Kementerian PPN/
Bappenas

CLIMATE CHANGE & RENEWABLE ENERGY DEVELOPMENT IN INDONESIA

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INDONESIA AND CLIMATE CHANGE

"An Archipelagic Country"

Strategic Location

- Between two continents
- Between two oceans
- An important route for the world trade sea transportation

- Indonesia has concern in the efforts to reduce impact of climate change.
- Indonesia is one of the biggest emitter in the world. (1.45– 2.88 GtCO2 between 2015-2030)*
- Indonesia is one of the emerging economy countries (G20 member).
- Indonesia is vulnerable to climate change. Estimated potential losses due to climate change will become very large.
- Indonesia can be a 'role model', on the reduction of emissions.

NATIONAL COMMITMENT TO CLIMATE CHANGE ISSUES

Indonesia's commitment to reduce GHG emissions by 2030:
29% of **BaU**
41% with **International Aid**

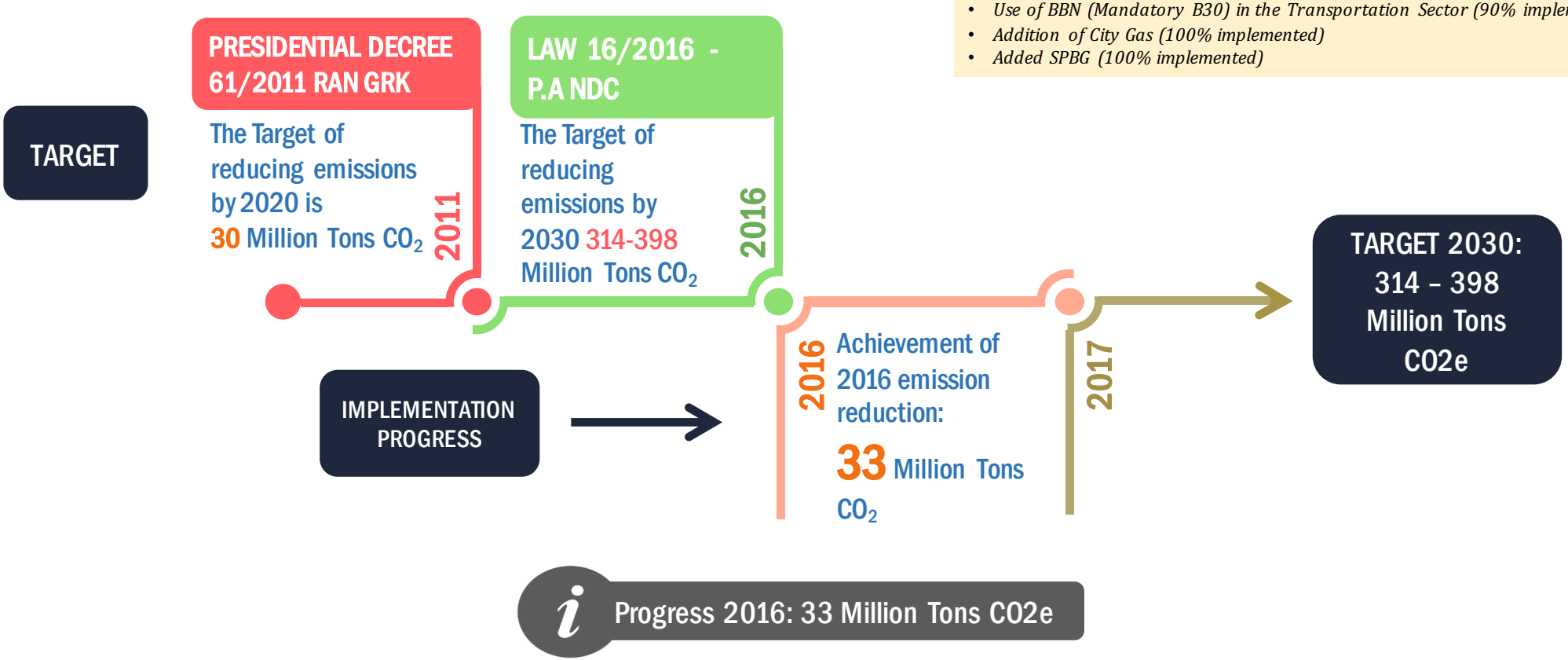
Indonesia has ratified the Paris Agreement in October 2016 (Law of Republic of Indonesia Number 16 of 2016), and submitted it to the UNFCCC on 6 November 2016

