DIRECTORATE GENERAL OF NEW, RENEWABLE ENERGY, AND ENERGY CONSERVATION
MINISTRY OF ENERGY AND MINERAL RESOURCES – REPUBLIC OF INDONESIA

WASTE POWER GENERATION

delivered at
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Eco-Business Promotion Conference

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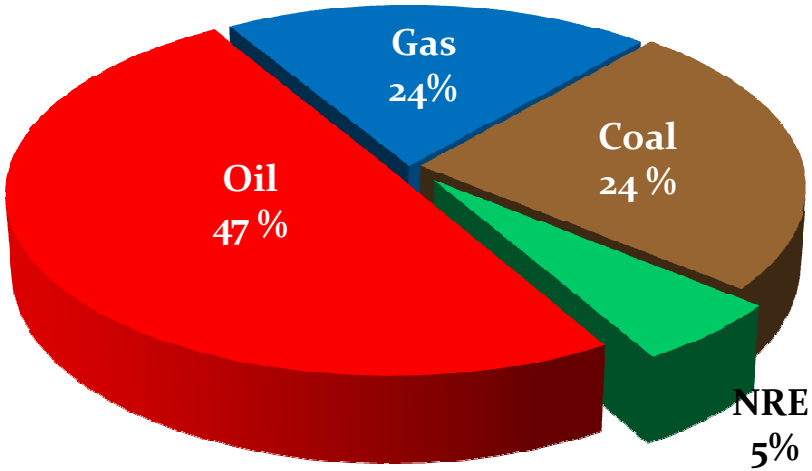
INDONESIA ENERGY CONDITION

Primary Energy Mix 2011



Share of Non Fossil Energy ≈ 5%

- Average growth rate of energy consumption is 7% per year
- High dependence on fossil energy while the reserves are limited and depleting
- Lack of energy infrastructure development, particularly in rural / remote areas and outer islands
- Utilization of renewable energy and implementation of energy conservation is not optimal
- Public access to modern energy is still limited; electrification ratio (2011) is 72.95%
- Linkage to environmental issues about mitigation of climate change.

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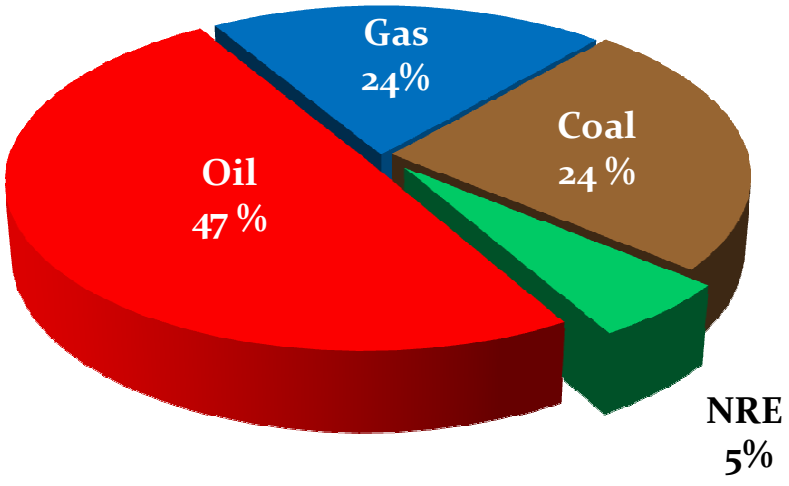
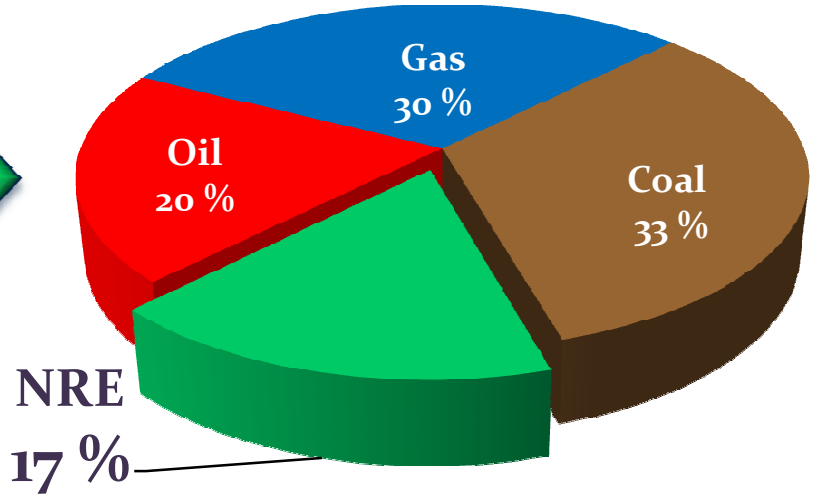
NATIONAL ENERGY MIX TARGET

