

Opportunity and Challenge of Research and Technology on Maritime in Indonesia

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Background

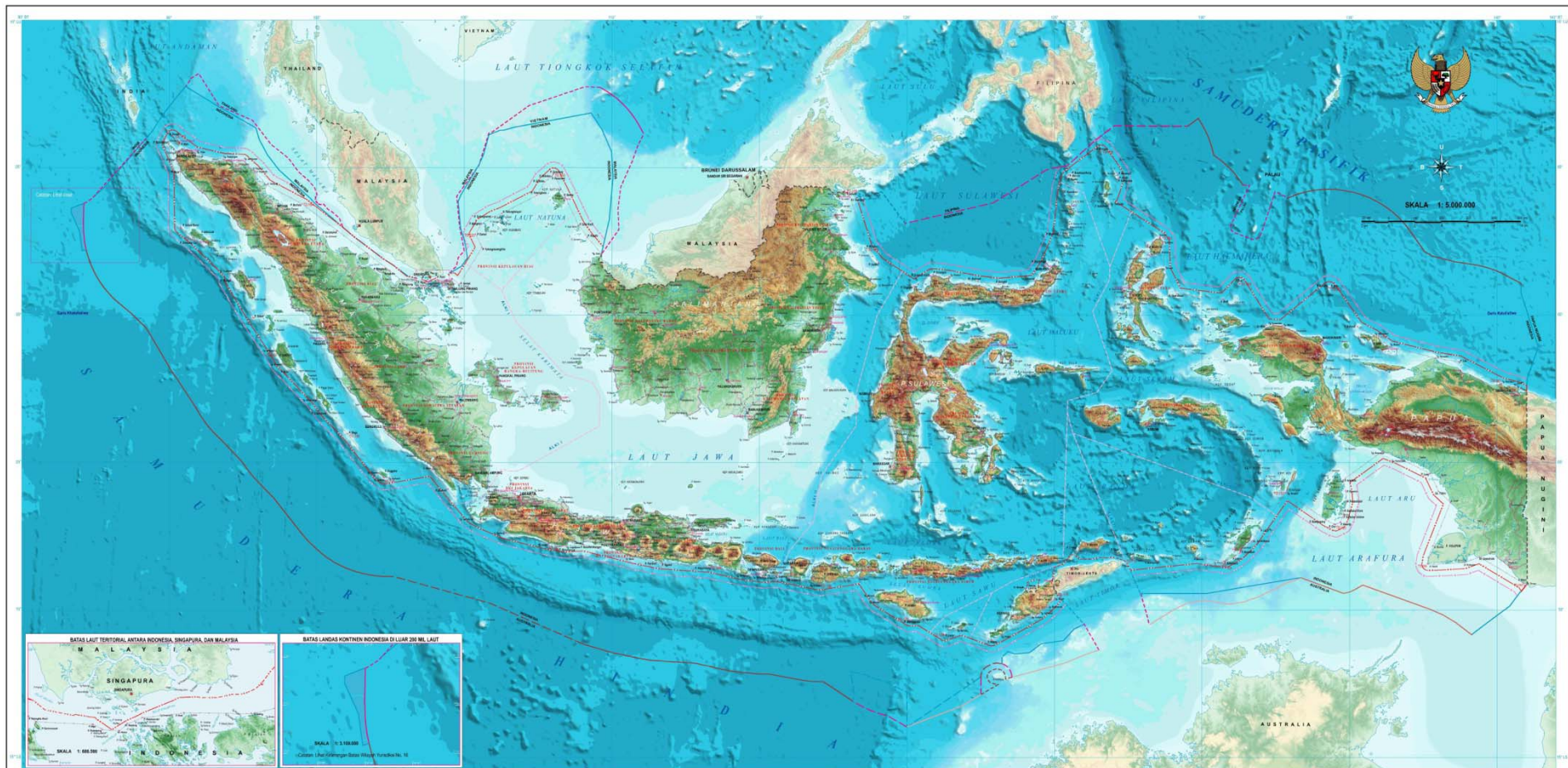
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Pidato Jokowi: Sudah Lama Kita Memungungi Laut

