13,07	5,73	Jangkar Perahu, Wisata

Website: http://fpk.jtam.unlam.ac.id/index.php/mcsij/

CORAL REEF PROTECTION WITHIN CURRENT AND FUTURE MPAs

GOAL

30% MPA

by 2045

MPAs that support the sustainability of **fish stocks, protects blue carbon ecosystem and protects coastal ecosystems** and small islands for community welfare in 2045.

CURRENT PROTECTION

Fisheries

Protect spawning areas

Reduce fisheries pressures

Carbon Sequestration

Seagrass
- 1.8% inside MPA

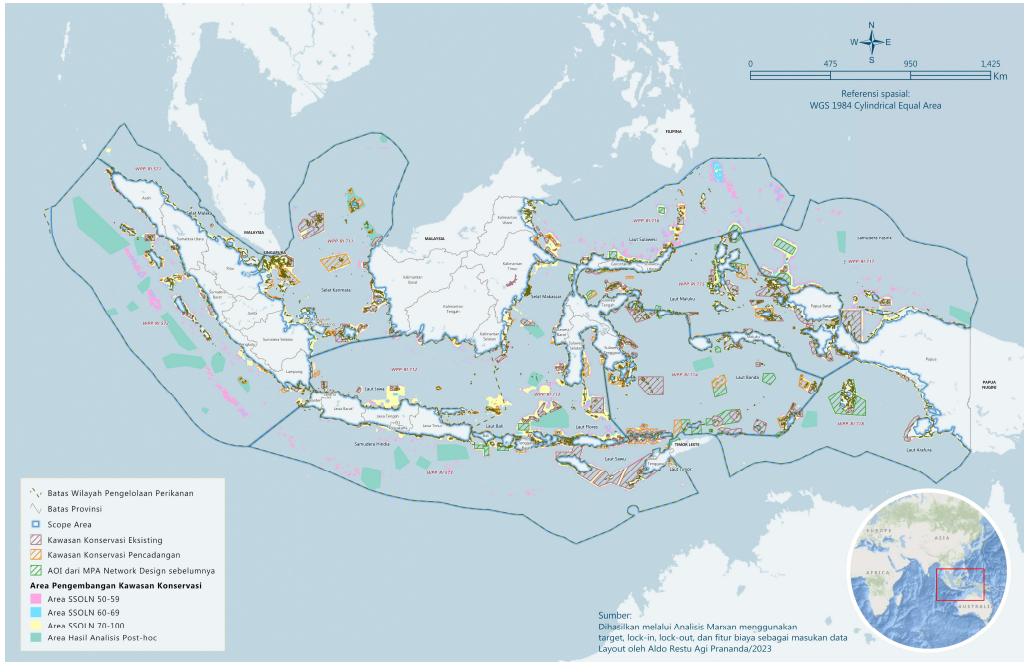
Mangrove
- 6.1% inside MPA

Major Ecosystem

Corals
- Extent: 2.5 mil ha
- MPA: 1.1 mil ha (44%)

Seagrass
- Extent: 3 mil ha
- MPA: 54 ths ha (1.8%)

Mangrove (Nonforest area)
- Extent: 1.1 mil ha
- MPA: 72.25 ths ha (6.1%)



