



Development of New & Renewable Energy and Energy Conservation in Indonesia

**Presented at:
Global Workshop On Clean Energy Development**

Washington DC, 3-8th December 2012

OUTLINE

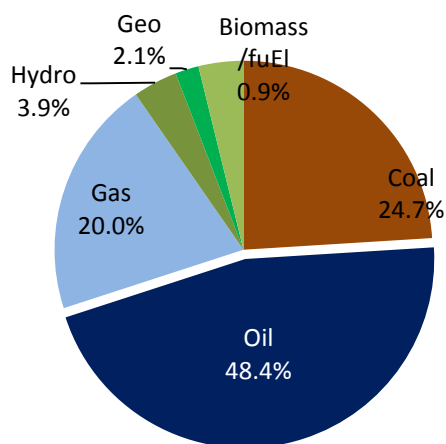
- I. Energy Condition
- II. Energy Policy
- III. New, Renewable Energy and Energy Conservation (NREEC) Development
 - A. Solar Energy
 - B. Geothermal
 - C. Bioenergy
 - D. Energy Conservation
- IV. Challenges & Opportunities
- V. Conclusion

I. ENERGY CONDITION



ENERGY CONDITION OF INDONESIA

**National Energy Mix Total
on 2010
1138 million BOE**



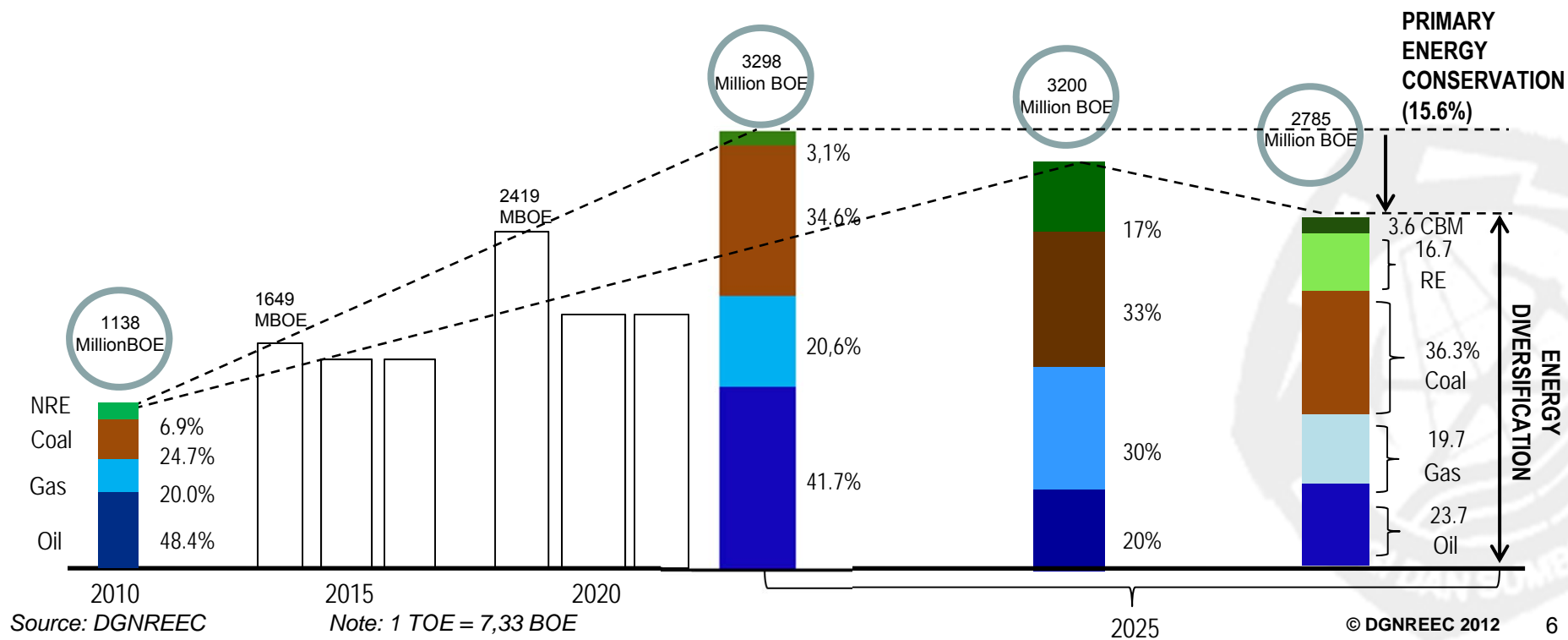
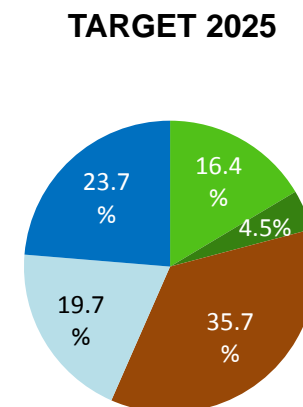
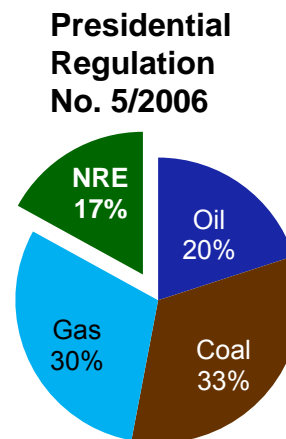
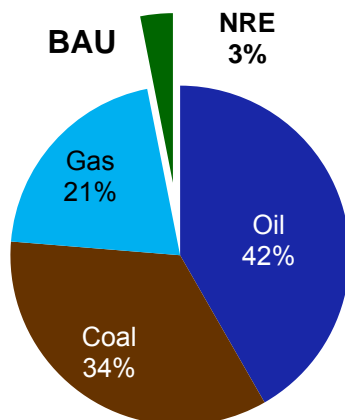
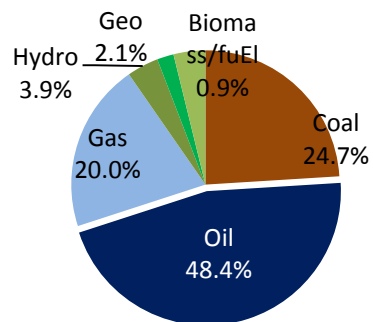
Elasticity of Energy = 1,60
Share of Non Fossil Energy \approx 6.9%

1. The average of growth rate of energy consumption is 7% per year ;
2. High dependence on fossil energy while it reserves are more limited;
3. Utilization of renewable energy is still low (6.9%) and implementation of Energy Conservation is not optimal;
4. Public access to energy (modern) is still limited:
 - a. Electrification ratio of year 2011 is 72.95 % (27.05 % of households not yet electrified);
 - b. Less of development of energy infrastructure particularly in rural / remote areas and outer islands .
5. Linkage to environmental issues:
 - a. Mitigation of climate change;
 - b. Carbon trading;
 - c. National commitment to reducing emissions 26% by 2020;

II. ENERGY POLICIES



POLICY DIRECTION



Source: DGNREEC

Note: 1 TOE = 7,33 BOE

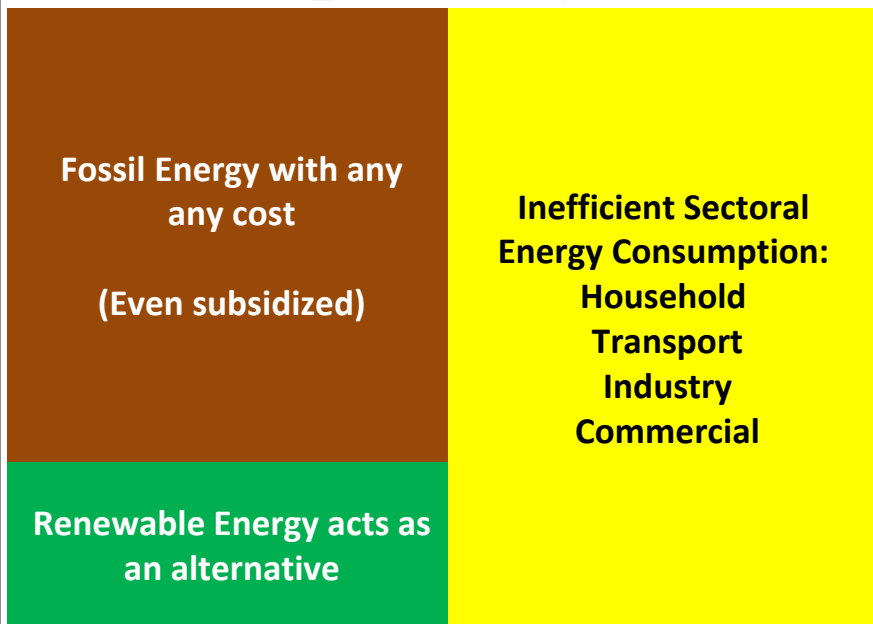
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TRANSFORMATION PARADIGM OF ENERGY MANAGEMENT

