JICA TRAINING AND DIALOGUE 2015
ON
ENERGY POLICY

COUNTRY REPORT: INDONESIA

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MINISTRY OF NATIONAL DEVELOPMENT PLANNING/
NATIONAL DEVELOPMENT PLANNING AGENCY (BAPPENAS)

PROLOG

"An Archipelagic Country"

Strategic Location

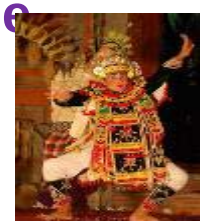
- Between two continents
- Between two oceans
- An important route for the world trade sea transportation

One of the largest

SOCIO ECONOMY				
Teritorial Area *) :	7,788,810.32	km^2		JAPAN**
Land Area *) :	1,910,931.32	km^2		
Population :	241,663.81	Thousand People		127.55 million
Household :	64,042.10	Thousand Household		
GDP Regional				
Total Value :	8,077.57	Trillion Rupiah	~ $868.3 bil.	$4,694.4 billion
Per Capita :	33,424.80	Thousand Rupiah per Year	~ $3,474.6	$36,804 billion
Energy Indicator				
TPES per population 2012**	0.87	TOE		3.55 TOE

… and diverse

Diversity of food



Diversity of culture

Diversity of people

** Key World Energy Statistics 2014, IEA

ENERGY CURRENT CONDITION (1)

a. Limited fossil fuel resources

Oil Proven Reserve

Gas Proven Reserve

Coal Proven Reserve

b. Diverse Renewable Resources

No	Type	Resources	Installed Capacity (MW)	Ratio
(a)	(b)	(c)	(d)	(e)=(d)/((c)
1	Hydro	75,000 MW	7,573	10.1 %
2	Geothermal	28,910 MW	1,344	4.65%
3	Solar	4.8 kWh/m2/day	48	
4	Wind	3-6 m/s	187	
5	Ocean	49 GW	0.01	
6	Uranium	3,000 MW	30	

Source: National Energy Council

ENERGY CURRENT CONDITION (2)

Thousand BOE

	Coal	NaturalGas	LNG	CrudeOil	Fuel	LPG	Electricity	OtherPet. Product	Renewable*	TOTAL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Primary Energy Supply	**410,567**	**402,121**	**-159,509**	**306,137**	**209,569**	**30,658**	**1,857**	**-20,335**	**128,946**	**1,310,011**
Production	1,886,137	462,317	0	300,830	0	0	0	0	128,946	2,778,230
Import	463	0	0	118,334	192,656	28,130	1,857	6,509	0	347,949
Export	-1,380,724	-60,195	-159,509	-117,380	-6,339	0	0	-26,845	0	-1,750,992
Stock Change	-95,309	0	0	4,353	23,253	2,529	0	0	0	-65,174
Transformation	**-231,792**	**-278,871**	**181,963**	**-300,134**	**119,366**	**17,143**	**132,522**	**80,094**	**-57,872**	**-337,581**
Refinery	0	-3,490	0	-300,134	168,447	4,807	0	80,094	0	-50,276
Gas Processing	0	-191,748	181,963	0	0	12,336	0	0	0	2,551
Coal Processing Plant	-283	0	0	0	0	0	0	0	0	-283
Power Plant	-231,596	-83,633	0	0	-49,081	0	132,522	0	-57,872	-289,660
Own Use & Losses	**0**	**-42,538**	**-22,454**	**-6,003**	**-608**	**0**	**-17,453**	**0**	**-142**	**-89,198**
FinalEnergySupply	**178,947**	**80,712**	**0**	**0**	**328,327**	**47,801**	**116,926**	**59,758**	**70,932**	**883,403**
Statistic Discrepancy	**0**	**44,818**	**0**	**0**	**0**	**0**	**-1,964**	**0**	**0**	**42,854**

Exclude Biomass
* Including Hydro, Geothermal, Biofuel

Source: Handbook of Energy and Economic Statistics of Indonesia 2014, Ministry of Energy and Mineral Resources

- International demand + export policy impeding domestic supply
  - Coal export: 73,2%
  - NG export: 54,6%

TPES

- Dominated by fossil fuel: Coal: 31%; NG: 18%; Oil: 40%
- Limited utilization of renewable (11%)

- Final Energy Supply
  - Fuel oil : 58% import (also crude oil import)
  - LPG: 24% import
  - Electricity: 84% ratio electrification

CURRENT CONDITION (3)

Thousand BOE

	Coal	NaturalGas	LNG	CrudeOil	Fuel	LPG	Electricity	OtherPet. Product	Renewable*	TOTAL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Final Energy Consumption	**178,947**	**125,529**	**0**	**0**	**328,327**	**47,801**	**114,962**	**59,758**	**70,932**	**926,256**
Industry	178,947	95,431	0	0	40,778	693	39,466	0	0	355,315
Transportation	0	185	0	0	252,411	0	79	0	70,932	323,607
Household	0	122	0	0	6,396	45,839	47,330	0	0	99,687
Commercial	0	1,422	0	0	5,195	1,269	28,088	0	0	35,974
OtherSector	0	0	0	0	23,546	0	0	0	0	23,546
Non Energy Use	**0**	**28,370**	**0**	**0**	**0**	**0**	**0**	**59,758**	**0**	**88,128**