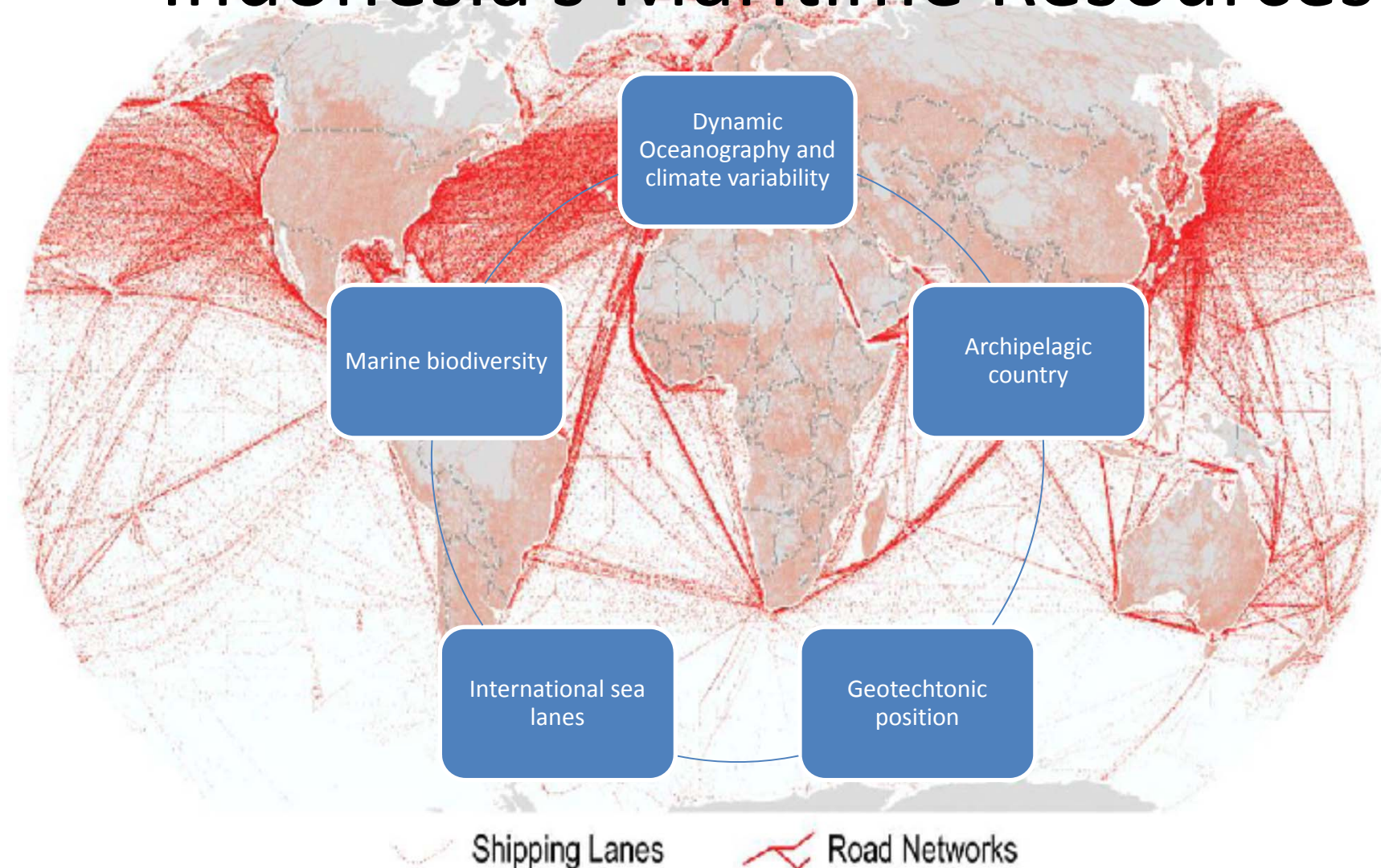


Mr. President stated that we neglect our ocean for a long time.



Territorial Sea Areas: 3.1 Million Sq-Km., EEZ Areas: 2.7 Million Sq-Km, 17.508 Islands, 99.093 Km-Long Coastline (the second longest after Canada).

Five Comparative Advantages of Indonesia's Maritime Resources



Maritime Economic Contributions

- The contribution of maritime to GDP is 11,14 % 2010 with 3 the biggest components: sea transportation including rivers, hotels and restaurants around the coast, and in the processing industries
- **Export of ocean product of Indonesia is the fifth in SEA**
- Optimistic projections 2025: reach 27% of GDP, with 3 the biggest components: processing industries, sea transportation and industry supporters, as well as aquaculture.



Maritime Vision

To bring Indonesia to become a new, strong and developed maritime fulcrum country, based on its national interest

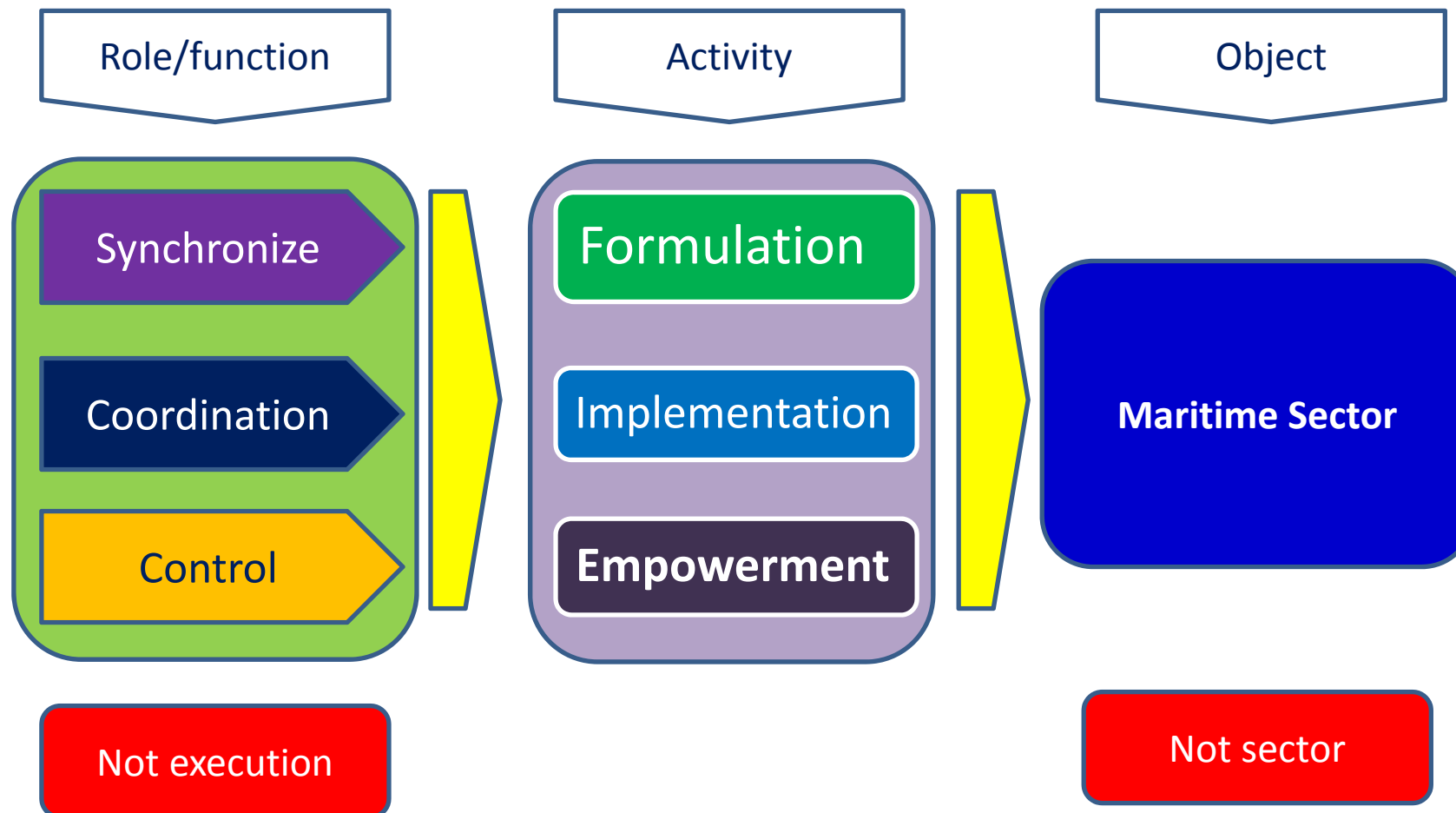
Indonesia Maritime Fulcrum

1. Raised Indonesia, from a group of lower middle income (\$ 3.592) to upper middle income (\$ 10,000) country with large maritime components
2. Reliable human resources, creative and innovative
3. Science and Technology supports
4. Strong maritime culture

