ADDRESSING CLIMATE CHANGE MITIGATION AND ADAPTATION IN INDONESIA AND ROLE OF MANGROVE ECOSYSTEM

DR. NUR MASRIPATIN
Director General of Climate Change
Ministry of Environment and Forestry of Indonesia

INTERNATIONAL CONFERENCE ON SUSTAINABLE MANGROVE ECOSYSTEM, APRIL 2017
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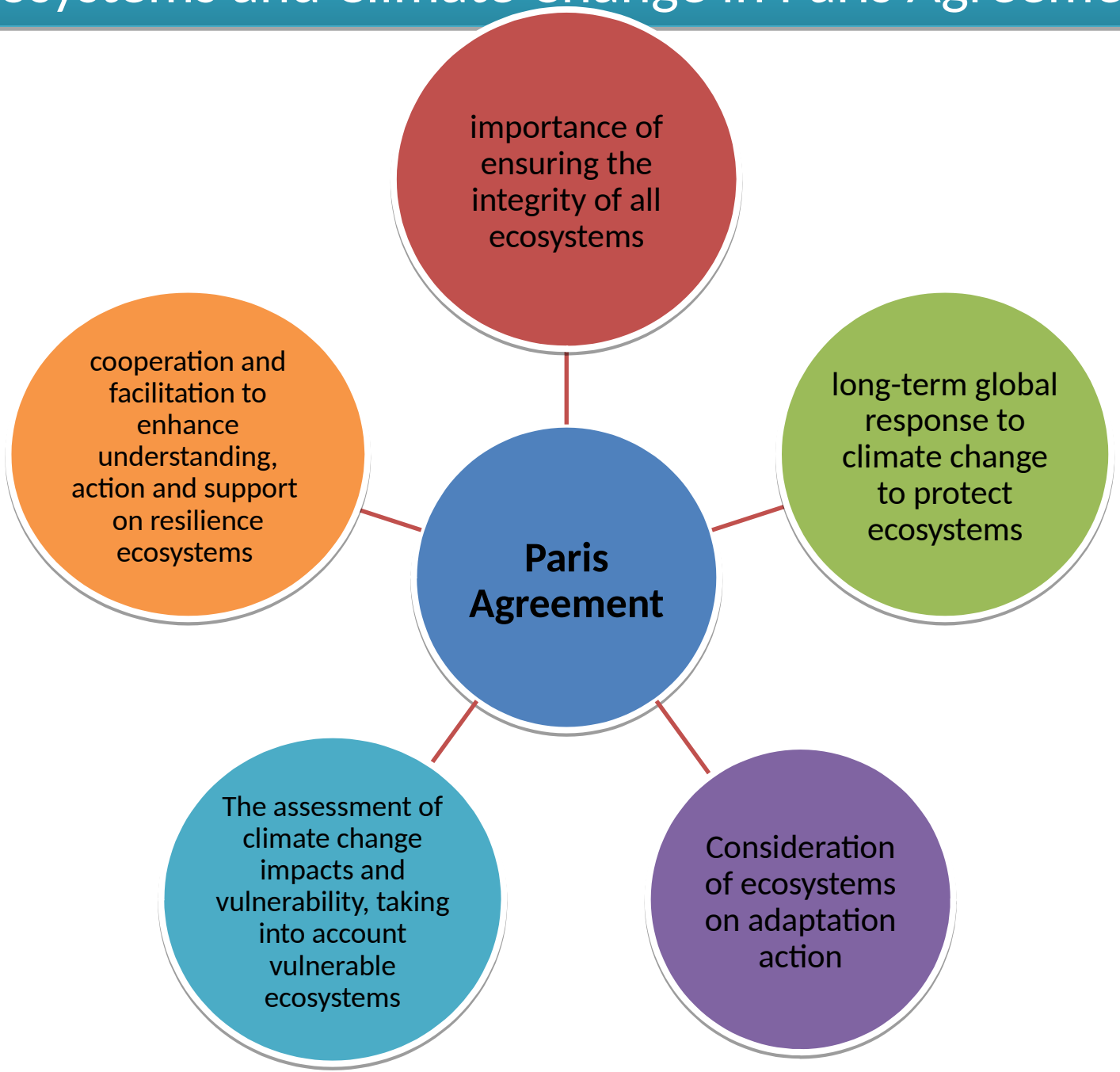
COMMITMENT OF THE GLOBAL COMMUNITY

- After 20 years the Parties of the UNFCCC fighting against negative impacts of climate change through differentiated paths between developed and developing countries, at 21st Conference of the Parties, Paris Agreement which brought all Parties to the same platform was adopted.
- Paris Agreement (PA) was adopted by Parties with universal commitment to prevent adverse impacts of climate changes, and signed by more than two third of the total number of UNFCCC Parties at the day of the signing ceremony. The Paris Agreement also entered into force much earlier than it was anticipated at the time of its adoption in 2015.