ENERGY SUPPLY SIDE MANAGEMENT

SUPPLY DEMAND

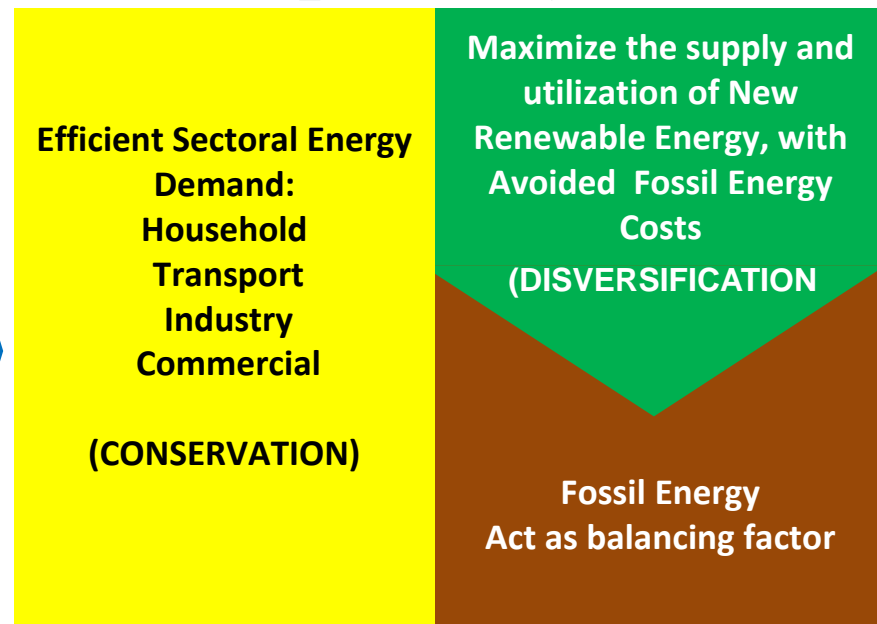


Existing:

1. Energy consumption is not efficient
2. Energy needs is fulfilled by fossil energy with any cost, and even subsidized
3. Renewable Energy acts as an alternative only
4. Unutilized Renewable Energy sources are wasted God's gift

ENERGY DEMAND SIDE MANAGEMENT

DEMAND SUPPLY



Future:

1. Efficient energy consumption
2. Maximize the supply and utilization of renewable energy, at least with avoided fossil energy costs and even can be subsidized
3. Fossil energy acts as balancing factor
4. Unutilized fossil energy sources is legacy for next generation or export commodity



TWO MAIN POLICIES

1. **Energy Conservation** to improve efficiency in energy utilization from up-stream up to down-stream (***Demand Side***) i.e industrial, transportation, household and commercial sector
2. **Energy Diversification** to increase new renewable energy share in national energy mix (***Supply Side***) as below

New Energy

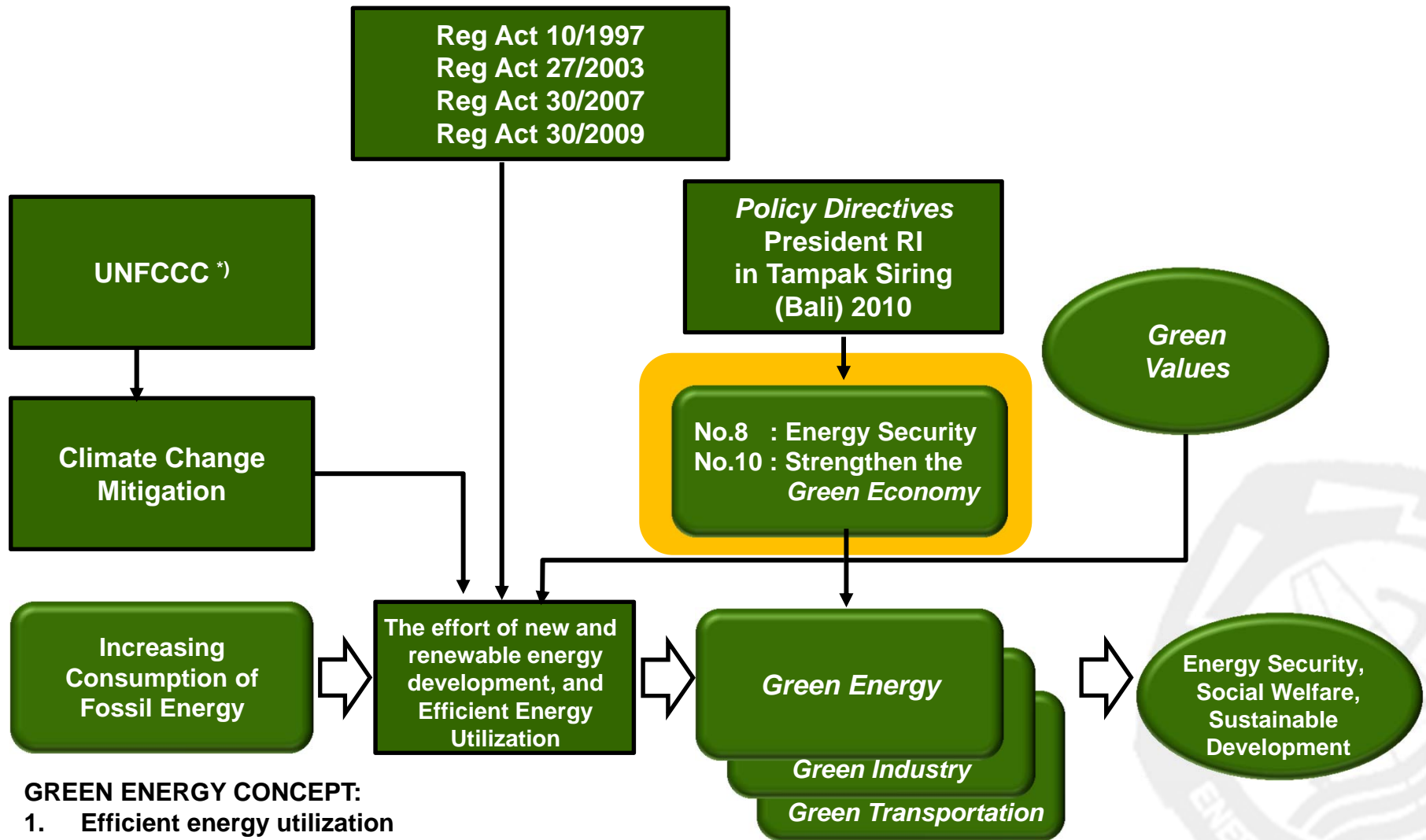
- a. Liquefied Coal,
- b. Coal Bed Methane,
- c. Gasified Coal,
- d. Nuclear,
- e. Hydrogen,
- f. Other Methanes.

Renewable Energy

- a. Geothermal,
- b. Bioenergy,
- c. Hydro,
- d. Solar,
- e. Wind,
- f. Ocean.



