MANAGEMENT POLICIES OF MANGROVE ECOSYSTEM

by:

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REPUBLIC OF INDONESIA

INTERNASIONAL CONFERENCE ON SUSTAINABLE MANGROVE ECOSYSTEM, BALI 2017

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MANGROVE

FUNCTION, BENEFIT AND DISTRIBUTION

Mangrove Function

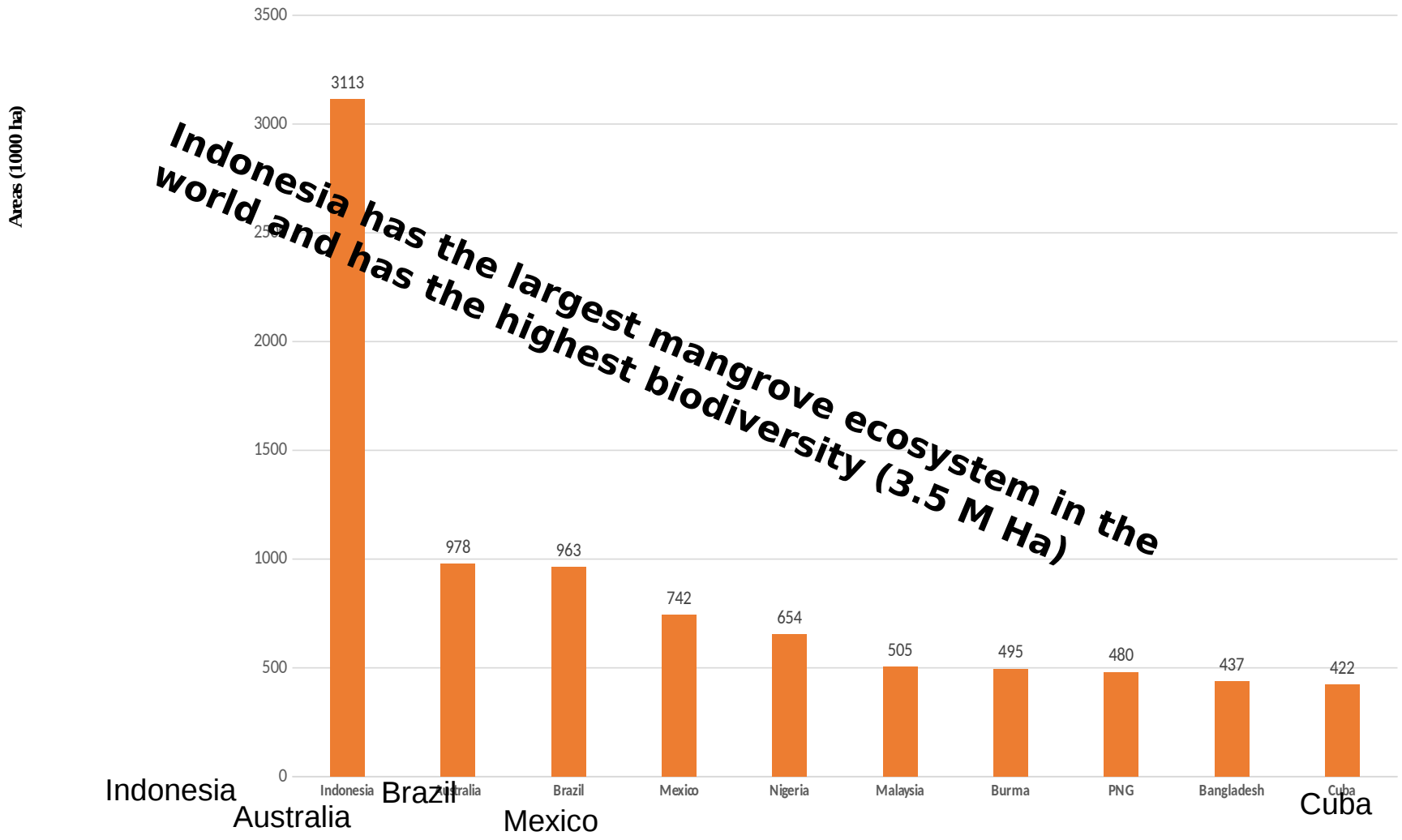
- ✓Prevent sea water intrusion;
- ✓Protective shoreline from erosion and tsunamis;
- ✓Spawning, nurshery and feeding ground for variety of species (fishes, mollusks, reptiles, birds, mammals, and insects);
- ✓High carbon stores: mitigation and adaptation to climate change. Indonesia could meet a quarter of a 26% emissions reduction target by 2020 by preventing deforestation of mangroves (Murdiyarso et al., 2015).
- ✓Pollutants absorbent.