ROLE OF FOREST

- Forest has been an important sector in the climate regime. Article 5 of the Paris Agreement explicitly stated the role of forest, including policy approaches and positive incentives for REDD+.
- Article 5 of the Paris Agreement also reemphasized the provision under Article 4 of the Convention that *Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.*
- *The Agreement also recognize the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity in addressing climate change,*

Ecosystems and Climate Change in Paris Agreement



COMMITMENT OF INDONESIA

I am here to convey our strong political support to a successful COP 21. As a country with one of the largest forest areas that serves as the lungs of the world, Indonesia has chosen to be part of solution. Under my leadership, the government will take into consideration environmental aspects in our development.

Indonesia have geographic conditions that are vulnerable to climate change. 2/3 of our territory consists of sea, there are 17,000 island – many of which are small islands, 60% of the population lives in coastal area, and 80% of disaster that has taken place are climate-related.

Above-mentioned vulnerabilities and challenges would not stop us from committing to contribute to global action in reducing emission. Indonesia commits to

Reduce by 29% from BAU level by 2030 and by 41% with international assistance.

COMMITMENT OF INDONESIA (cont.)

- ✓ Signing of Paris Agreement in New York, April 2016;
- ✓ Ratification of Paris Agreement through Act No. 16/2016 in October 2016;
- ✓ Submission of Instrument of Ratification to Depository of UN
- ✓ Submission of the First Nationally Determined Contribution (NDC) document to UNFCCC, November 2016.

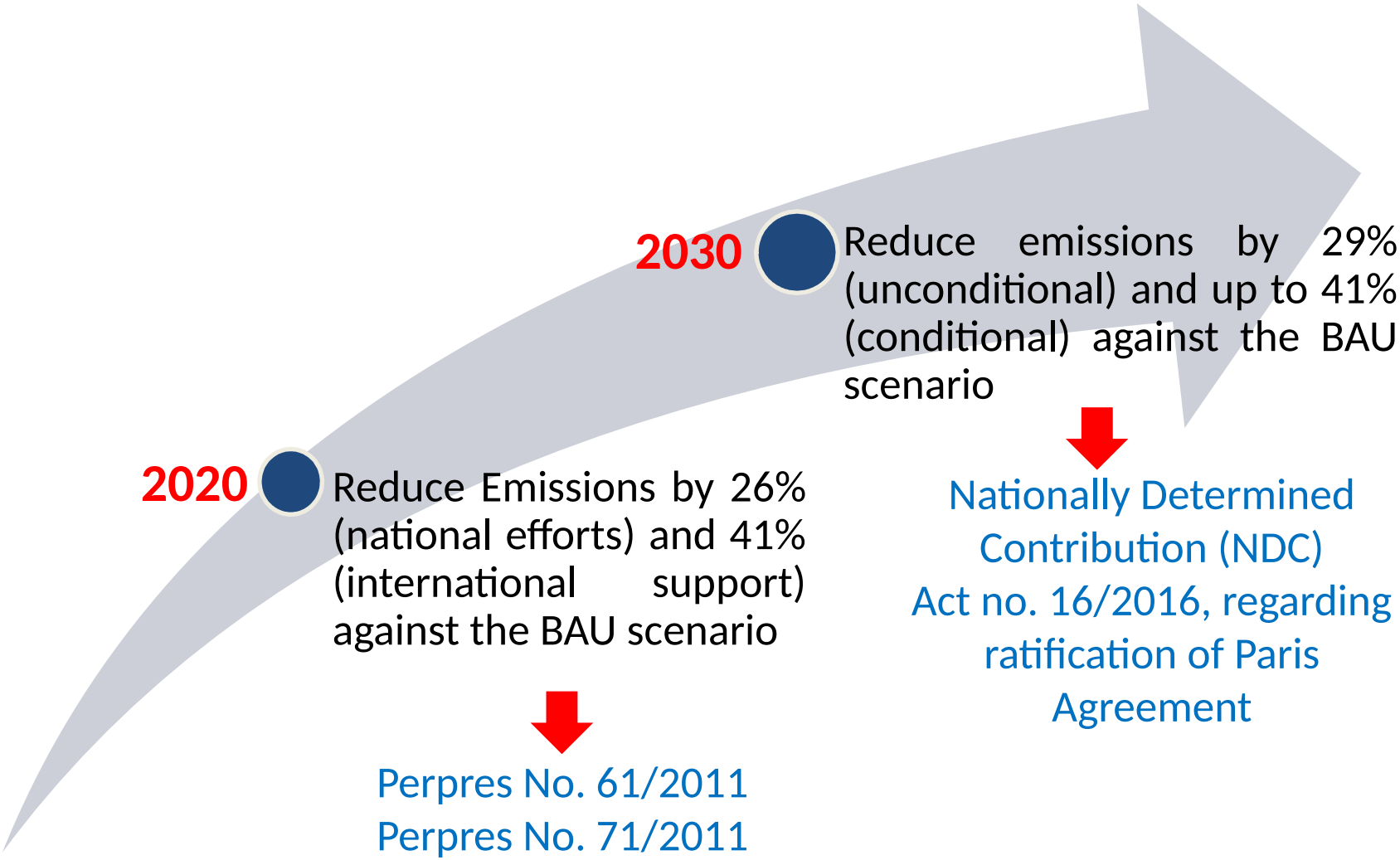
COMMITMENT OF INDONESIA (cont.)