DEVELOPMENT OF GREEN AND CLEAN ENERGY



GREEN ENERGY CONCEPT:

1. Efficient energy utilization
2. Renewable energy use
3. Use Clean Energy Technologies for fossil and non-fossil energy

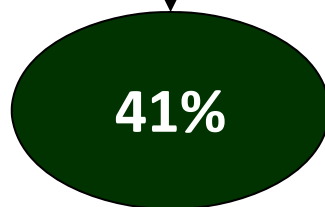
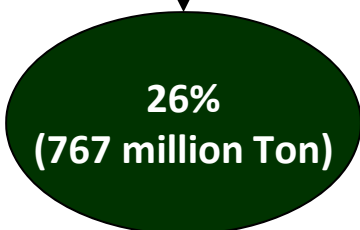
*) United Nations Framework Convention on Climate Change



NATIONAL COMMITMENT TO REDUCE GREENHOUSE GASSES

President Commitment in G-20 Pittsburgh and COP15
to reduce greenhouse gasses emission by 2020

Domestic
efforts



Domestic efforts
and international
support

Forestry, Peat, Agriculture	680 million Ton
Energy Sector	30 milion Ton
Wastes	48 million Ton
Industry and Transport	9 Juta Ton

Through new renewable energy development and energy conservation implementation in all sector

III. NEW, RENEWABLE ENERGY AND ENERGY CONSERVATION (NREEC) DEVELOPMENT



AGENDA ON NEW RENEWABLE ENERGY AND ENERGY CONSERVATION (NREEC) DEVELOPMENT

MAIN AGENDA

- 1. Harmonizing new renewable energy and energy conservation regulations**
- 2. Updating Master Plans on Energy Diversification and Energy Conservation**
- 3. Improvement of energy efficiency**
- 4. Development of geothermal**
- 5. Development of bioenergy**
- 6. Development of other new renewable energy**
- 7. Clean Energy Initiative (REFF-Burn)**
- 8. Increasing local content and supporting industry**
- 9. Energy Self-Sufficient Village**
- 10. Role model of clean manufacture, clean industrial park, low carbon city, and provinces**

SUPPORTING AGENDA

- 1. Enhancing research and development**
- 2. Enhancing training and education**



GOVERNMENT POLICIES ON RENEWABLE ENERGY DEVELOPMENT

1. Ministry of Energy And Mineral Resources Regulation Number 32 Year 2008 Concerning On Provision, Utilization, and Procedures of Commerce Biofuels (Biofuel) As Other Fuel. (Biofuels Mandatory);
2. Ministry of Finance Regulation No. 21/PMK.011/2010 Concerning on Tax And Custom Facilities For Renewable Energy Utilization;
3. Ministry Of Finance Regulation Number 130/PMK.011/2011 Concerning on Provision of Exemption Facilities or Reduction of Income Tax.
4. Ministry of Energy and Mineral Resources Regulation Number 04 Year 2012 Electricity Power Purchased Price from Renewable Generations (small and medium scale) and Excess Power
5. Ministerial Regulation of MEMR No. 22/2012 on geothermal price structure.

A. SOLAR ENERGY

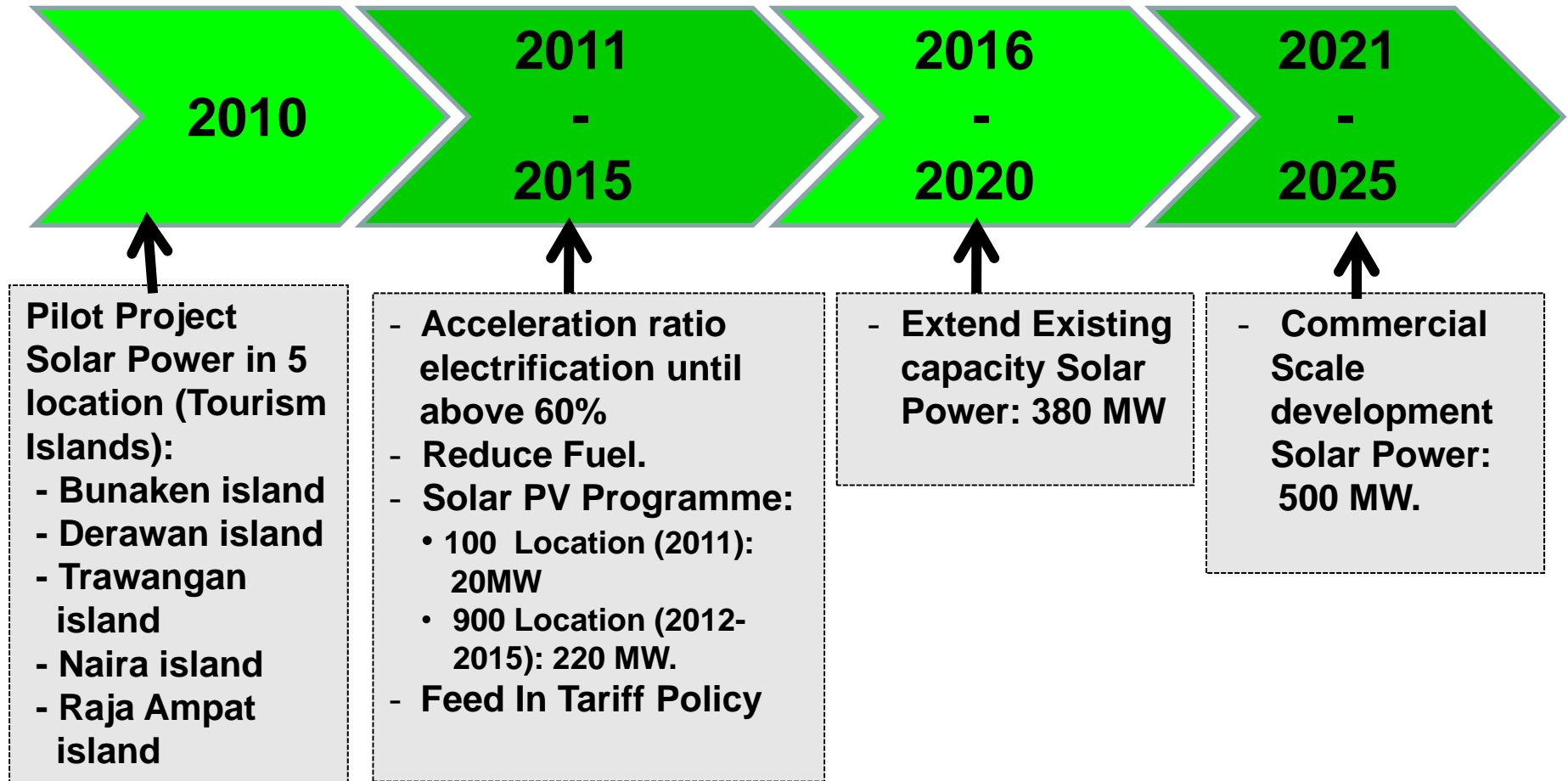


PROGRAM OF SOLAR ENERGY (INCLUDING WIND AND OCEAN ENERGY)

1. Rural Electricity: increasing rural community accessibility to electricity; targeting electricity demand in remote area
2. Urban Electricity: targeting middle and high class household, real estate, office and commercial buildings, hotel and resort, industry and others
3. Electricity for Frontier Island: targeting community in the island located along the country border line