STRATEGIES

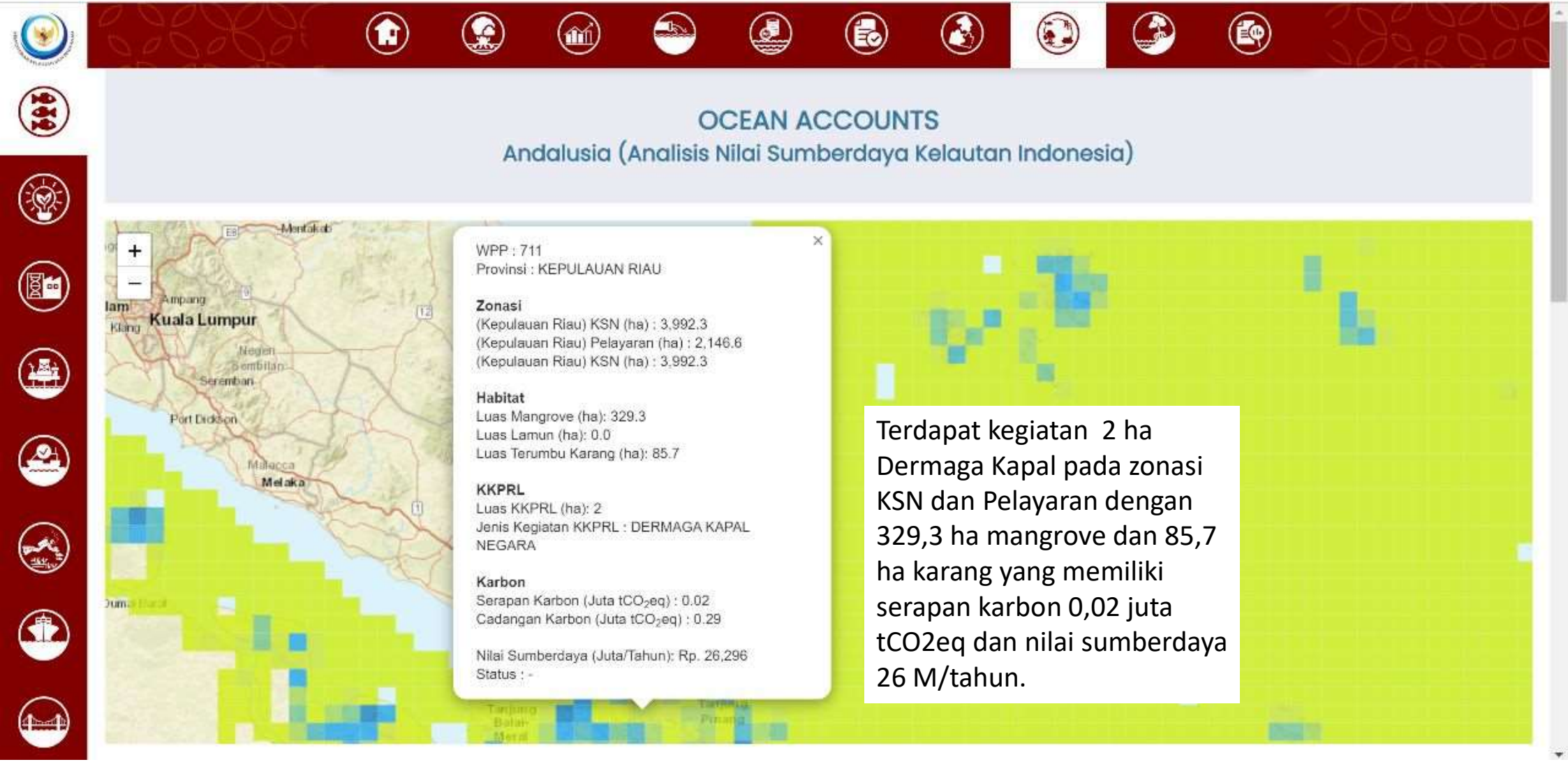
- 10 - 30% protection of fish spawning and nursery areas in each FMA
- 30% carbon stock protection (mangrove and seagrass)
- Strengthening of management institutions
- Sustainable Funding

TARGET

97,5 mil ha

- Different level of restriction
- Different management and authority level
- Different conservation targets

