

Regional Technical Meeting on Fisheries Resource Enhancement in Southeast Asia

Bangkok, Thailand, 24-26 April 2018





AGENDA 3.4

Country Presentation on Fisheries Resource Enhancement (2)

OUTLINE

Critical Habitat Enhancement

1. Introduction
2. Objectives
3. Methodology and Implementation
4. Constraints
5. Conclusion

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1. Introduction

- Habitats degradation and IUU fishing are the most challenging issues.
- To maintain and improve fisheries production management and preservation of fisheries habitats are essential.
- Rehabilitation efforts are conducted to restore degraded habitats as complementary actions.

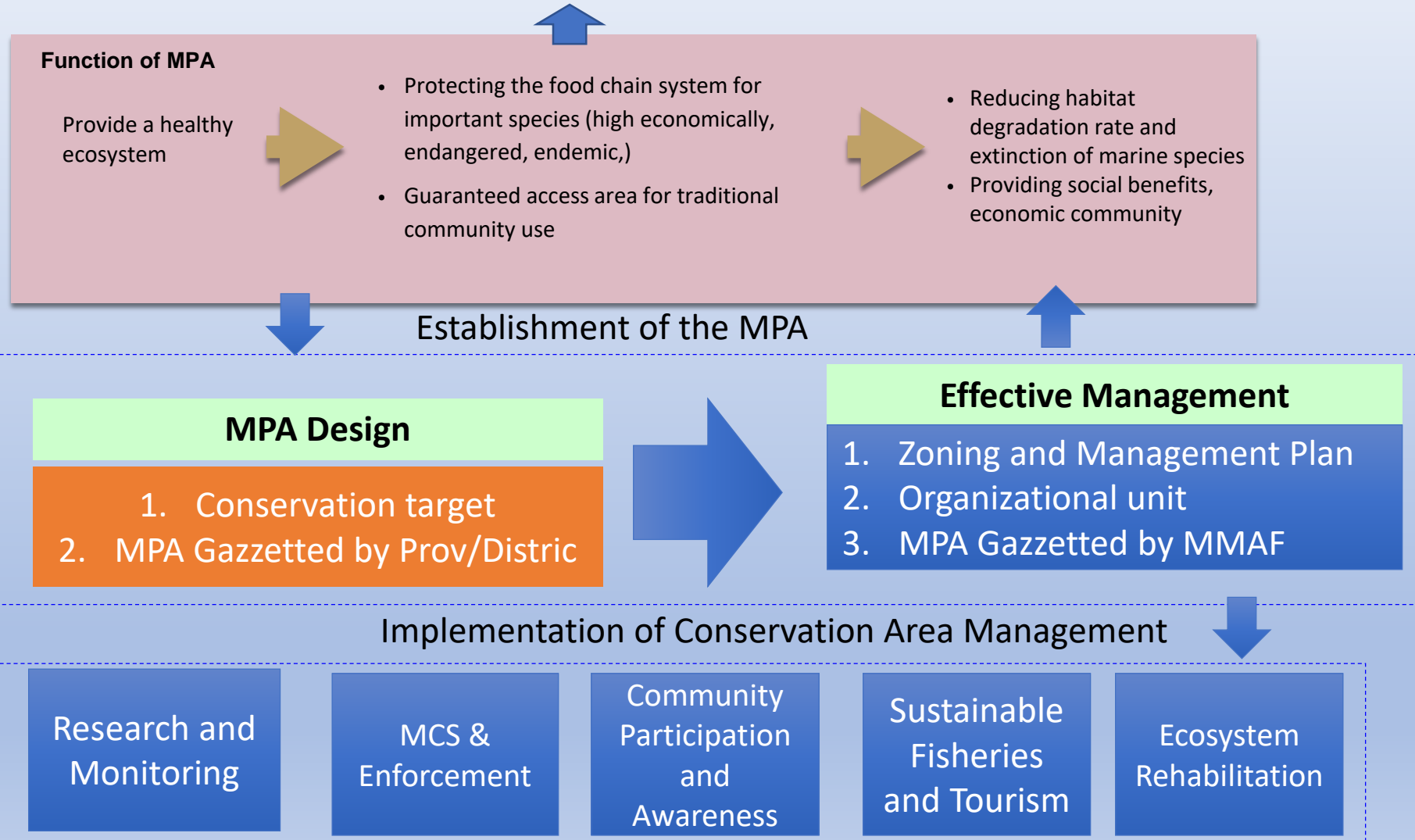
2. Objective of Indonesian Fish Resources Conservation (Law 31/2004)

Conservation of fish resources is the **protection, preservation, and utilization** of fish resources, including **ecosystems, species, and genetic** to ensure **the existence, availability, and continuity** while maintaining and improving the quality of the value and diversity of fish resources.

Mandate for rehabilitation in fisheries law is not significant and more accommodated in law on coastal and small islands management (Law 27/2007)

Policy of Marine Conservation Area

Sustainability



PARTNERSHIP

ESSENTIAL FEATURES AND ACTIVITIES OF THE CONSERVATION

(Gov. Regulation No 60/2007 on Fishery Resources Conservation) derivation of Law 31/2004

Ecosystem conservation

(Sea, **Sea grass, Coral Reef, Mangrove**, estuary, coastal, swamp, river, lake, reservoirs, emples, artificial ecosystem waters)



- Protection of habitat and fish populations;
- Habitat rehabilitation and fish populations;
- Research and development;
- Utilization of fish resources and environmental services;
- Socio-economic development of the community;
- surveillance and control;
- Monitoring and evaluation

Species Conservation

(endangered fish, rare, endemic, low population, low reproduction)



- Classification of fish species;
- Determination of fish species protection status;
- Maintenance;
- Breeding; and
- Research and development