Paris Agreement target :
Control global temperature rise below 2^0C, strive to $1,5^0$C

TARGET AND IMPLEMENTATION ENERGY SECTOR FOR NDC

Assumptions to achieve NDC Energy Sector targets:

- *Final Energy Efficiency Use (75% implemented)*
- *Utilization of CCT Technology (75% implemented)*
- *Electrical Production of EBT (as per RUPTL)*
- *Use of BBN (Mandatory B30) in the Transportation Sector (90% implemented)*
- *Addition of City Gas (100% implemented)*
- *Added SPBG (100% implemented)*



ACTION PLAN FOR ENERGY SECTOR TO ACHIEVE NDC TARGETS IN 2030

NRE Non ELECTRICITY

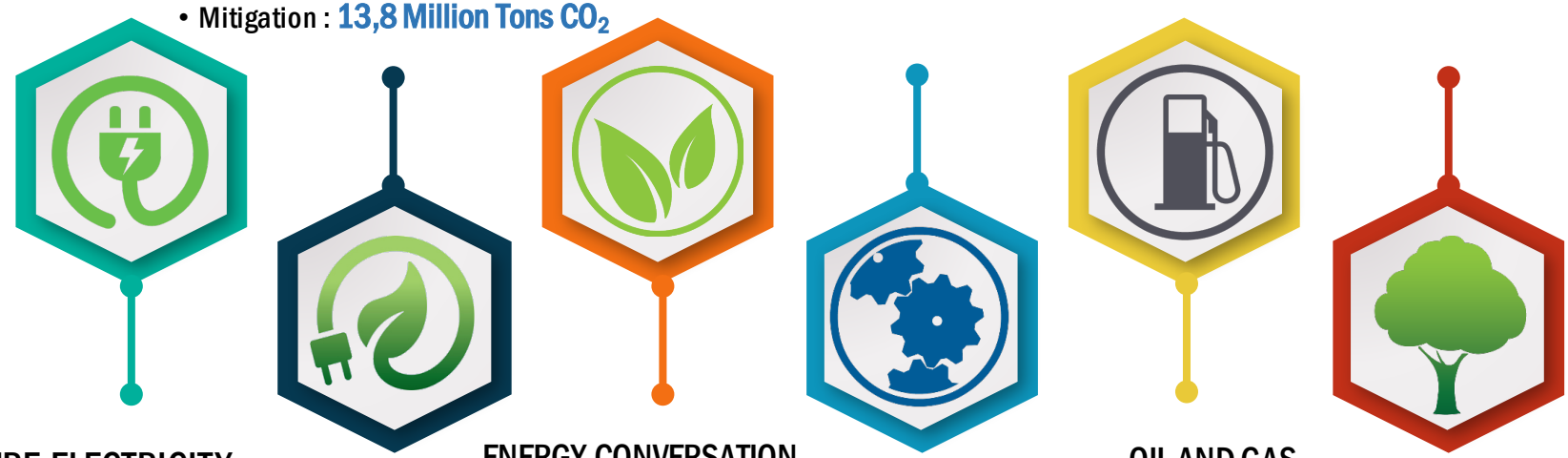
- Production Activity :
  - Biodiesel : 9,2 Million KL
  - Biogas : 19,4 Million M^3
- Mitigation : 13,8 Million Tons CO_2

CLEAN TECHNOLOGY

- Production Activity : 102 GW
- Mitigation : Rp.31,8 Million Tons CO_2

RECLAMATION

- Reclamation Activity : 145,2 Thousand HA
- Mitigation : 5,5 Million Tons CO_2



NRE ELECTRICITY

- Production Activity : 48,9 GW
- Mitigation : 156,6 Million Ton CO2

ENERGY CONVERSATION

Saving Activity : 117 TWh

Mitigation : 96,3 Million Ton CO_2

OIL AND GAS

- Activity
  - Gas Conversion : 5,6 Million Tons
  - SPBG : 143,75 MMSCFD
  - City Gas : 2,4 Million SR
- Mitigation : 10 Million Tons CO_2