- Indonesia's commitment to implement Paris Agreement has been reflected in the ratification of the agreement through Law No. 16/2016 in October 2016 last year, and in the First NDC/revised INDC submitted to UNFCCC Secretariat in November 2017. Indonesia's NDC set emission reduction target of 29 % and up to 41 % with international support, compared to BAU 2030 of 2.869 GigaTon CO2e. The emission reduction target will be met through five sector categories, namely : LULUCF (17.2 %), energy including transport (11 %), IPPU (0.10 %), waste (0.38 %), and agriculture (0.32 %).

- Among the 29 % of the NDC target, 17,2 % of them will come from LULUCF sector to achieve. The target will be achieved through four main areas of policy and action : (1) reducing deforestation and forest degradation including forest fire, (2) regulate production of natural forests, (3) increase production of commercial timber plantation by improving its productivity, and (4) set ambitious target on rehabilitation of degraded lands and peatlands restoration.

INDONESIA'S PRE 2020 AND POST 2020 COMMITMENT

TO REDUCE GHGs EMISSION



NDC INDONESIA : EMISSION REDUCTION TARGET FOR EACH SECTOR CATEGORY

No	Sector	GHG Emission Level 2010*	GHG Emission Level 2030 (MTon CO_2e)			GHG Emission Reduction (MTon CO_2e)		GHG Emission Reduction % of Total BaU		Annual Average Growth BAU (2010-2030)	Average Growth 2000-2012*
		MTon CO_2e	BaU	CM1	CM2	CM1	CM2	CM1	CM2		
1	Energy*	453.2	1,669	1,355	1,271	314	398	11%	14%	6.7%	4.50%
2	Waste	88	296	285	270	11	26	0.38%	1%	6.3%	4.00%
3	IPPU	36	69.6	66.85	66.35	2.75	3.25	0.10%	0.11%	3.4%	0.10%
4	Agriculture	110.5	119.66	110.39	115.86	9	4	0.32%	0.13%	0.4%	1.30%
5	Forestry**	647	714	217	64	497	650	17.2%	23%	0.5%	2.70%
	TOTAL	**1,334**	**2,869**	**2,034**	**1,787**	**834**	**1,081**	**29%**	**38%**	3.9%	3.20%

* Including fugitive

**Including peat fire

Notes: **CM1** = Counter Measure (*unconditional mitigation scenario*)

CM2 = Counter Measure (*conditional mitigation scenario*)

POLICIES AND ACTIONS NEEDED TO ACHIEVE NDC TARGET IN FORESTRY/LULUCF SECTOR
(Reduce Deforestation Rate)

BAU	CM1	CM2
2013-'20: 920 2020-'30: 820 2030-'50: result from model	2013-'20: 450 2020-'30: 325 2030-'50: result from model	2013-'20: 450 2020-'30: 325 2030-'50: result from model

Assumptions :

1. Deforestation rate in thousand hectars per year
2. BAU 2013 – 2020 using FREL REDD+
3. Deforestation contains planned and unplanned deforestation
4. No unplanned deforestation post 2030.