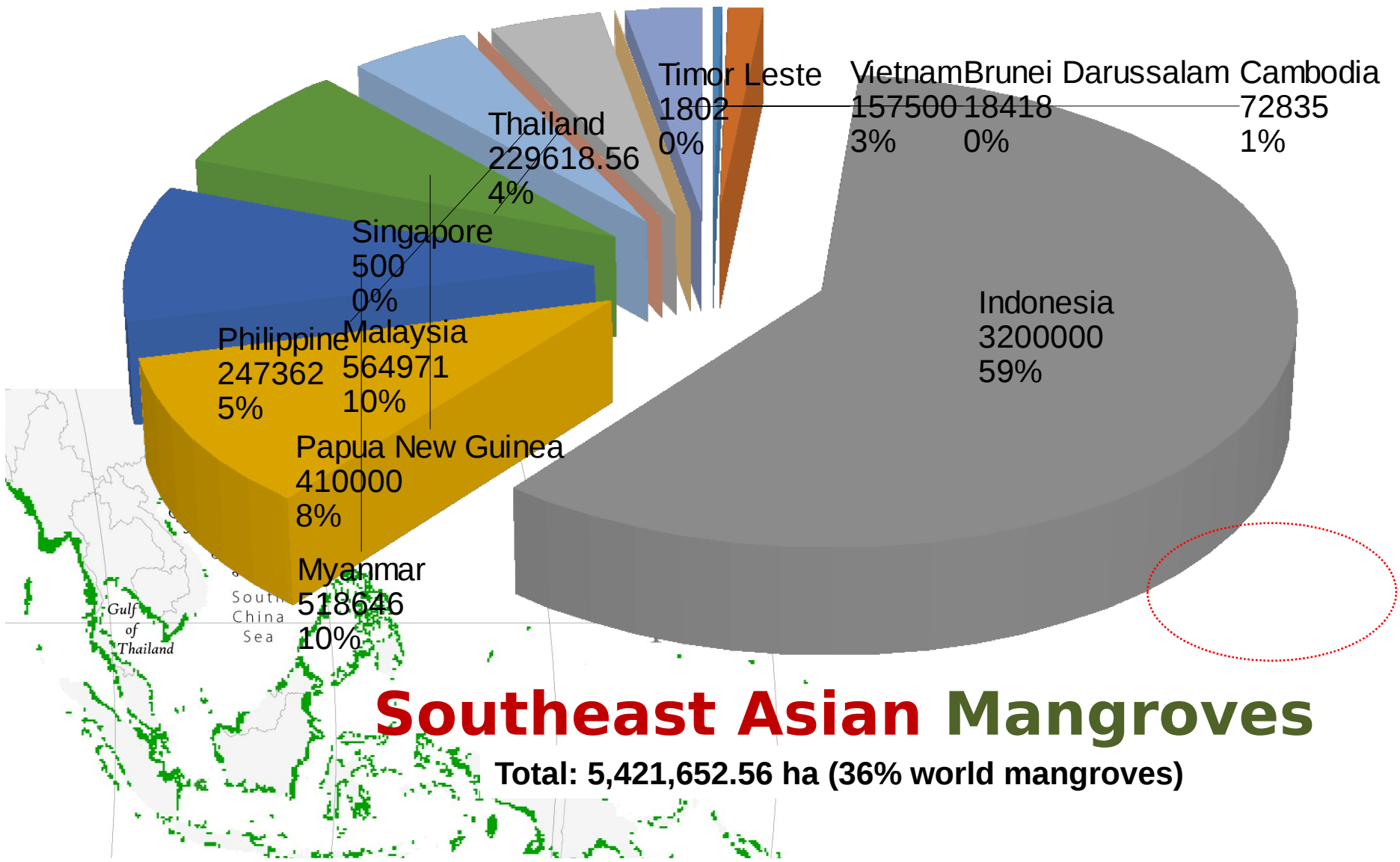
Mangrove Benefits

- ✓Source of livelihood:

  Contribute to the national economy at least USD 1.5 billion from fisheries sector (Ministry of Maritime Affairs and Fisheries, 2015);
- ✓Providing forest products such as timber and non-timber
- ✓Cultural and Ecotourism opportunities;
- ✓P
- ✓R

10 Countries with The Largest Mangrove Forest in The World





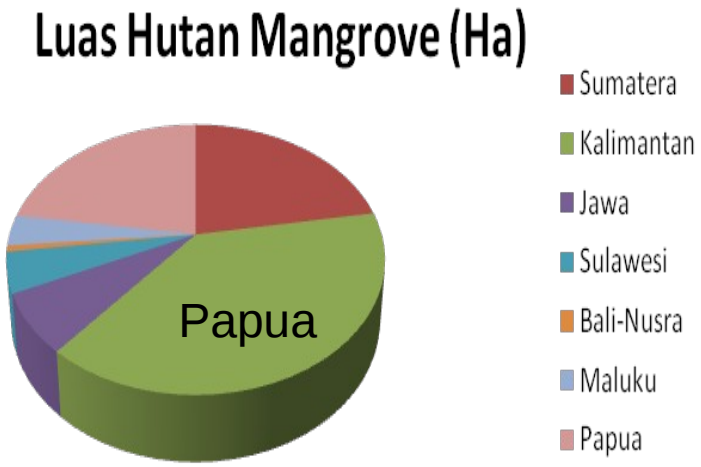
Southeast Asian Mangroves

Total: 5,421,652.56 ha (36% world mangroves)

(FAO 2007; Bakosurtanal 2009; Pumijumnong 2014; Garcia *et al.* 2014; Alongi 2014)

Mangrove Distribution

No	Islands	Mangrove Forest Area (Ha)
1	Sumatera	921.632,20
2	Kalimantan	1.449.634,0
3	Jawa	34.326,28
4	Sulawesi	130.017,36
5	Bali-Nusra	34.832,42
6	Maluku	138.907,74
7	Papua	788.128,90
	Total	3.497.478,90



Mangrove ecosystem in good condition : 1,671,140.75 hectares:
- in the forest area : 903,916.88 hectares
- outside the area : 767,223.87 hectares → 47 %

Mangrove ecosystem in critical condition : 1,817,999.93 hectares:
- in the forest area : 1,266,927.38 hectares
- outside the area : 551,072.55 hectares → 53 %

(Source : DG of DAS Control and Protected Forest, 2015)

PROTECTED MANGROVE AREAS IN INDONESIA

Region	Luasan Ekosistem		Luasan Terlindungi	
	Ha	%	Ha	%
Jawa	48.846	1,41%	13.155	26,93%
Sulawesi	161.504	4,68%	19.463	4,68%
Nusa Tenggara & Maluku	223.851	6,48%	15.382	6,87%
Sumatera	615.296	17,82%	36.640	17,82%
Kalimantan	762.454	22,08%	111.230	14,59%
Papua	1.640.724	47,52%	562.600	34,29%
TOTAL	3.452.675	79%	758.470	21 %