2011



2025

PRESIDENTIAL REGULATION NO. 5/2006



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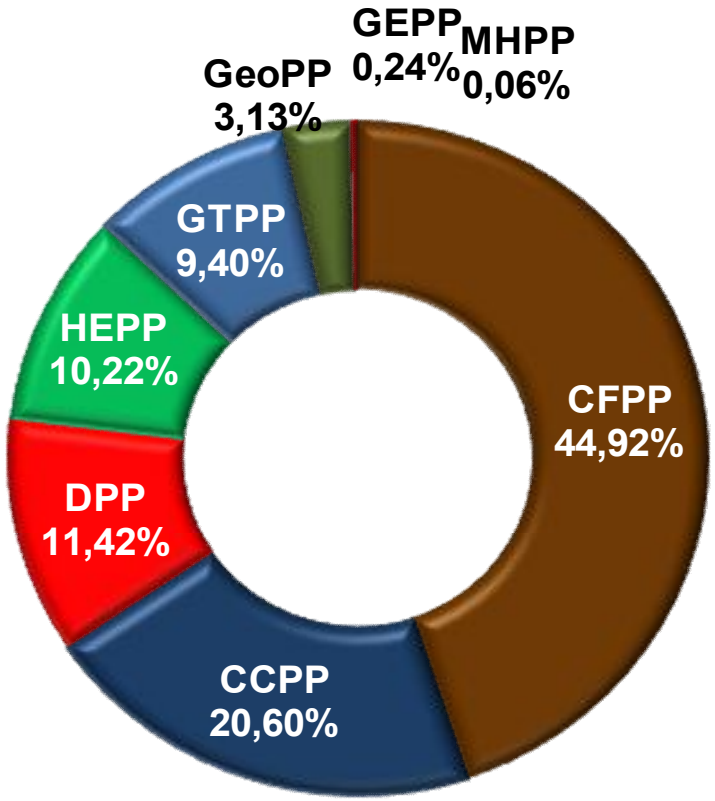
POWER GENERATION CONDITION



CFPP: Coal Fired Power Plant
CCPP: Combined Cycle Power Plant
DPP: Diesel Power Plant
HEPP: Hydro Electric Power Plant
GTPP: Gas Turbine Power Plant
GeoPP: Geothermal Power Plant
MHPP: Mini Hydro Power Plant
GEPP: Gas Engine Power Plant

Total installed capacity is about 38,1 GW consisting of 29,1 GW owned by PLN (state owned enterprise) and 9 GW by non-PLN.

DPP share is still high due to:

- Most areas in non-Java-Bali System are highly dependent on DPP
- Several CCPPs and GTPPs in Java-Bali System are using oil instead of gas due to a lack of gas supply.

Due to high cost of DPP fuel, Government has a strong concern to replace diesel power plants, among others by biomass/waste power plants.

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WHY WASTE POWER GENERATION?

- Government has a strong concern to replace diesel power plants by among others biomass/waste power plants.
- Waste potential is big, spread, and increasing continually.
- Waste management needs larger area due to its increasing volume.
- Waste makes environment dirty.
- Waste has a high potential for generating power.
- *Feed-in Tariff (FiT)* was established through Ministerial Regulation of Energy and Mineral Resources No. 4 year 2012 to guarantee power price, and will be set more interesting in near future.
- Reducing Green House Gas Emissions