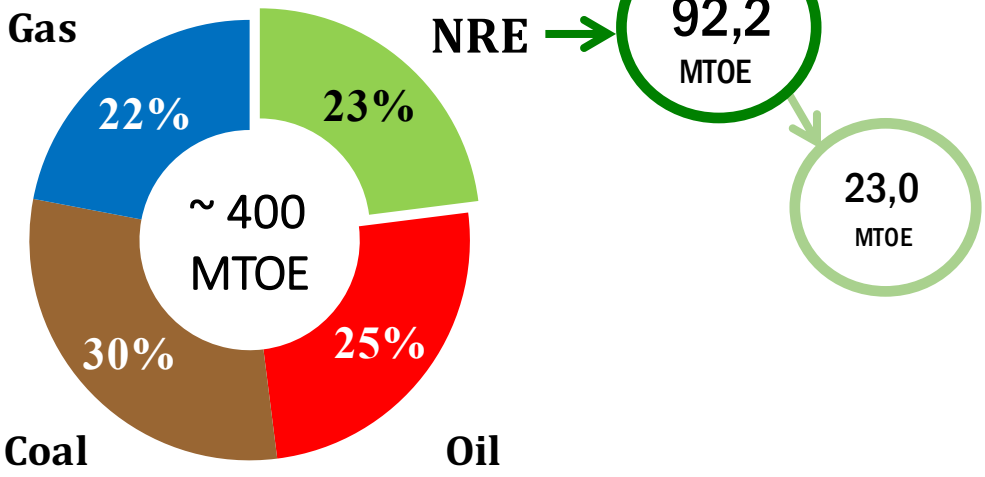
TOTAL

Mitigation : 314,0 Million Tons CO_2

TARGET OF NRE DEVELOPMENT IN 2025 (NATIONAL ENERGY PLAN)

PRESIDENTIAL DECREE 22/2017

National Power Plant Capacity	135 GW
EBT Power Plant Capacity	45 GW



Electricity NRE 45 GW	
	1. Geothermal, 7,2 GW 2. Hydro, 17,9 GW 3. Mikrohydro, 3 GW 4. Bioenergi, 5,5 GW 5. Solar, 6,5 GW 6. Wind, 1,8 GW 7. Other NRE, 3 GW

Biofuel	13,69*) Million KL
Biomassa	8,4 Million tons
Biogas	489,8 Million m3
CBM	46,0 Mmscfd

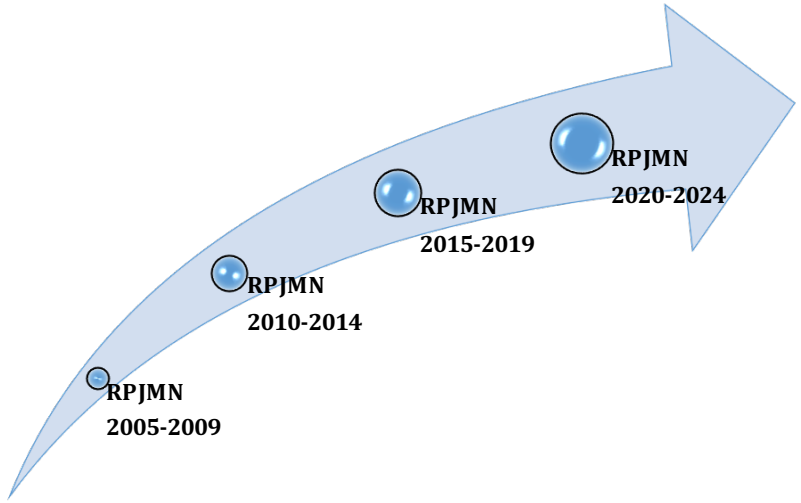
*) excluding biofuel for power generation of 0.7 million KL by 2025

LONG TERM DEVELOPMENT PLAN (RPJPN 2005 - 2025)

LAW 25/2004

DEVELOPMENT DIRECTIONS

- *Utilizing Renewable Natural Resources.*
- *Managing Non-Renewable Natural Resources.*
- *Maintaining Energy Availability Security.*
- *Increase Value Added to Unique and Typical Tropical Natural Resource Utilization.*
- *Observing and Managing the Diversity of Natural Resources Types in Each Region.*