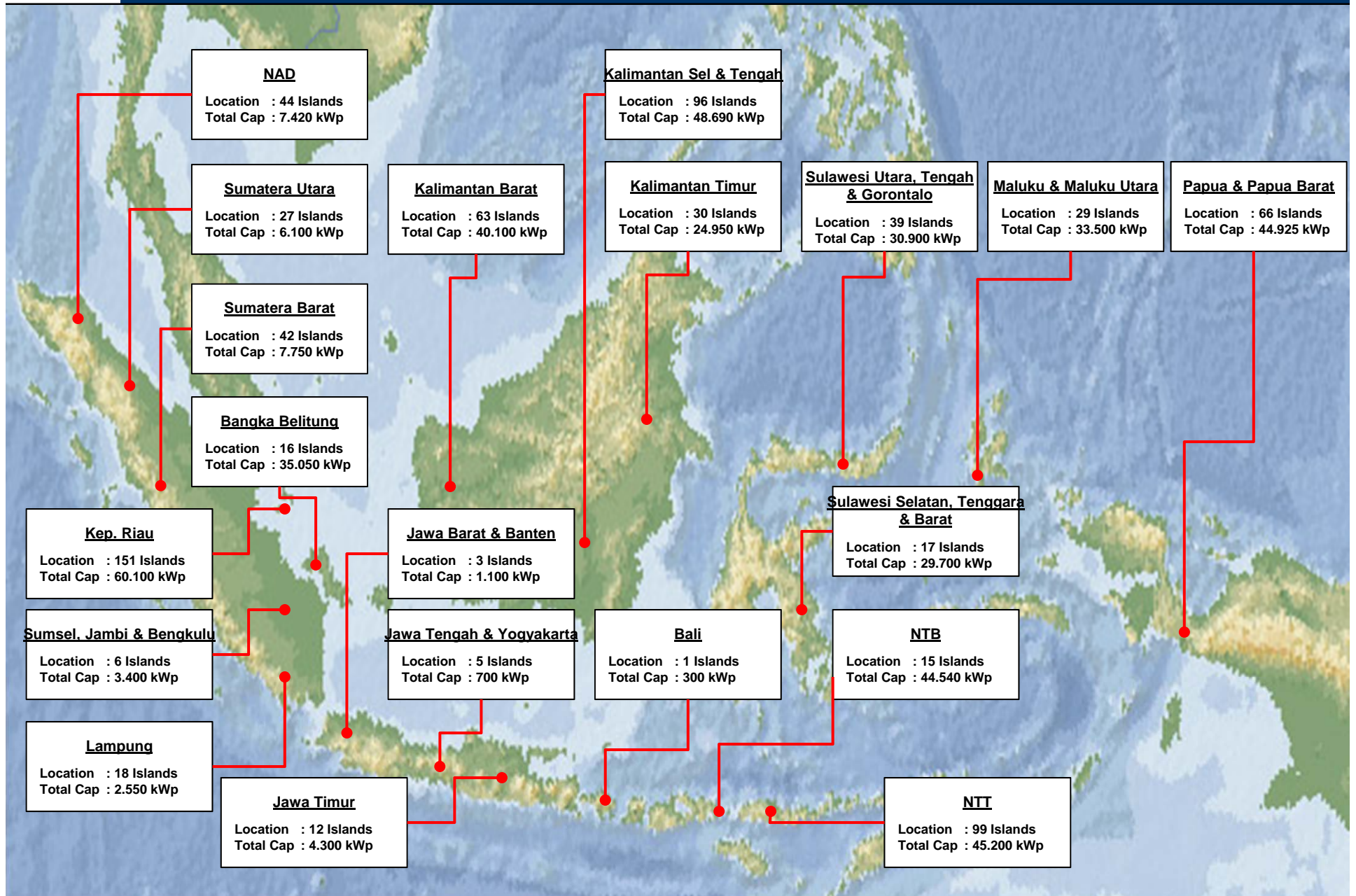


ROAD MAP OF SOLAR PV BY PT. PLN (PERSERO)



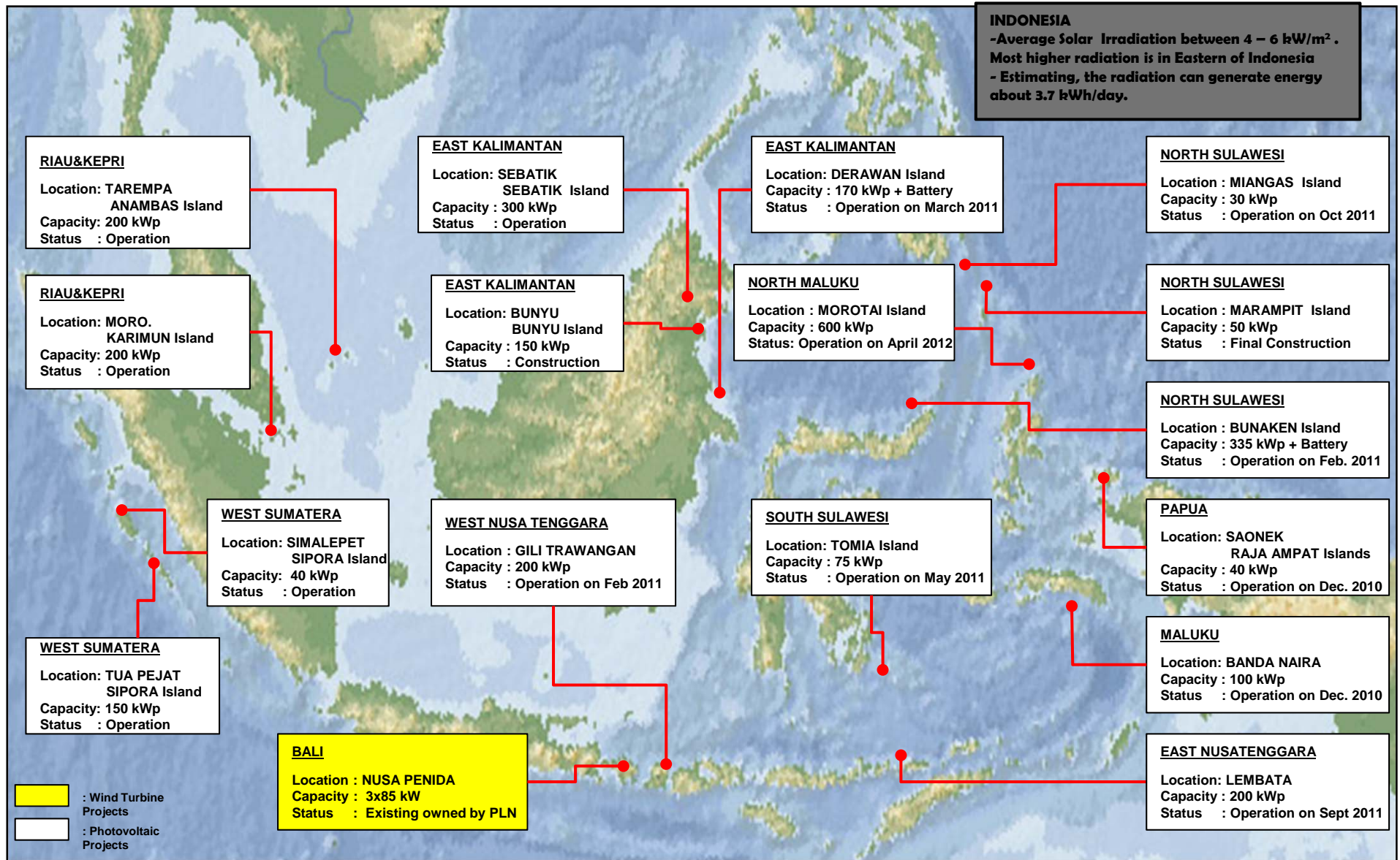


MAP OF SOLAR PV PROGRAM FOR 1000 ISLANDS





MAP OF PV & WIND POWER PROJECTS OF PLN



Contact us : PT PLN (Persero), Jl. Trunojoyo Blok M I/135, Jakarta 12160 Phone : 62-21-7261875 Fac : 62-21-7221330



MAP OF SOLAR ENERGY FOR 100 ISLANDS



100% SOLAR ENERGY FOR 100 ISLANDS

PT PLN (Persero)

Salah Satu Program Unggulan PLN 2011

Mohon Doa Restu

Kami akan melistriki 100 pulau terpencil dengan 100% Energi Surya dan harus selesai pada akhir tahun 2011 ini juga !

PAPUA

1. Melpiana
2. Kopyi
3. Any
4. Kimara

PAPUA BARAT

5. Masiara
6. Babe
7. Sasafer
8. Koku
9. Anay
10. Mengpanan
11. Mbrandi
12. Sapana
13. Nendabek
14. Ovi
15. Dufi
16. Kompong Pines
17. Kompong Suporika
18. Kompong Yambor
19. Kompong Wawiyat
20. Dawa
21. Sardi
22. Kaku
23. Wapawa
24. Sanaa

MALUKU

25. Taholea (P. Kaba)g
26. Nani Ebi (P. Tigai)
27. Kesi
28. Mentrana (Sera)
29. Tora (Lara)
30. Anubala (Mauwari)
31. Pasi Pasi (Kab. Bera)
32. Pajang (Kab. SBT)
33. Wera (Dhaki)
34. Kura (Wera)
35. Lati (Serawa)
36. Mui (Musi)
37. Laba (Sera)
38. Romang (Hibi)

MALUKU

39. Kai Tomahu
40. Kai
41. Eia

MALUKU TENGAH

42. Moresi (Doraha)
43. Moresi (Dora Bera)
44. Pira
45. Oti (Larasi)
46. Taliba (Dobong)
47. Taliba (Gila)
48. Mungla (Dofa)
49. Kaye
50. Mui (Tobolaba)
51. Miki (Dyagaga)
52. Kasuta
53. Mui

NUSA TENGGARA TIMUR

54. Marising
55. Pasi
56. Nala
57. Rajan
58. Naha
59. Lantala
60. Selar Barat
61. Pansa
62. Niborony
63. Rika
64. Kemado

NUSA TENGGARA BARAT

65. Cici Travangan (Est.)
66. Cici Mena
67. Cici Aji
68. Marangi
69. Mualang
70. Sebatuk
71. Labuan Haji
72. Meja
73. Leraang
74. Raja Palas

SULAWESI SELATAN

75. Kesarang
76. Kadipatang
77. Tombeke
78. Bating Lampa
79. Saling
80. Sikana

SULAWESI TENGGARA

81. Kapra
82. Kahena

SULAWESI UTARA

83. Mendo Tasi
84. Bualaka (Est.)
85. Naha
86. Mandaya
87. Tibui
88. Mihalati
89. Dajulan
90. Kanrang
91. Mungai
92. Marangit
93. Nenebete
94. Mawa
95. Hano
96. Gungga