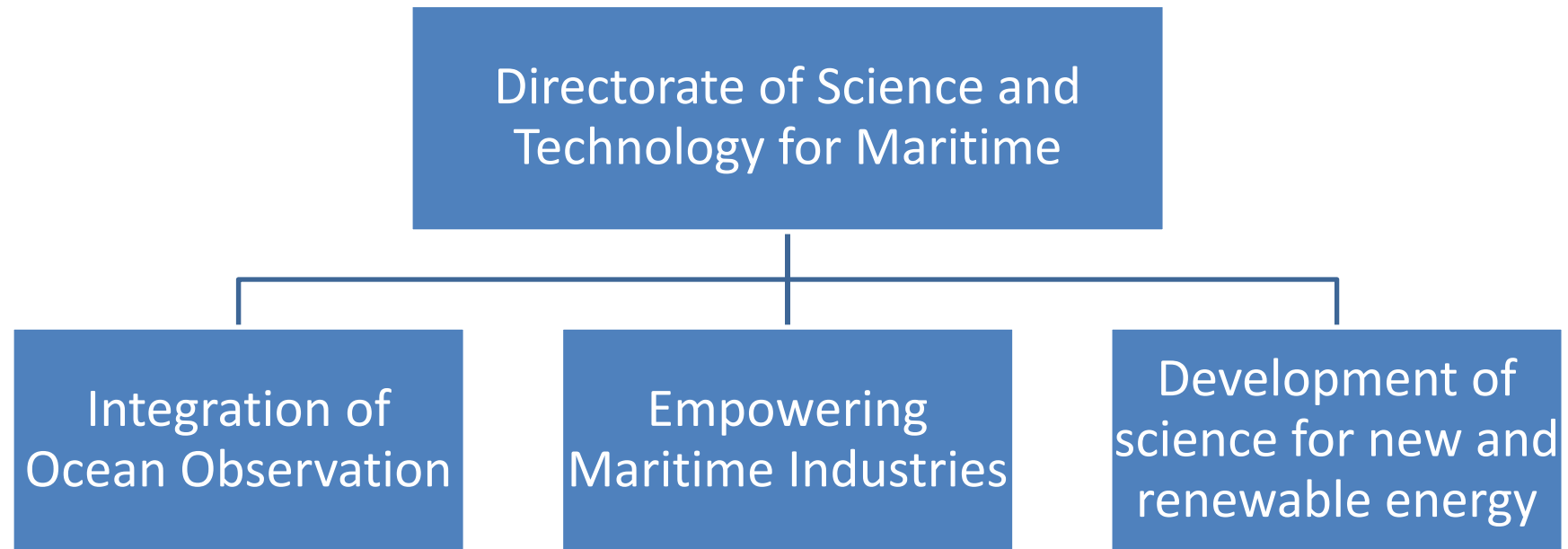
Strategic for Science and Technology for Maritime

- Encourage the integration of utilization of data and recent knowledge for maritime
- Build independence of national maritime industry through sustaining innovation
- Optimization of vessel for ocean research
- Coordinating the development of national data base
- Encouraging the research and technology for utilization of the new and renewable energy
- Develop and strengthen networking of maritime innovation with economy, science and technology based

Function of Coordinating Ministry



Focus of the strengthen of Sci-Tech of Maritime



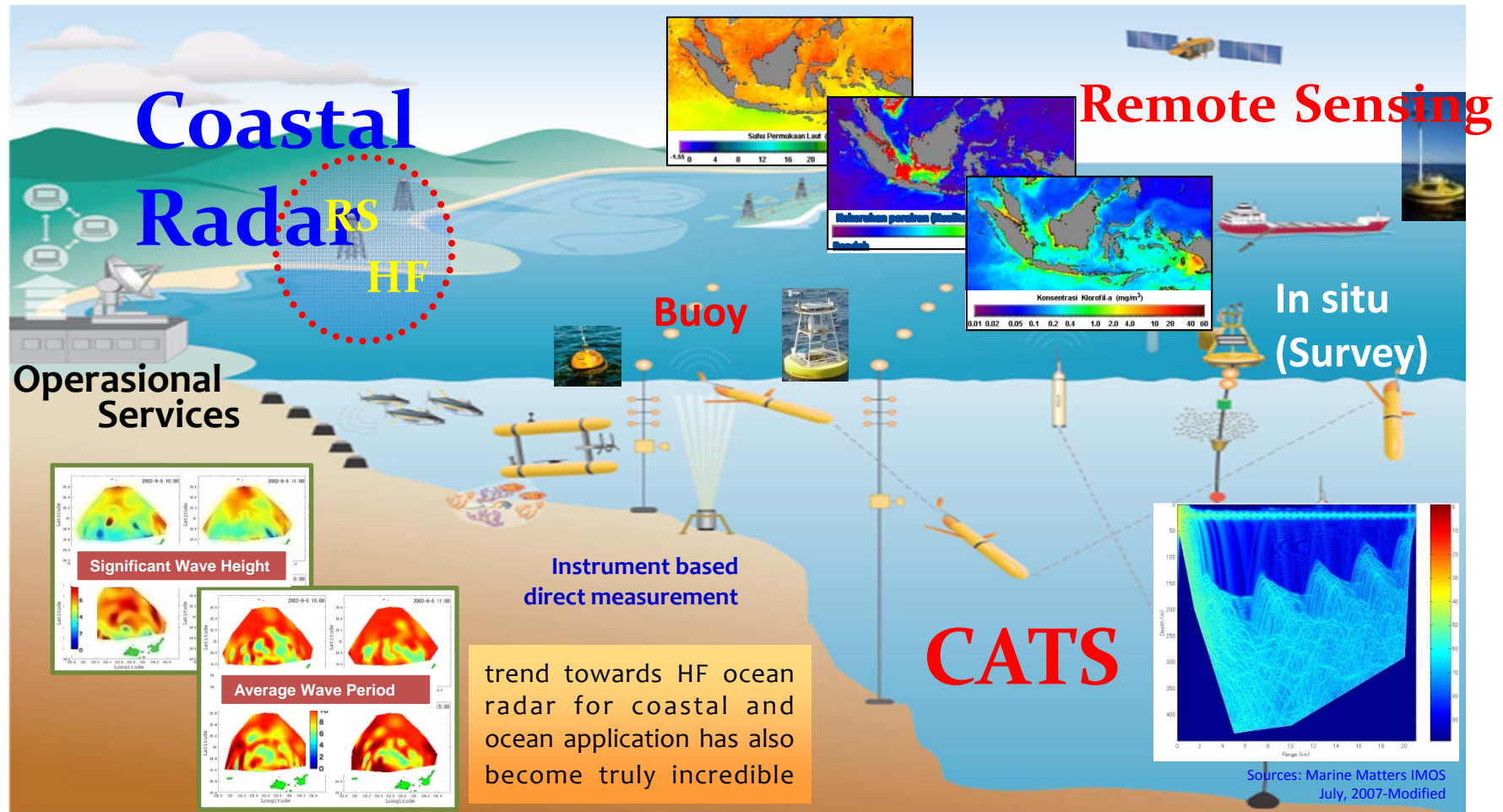
The main tasks are: to coordinate , sinchronize the formulation and policy, and control its implementation