MID TERM NATIONAL DEVELOPMENT PLAN (RPJMN 2015 – 2019)

PRESIDENTIAL DECREE 2/2015

TARGETS AND ACHIEVEMENT RENEWABLE ENERGY ON MID TERM NATIONAL DEVELOPMENT PLAN (RPJMN 2015 – 2019) (1/2)

PRESIDENTIAL DECREE 2/2015

TARGET	2015		2016		2017		2018	2019
	(target)	(realization)	(target)	(realization)	(target)	(realization)		
Primary Energy Intensity (Decrease 1%/year) (SBM/Billion Rp)	482,2	501	477,3	440,3	472,6	**434**	467,8	463,2
EBT Portion on Energy Mix (%)	6	6,7	11	7,7	15	**8,4**	15	16
Installed Capacity on Renewable Resources (MW)	11.753,14	8.619,77	13.135,17	12.059	13.995,67	**9.070**	15.458,97	16.991,97
1. Geothermal Power Plant	1.438,5	1.438,5	1.712,5	1.643,5	1.976,0	**1.808,5**	2.609,5	3.194,5
2. Bioenergy Power Plant	1.892,0	1.767,1	2.069,4	1.787,9	2.291,9	**1.839,5**	2.559,3	2.871,8
3. Hydro Power Plant	8.340,0	5.076,06	9.250,0	5.124,60	9.590,0	**5.124,60**	10.080,0	10.620,0
4. Solar Power Plant	76,9	22,81	92,1	85,00	118,6	**90,01**	180,0	260,3
5. Wind Power Plant	5,8	1,12	11,2	1,12	19,2	**1,12**	30,2	45,4
6. Mini/Micro Hydro Power Plant	1.492,48	137,57	1.761,43	162,36	1.885,65	**206,01**	-	-
Electrification Power Plant (%)	88,30	85	91,6	91,2	92,75	**95,35**	97,5	99

CHALLENGES AND BARRIERS

1	DEBOTTLENECKING	1. Land acquition. 2. Simplifying permits and procedures. 3. Availability of primary energy. 4. Low enforment issue (not fair and unjustice). 5. Inter sectoral coordination.
2	PRICING POLICY	1. Tariff policy (transparant, targeted, and sustainable) 2. Energy subsidy. *3. Feed-in tariff* to promote renewable energy.
3	FUNDING AND RISKS	1. Government guarantee to support private investments. 2. Government capital participation to improve financial aspect of state owned enterprises. 3. Risk sharing between public and private (i.e. Geothermal exploration). 4. Regulation to promote direct lending.
4	INDUSTRY STRUCTURE AND MANAGEMENT	1. Deregulating industry through re-arranging business area, creating regulator to create more effective and efficient industry. 2. Restructuring electricity industry to reduce span of control.