Genetic Conservation

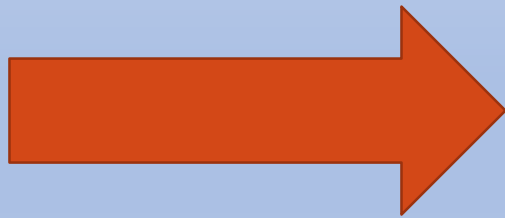


- Maintenance;
- Breeding
- Research; and
- Gamete Research

3. Methodology and Implementation

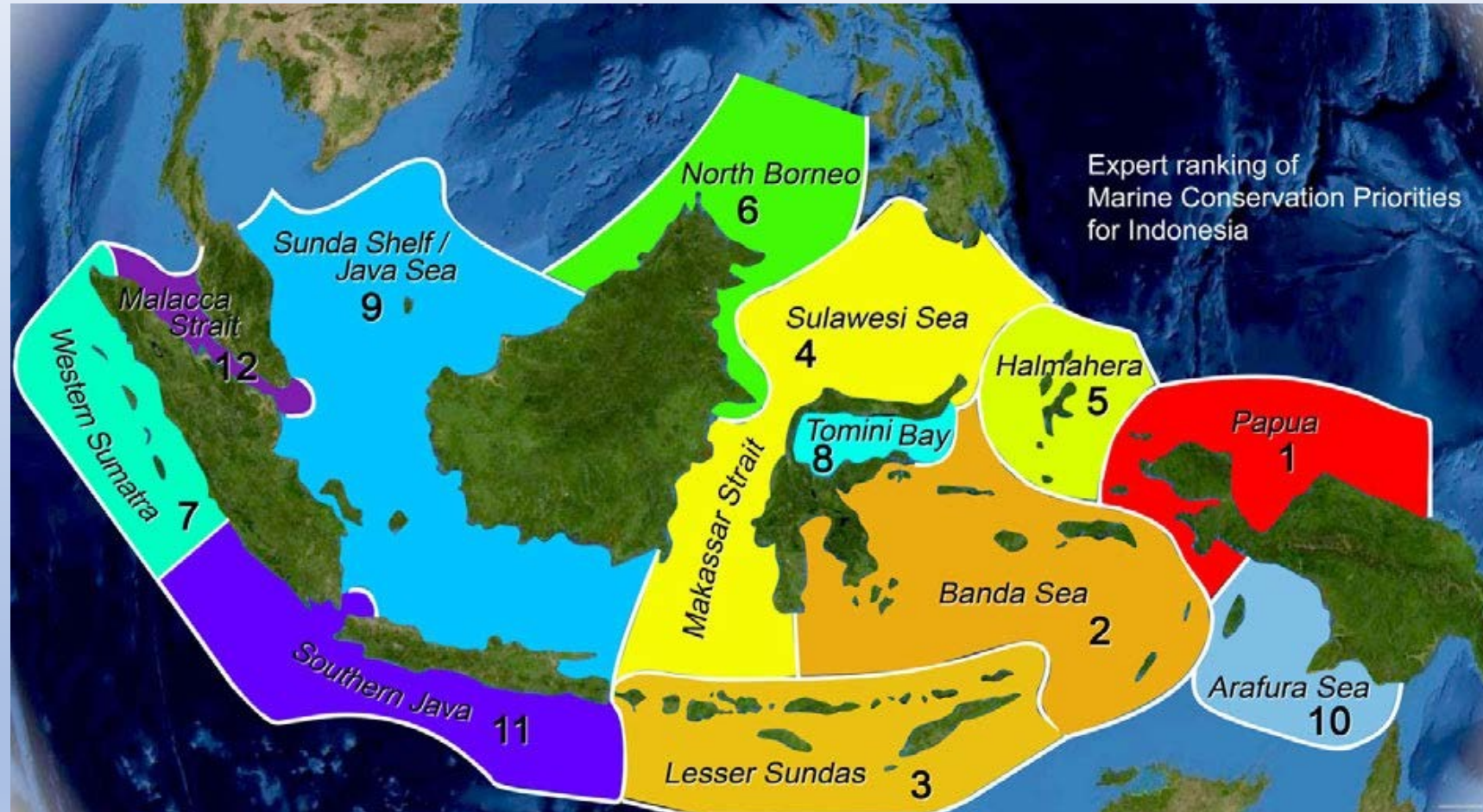
Rehabilitation of marine and coastal habitats are carried out through (Law 27/2007):

- Stock enhancement
- Habitat restoration
- Conservation



Presentation will focus on:
Conservation and several examples of
direct rehabilitation of critical habitat

Indonesia Ranking of Marine Conservation Priorities



Ranking of Indonesia marine ecoregion prioritize for conservation based on biodiversity and irreplaceability, vulnerability and representativeness criteria.

Total coral cover in Indonesia

= 2,5 mio hectare (source: Badan Informasi Geospasial, 2017)