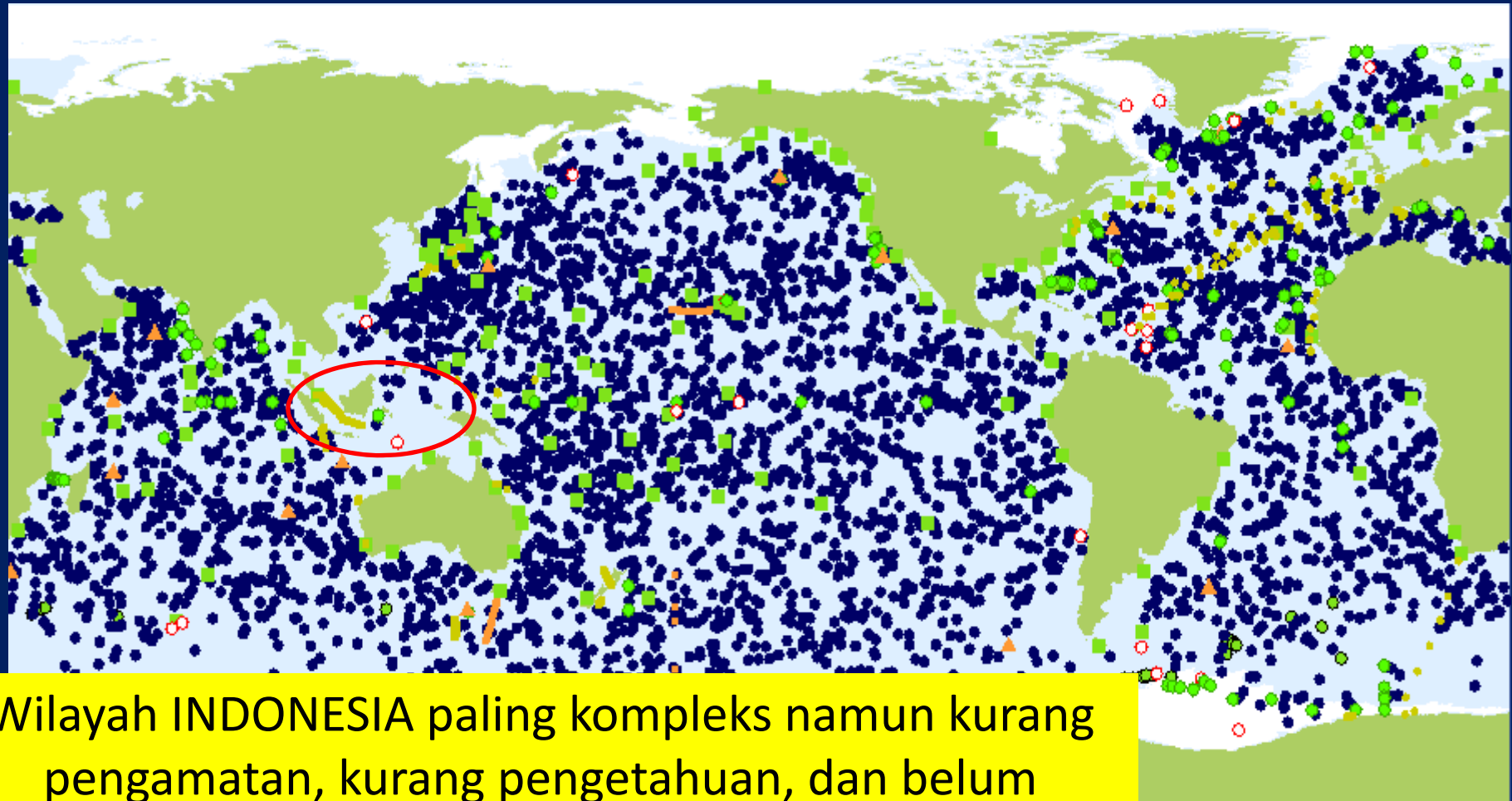
Ocean Observation

- Implementation of data sharing agreement among 7 ministries and National agencies
 - Optimization of vessel for ocean research
 - Increasing the understanding on marine debris and ocean climate
- Development of ocean data base in the office of Coordinating Ministry for Maritime Affairs