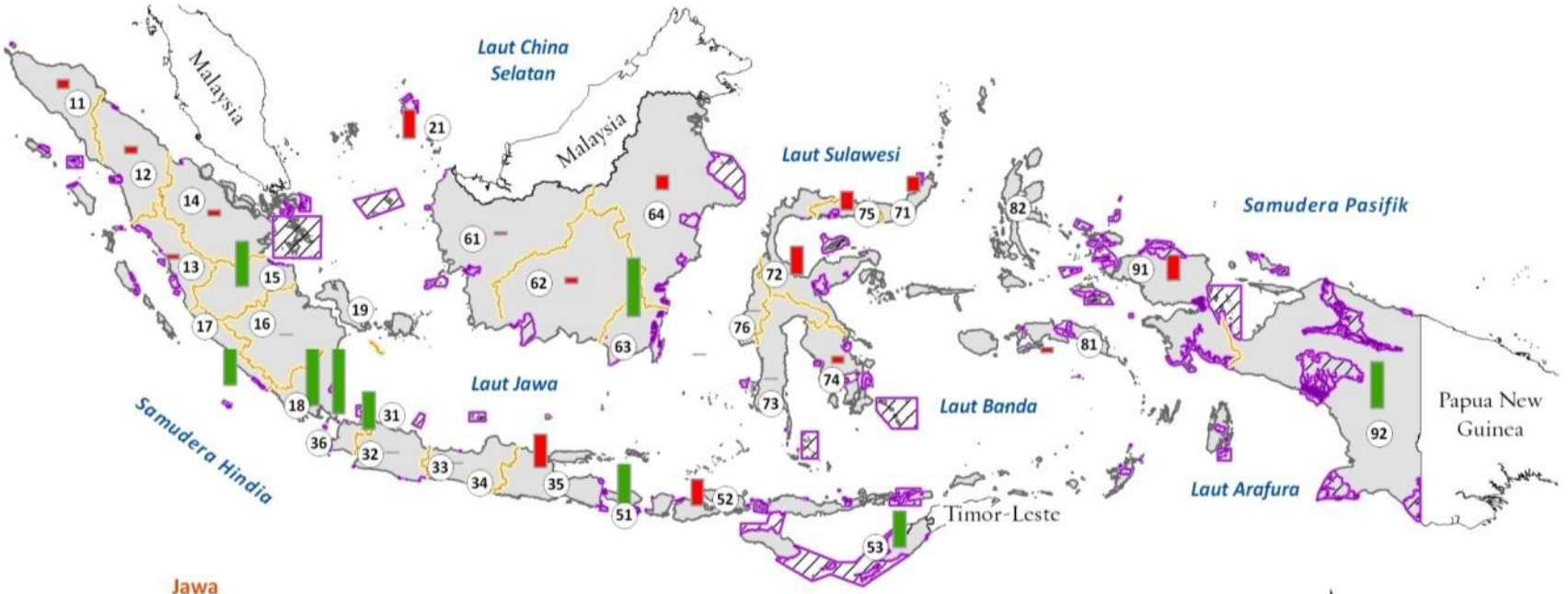
Sumber : Analisis Kesenjangan Kawasan Konservasi, Kemenhut-KKP, 2010

The unprotected mangrove area :65,71%

(Gap Analysis, 2010)

MAP OF MANGROVE AREAS IN INDONESIA (PROTECTED BY PROVINCE)

(Gap Analysis, 2010)



Sumatera

(11) Aceh
(12) Sumatera Utara
(13) Sumatera Barat
(14) Riau
(15) Jambi
(16) Sumatera Selatan
(17) Bengkulu
(18) Lampung
(19) Kepulauan Bangka Belitung
(21) Kepulauan Riau

Jawa

(31) Daerah Khusus Ibukota Jakarta
(32) Jawa Barat
(33) Jawa Tengah
(34) Daerah Istimewa Yogyakarta
(35) Jawa Timur
(36) Banten

Nusa Tenggara

(51) Bali
(52) Nusa Tenggara Barat
(53) Nusa Tenggara Timur

Sulawesi

(71) Sulawesi Utara
(72) Sulawesi Tengah
(73) Sulawesi Selatan
(74) Sulawesi Tenggara
(75) Gorontalo
(76) Sulawesi Barat

Kalimantan

(61) Kalimantan Barat
(62) Kalimantan Tengah
(63) Kalimantan Selatan
(64) Kalimantan Timur

Maluku

(81) Maluku
(82) Maluku Utara

Papua

(91) Papua Barat
(92) Papua

N

0 245 490 Km

Persentase Ekosistem Hutan Mangrove Yang Dilindungi Menurut Provinsi - Dengan Keterwakilan Ekosistem 30 %

Mencapai Keterwakilan Ekosistem (>= 30 %)
Tidak Mencapai Keterwakilan Ekosistem (< 30 %)