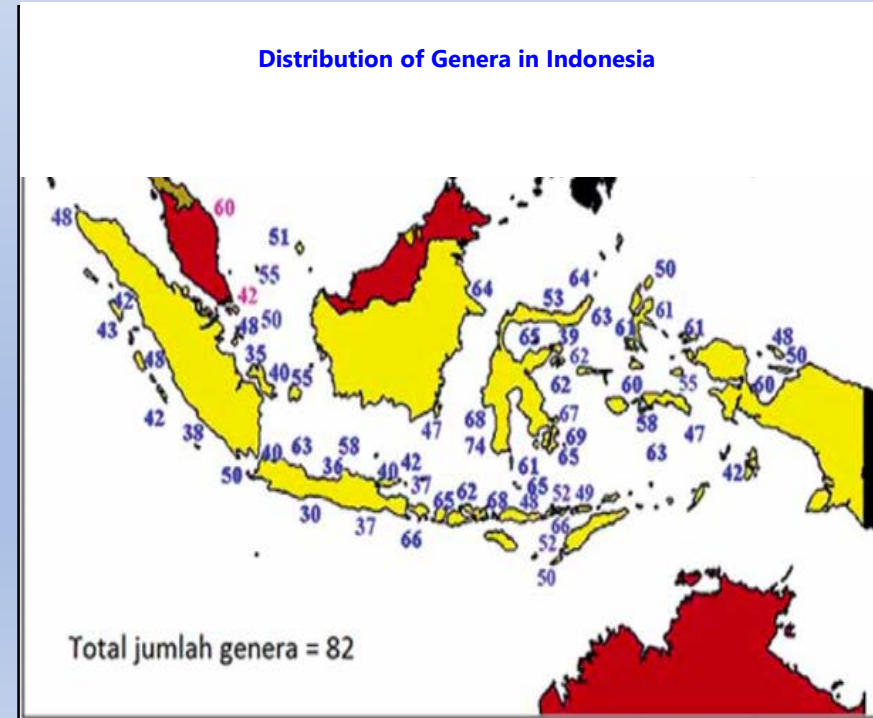
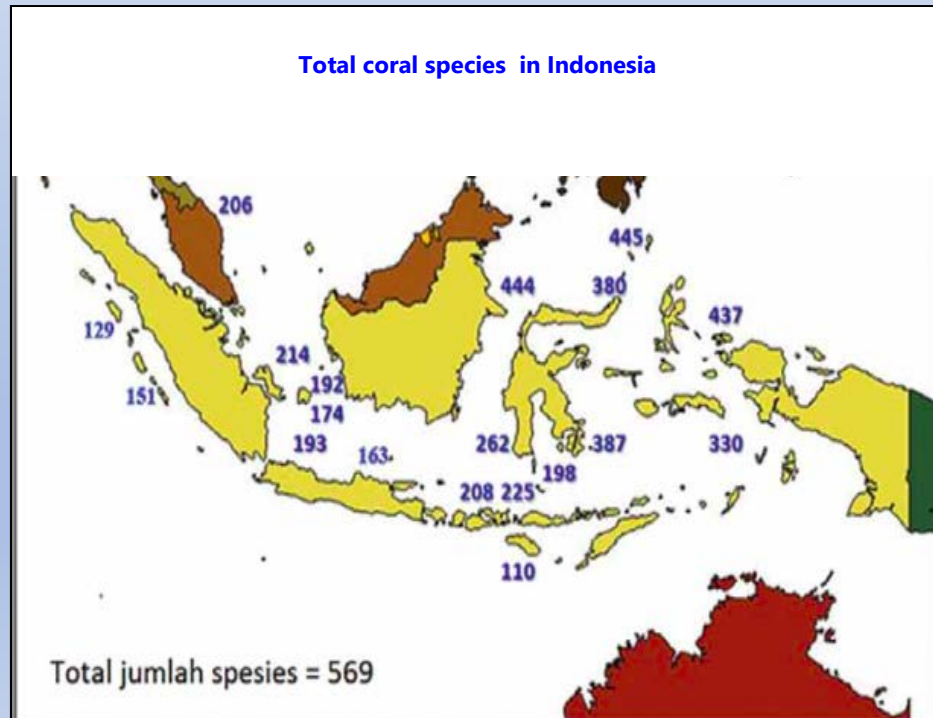
No	Regional	Luas (Ha)
1	Bali	8,837
2	Jawa	67,869
3	Kalimantan	119,304
4	Maluku	439,110
5	Nusa Tenggara	272,123
6	Papua	269,402
7	Sulawesi	862,627
8	Sumatra	478,587
Total		2,517,858

Coral cover on each islands

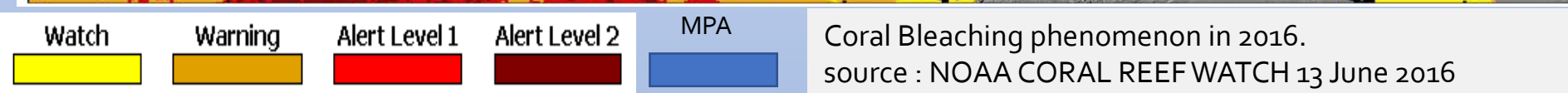
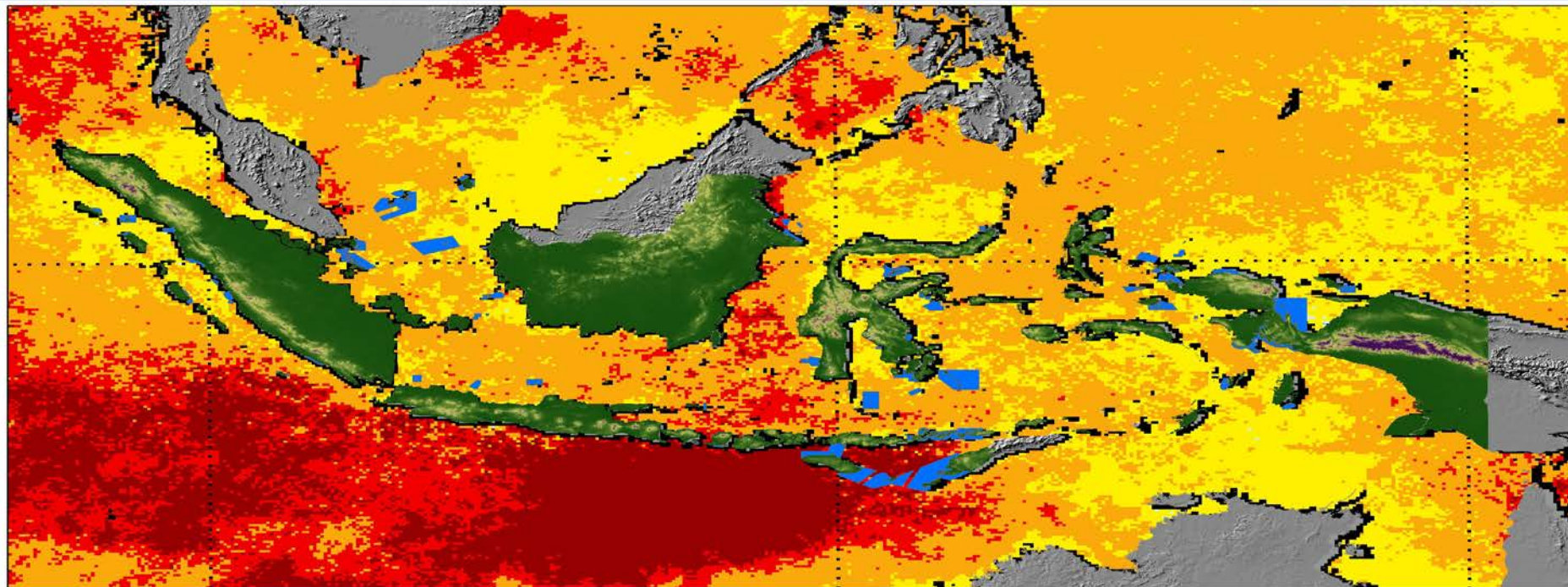
(source: LIPI, 2017)

Biodiversity of Coral Reefs in Indonesia

- 590 species (82 genera) of hard corals, 210 types of soft coral, and 350 species of gorgonian (Hutomo & Moosa, 2005 in Indonesian Kehinian Kehati-LIPI, 2014)
- The total wealth of hard coral species (ordo Scleractinia) Indonesia is estimated to reach 569 species or about 67% of the total coral species in the world (Coral Reef Status-LIPI, 2017)
- The highest diversity of coral reefs : in Eastern Indonesia