POLICIES AND ACTIONS NEEDED TO ACHIEVE NDC TARGET IN FORESTRY/LULUCF SECTOR
(Regulate Wood Production in Natural Forest)

- Rate of sustainable wood extraction ~ 30m3/ha (some literatures : rate of wood extraction from sustainable natural forest ranges from 20 to 35 m3ha; assumption for wood extraction in 2010 : 50 m3/ha)
- Target for wood production from natural forest under CM1 and CM2 scenarios follow National Forestry Planning (RKTN - MoF, 2011); BAU used data from the Association for Indonesian Forest Concessionaire (APHI).
- It is assumed that all forests cleared would leave zero waste, and all woods from these areas would be useable.
- Utilization of wood from oil palm and rubber trees at the end of its cycle is at medium rate or about a half of total.

POLICIES AND ACTIONS NEEDED TO ACHIEVE NDC TARGET IN FORESTRY/LULUCF SECTOR
(Increase Production in Commercial Plantation Forest)

- Production in 2010 were set to 120m3/ha and 130 m3/ha for BAU 2030, and 140 and 150m3/ha for CM1 and CM2 (BAU, CM1, CM2 of 140, 160, 200 m3/ha in 2050) with the role of technology intervention.
- The rate of Industrial Plantation (HTI) in ton C/ha/year was calculated based on data of measurable wood production volume in m3/ha, assuming the increase in every 10 year with :
  - ✓ a. Biomass Expansion Factor (BEF): 1.4 (IPCC Default)
  - ✓ b. Wood density for HTI/CPF: 0.4 t/m3
  - ✓ 6 years rotation.

Note : Growth rate of plants in ton C/ha/year for natural forest was calculated based on the growth in m3/ha/year, with conversion BEFof 1.4 (Ruhiyat, 1990) and wood density for natural forest: 0.7 t/m3

POLICIES AND ACTIONS NEEDED TO ACHIEVE NDC TARGET IN FORESTRY/LULUCF SECTOR
(Set ambitious target for peat restoration and land rehabilitation)

CM2 calculation used a very ambitious target in LULUCF for achieving the national target of 29 % and 38 %, and some adjustment to the CM1 assumptions are as follows:

- Peat restoration achieves 90% survival rate and the area of peat restoration reaches 2 Million ha by 2030
- Land rehabilitation achieves 90% survival rate and almost all unproductive lands have to be rehabilitated (about 12 Million ha in total), so that up to 2030 the rate of plantation would be 800 thousand ha/year (the baseline under historical data is about 270 thousand ha).

REDD+ is important part of NDC

- Almost of 100 Million ha of forest has been under REDD+ area,
- Four areas of policy interventions and actions in NDC target from forestry sectors include areas for REDD+,
- Among of these areas includes mangroves.