Integrated Ocean Observation System



Global Ocean Observation System



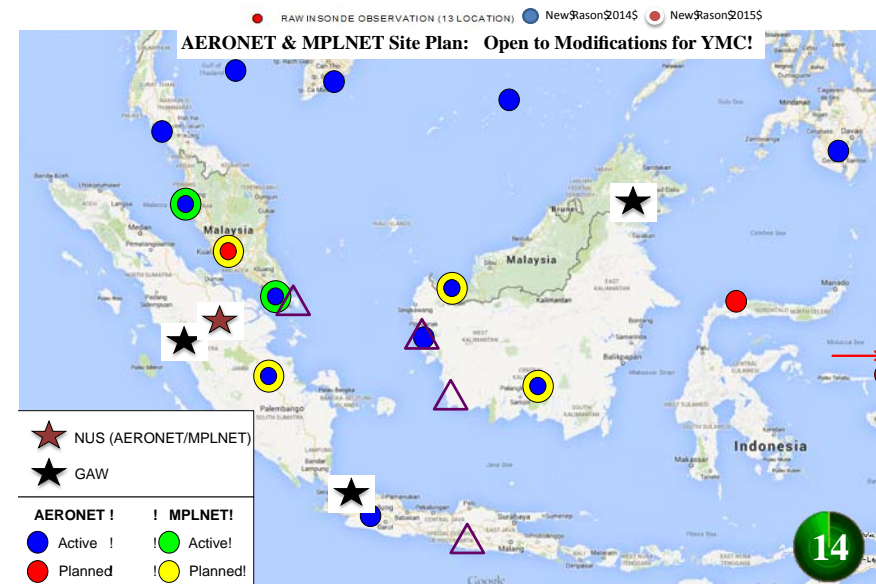
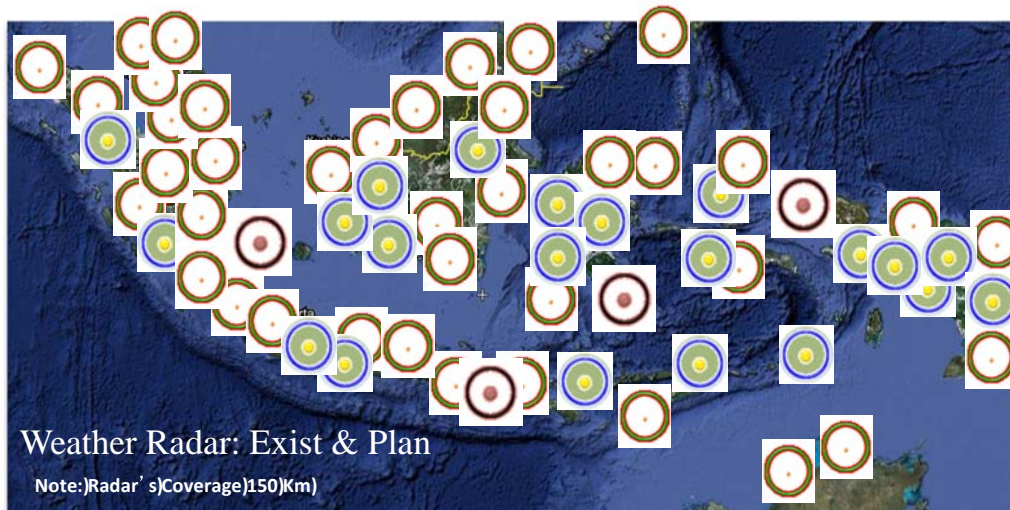
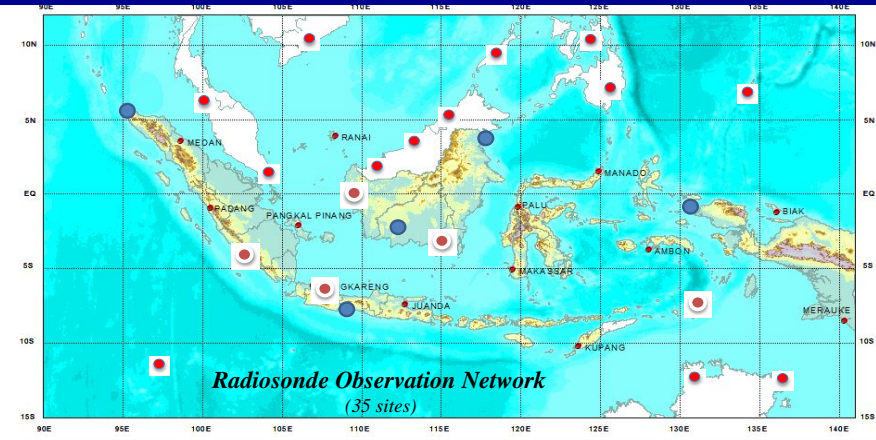
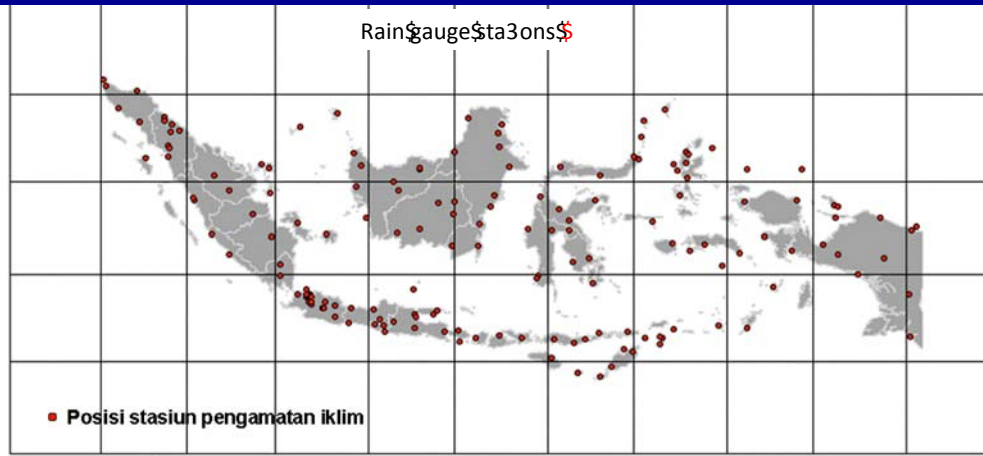
Wilayah INDONESIA paling kompleks namun kurang pengamatan, kurang pengetahuan, dan belum tersedia DATA dan model yang cukup representatif