100 %
50 %
30 %
0 %

Batas Provinsi
Kawasan Konservasi

MANGROVE DEGRADATION

JALAN TOL

BANDARA

PERTANIAN

MANGROVE ECOSYSTEM LOST

Region	1980	25 tahun	2005
Afrika	3,670,000 ha	-14%	3,160,000 ha
Asia	7,769,000 ha	-25%	5,858,000 ha
Amerika Utara dan Tengah	2,951,000 ha	-23%	2,263,000 ha
Oceania	2,181,000 ha	-10%	1,972,000 ha
Amerika Selatan	2,222,000 ha	-11%	1,978,000 ha
WORLD	18,794,000 ha	-19%	15,231,000 ha

- ✓ **Selama 25 tahun, luas hutan mangrove di dunia berkurang sebanyak 19% karena konversi ke berbagai kegiatan pembangunan pesisir; 3-4 kali lebih cepat dari ekosistem daratan yang membutuhkan masa pemulihan yang lebih lama**

Changes in Mangrove Area from 1800 to 2012

Islands	Mangrove Area (Ha)		Percentage of Mangrove Lost
	Estimated 1800	2012	
Java	173,000	45,000	75%
Sumatra	860,000	600,000	30%
Sulawesi	273,000	165,000	39%
Kalimantan	945,000	595,000	37%
Maluku and Lesser-Sunda Islands (MLS)	232,000	210,000	9%
Papua	1,650,000	1,600,000	3%
Total	4,133,000	3,220,000	22%