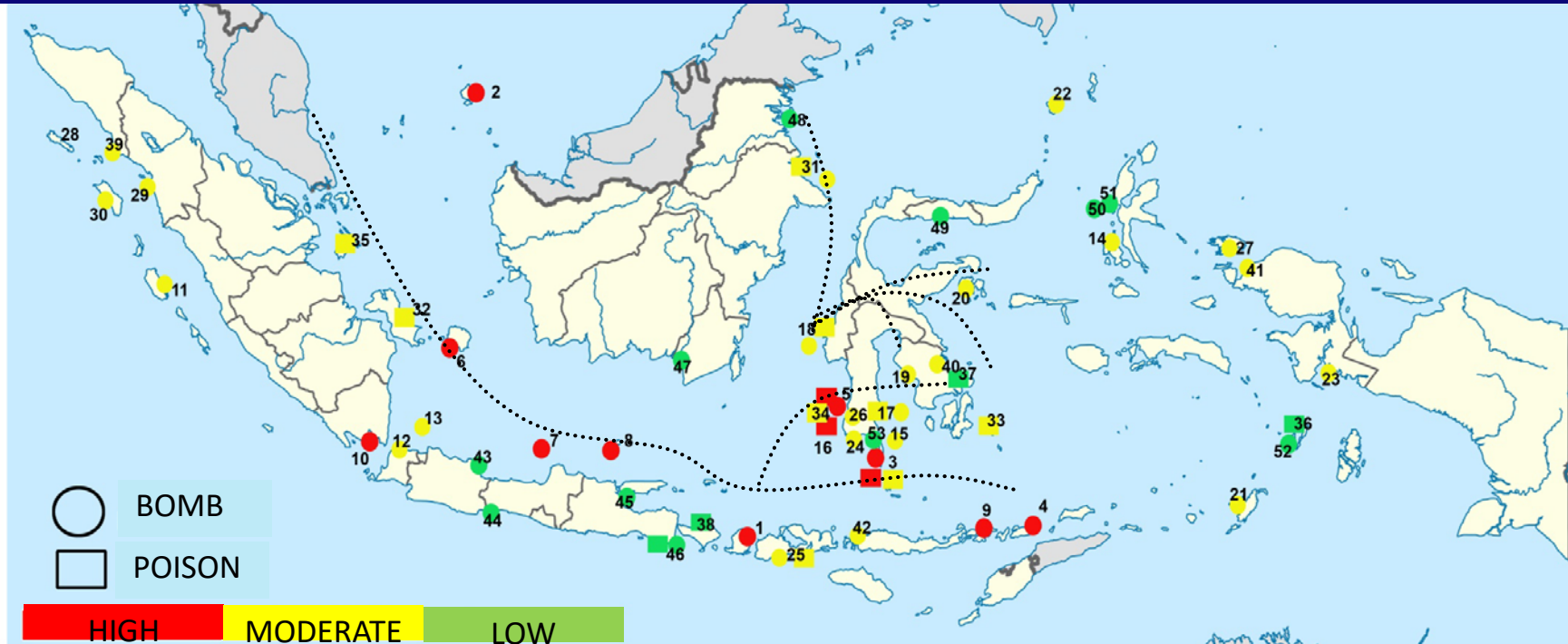


THREATS ON CORAL REEFS



- Destructive fishing
- Pollution and contamination
- Runoff sedimentation from land

DESTRUCTIVE FISHING AREA



- | | | | |
|--------------------------------------|---|--------------------------------------|-------------------------------------|
| 1. Lombok Timur, Nusa Tenggara Timur | 16. Kep. Spermonde, Sulawesi Selatan SN | 31. Berau, Kalimantan Timur | 46. Banyuwangi, Jawa Timur DFSN |
| 2. Natuna, Kepulauan Riau | 17. Sinjai, Sulawesi Selatan DFSN | 32. Bangka Belitung | 47. Banjarmasin, Kalimantan Selatan |
| 3. Selayar, Sulawesi Selatan DFSN | 18. Mamuju, Sulawesi Barat DFSN | 33. Wakatobi, Sulawesi Tenggara SN | 48. Tarakan, Kalimantan Utara |
| 4. Alor, Nusa Tenggara Timur | 19. Kolaka, Sulawesi Tenggara | 34. Kapoposang, Sulawesi Selatan SN | 49. Boalemo, Gorontalo |
| 5. Pangkep, Sulawesi Selatan SN | 20. Banggai Laut, Sulawesi Tengah | 35. Lingga, Kepulauan Riau SN | 50. Ternate, Maluku Utara |
| 6. Belitung, Bangka-Belitung | 21. Saumlaki, Maluku | 36. Tual, Maluku SN | 51. Tidore, Maluku Utara |
| 7. Karimunjawa, Jawa Tengah | 22. Tahuna, Sulawesi Utara | 37. Kendari, Sulawesi Tenggara SN | 52. Kei, Maluku |
| 8. Bawean, Jawa Timur | 23. Kaimana, Papua | 38. Bali SN | 53. Buton, Sulawesi Tenggara. |
| 9. Flores Timur, Nusa Tenggara Timur | 24. Jeneponto, Sulawesi Selatan | 39. Aceh Singkil, N. Aceh D. | |
| 10. Lampung | 25. Sumbawa, Nusa Tenggara Barat DFSN | 40. Konawe, Sulawesi Tenggara | |
| 11. Mentawai, Sumatera Barat | 26. Makassar, Sulawesi Selatan | 41. Sorong, Papua Barat | |
| 12. Serang, Banten | 27. Raja Ampat, Papua | 42. Labuan Bajo, Nusa Tenggara Timur | |
| 13. Kepulauan Seribu, DKI Jakarta | 28. P. Simeleu, Sumatera Utara | 43. Indramayu, Jawa Barat | |
| 14. Halmahera, Maluku Utara | 29. Sibolga, Sumatera Utara | 44. Cilacap, Jawa Tengah | |
| 15. Bulukumba, Sulawesi Selatan | 30. Nias, Sumatera Utara | 45. Sidoarjo, Jawa Timur | |



DIREKTORAT PENGAWASAN
PENGELOLAAN SUMBER DAYA KELAUTAN

CONSERVATION TARGET 2014 – 2019

Objectives:

1. Maintain / Increase fish resources habitat cover for spawning,
2. Maintaining the trend of declining populations of endangered fish species

Protect Habitat and Population Targets:

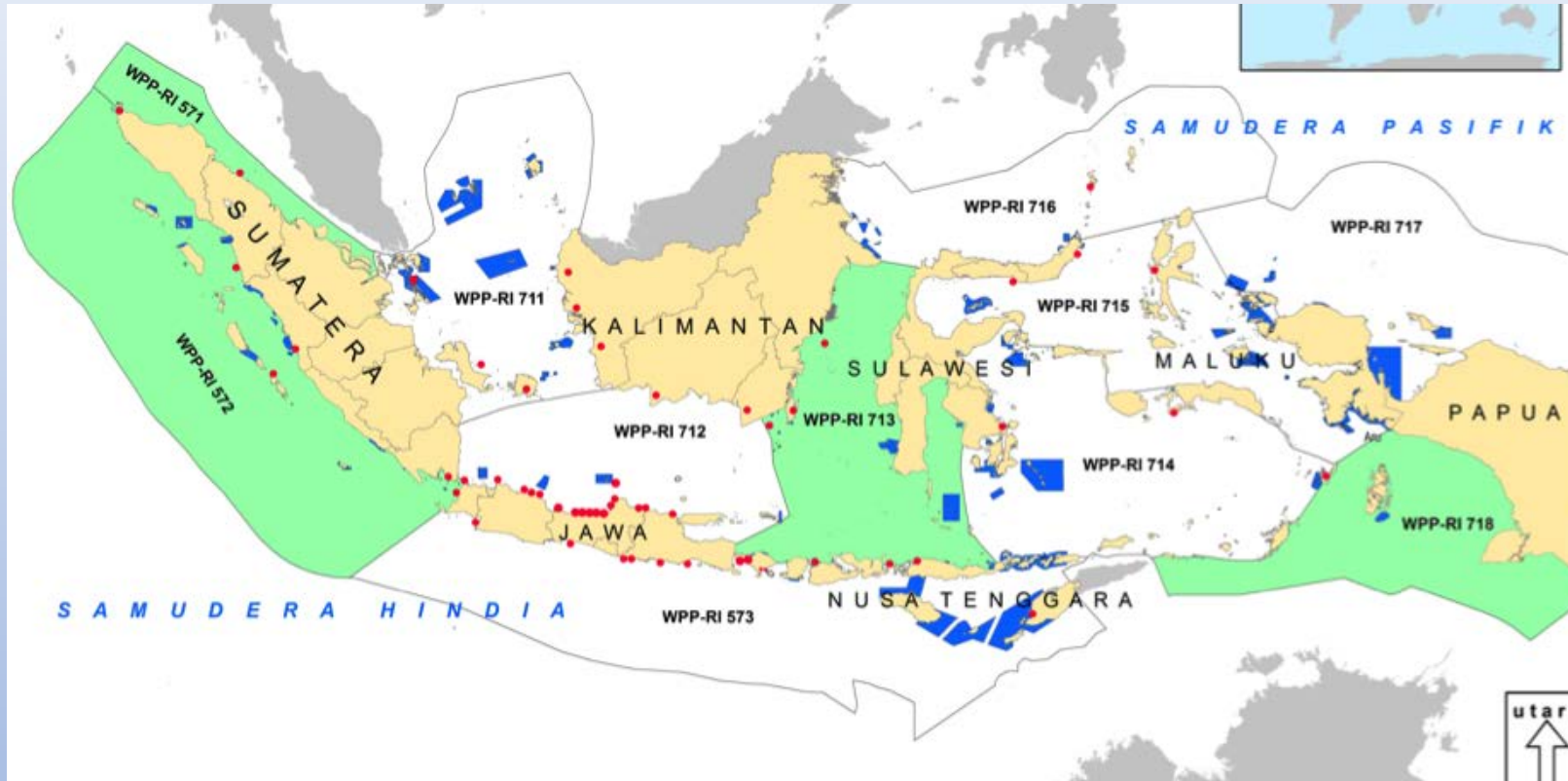
1. 20 mio Hectare MPA in 2019
2. 35 MPA showed positive performance in:
 - a. Maintaining fish habitat cover**
 - b. Reducing destructive fishing
 - c. Maintaining the marine biodiversity**
 - d. Increasing fish biomass**
 - e. Increasing income of community in MPA

Protect Endangered, Threatened Species Targets:

1. Maintaining population in nature
2. Increasing life chance of stranded mammals
3. Reducing illegal use

Species Targets : Dugong, Penyu, Napoleon, Terubuk, BCF, Karang Hias, Hiu Paus, Arwana, Labi-labi, Sidat, Bambu Laut, Paus, Kima, Lola, Kuda Laut, teripang, mola-mola, pari manta, Hiu appendix CITES, pari gergaji

MPA PLAN FOR CRITICAL HABITATS (2017 – 2019)