STRATEGIC APPROACH OF INDONESIA'S NDC

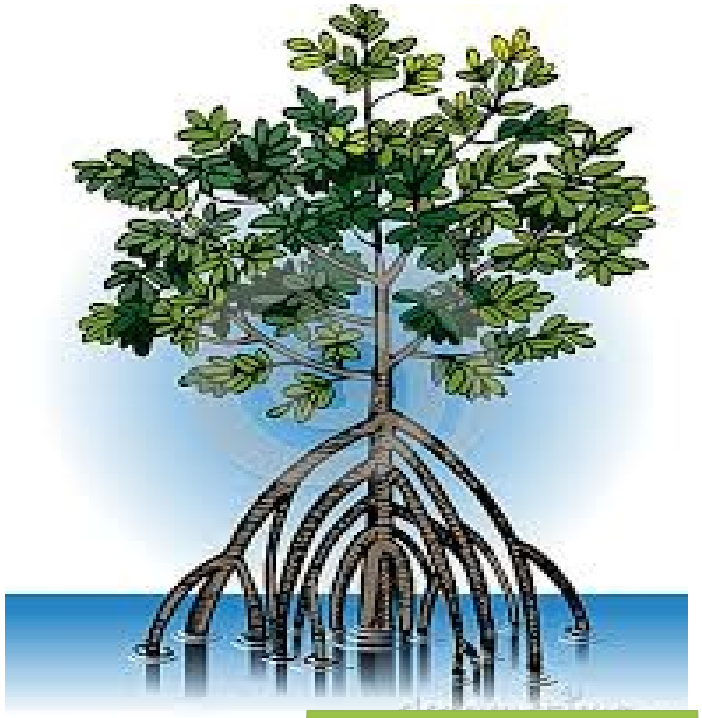
- Employing a landscape approach: Recognizing that climate change adaptation and mitigation efforts are inherently multi-sectoral in nature, Indonesia takes an integrated, landscape-scale approach covering terrestrial, coastal and marine ecosystems.
- Highlighting existing best practices: Recognizing significant strides in multi-stakeholder efforts in combating climate change, Indonesia intends to scale up the diversity of traditional wisdom as well as innovative climate change mitigation and adaptation efforts by the government, private sector, and communities.
- Mainstreaming climate agenda into development planning: Recognizing the needs to integrate climate change into development and spatial planning and the budgeting process, Indonesia will include key climate change indicators in formulating its development programme's targets.
- Promoting climate resilience in food, water and energy: Recognizing the importance of fulfilling the needs of a growing young population for food, water and energy, Indonesia will improve its management of natural resources to enhance climate resilience by protecting and restoring key terrestrial, coastal and marine ecosystems.

ROLE OF MANGROVE

- With 3.7 million ha of mangrove, Indonesia has been recorded as the home of the largest mangrove area (33% of the total mangrove area in the world),
- Although Indonesia's NDC has not quantitatively mentioned the role of mangrove in the emission reduction target, the target from forestry sector covers all forest area including mangroves,
- Mangrove ecosystem will also play an important role in adaptation under NDC.

Mangrove Ecosystem in the context of Nationally Determined Contribution (NDC) of Indonesia

Ecosystem and Landscape Resilience : integrated,landscape-based approach in managing the terrestrial, coastal and marine ecosystems.