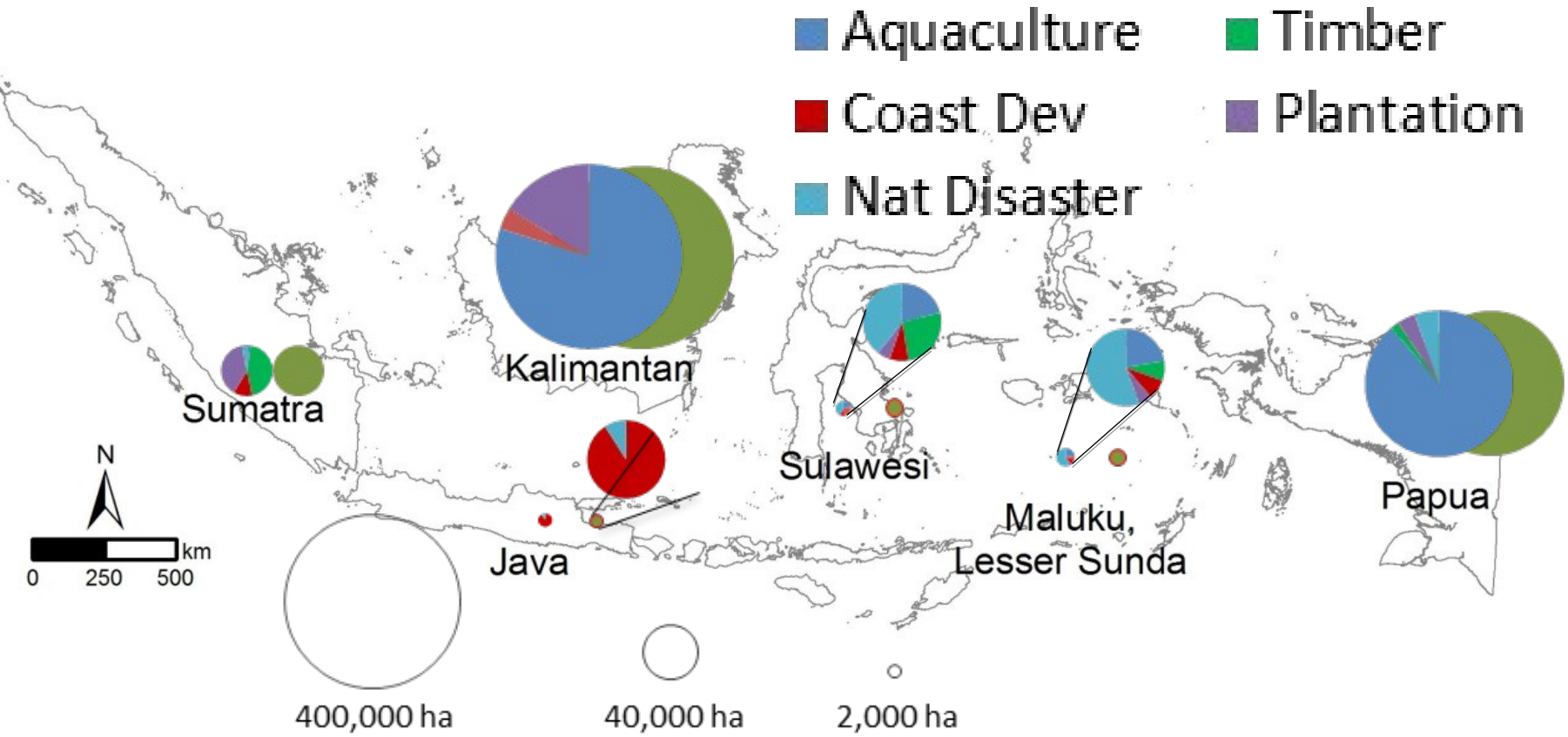
Source: Ilman et al., 2016

MANGROVE CHALLENGE

Challenges on Mangrove Management

1. Land use for various purposes (ponds, settlement, industrial, coastal infrastructure/ port).
2. Lack of community awareness of mangroves ecosystem.
3. Overlapping policies at national and regional level.
4. Pollution by plastic waste, household waste, oil spills.
5. Illegal logging.
6. Natural disasters.

Mangroves Challenge in 2 Decade Ahead



(Source: Ilman et al., 2016)

LEGISLATION

a. Act No. 5 of 1990 concerning Natural Resources Conservation and its Ecosystem
b. Act No.41 of 1999 concerning Forestry Affairs
c. Act No. 27/2007 jo No. 1/2014 concerning The Management of Coastal Zones and Small islands
d. Act No 26 of 2007 concerning Spatial Planning
e. Act No. 45 of 2009 concerning Fisheries
f. Act No 32 of 2009 concerning Protection and Management of The Environment
g. Act No. 4 of 2011 concerning Geospatial Information
h. Act No. 23 of 2014 concerning Local Government
i. Government Regulation No. 45 of 2004 concerning Forest Protection
j. Government Regulation No. 76 of 2008 concerning Forest Rehabilitation and Reclamation

LEGISLATION

k. Government Regulation No.28 of 2011 concerning Nature Reserve Area and Nature Conservation Area Management

l. Government Regulation No. 18 of2016 concerning Local Government Apparatus

m. Presidential Regulation No. 73 of 2012 concerning National Strategy for Mangrove Ecosystem Management (SNPEM)

n. Presidential Decree No 32 of 1990 concerning Management of Protected Areas

o. Presidential Decree No. 48 of 1991 concerning Ratification *Convention on Wetlands of International Importance Especiallly as Waterfowl Habitat*

p. Minister Regulation No.P.9 of 2013 Jo P.39 of 2016 concerning Procedures of Implementation of Support Activities and Incentives for Land and Forest Rehabilitation

MANGROVE MANAGEMENT

3P PRINCIPALS

STRATEGY

MANGROVE ECOSYSTEM

GOOD CONDITION

Maintain the existence through:

1. The Establishment of Conservation Areas
2. The Establishment of Essential Ecosystem Areas

CRITICAL CONDITION

1. Restoration / Rehabilitation through RHL activity & mangrove maintenance by the government, private sector and local communities
2. Community empowerment
3. The Establishment of Essential Ecosystem Areas

National Strategy for Mangrove Ecosystem Management (SNPEM)

(Presidential Regulation No.73 of 2012)

1. The form of policies and programs to achieve sustainable management of mangrove ecosystems and sustainable welfare communities based on the available resources as an integral part of national development planning system.
2. provides policies, principles, vision, mission, and objectives.
3. Will be implemented in a coordinated way as the guidelines for the Gove

GOAL

synergize policies and management program of mangrove ecosystem that includes ecological, social, economic, institutional, and legislation to ensure the sustainable function and benefits of mangrove ecosystems for the communities welfare

12 Ministries

IMPLEMENTATION HIERARCHY OF SNPEM

National Level	National Strategy for Mangrove Ecosystem Management	**National Coordination Team** Chief Executive formed Mangrove Working Group at National Level
Province Level	National Strategy for Mangrove Ecosystem Management at Province Level	Chief Executive formed Mangrove Working Group at Province Level
District/ City Level	National Strategy for Mangrove Ecosystem Management at District/ City Level	Chief Executive formed Mangrove Working Group at District/ City Level

Funding needed to implement SNPEM charged to APBN / APBD or other legitimate sources and are not binding in accordance with laws and regulations.