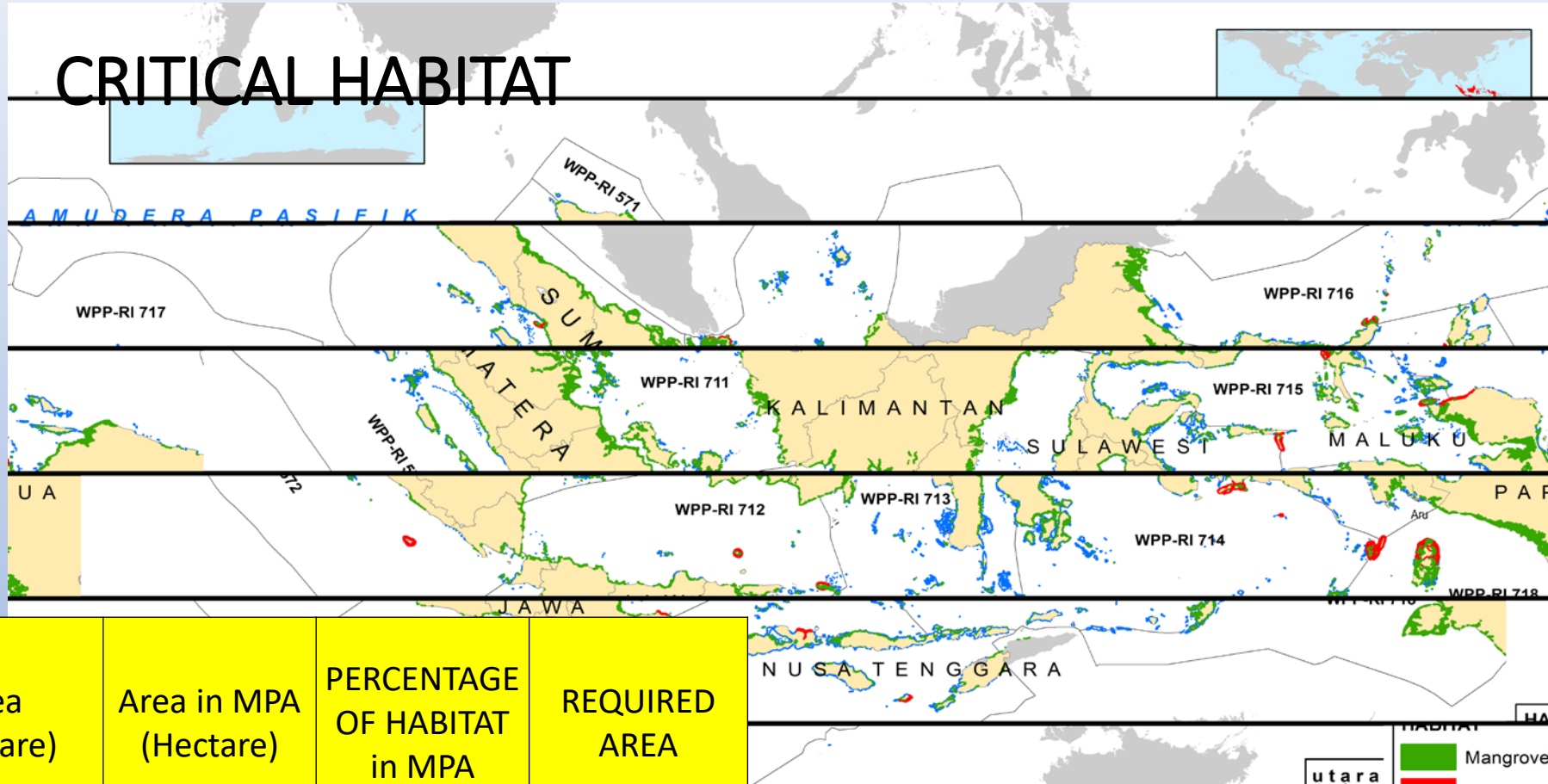
The proportion of MPA to FMA areas is small but it protects most of critical fish habitats in each FMA

- Existing MPA
- Target Areas
- Fisheries Ports

*) Critical habitat protection target according to PISCO (2002) = 30% of total critical area
Strategy:

1. Increasing MPA area in 4 FMA (571, 572, 713, 718)
2. Gazetted 115 District MPA
3. Manage 10 National MPA/KKPN

CRITICAL HABITAT



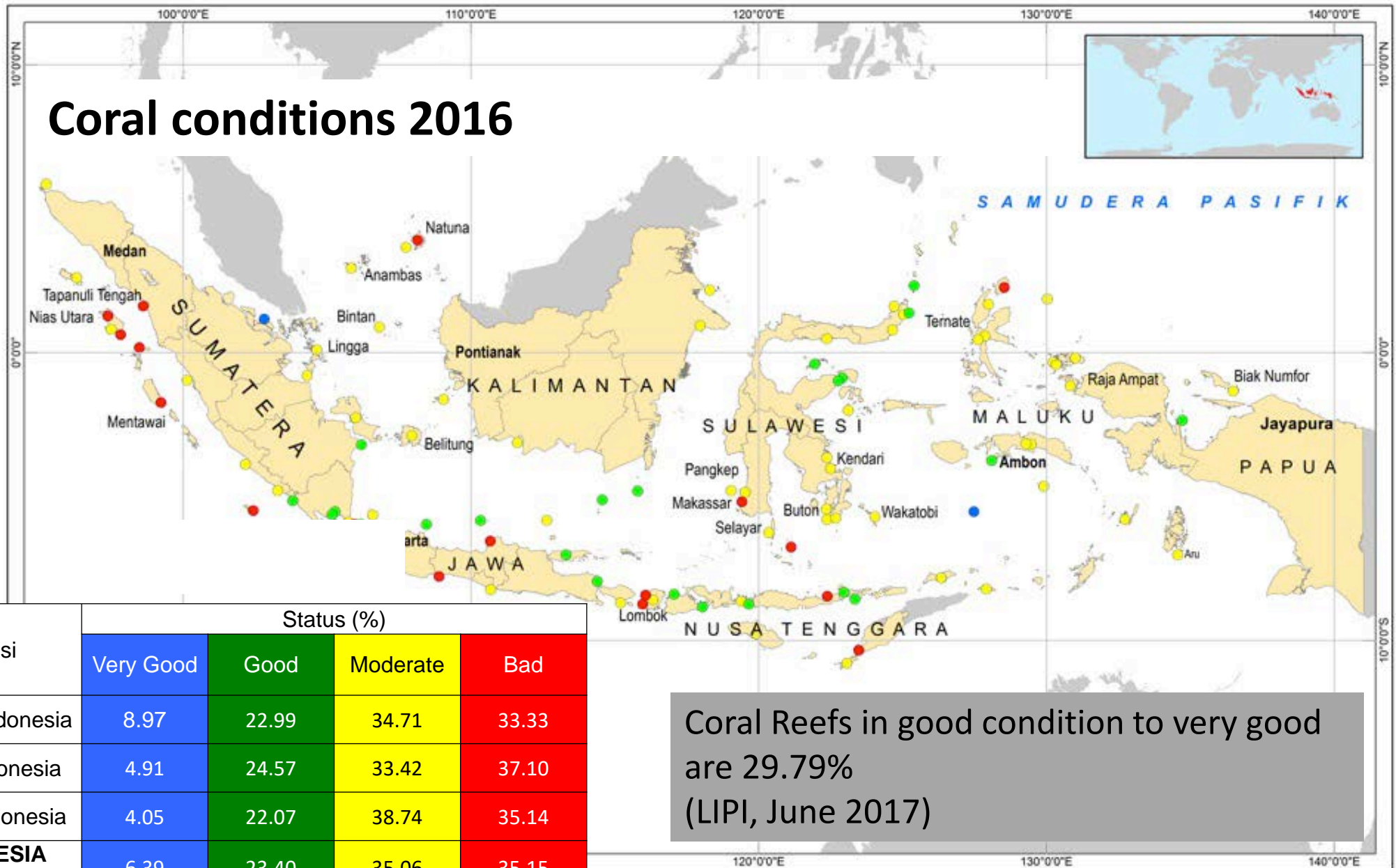
Data 2017

Critical Habitat	Area (Hectare)	Area in MPA (Hectare)	PERCENTAGE OF HABITAT in MPA	REQUIRED AREA
Mangrove	3.416.181,71	304.886,00	8,92%	21,08%
Sea grass	1.719.106,54	407.833,54	23,72%	6,28%
Coral Reef	2.517.858,00	960.823,35	38,16%	-8,16%