Ocean Accounting to Support Coral Reef Management



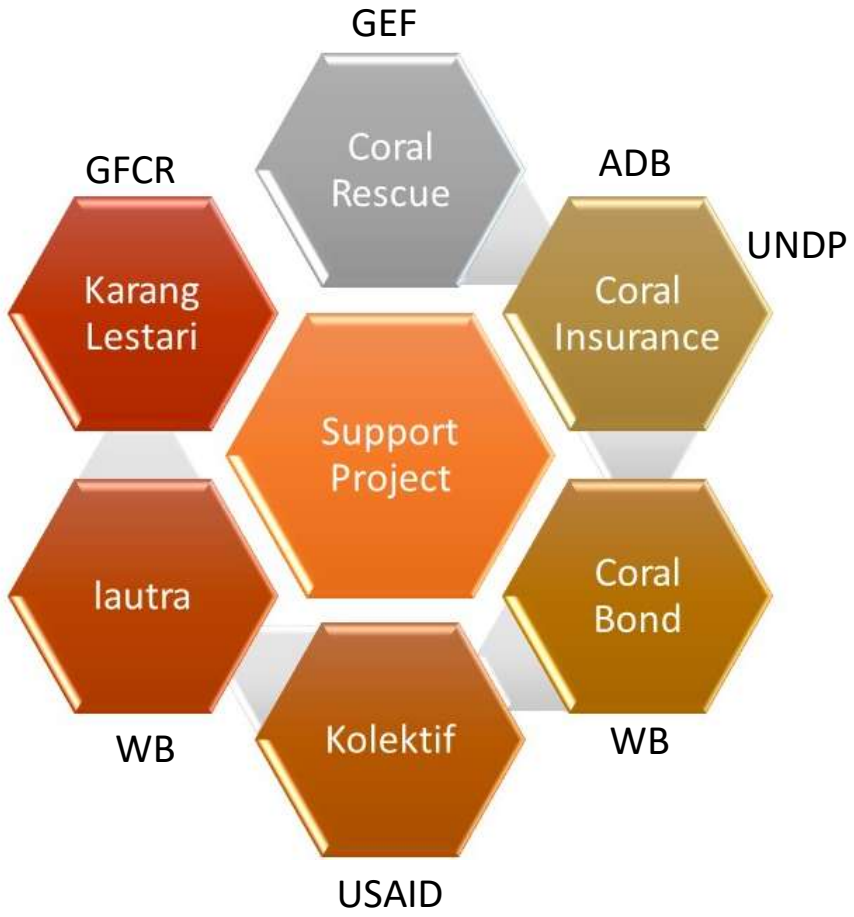
Terdapat kegiatan 2 ha Dermaga Kapal pada zonasi KSN dan Pelayaran dengan 329,3 ha mangrove dan 85,7 ha karang yang memiliki serapan karbon 0,02 juta tCO2eq dan nilai sumberdaya 26 M/tahun.