SULAWESI TENGAH

97. Kep Engas
98. Kep Engas
99. Kep Engas
100. Kep Engas
101. Simbing

KALIMANTAN SELATAN

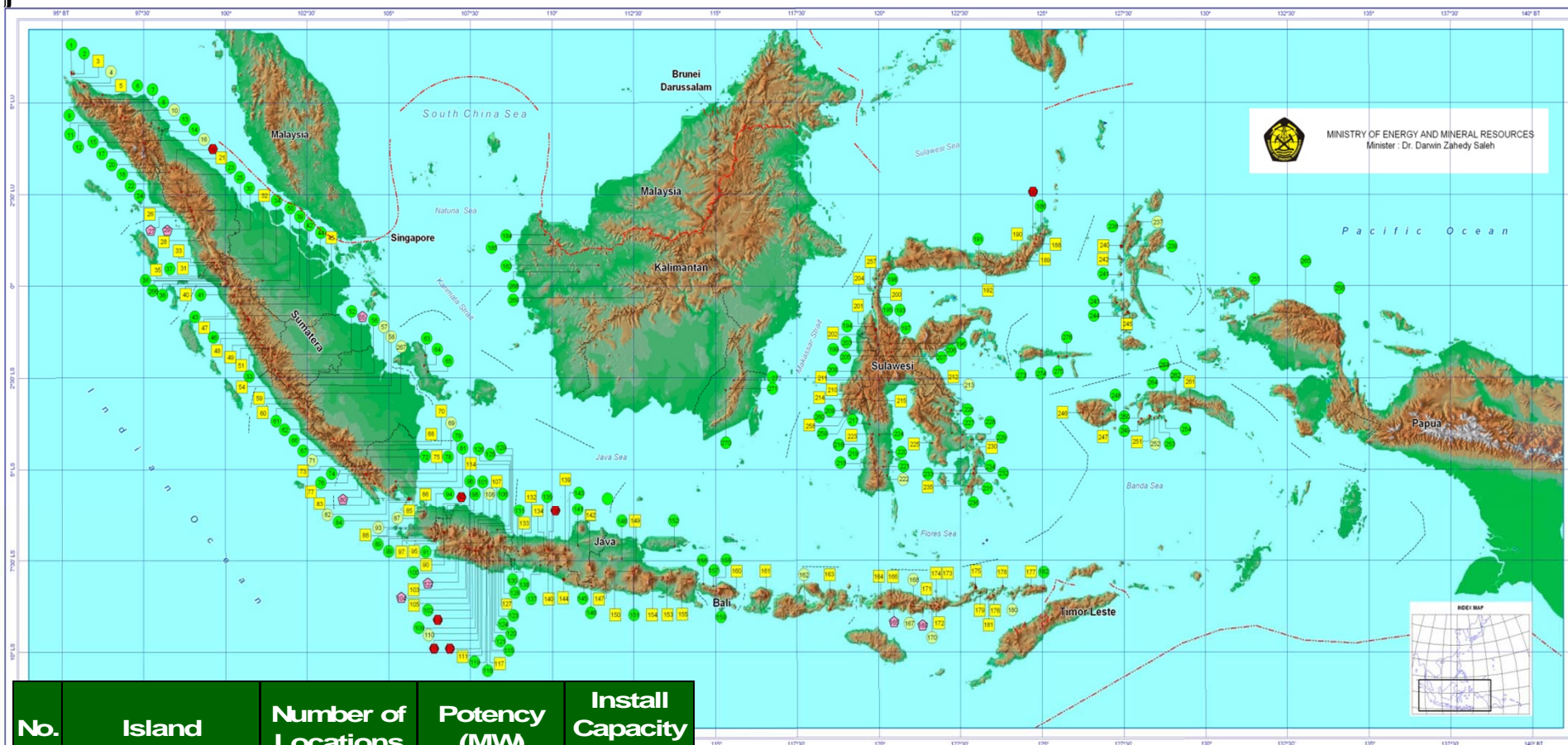
102. Marapan
103. Ketuan
104. Kempen
105. Karau
106. Tanjung Nyar



B. GEOTHERMAL



GEOHERMAL POTENTIAL MAP



No.	Island	Number of Locations	Potency (MW)	Install Capacity (MW)
1	Sumatera	86	13,516	12
2	Java	71	10,092	1,117
3	Bali	5	296	
4	Nusa Tenggara	22	1,471	
5	Kalimantan	8	115	
6	Sulawesi	55	2,519	60
7	Maluku	26	954	
8	Papua	3	75	
Total		276	29,038	1,189

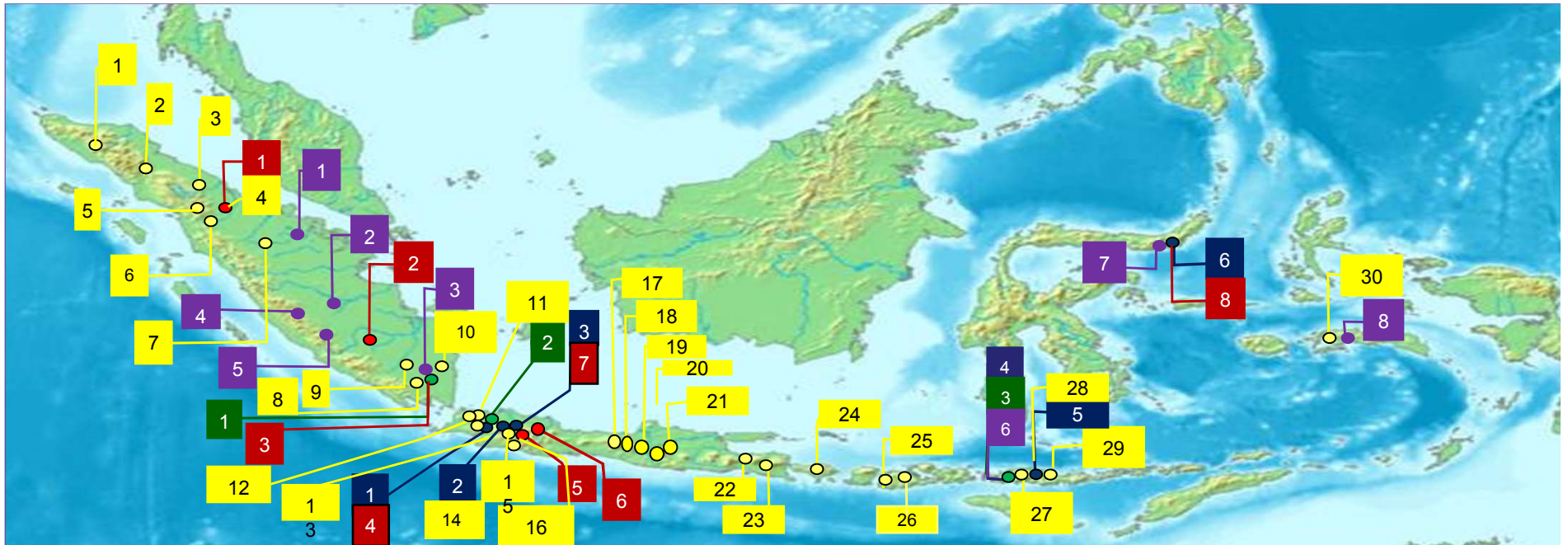
Source : Geological Survey, MEMR(2010)

Note:

- Preliminary Survey
- Detail Survey
- Ready to Developad
- Already Developed



MAP OF GEOTHERMAL DEVELOPMENT



READY FOR EXPLORATION OR ON BIDDING STAGE

- | | |
|---------------------------|----------------------------|
| 1. JABOI (10 MW) | 16. TAMPOMAS (45 MW) |
| 2. SEULAWAH AGAM (55 MW) | 17. GUCI (55 MW) |
| 3. S.MERAPI (240 MW) | 18. BATU RADEN (220 MW) |
| 4. SARULLA II (110 MW) | 19. NGBEL/WILIS (165 MW) |
| 5. PUSUK BUKIT (110 MW) | 20. UNGARAN (55 MW) |
| 6. SIPOHOLON (55 MW) | 21. UMBUL TELOMOYO (55 MW) |
| 7. BONJOL (165 MW) | 22. IYANG ARGOPURO (55 MW) |
| 8. S. SEKINCAU (220 MW) | 23. IJEN (110 MW) |
| 9. WAY RATAI (55 MW) | 24. BEDUGUL (10 MW) |
| 10. DANAU RANAU (110 MW) | 25. SEMBALUN (20 MW) |
| 11. C. CISUKARAME (50 MW) | 26. HU'U (20 MW) |
| 12. RAWA DANO (110 MW) | 27. SOKORIA (15 MW) |
| 13. G.ENDUT (55 MW) | 28. MATALOKO (15 MW) |
| 14. W. WINDU 3&4 (220 MW) | 29. ATADEI (5 MW) |
| 15. T. PERAHU (170 MW) | 30. JAILOLO (10 MW) |