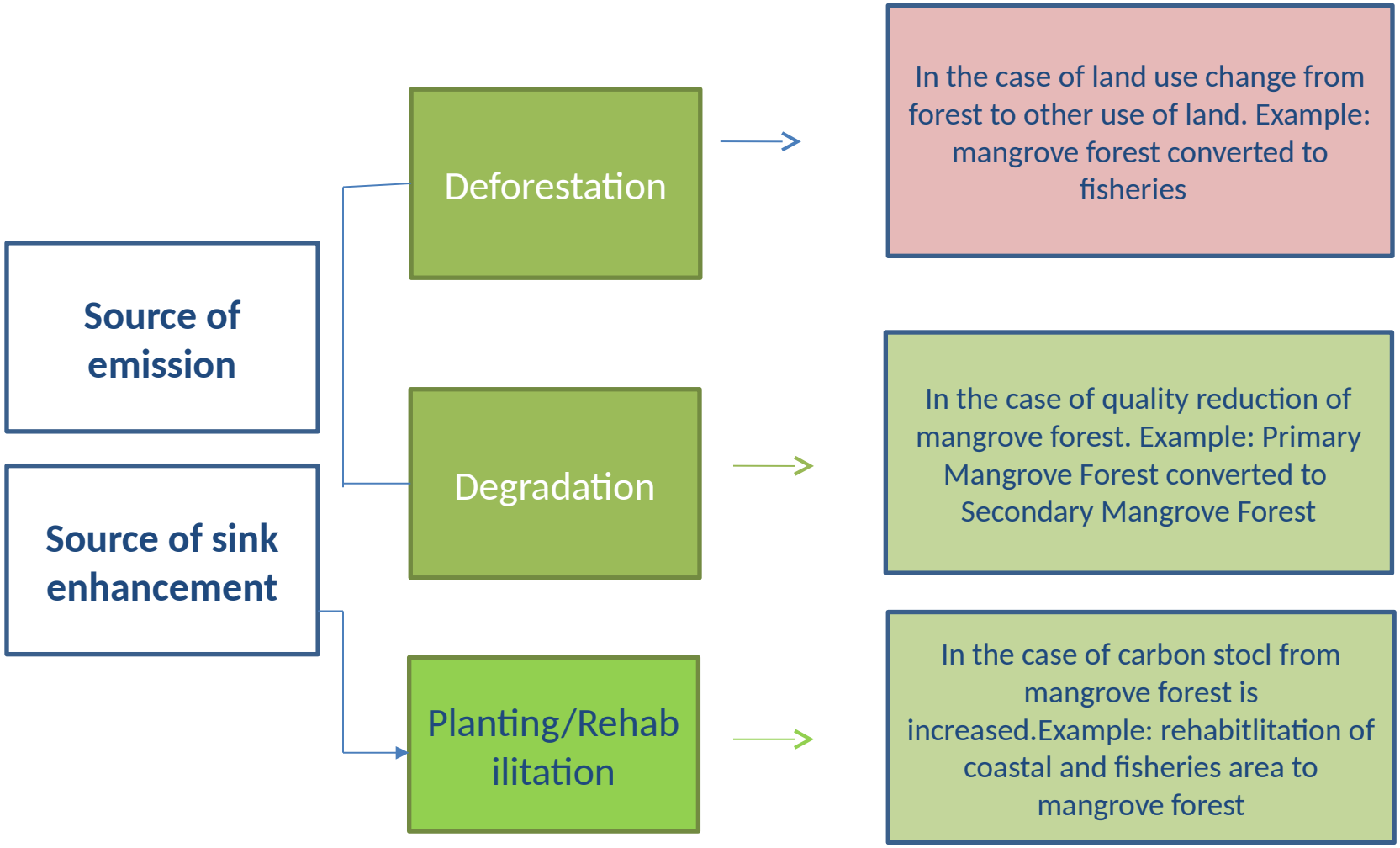
MANGROVE ECOSYSTEM

cosystem and Landscape Resilience

Social and Livelihood Resilience

Economic Resilience

EMISSION/SINK ENHANCEMENT IN MANGROVE



MITIGATION OF MANGROVE

Some Examples of mitigation in mangrove forest

Rehabilitation	Mangrove planting in coastal/degraded mangrove forest or ex fish pond
Replanting	Replanting of degraded mangrove forest

Reduce of logging of mangrove

Reduce the use of fuel wood from mangrove forest

Mangrove forest as conservation/ecotourism area

GHG EMISSION REDUCTION IN RAN GRK (pre 2020 commitment)

Mitigation Action	Target	Location	Target of GHG Emission (million ton CO2e)
Rehabilitation forest and land and reclamation of forest in priority water catchment area	Rehabiltation of forest at priority water catchment area for 500.000 ha	all provinces	18,35
	Rehabilitation of critical land at water catchment area for 1.954.000 ha	all provinces, except DKI Jakarta	71,71
	City forest for 6.000 ha	all provinces, except DKI Jakarta	0,22
	Rehabilitation of mangrove forest/coastal forest for 40.000 ha	all provinces, except DI Yogyakarta	1,47

Climate Change Adaptation in Mangrove Ecosystem (based on 3 pillars of adaptation in NDC)

KNOWLEDGE MANAGEMENT

- Climate Risk and Impact Assessment on Mangrove Ecosystem
- Establish baseline data and monitor the impact and response of mangroves to climate change.
- Identify the mangrove ecosystem services to support community to adapt climate change impact