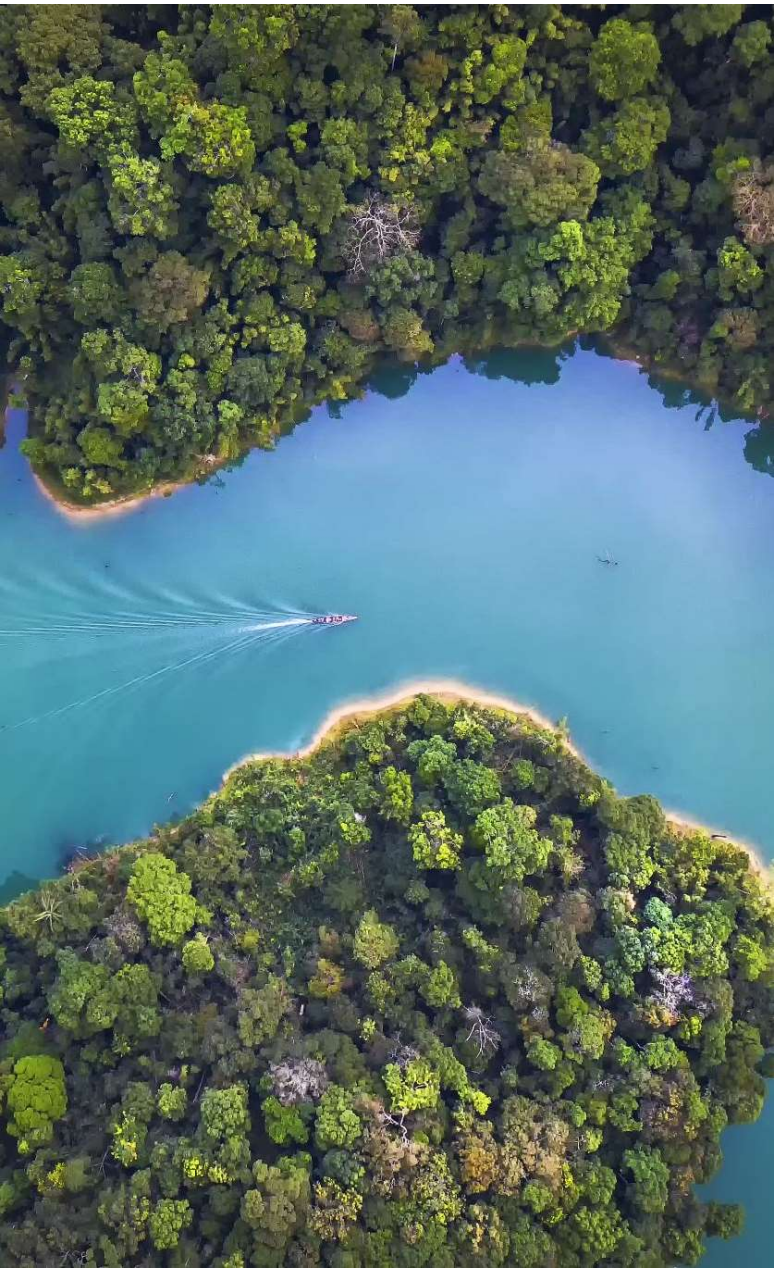
Coral Reef Conservation Funding Opportunity and Challenges

Scheme	Potential	Challenges/Stage
Biodiversity offset	Big	• Needs more detailed and operational setting for operationalization of PP 46/2017 regarding the internalization of environmental costs
Bioprospecting	Big	• Using Access and Benefit Sharing (ABS) under Protocol Nagoya • Mostly still under R & D
Concession	Big	Need regulation support for MPA
Funding Donor, CSR, Crowd funding	Big	Not connected and difficult to pool in one place
Debt for nature swap	Medium	Depend on bilateral agreement
Risk insurance	Medium – Big	Perlu pengaturan lebih detail dan operasional
Ecological fiscal transfer	Medium	MMAF is preparing the fiscal transfer for local government to support conservation program
Environmental trust fund	Big	• Blue Abadi Fund, ICCTF, BPDLH • MMAF is working with BPDLH to establish *window financing marine conservation*
Coral bond	Big	Under preparation with MMAF, Bappenas, and WB
Payment for environmental services	Medium – Big	• Still limited for entrance fee of MPAs

Potential Benefit and Synergy with Other Initiatives

- Address the government's fiscal burden to fund coral damage restoration activities.
- An affordable means of risk sharing to protect coral reefs from potential threats.
- Collaboration of government, development partners and the private sector to enable significant cost savings.
- An opportunity for Indonesia to implement innovative solutions to protect coral reefs, especially in the Coral Triangle region.





What should be addressed

- Map the scope of regulation and authority for coral reef management between the Government and provincial governments.
- Anticipate and prepare strategies related to the nature of coral reefs which are still a common property resource.
- A reasonable premium amount and who will pay it
- Ensure the readiness of regulations, institutions, human resources and guidelines for risk assessment procedures.

KEMENTERIAN KELAUTAN DAN PERIKANAN

Terima Kasih