Coral Reef Surplus but not equally in all WPP

Coral conditions 2016



Implementation of Critical habitats restoration

CORAL REEF REHABILITATION



- Focus on reducing stress and damaging factors such as fishing, pollution, sedimentation, and coastal development
- Several direct rehabilitations include transplantation and artificial reef PLUS shipwrecks.
- Transplantation are carried out to provide new habitat, seed garden (for ornamental coral), diving activities, and coral adoption.
- Indicators: fish biomass, coral health index (coral cover, fish target, and megabenthos)

MANGROVE REHABILITATION

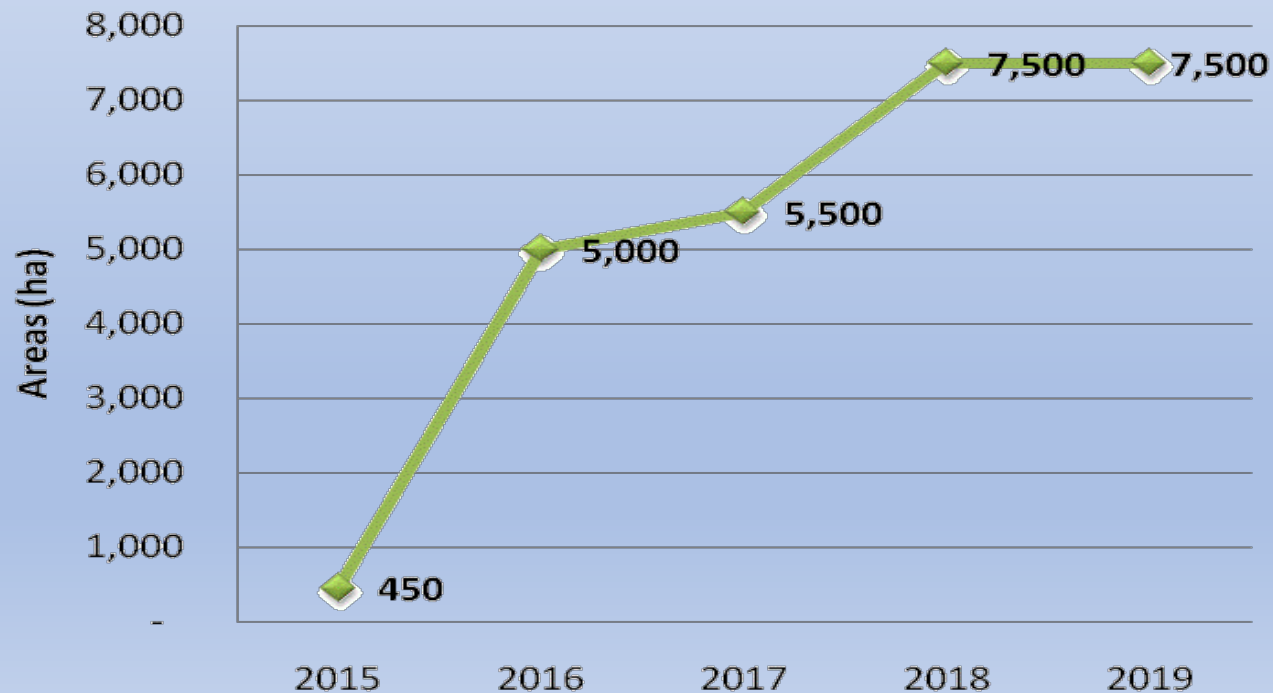
- Mostly conducted in North coast of Java and eastern coast of Sumatra
- Target not only for fish habitats but also for education, tourism, and coastal protection (multi purposes/objectives)
- Using most abundant local species (mostly Rhizophora)
- Engage community in planting and nursery
- Issues related to land status, land use change, and longterm maintenance.



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Mangrove Condition (Ha)					
No	Provinces	Good	Degraded	Heavily degraded	Total
1.	Banten	152.73	962.45	79.52	1,041.97
2.	DKI Jakarta	-	80.56	40.38	120.94
3.	West Java	203.59	5,294.26	83.65	5,377.91
4.	Central Java	170.8	744.535	-	744.535
5.	East Java	1,534.39	1,967.87	140.26	3,642.52
Total		2,061.51	9,049.68	343.81	10,927.88



Target of mangrove rehabilitation for the next five years

FISH APARTMENT (FAD)



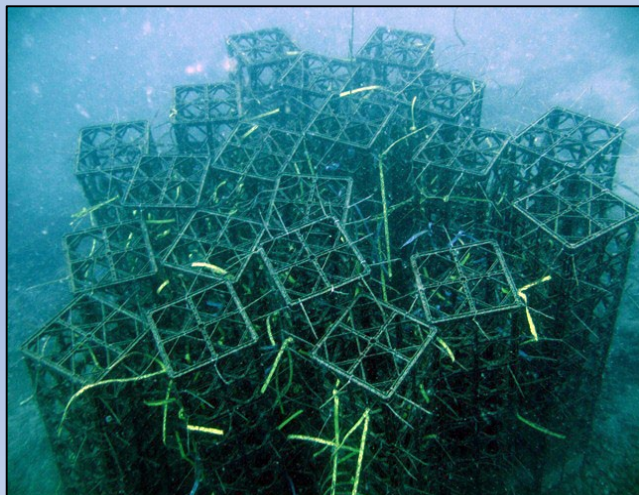
- Implemented to support fish aggregation and shelter
- Using environmental friendly materials, constructed near fishing communities
- Indicators: fish diversity, abundance, size composition, other associate biota

Location:

Anambas islands (MPA)

Example of result:

- The composition of the catch (weight and length of the individual) surrounding fish apartment is better than the catch from outside the apartment.
- Catch is 1.4 times greater within fish apartment than outside
- The target fish caught is 77.9% higher than that from outside fish apartment (59.2%).