(GTS, Dec 2014)

Years of the Maritime Continent (YMC)

July 2017 – July 2019

MEMPERKUAT SISTEM OBSERVASI LAUT DAN CUACA-IKLIM DI INDONESIA

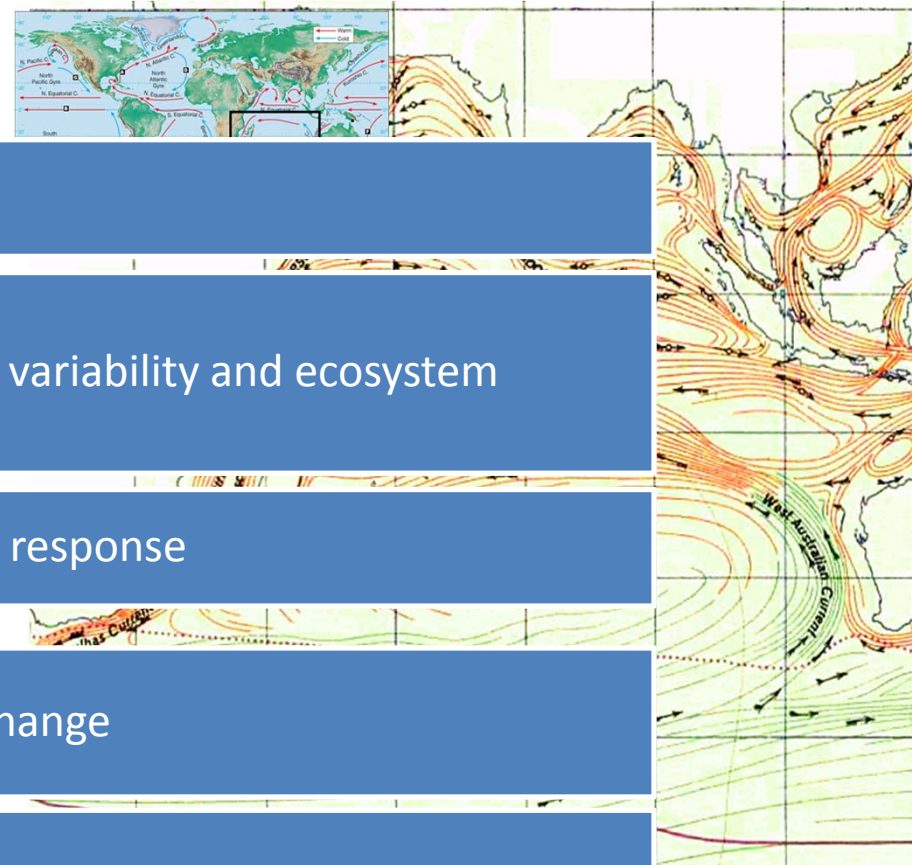


Existing (30 Sites) Radar) Build (2014, 4 Sites) Radar) 2015 & 2019, 18 New Sites)

International Indian Ocean Expedition-2 (IIOE) 2016 - 2020

MEMPERKUAT SISTEM OBSERVASI LAUT

IIOE-2 Science Plan (Hood et al, 2015)



- 1 Human impact
- 2 Boundary current dynamic, upwelling variability and ecosystem
- 3 Monsoon variability and ecosystem response
- 4 Circulation climate variability and change
- 5 Extreme events and their impact on ecosystem and human response
- 6 Unique geological, physical, biogeochemical and ecological feature of IO

Five world ocean gyres Indian Ocean Gyre is in the box. Source: <http://www.i-ool.org>

Maritime Industries

- Downstreaming the research product of maritime
- Recommend maritime and marine research
- Master plan of maritime and marine research
- Initiation of Research Center for Tropical Ecosystem in Kepulauan Seribu, North Jakarta

New and Renewable Energy

- Sci-Tech Development on Ocean Renewable Energy
- Innovation of Hybrid Power Plan in some remote villages in Indonesia

POTENSI ENERGI BARU TERBARUKAN

Sumber: ESDM

NO	ENERGI BARU TERBARUKAN	SUMBER DAYA (SD)	KAPASITAS TERPASANG (KT)	RASIO KT/SD (%)
1	Hidro	75.000 MW	5.250 MW	7,0 %
2	Panas Bumi	29.475 MW	1.403,50 MW	4,8 %
3	Biomassa	32.000 MW	1.740,40 MW	5,4 %
4	Surya	4,80 kWh/m ² /day	71,02 MW	-
5	Angin dan Hybrid	3 – 6 m/s	3,07 MW	-
6	Samudera	61 GW ***)	0,01 MW ****)	-
7	Uranium	3.000 MW *)	30,00 MW **)	-