EXPLORATION STAGE

1. MUARA LABOH (220 MW)
2. RANTAU DADAP (220 MW)
3. RAJABASA (220 MW)
4. SUNGAI PENUH (110 MW)
5. HULULAIS (110 MW)
6. ULUMBU (5 MW)
7. KOTA MOBAGU (80 MW)
8. TULEHU (20 MW)

READY FOR EXPLOITATION

1. SARULLA I (330 MW)
2. LUMUT BALAI (220 MW)
3. ULUBELU 3&4 (110 MW)
4. KAMOJANG 5&6 (90 MW)
5. CIBUNI (10 MW)
6. KARAHA BODAS (140 MW)
7. LAHENDONG 5&6 (40 MW)

CONSTRUCTION STAGE (117,5 MW)

1. ULUBELU 1&2 (110 MW)
2. PATUHA (120 MW)
3. ULUMBU (7,5 MW)

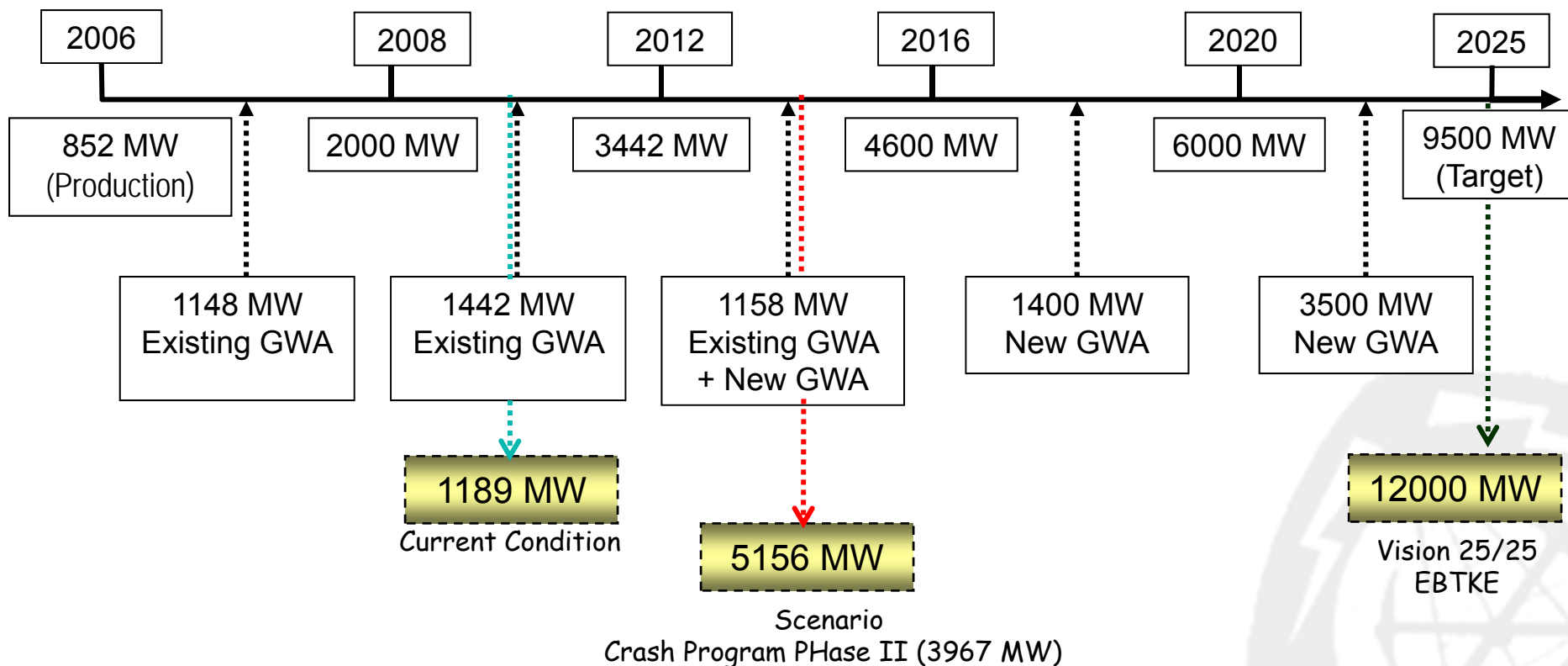
PRODUCTION STAGE (1201 MW)

1. KAMOJANG (200 MW)
2. WAYANG WINDU (220 MW)
3. DIENG (60 MW)
4. ULUMBU (2,5 MW)
5. MATALOKO (1,5 MW)
6. LAHENDONG (80 MW)



Road Map of Geothermal Development 2006 – 2025

(Based on Presidential Decree No. 5/2006 National Energy Policy)





GOVERNMENT POLICIES TO SCALE UP GEOHERMAL DEVELOPMENT IN INDONESIA

The Government of Indonesia (GoI) intends to accelerate and speed up the development of geothermal.

1. Presidential Regulation No. 04/2010 jo Ministerial Regulation No. 15/2010 (2nd Stage of 10,000 MW Crash Program) in order to speed up the development of geothermal power to the amount of 3,967 MW by the year 2014 which will require a total of US\$ 12 Billions.
2. Pricing Policy
 - Ministerial Regulation of MEMR No. 22/2012 on geothermal price structure.
 - Fiscal incentives for geothermal development (based on Government Regulation No. 62/2008 jo No. 1/2007; MR of MoF No. 177/PMK.011/2007; and MR of MoF No. 22/PMK.011/2011).
3. Access to Potential Geothermal Resources for Investors.
The GoI establishes new GWAs and widely open opportunities for investors to participate in the geothermal business through GWAs tendering mechanism
4. Capacity Building. To support 2nd crash program of 10.000 MW, it will require at least 800.000 workers with particular skill and knowledge on geothermal.

C. BIOENERGY



POTENTIAL BIOENERGY RESOURCE

FUEL

- CPO production 24 million ton for food, export and fuel
- Production of molasses 1,5 million ton, cassava 14 million ton

BIOGAS (HOUSEHOLD)

- The potential for biogas mostly from manure and other organic materials;
- In 2009, Indonesia has a number of livestock quite large, including 13 million dairy cows and cattles, as well as approximately 15.6 million goats; the potential equivalent of 1 million units of biogas digester.

POWER GENERATION

- Huge potential of biomass from agricultural waste, plantations, and urban wastes for power generation



BIOFUEL USAGE MANDATORY

Ministry of Energy and Mineral Resources Regulation Number 32 Year 2008

BIOETHANOL (Minimum)

Sector	2008	2009	2010	2015	2020	2025
Transportation, PSO	3% (Existing)	1%	3%	5%	10%	15%
Transportation, Non PSO	5% (Existing)	5%	7%	10%	12%	15%
Industry		5%	7%	10%	12%	15%

BIODIESEL (Minimum)

Sector	2008	2009	2010	2015	2020	2025
Transportation, PSO	1% (Existing)	1%	2.5%	5%	10%	20%
Transportation, Non PSO		1%	3%	7%	10%	20%
Industry	2.5%	2.5%	5%	10%	15%	20%
Electricity	0.1%	0.25%	1%	10%	15%	20%



Implementation of Bioenergy in Indonesia

1. Development of biofuel as fossil fuel substitution:

- There are 23 biodiesel producer and 7 bioethanol producer that have commercial business license to operate in Indonesia (status on 2010).
- Installed capacity of biodiesel is 4,506,629 KL/year and installed capacity of bioethanol is 286,686 KL/year .

2. Development and utilization of “Mitanol” (kerosene from bioethanol) as kerosene substitution for household

3. Development of biogas digester for cooking in household sector through BIRU (Biogas Rumah) Programme as Indonesia Domestic Biogas Programme. This programme implemented by HIVOS, as NGO from Netherlands and funded by Netherlands Government. Status until August 31st the total biogas digester that have been built is 3,707 unit from total target is 8,000 unit.

4. Development of power plant based on biomass with the total installed capacity is 1,618.40 MW. Indonesia as agricultural country has a large potency of biomass for electricity generation.