MANGROVE BIODIVERSITY CONSERVATION

-Ecosystem

-Species

-Genetic Resources

MANGROVE ECOSYSTEM

MANGROVE FLORA IN INDONESIA

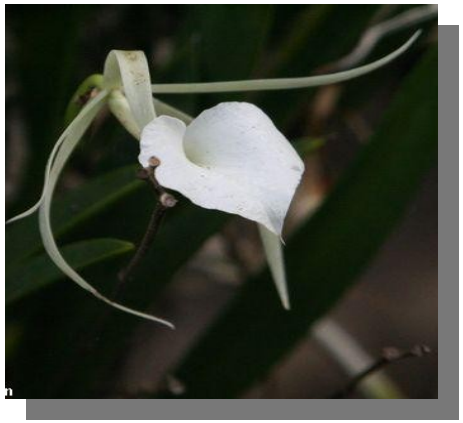
45 famili | 75 genus | 157 spesies

Pohon
(52 spesies)

Semak & Terna
(24 spesies)

Herba & Rumput
(22 spesies)

Liana
(13 spesies)



Epifit
(36 spesies)

Parasit
(3 spesies

Palma
(7 spesies)

MANGROVE FAUNA

FAUNA DARAT (101 spesies)

TOTAL: 257 spesies

FAUNA LAUT (156 spesies)

BURUNG (44 spesies)

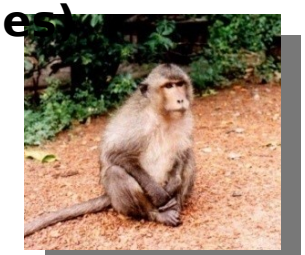
AMFIBI (2 spesies)

CRUSTACEA (67 spesies) : Gastropoda (43 species) Bilvalvia (9 spec

MOLUSKA (26 spesies)

REPTIL (11 spesies)

SERANGGA (22

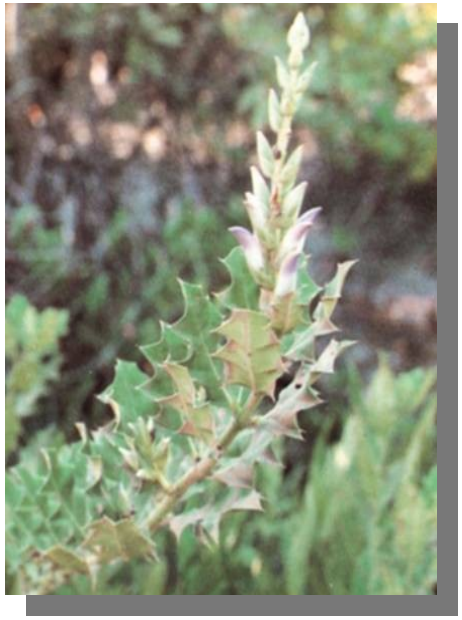


MAMALIA (22 spesies)

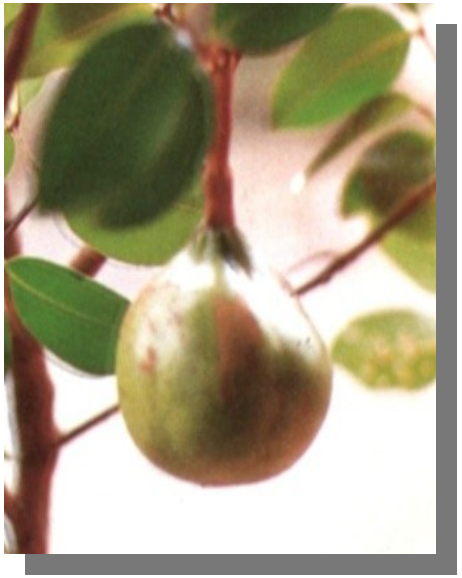
IKAN (63 spesies)

MANGROVE GENETIC RESOURCES

Getah *Excoecaria agallocha* (antibiotik)



Jus daun Acanthus (Penawar Racun)



Minyak Biji *Xylocarpus* (kosmetik)