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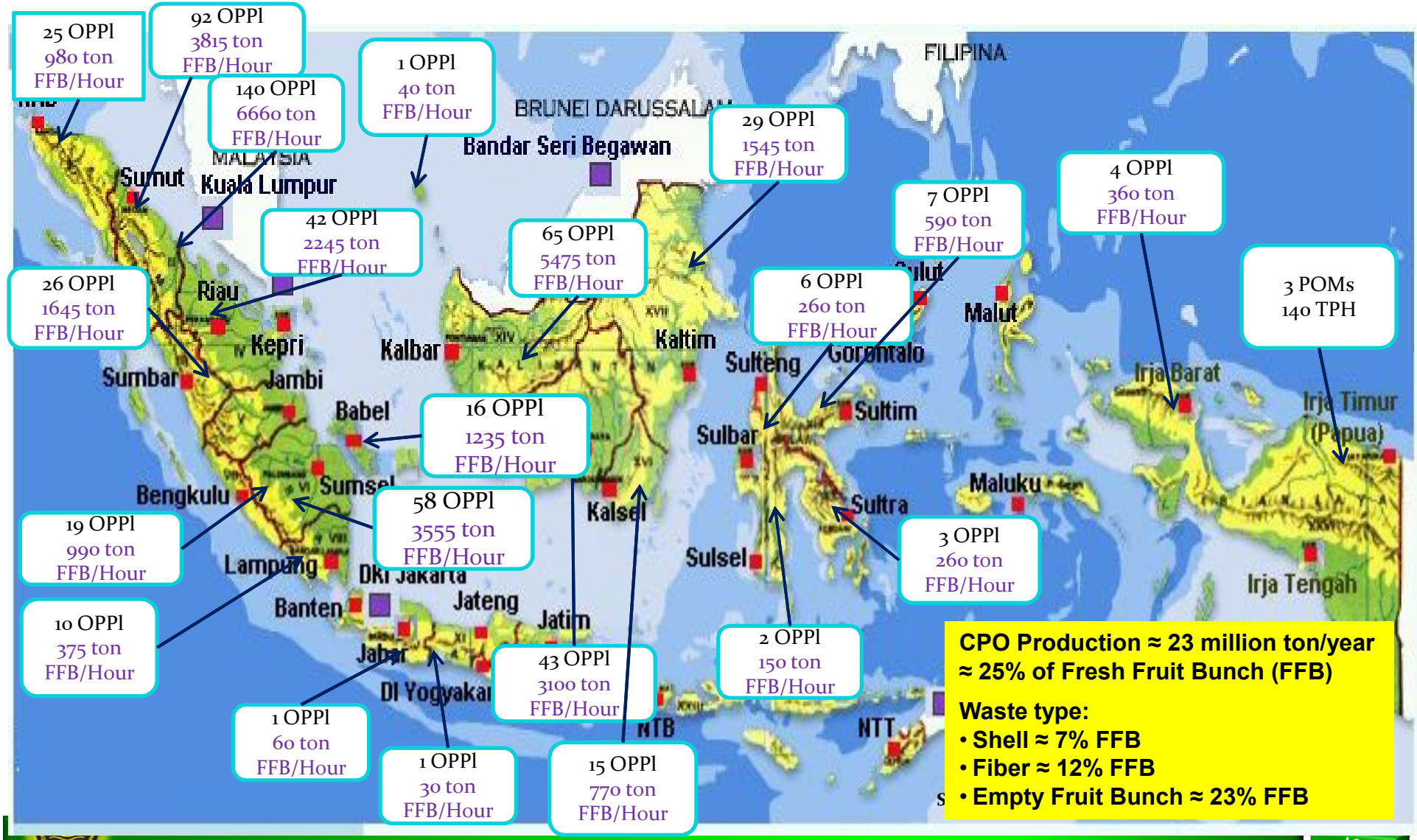
MUNICIPAL SOLID WASTE POTENTIAL IN 28 CITIES

NO.	CITY	MSW POTENTIAL (ton/day)	ELECTRICITY POTENTIAL (MW)
1	DKI Jakarta	8.733	362
2	Kota & Kab. Tegal	3.519	146
3	Kota Surabaya	2.562	106
4	Surakarta, Klaten & Boyolali	2.447	101
5	Kota Bandung	2.114	88
6	Kota Jember	2.112	88
7	Kota & Kab. Cirebon	2.012	83
8	Kota Medan	1.812	75
9	Kota Cianjur	1.762	73
10	Kab. Sidoarjo	1.568	65
11	Kab. Banyuwangi	1.503	62
12	Kota & Kab. Tegal	1.485	62
13	Kota Tangerang	1.352	56
14	Kota Semarang	1.345	56
15	Kota & Kab. Kediri	1.224	51

MUNICIPAL SOLID WASTE POTENTIAL IN 28 CITIES (cont'd)

NO.	CITY	MSW POTENTIAL (ton/day)	ELECTRICITY POTENTIAL (MW)
16	Kota Depok	1.217	50
17	Kota & Kab. Pasuruan	1.215	50
18	Kota Palembang	1.171	49
19	Kota Makasar	1.029	43
20	Kota Malang	761	32
21	Kota Bandar Lampung	703	29
22	Kota Padang	682	28
23	Kota Madiun	612	25
24	Kota Pakanbaru	603	25
25	Batam	450	19
26	Denpasar, Bali	445	18
27	Kota Balikpapan	400	17
28	Kota Pontianak	340	14

POTENTIAL OF POWER GENERATION FROM WASTE OF OIL PALM PLANTATION



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INSTALLED CAPACITY OF ON-GRID WASTE POWER PLANT
(SEPTEMBER 2012)