THANK YOU

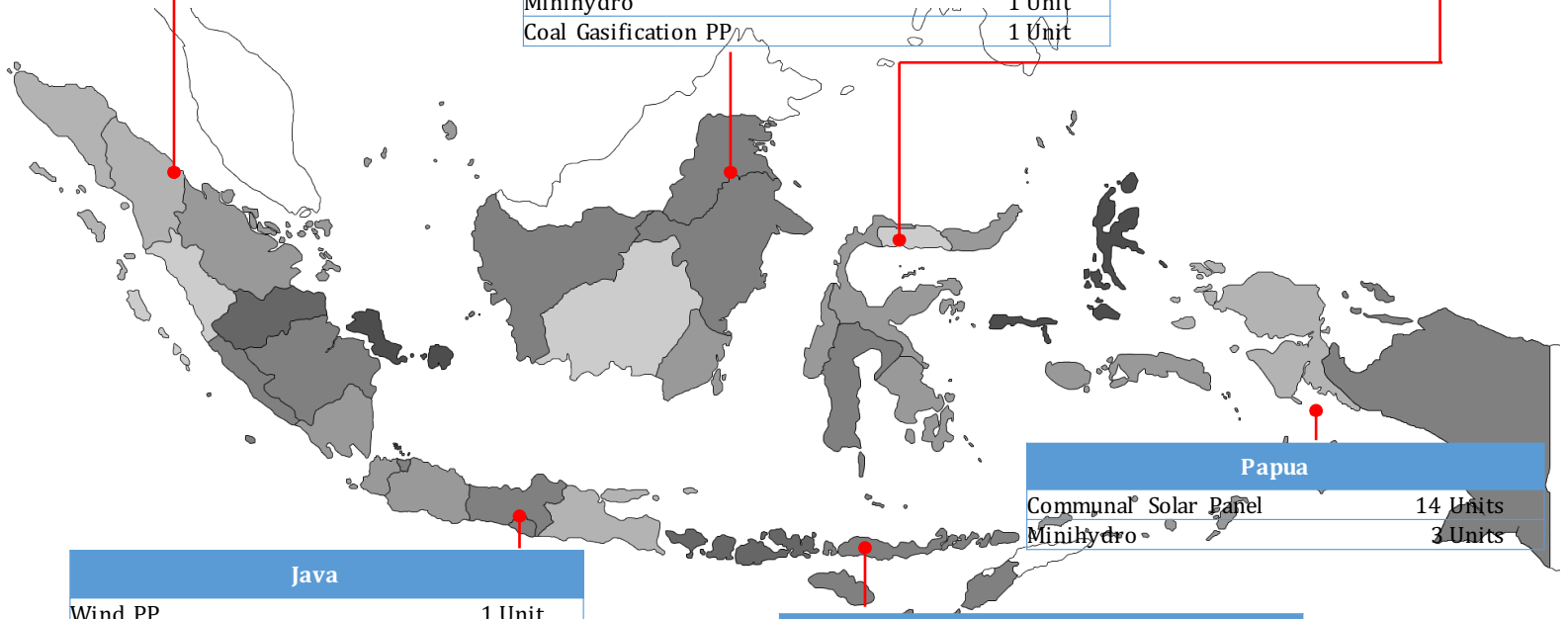
NEW AND RENEWABLE ENERGY DEVELOPMENT... (1)

Rural Electrification

- Rural electrification on-grid
- Rural electrification off-grid (State Budget and Special Alocation Fund)

- Enhance the use of NRE
- Prioritises at the frontier, remote, and underdeveloped regions
- To reach priority costumer
- Form of govenment present

NRE Infrastructure Develop 2017



Sumatera	
Communal Solar Panel	18 Units
Microhydro	4 Units

Kalimantan	
Communal Solar Panel	28 Units
Microhydro	3 Units
Minihydro	1 Unit
Coal Gasification PP	1 Unit

Sulawesi	
Communal Solar Panel	34 Units
Microhydro	1 Unit

Papua	
Communal Solar Panel	14 Units
Minihydro	3 Units

Java	
Wind PP	1 Unit
Rooftop Solar Panel	11 Units

Spreaded Accross Nation	
Communal Solar Panel	1 Unit
Solar Cell Rooftop	11 Unit

Nusa Tenggara & Bali	
Communal Solar Panel	5 Units
Ocean Wave PP	1 Unit
Solar Panel (On Grid)	1 Unit
Wind PP (Revitalization)	1 Unit

NEW AND RENEWABLE ENERGY DEVELOPMENT... (2)

Rural Electrification-Approach

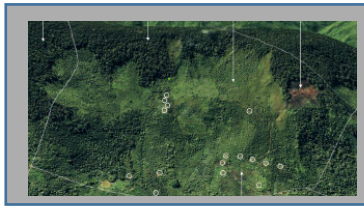
- Based on PODES data (Village Potential Statistics) in 2014 there are 12.659 villages still do not have electricity access.
- Government of Indonesia plans to electrify villages that are not yet reached by PLN (State Electricity Company) within the next 5 years.
- The program is carried out gradually started from eastern Indonesia. PIT will be started from begins from the 6 provinces of Eastern Indonesia (NTB, NTT, Maluku, North Maluku, Papua, West Papua).


Condition: Un-electrified village location is adjacent with electrified village

Solution : *Grid Extension* → Rural electrification (*on-grid*)


Condition: Un-electrified village (one household to another is not apart) located away from existing distribution line

Solution : *Mini grid* → Various Renewable Energy and Special Alocation Fund (*off-grid*)




Condition: Un-electrified village (one household to another is apart) located away from existing distribution line

Solution : *Micro grid/stand alone* → Various Renewable Energy and Special Alocation Fund (*off-grid*)