ELECTRICITY PRICE (*FEED-IN TARIFF*) BASED ON ENERGY BIOMASS, BIOGAS, AND MUNICIPAL SOLID WASTE *)

No.	Energy	Capacity	Electricity Tariff	Note
1.	Biomass	until 10 MW	Rp. 975,- / kWh X F	
2.	Biogas	until 10 MW	Rp. 975,- / kWh X F	Non Municipal Solid Waste
3.	Municipal Solid Waste	until 10 MW	Rp. 1050,- / kWh	Zero waste **)
4.	Municipal Solid Waste	until 10 MW	Rp. 850,- / kWh	Landfill **)

- F as an incentive factor based on the region where the power plant installed, as follows:

Jawa, Bali, and Sumatera region : F = 1
Kalimantan, Sulawesi , NTB and NTT region : F = 1,2
Maluku and Papua region : F = 1,3

- Feed in Tariff will be issued in Minister of ESDM decree.

Note :

*) Connected to medium voltage system

**) - Based on Act No. 18 Year 2008 concerning to Waste Management.



MINISTRY OF FINANCE REGULATION NUMBER 130/PMK.011/2011 CONCERNING ON PROVISION OF EXEMPTION FACILITIES OR REDUCTION OF INCOME TAX

CORPORATE
TAXPAYERS

can get facilities:

**EXEMPTION OR REDUCTION OF
CORPORATE INCOME TAX**

EXEMPTION OF CORPORATE INCOME TAX

5 - 10 tax year

After the end of Corporate Income Tax exemption facility

REDUCTION OF CORPORATE INCOME TAX

50% of Income Tax Payable for 2 tax yearh

Minister of Finance may provide facilities Corporate Income Tax exemption or reduction for a period EXCEED predetermined period of time

^{*)} The facility can be utilized if:

1. Had executed the entire capital investment
2. Has been produced commercially

• **PIONEER INDUSTRIES**

- Having a new investment plan min. IDR 1 trillion
- Placing funds in the Indonesian banking min 10% from the total capital investment plan
- Existed as ENTITY INDONESIA

- Industry of Basic Metals Manufacture
- Industry of Oil Refining and / or Basic Organic Chemicals sourced from Oil and Natural Gas
- Industry of Machinery
- **INDUSTRY OF RENEWABLE RESOURCES FIELD**
- Industry of Communications Equipment

PIONEER INDUSTRIES

D. ENERGY CONSERVATION



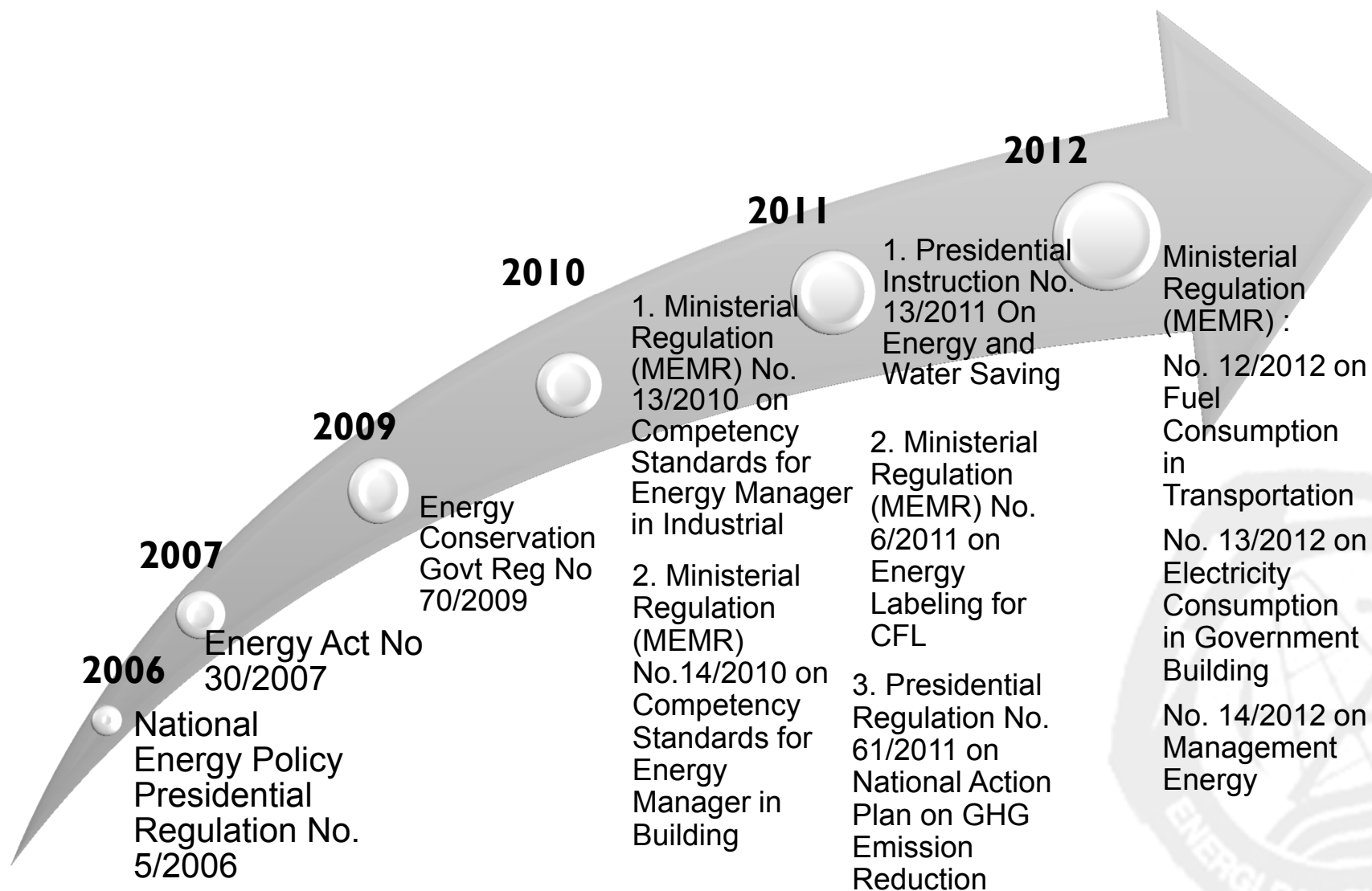
POTENTIAL AND TARGET FOR ENERGY CONSERVATION

SECTOR	POTENTIAL OF ENERGY CONSERVATION	TARGET OF ENERGY CONSERVATION SECTORAL (2025)	SHARE OF ENERGY FINAL CONSUMPTION (2009)	TOTAL TARGET OF ENERGY CONSERVATION (2025)
Industry	10 - 30%	17.00%	41%	6.9%
Commercial	10 - 30%	15.00%	5%	0.7%
Transportation	15 - 35%	20.00%	37%	7.4%
Household	15 - 30%	15.00%	13%	2.0%
Others (ACM)	25%	0.00%	4%	0.0%
TOTAL			100%	17.0%

SECTOR	TARGET ACCUMULATION FOR ENERGY CONSERVATION						
	2011	2012	2013	2014	2015	(2016-20)	(2021-25)
Industry	0.01%	1.25%	2.90%	3.50%	4.00%	9.50%	17.00%
Commercial	0.00%	0.50%	2.00%	4.60%	7.40%	13.80%	15.00%
Transportation	1.50%	4.10%	6.00%	6.80%	9.30%	15.90%	20.00%
Household	1.80%	4.00%	5.60%	7.30%	9.20%	14.00%	15.00%



REGULATORY FRAMEWORK





PRESIDENTIAL INSTRUCTION NO. 13/2011 ON ENERGY AND WATER SAVING

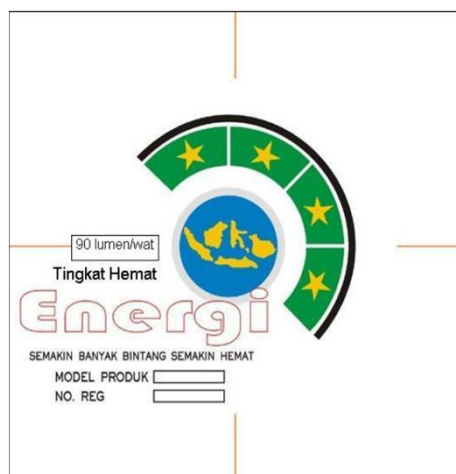
- Instruction to the leaders of **Government Institutions** both at central and local governments to measures water and energy saving.
- Establish a **National Team** of Water and Energy Savings
- **Target :**
 - ✓ 20% Electrical saving
 - ✓ 10% Subsidized fuel consumption saving
 - ✓ 10% Water saving