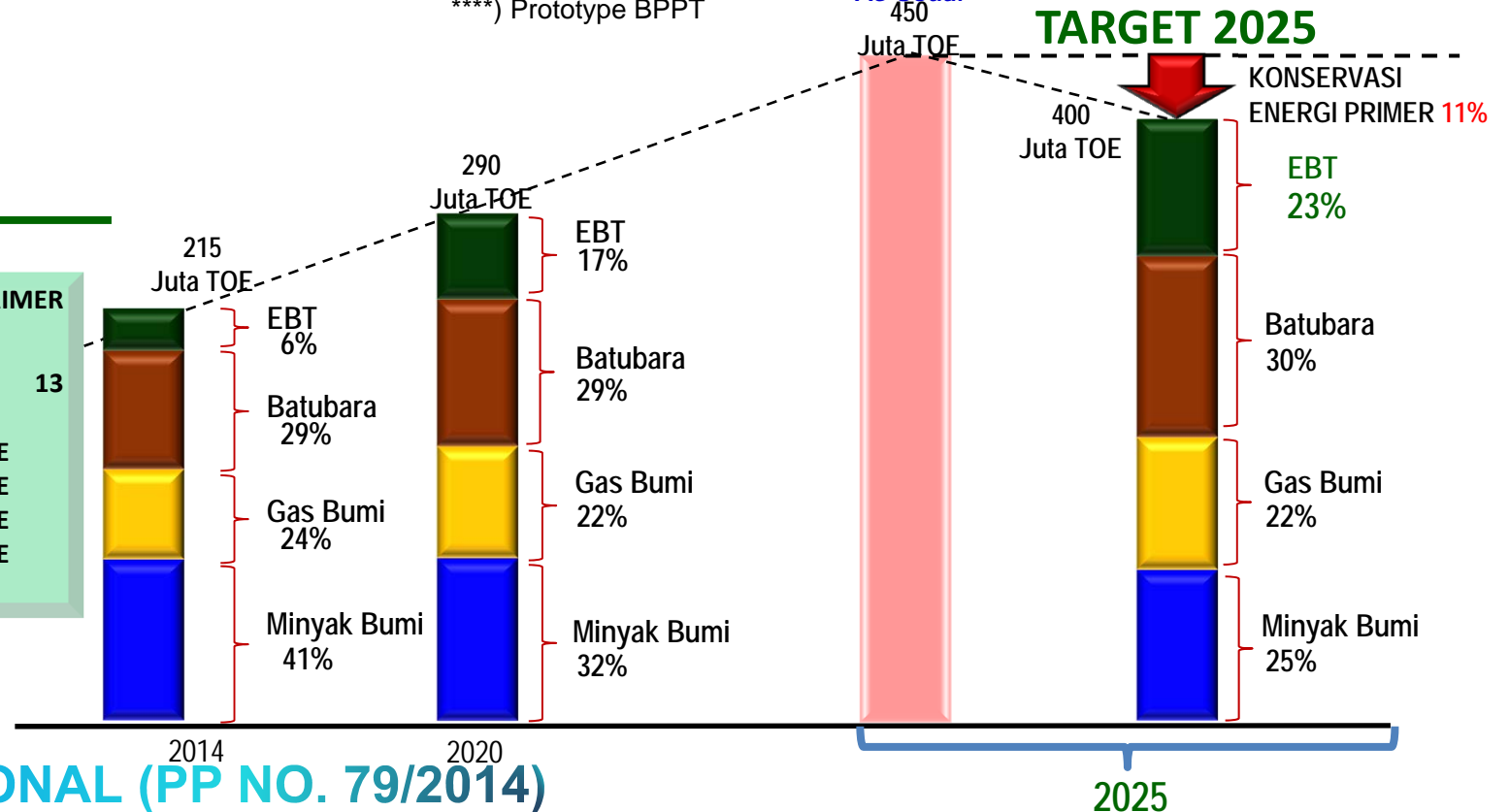
*) Hanya di Kalan – Kalimantan Barat
 **) Sebagai pusat penelitian, non-energi

***) Sumber: Badan Litbang ESDM, 2014
 ****) Prototype BPPT

Bussiness As Usual
 450
 Juta TOE

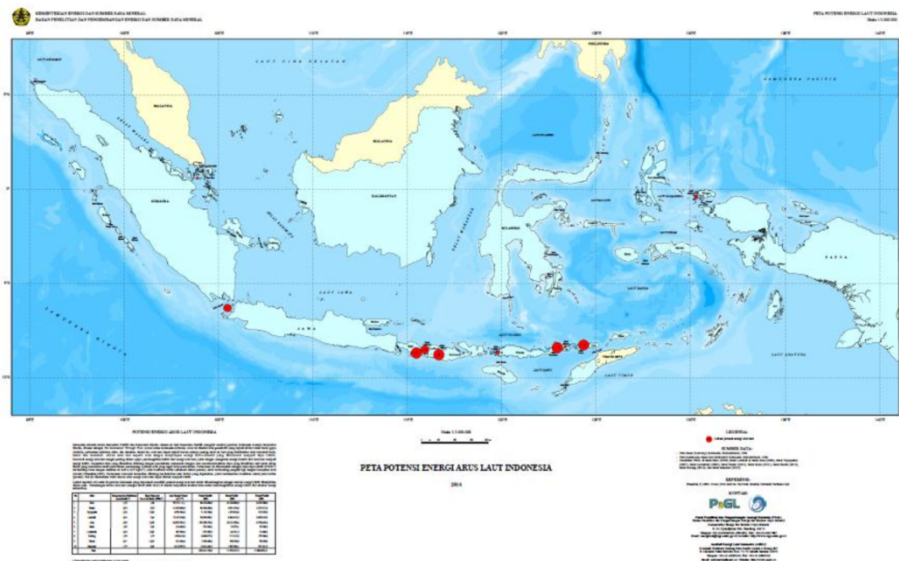
TARGET 2025

- TOTAL ENERGI PRIMER NASIONAL 215 MTOE
- ENERGI PRIMER EBT: 13 MTOE
 - ✓ PANAS BUMI : 6 MTOE
 - ✓ BIOFUEL : 4 MTOE
 - ✓ BIOMASSA : 2 MTOE
 - ✓ AIR : 1 MTOE

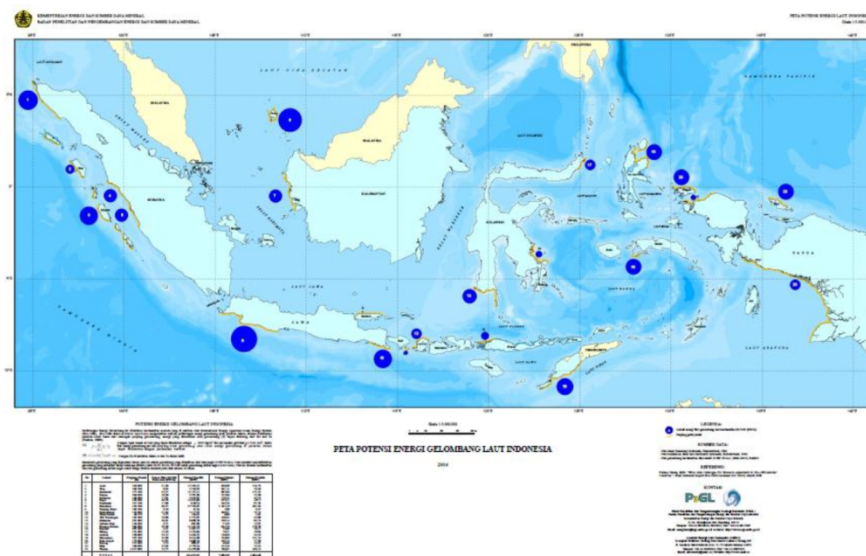


ENERGI NASIONAL (PP NO. 79/2014)