Rebusan Ujung Akar Muda Akar Rhizophora (Tonic)

AUTHORITY

MANGROVE BIODIVERSITY

National Government

Conservation Area

- National Park
- Nature Reserves
- Wildlife Reserve
- Nature Tourist Park

Provincial/District Government

Essensial Ecosystem Area

- Production Forest
- Fish pond
- Plantation

ECOSYSTEM ESSENSIAL MANAGEMENT MODEL

Essential ecosystems (EE) are ecosystems outside of protected areas (conservation areas/ nature reserves) that are ecologically important for the conservation of biodiversity, which includes natural and artificial ecosystems, inside and outside the forest area.

CRITERIA FOR DETERMINING MANGROVE AS ESSENTIAL ECOSYSTEM AREAS

(adopted from Directorate General Regulation No.SK.151/IV/Set-3/2007 based on Ramsar Convention)

1. **Criteria for Representation and Uniqueness Mangrove as Wetland**

- The mangrove ecosystem in general is an example of a good representation of a natural wetland, specifically for the corresponding biogeografi area; or
- The mangrove ecosystem in general is an example of a good representation of a natural wetland, which is common for 1 (one) or several biogeografi regions; or
- Plays an important role of the elements of hydrology, biology, or ecology in the natural function of a coastal system or river basins, especially located in the transition/ border area; or
- The mangrove ecosystem is an example of a special type of wetland, rare or unusual in the appropriate biogeografi area.

CRITERIA FOR DETERMINING MANGROVE AS ESSENTIAL ECOSYSTEM AREAS

(adopted from Directorate General Regulation No.SK.151/IV/Set-3/2007 based on Ramsar Convention)

2. Criteria based on the Presence of Plants and Animals:

- The mangrove ecosystem supports a large number of one or more rare species, vulnerable, endangered, or subspecies of flora or fauna; or

- The mangrove ecosystem has a special value for maintaining the ecological and genetic diversity of flora and/ or fauna of a region due to the quality and the uniqueness of flora and/ or fauna in it; or

- The mangrove ecosystem has special value as a habitat flora and/ or fauna at a critical level in their biological cycle; or

- The mangrove ecosystem has a particular value for one or more species of native flora and/ or fauna (endemic).

CRITERIA FOR DETERMINING MANGROVE AS ESSENTIAL ECOSYSTEM AREAS

(adopted from Directorate General Regulation No.SK.151/IV/Set-3/2007 based on Ramsar Convention)

3. Special Criteria based on Water Birds:

- The mangrove ecosystem regularly support the presence of more than 20,000 water birds; or
- The mangrove ecosystem regularly supports a number of important individuals from certain groups of water birds which is an indication for biodiversity; or
- The mangrove ecosystem regularly supports 1% of the individuals in a population of a species or sub-species of water birds.

4. Special Criteria based on Fish

- The mangrove ecosystem supports a species, subspecies, or familia of native fish in sufficient quantities, the breeding level of fish, species interactions and/ or fish populations that illustrate the benefits and/ or values of wetlands and significantly contribute to global biodiversity;
- The mangrove ecosystem is an important feeding ground, spawning ground, nursery and/ or migration path for fishes.

CRITERIA FOR DETERMINING MANGROVE AS ESSENTIAL ECOSYSTEM AREAS

(adopted from Directorate General Regulation No.SK.151/IV/Set-3/2007 based on Ramsar Convention)

5. Criteria based on Socio-Cultural Aspects:

- The mangrove ecosystem is crucial to support communities livelihoods (clothing, food, fuel, or other sources of income); or

- The mangrove ecosystem has the potential functions for tourism, religion, and tradition.

Follow Up:

- ✓ Enpowerment of mangrove ecosystem management by local governement which be mandated by the Law No.23/2014 and Presidential Decree No.73/2012
- ✓ Harmonization of the work program between central government, local governments, NGOs, private sector, and university
- ✓ To enhance the role of NGOs and the private sector in support of government programs
- ✓ Promoting of sustainable mangrove management to invite the investment of global funding to save mangrove biodiversity for the future.
- ✓ Scientific studies related to enhance mangrove benefits from aquaculture/ fisheries/sivofisheries, genetic resources.


THANK
YOU