LABELLING FOR CFL

- Objective : introducing energy saving level as a guidance for consumer and to promote energy efficiency
- Testing procedure : SNI IEC 60969 : 2009
- Label for energy saving marks : SNI 04-6958-2003
- Ministerial Regulation (MEMR) No. 6/2011 on Energy Labeling for CFL was issued as a legal basis
- CFL as a pioneer for Labeling Program



Power (Watt)	Efication Value(Lumen/Watt)			
	1 Star ★	2 Stars ★★	3 Stars ★★★	4 Stars ★★★★
5 – 9	45 – 49	>49 – 52	>52 – 55	> 55
10 – 15	46 – 51	> 51 – 54	> 54 – 57	> 57
16 – 25	47 – 53	> 53 – 56	> 56 – 59	> 59
≥ 26	48 – 55	> 55 – 58	> 58 – 61	> 61



ENERGY CONSERVATION PROGRAM ...(1)

PROGRAM	DESCRIPTION
1. Creating Policy and Regulation	<ul style="list-style-type: none">▪ Drafting Ministerial Regulation (MEMR) on Preparation Program Procedures and Reporting of Implementation on Energy Conservation▪ Drafting Ministerial Decree (MEMR) on The Master Plan for Energy Conservation (RIKEN)▪ Drafting for Guideline of Energy Efficiency for Building
2. Public Awareness Improvement	<ul style="list-style-type: none">▪ Conduct seminar/workshop and public advertisement through printed and electronics media, and dissemination of brochure on energy efficiency▪ Conduct National Energy Awards for building and industrial sector and participating in ASEAN Energy Awards
3. Education and Training	<ul style="list-style-type: none">▪ Training on energy efficiency and conservation by Centre for Training and Education – MEMR▪ Participate in the training on energy conservation in abroad conducted by JICA, ACE, etc



ENERGY CONSERVATION PROGRAM ...(2)

PROGRAM	DESCRIPTION
4. Partnership Program on Energy Conservation	<ul style="list-style-type: none">▪ Providing free of charge energy audit for buildings and industries▪ During 2003 - 2010, energy audit already done for 452 industries & buildings, and 195 industries & buildings in 2011
5. Energy Manager & Auditor	<ul style="list-style-type: none">▪ Preparing the Certification Institution for Energy Manager and Auditor
6. Labeling	<ul style="list-style-type: none">▪ Promoting energy efficiency labeling as a guidance for consumer▪ Energy efficiency lamp (CFL) is pioneer for labeling system▪ Preparing technical guidance for CFL labeling
7. Monitoring and Evaluation	<ul style="list-style-type: none">▪ Monitoring to large energy consumer ≥ 6000 TOE▪ Monitoring to energy saving target for Government Institutions



ENERGY CONSERVATION PROGRAM ...(3)

PROGRAM	DESCRIPTION
8. International Cooperation	<ul style="list-style-type: none">■ Bilateral Indonesia –Denmark (DANIDA) Cooperation with 3 (three) main outputs :<ul style="list-style-type: none">✓ Energy Efficiency and Conservation Clearing House✓ Energy Efficient : New large building are efficient✓ Auditor Certification and review of incentive scheme■ Bilateral Indonesia-Netherland (NL Agency) : Energy efficiency improvement in industrial sector through implementation of Energy Potential Scan (EPS)■ Bilateral Indonesia-Japan (JICA & NEDO) :<ul style="list-style-type: none">✓ Study on tariff mechanism and load management at peak load✓ Labeling for energy equipment✓ Funding mechanism for energy efficiency✓ Methodology and emission factor baseline for energy efficient equipment■ International Copper Association: Conducting Minimum Energy Performance Standards (MEPS) for Electric Motor and Air-Conditioning■ USAID

IV. CHALLENGES & OPPORTUNITIES



CHALLENGES FOR NREEC DEVELOPMENT

- High initial investment cost
- Production cost of NRE is higher than production cost of conventional energy that caused NRE cannot compete with conventional energy;
- Lack of incentives and smart funding mechanisms
- Energy subsidy removal
- Formulating energy price based on its economic value
- Quantifying externality costs





OPPORTUNITIES FOR NREEC DEVELOPMENT

- High growth rate of energy;
- Huge potential of NRE and can be found throughout Indonesia;
- Fossil energy reserves is decreased;
- Oil price is very volatile and tends to increase;
- NRE is clean energy;
- Utilization of clean energy to be a world trend in the framework of climate change mitigation;
- Law Number 30 Year 2007 (concerning Energy) mandated:
 - Priority of utilization of NRE,
 - Government provide incentives for NRE development.



FINANCING INSTRUMENTS

- Government and Local Government are obliged to develop new & renewable energy
- The cost of this mitigation is pursued from own funds (National Budget, budget business entity (Anggaran Badan Usaha))
- ~~Scheme of funding from the Clean Development Mechanism (CDM)~~
 - **excluded**
- Donor Assistance funding to the partnership program
- Scheme of funding from the Public-Private partnership
- Scheme of funding from APLN (PLN Budget), SLA (Subsidiary Loan Agreement), Bonds, Loans and Revenue
- The funds from the non-renewable energy for new and renewable energy research (Law 30/2007 Article 30 paragraph 3)



INVESTMENT OPPORTUNITIES (1)

- 1. SECOND PHASE 10,000 MW ACCELERATED PROGRAM :**
to accelerate the construction of power generation with focus on renewable energy resources (geothermal 3,967 MW and hydro 1,174 MW).
- 2. PROGRAM ON RENEWABLE ELECTRICITY FROM LOCAL AVAILABLE RESOURCES:**
 - Small/medium scale electricity generation from renewable energy resources such as biomass, microhydro, wind power plant, and geothermal as well as smart grid projects*
 - Feed-in-tariff for the purchase of electricity from new and renewable energy generation.*
- 3. BIOFUEL INDUSTRY AS PART OF MANDATORY FOR USING BIOFUELS IN INDUSTRY, TRANSPORTATION, AND POWER PLANT SECTOR (MINISTER REGULATION NUMBER 32/2008)**
- 4. ENERGY CONSERVATION PROGRAM AS A PART OF GOVERNMENT'S COMMITMENT TO REDUCE NATIONAL EMISSION OF GREENHOUSE GASSES**



INVESTMENT OPPORTUNITIES (2)

5. MANUFACTURE, SUPPORT AND MAINTENANCE INDUSTRIES FOR RENEWABLE ENERGY PROJECTS

industries which are focusing on solar PV panel, blade for wind, small and efficient generator, cables, electronic components as well as support and maintenance for existing projects

6. MANUFACTURE, SUPPORT AND MAINTENANCE INDUSTRIES FOR ENERGY EFFICIENCY PROGRAMS

Low energy lighting, building materials, HVAC, etc as well as support and maintenance for existing projects

7. CAPACITY BUILDING PROGRAM





NATIONAL ACTION PLAN ON GHG EMISSION REDUCTION (Ministry of Energy and Mineral Resources)

NO	ACTION PLAN	TIME PERIOD	INDICATION OF GHG EMISSION REDUCTION (Million Ton CO ₂ e)
1	Implementation of mandatory energy management for large energy consumer	2010-2020	10.16
2	Implementation of partnership program on energy conservation	2010-2020	2.1
3	Efficiency improvement of home appliances	2010-2020	10.02
4	Supply and management of new renewable energy and energy conservation	2010-2014	1.27 (MHP: 0.21 MCHP: 0.85 SOLAR: 0.11 WIND: 0.02 Biomassa PP: 0.00032 ESSV: 0.06)
		2015-2020	3.13 (MHP: 0.40 MCHP: 2.40 SOLAR: 0.18 WIND: 0.04 Biomassa PP: 0.01 ESSV: 0.12)
5	Biogas utilization	2010-2020	0.13
6	Natural gas usage for public transportation in urban area	2010-2020	3.07
7	Increase of number of household installed with natural gas through pipeline	2010-2014	0.15
8	Construction of Mini plant Refinery for Liquid Petroleum Gas (LPG)	2010-2014	0.03
9	Post mining reclamation	2010-2020	2.73
TOTAL			32.8

V. CONCLUSION



CONCLUSION

- **It's time to develop new & renewable energy along with effort to improve energy efficiency, towards a green energy.**
- **The GHGs mitigation in energy sector poses an opportunity as well as challenge to implement clean energy that focuses on new renewable energy development, implementing efficiency energy and clean energy technology.**
- **The clean energy initiative is an integrated effort of the energy sector to fulfill the national security energy supply and mitigate the global GHGs emission that must be equipped with appropriate policy and regulatory framework, such as incentive and disincentive to develop energy efficiency (EE) and renewable energy (RE) projects.**

THANK YOU



Go Green Indonesia !

green energy, future energy



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