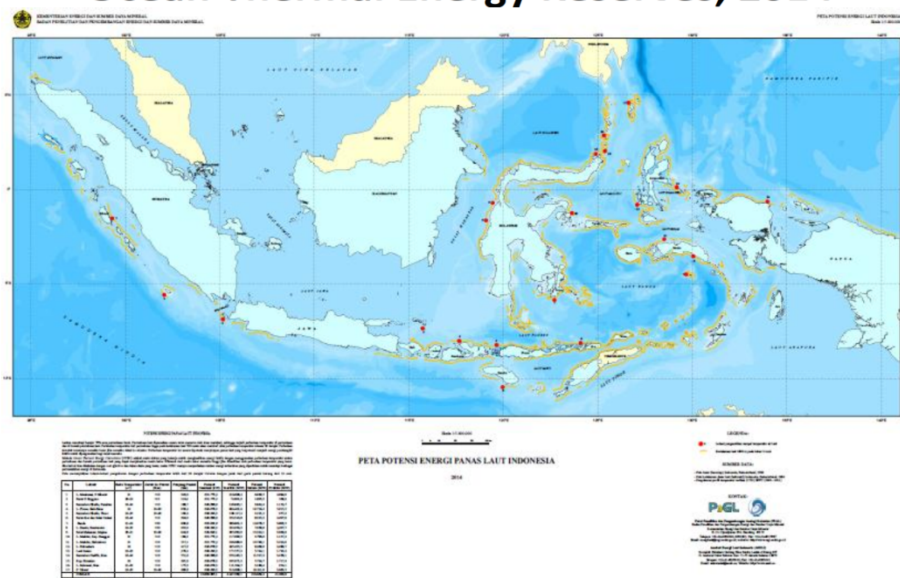
Tidal Energy Reserves, 2014



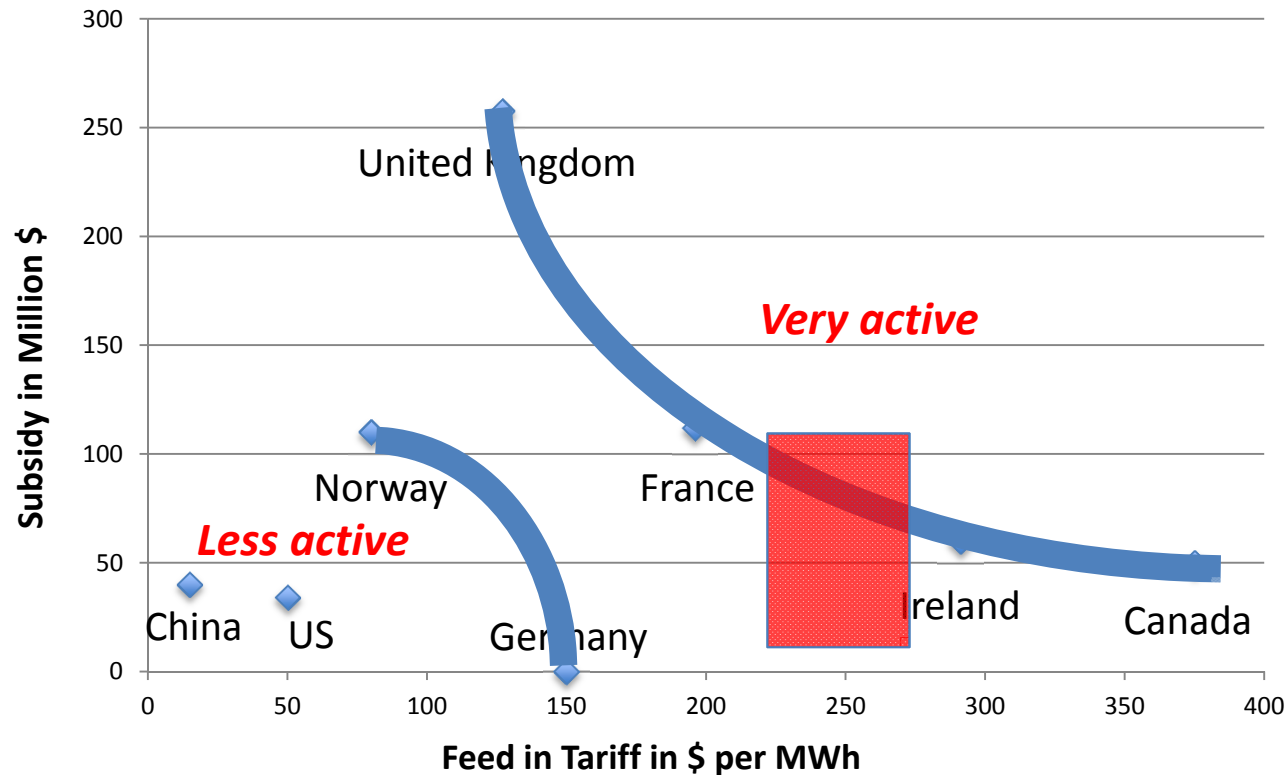
Wave Energy Reserves, 2014



Ocean Thermal Energy Reserves, 2014



Opportunity of Ocean Energy



FIT dan Tingkat Insentif akan membedakan aktivitas industri di *Ocean Power*, memotivasi operator & pengembang proyek.

- Investation on Ocean Energy :**
- Maximize the local content
 - Utilization of ocean energy in the area where the gasoline price is relatively high

PTTAL 10 kW
Sudah beroperasi



Cooperation Opportunities in Maritime Human Resources, Science and Technology and culture

1. Increasing maritime human resources skill through training, education and certification
2. Science and Technology Utilization;
3. Strengthening maritime culture and sport;
4. Expanding maritime innovation network to increase competitiveness