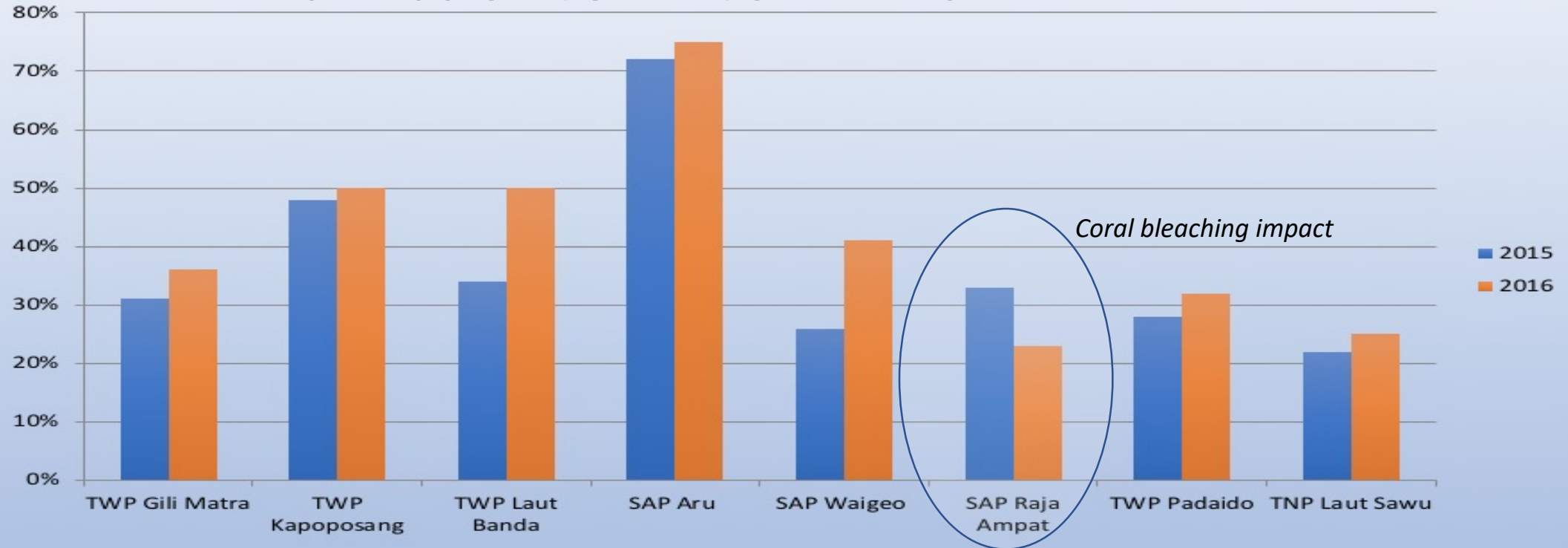
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ACHIEVEMENTS
Of Effective Management of MPA to Coral Cover

Positive impact of EM MPA to coral reef

STATUS OF CORAL COVER IN 8 MPA



All Marine conservation areas show that effective management can increase coral cover through activities:

1. Patrol; 2. Awareness; 3. Partnership; 4. Alternative Income; 5. Monitoring

*) The impact assessment of conservation areas in Mayalibit, Raja Ampat District shows that hard coral cover increased 4% and fish biomass increased by an average of 26 0% within 2 years. CPUE for mackerel fish increased 199 % from 1.64 kg / hectare to 4.9 kg / hectare.

Constraints on Critical Habitat Enhancement

- Geographic coverage (that is very large)
- Information on specific locations that are essential for fish recruitment (spawning, nursery, feeding) is still limited
- Long-term impacts of conservation and rehabilitation of fish habitats
- Involvement of multi-stakeholders is still challenging due to benefits and impacts to their interest

Conclusion

- Most of marine fisheries habitats are already conserved but still need concrete management actions to maintain its coverage and quality.
- Its effectiveness to improve fish stocks depends on good understanding and proper site selection on specific sites for spawning, nursery, and feeding areas.
- Monitoring and evaluation on the results of conservation and habitat rehabilitation need to be undertaken regularly and as a long-term activity.



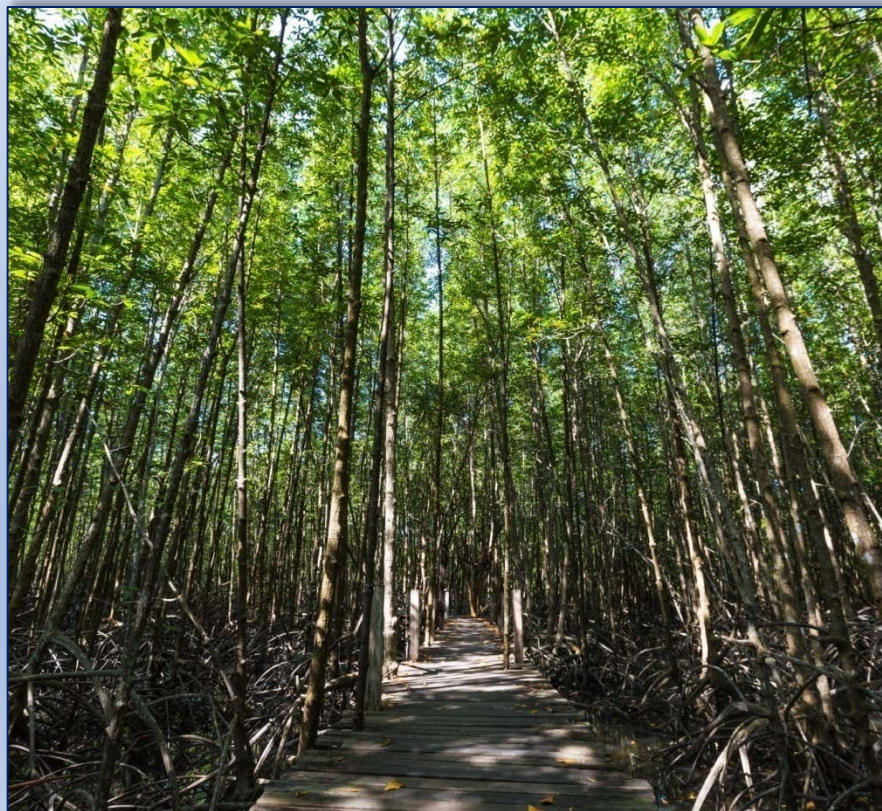
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