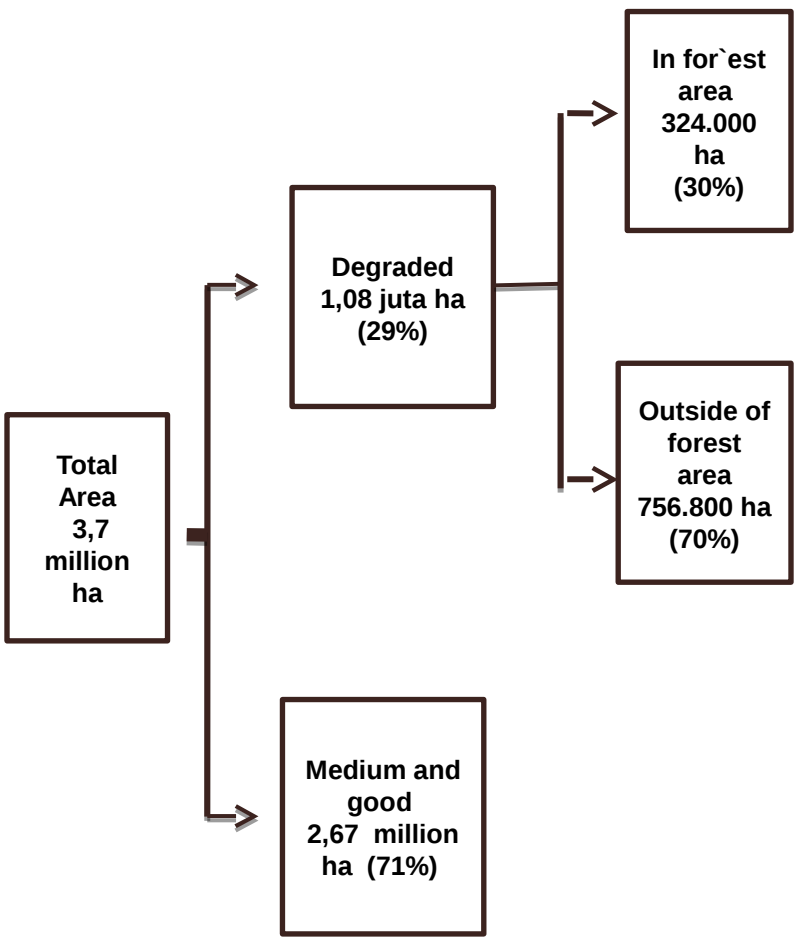
ECOSYSTEM AND LANDSCAPE RESILIENCE

- Protect the mangrove areas that are vulnerable to climate change.
- Reduce human pressure on mangroves.
- Implement adaptive strategies to compensate for changes in species ranges and environmental conditions
- Restore degraded mangrove areas that have resistance or resilience to climate change.
- Establish buffer zones to allow for mangrove migration in response to sea-level rise, and to reduce impacts from adjacent land-use practices.

SOCIAL, LIVELIHOODS AND ECONOMIC RESILIENCE

- Restore mangrove ecosystem to support fish stocks and protect inland freshwater system
- Develop alternative livelihoods for mangrove dependent communities as a means to reduce mangrove destruction.
- Build partnerships with a variety of stakeholders to generate the necessary finances and support to respond to the impacts of climate change.

CHALLENGES



- Degradation rate is high due to over- logging
- Rapid land use change for economic activities
- Lack of awareness and participation of community in mangrove conservation
- Rehabilitation of mangrove forest is not at the top priority
- Limited data and information on mangrove
- Pressure due to population growth
- Law enforcement need to be strengthened
- Integration, coordination and synergy among sectors need to be strengthen

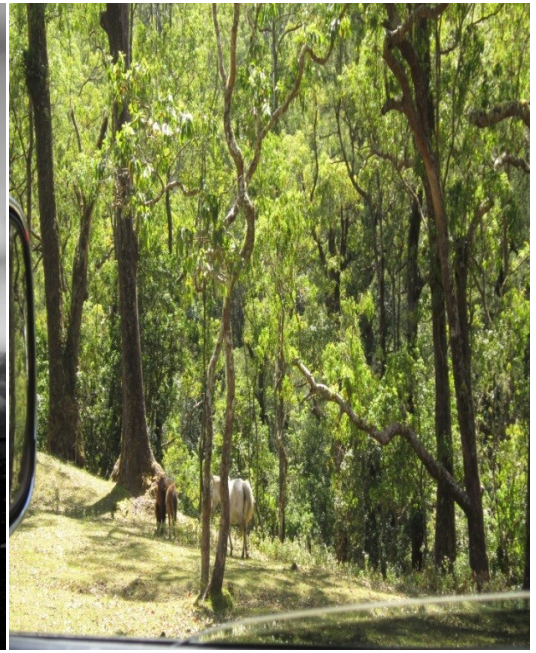
Source: MoEF (2015)

OPPORTUNITY TO IMPROVE RECOGNITION OF MANGROVE ECOSYSTEM IN ADDRESSING CLIMATE CHANGE IN INDONESIA (as stated in NDC)

- Indonesia's commitment to a low carbon future outlines enhanced actions and puts in place the necessary enabling environment for the 2015-2019 period that will lay the foundation for more ambitious goals beyond 2020.
- This would provide opportunities for building coherent actions at the national level, with particular emphasis on research, resource mobilization through partnerships, and international cooperation.

THANKYOU





passion & integrity

nurmasripatin@gmail.com, **nmasripatin@gmail.com**
http://ditjenppi.menlhk.go.id