No	Company	COD	Contract Type	Location	Buyer	Waste Type	Capacity (MW)
1	PT Riau Prima Energy	2001	Excess power	Riau	PLN Riau Region	Palm waste	5
2	PT Listrindo Kencana	2006	IPP	Bangka	PLN Bangka Region	Palm waste	5
3	PT Growth Sumatra	2006	Excess power	Sumatera Utara	PLN Sumut Region	Palm waste	6
4	PT Indah Kiat Pulp & Paper	2006	Excess power	Riau	PLN Riau Region	Palm waste	2
7	PT Belitung Energy	2010	IPP	Belitung	PLN Babel Region	Palm waste	7
8	PT Growth Sumatra	2010	Excess power	Sumatera Utara	PLN Sumut Region	Palm waste	9
9	PT Pelita Agung	2010	Excess power	Riau	PLN Riau Region	Palm waste	5
10	Permata Hijau Sawit	2010	Excess power	Riau	PLN Riau Region	Palm waste	2
11	PT Navigat Organic	2011	IPP	Bali	PLN Dist Bali	MSW	2
12	PT Navigat Organic	2011	IPP	Bekasi	PLN Dist Jabar	MSW	8
13	PT Growth Asia	2012	Excess power	Sumatera Utara	PLN Sumut Region	Palm waste	20
Total On Grid Capacity (MW)							**71**

Source: PT. PLN (Persero) Divisi EBT

ADDITIONAL CAPACITY OF ON-GRID WASTE POWER PLANT IN 2013 (STATUS: SEPTEMBER 2012)

No	Company	COD	Contract Type	Location	Buyer	Waste Type	Capacity (MW)	Status
1	PT PN III	2013	Excess power	Sumatera Utara	PLN Region Sumut	Palm waste	1,8	FS
2	PT PN IV	2013	Excess power	Sumatera Utara	PLN Region Sumut	Palm waste	1,6	FS
3	Private	2013	IPP	Aceh, Langsa	PLN Region Aceh	Biogas POME	2	FS
4	Navigat Organic	2013	IPP	Bantar Gebang, Bekasi	PLN Dist Jabar	MSW (sampah)	2	FS
5	Private	2013	IPP	Gorontalo	PLN Region Gorontalo	Corn Cob	10	Planning
6	PT Gikoko	2013	IPP	Bekasi	DISJBB	MSW (sampah)	2	Planning
7	PT Gikoko	2013	IPP	Palembang	PLN Wil Sumsel Jambi Bengkulu	MSW (sampah)	3	Planning
8	PT Gikoko	2013	IPP	Makassar	PLN Region Sulselrabar	MSW (sampah)	3	Planning
9	Korindo Group	2013	Excess power	Kalteng	PLN Region Kalselteng	woodchip	4	FS
10	Growth Steel Group	2013	Excess power	Simalungun, Sumut	PLN Region Sumut	Palm waste	10	Commissioning
11	Growth Steel Group	2013	Excess power	Jambi	PLN Region Sumsel	Palm waste	10	Commissioning
12	Growth Steel Group	2013	Excess power	Pontianak	PLN Region Kalbar	Palm waste	10	Planning
13	Growth Steel Group	2013	Excess power	Cilegon	PLN DisJabar	rice husk	10	Commissioning
Total Capacity 2013 Plan (MW)							**69,4**	

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REGULATIONS AND INCENTIVES

1. Law No. 30/2007 on Energy.
2. Presidential Regulation No. 5/2006 on National Energy Policy.
3. Ministerial Regulation of EMR No. 4/2012 concerning Power Purchase Price from Renewable Generations (small and medium scale) and Excess Power.
4. Ministerial Regulation of Finance No. 21/PMK.011/2010 concerning Tax and Custom Facilities for Renewable Energy Utilization.
5. Ministerial Regulation of Finance No. 130/PMK.011/2011 concerning Provision of Exemption Facilities or Reduction of Income Tax.
6. Ministerial Regulation of Finance No. 139/PMK.011/2011 concerning Procedure of Providing Business Feasibility Guarantee for PT PLN (Persero) in Developing Power Station based on Renewable Energy, Coal and Gas through Cooperation with Independent Power Producers.

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

(Ministerial Regulation of EMR No. 4/2012)

No.	Energy	Capacity	Electricity Tariff	Note
1.	Biomass	upto10 MW	Rp. 975,- / kWh X F	
2.	Biogas	upto 10 MW	Rp. 975,- / kWh X F	Non Municipal Solid Waste
3.	Municipal Solid Waste	upto 10 MW	Rp. 1050,- / kWh	*Zero waste* **)
4.	Municipal Solid Waste	upto 10 MW	Rp. 850,- / kWh	*Landfill* **)

- F is 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 already issued in Minister of ESDM decree No. 4/2012

Note :

*) Connected to medium voltage system

**) - Based on Law No. 18 Year 2008 concerning to Waste Management.
- For municipal solid waste, tipping fee applied at minimum Rp. 100.000, - / ton of waste (tipping fee is fee given by local government to waste management institution).

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CONCLUSIONS

- Waste/biomass power genaration supports energy security, environment sanitation, and green house gas reduction.
- Potential and market of waste/biomass power genaration in Indonesia is big.
- There is power price certainty and it will be set more interesting.
- Government concerns to replace diesel power plants by waste/biomass power plant.

Thank You

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