Exclude Biomass

* Including Hydro, Geothermal, Biofuel

Source: Handbook of Energy and Economic Statistics of Indonesia 2014, Ministry of Energy and Mineral Resources

By Sector

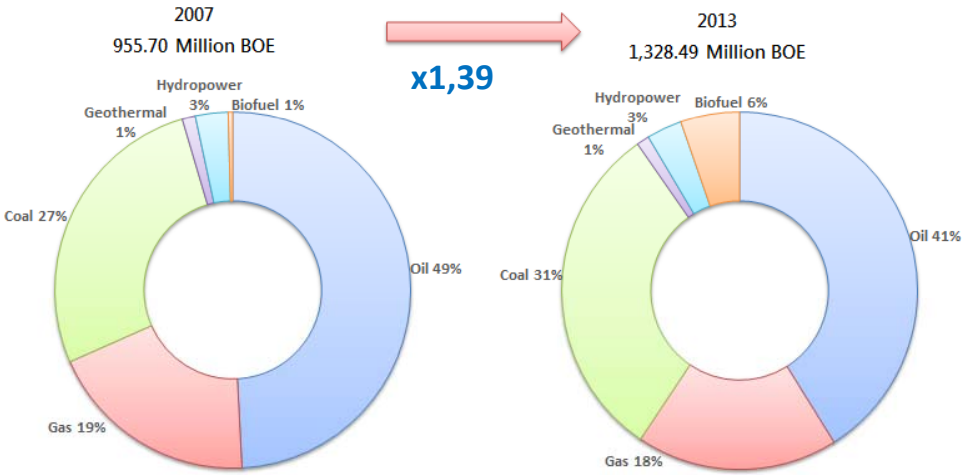
- Dominated by Industry & Transportation (73%).

By Type

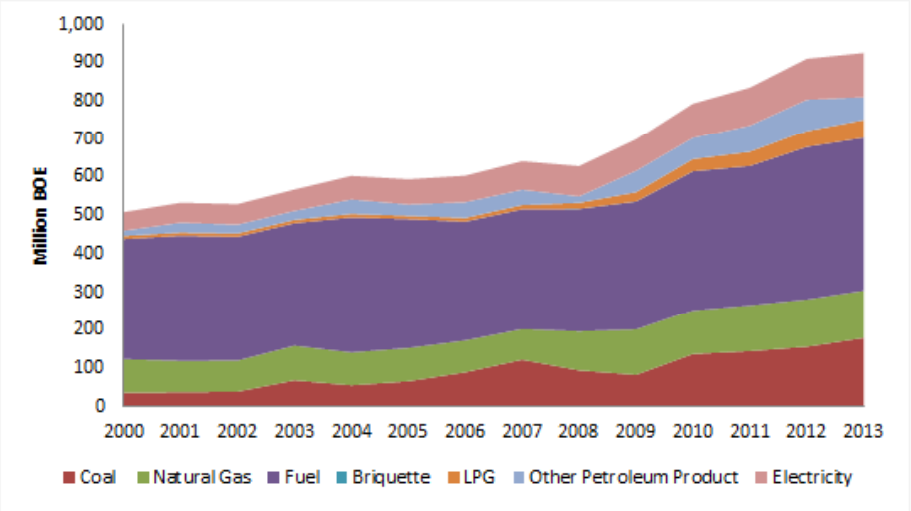
- Fuel oil mainly used for transportation
- LPG mainly used for residential
- Limited electricity consumption
  - Elec. Cons/Pop: 733 kWh →Japan (2012): 7.193 kWh *

* Key World Energy Statistics 2014, IEA

SUPPLY-DEMAND HISTORY



Primary Energy Supply



Final Energy Consumption

Source: Handbook of Energy and Economic Statistics of Indonesia 2014, Ministry of Energy and Mineral Resources

ENERGY POLICY

National Energy Policy ---- Government Regulation No. 79 Year 2014

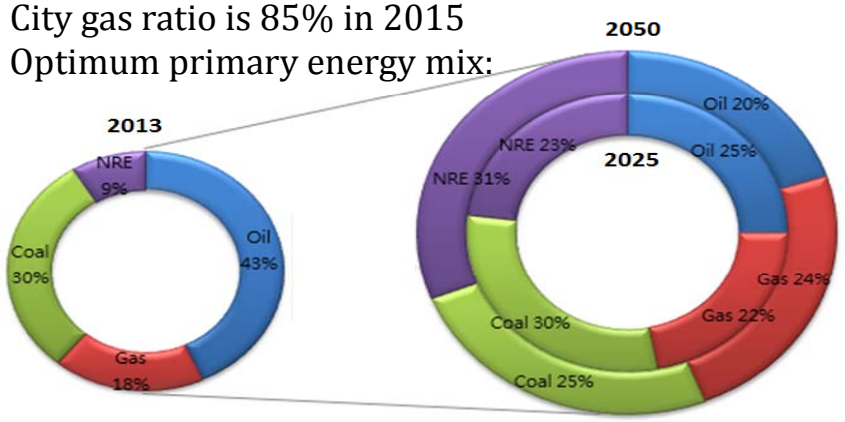
The objectives of provision and utilization of primary and final energy

Aspect		Unit	2025	2050
Primary Energy	Supply	MTOE	400	1000
	Utilization	TOE per Capita	1,4	3,2
Electricity	Supply	GW	115	430
	Consumption	kWh per Capita	2500	7000

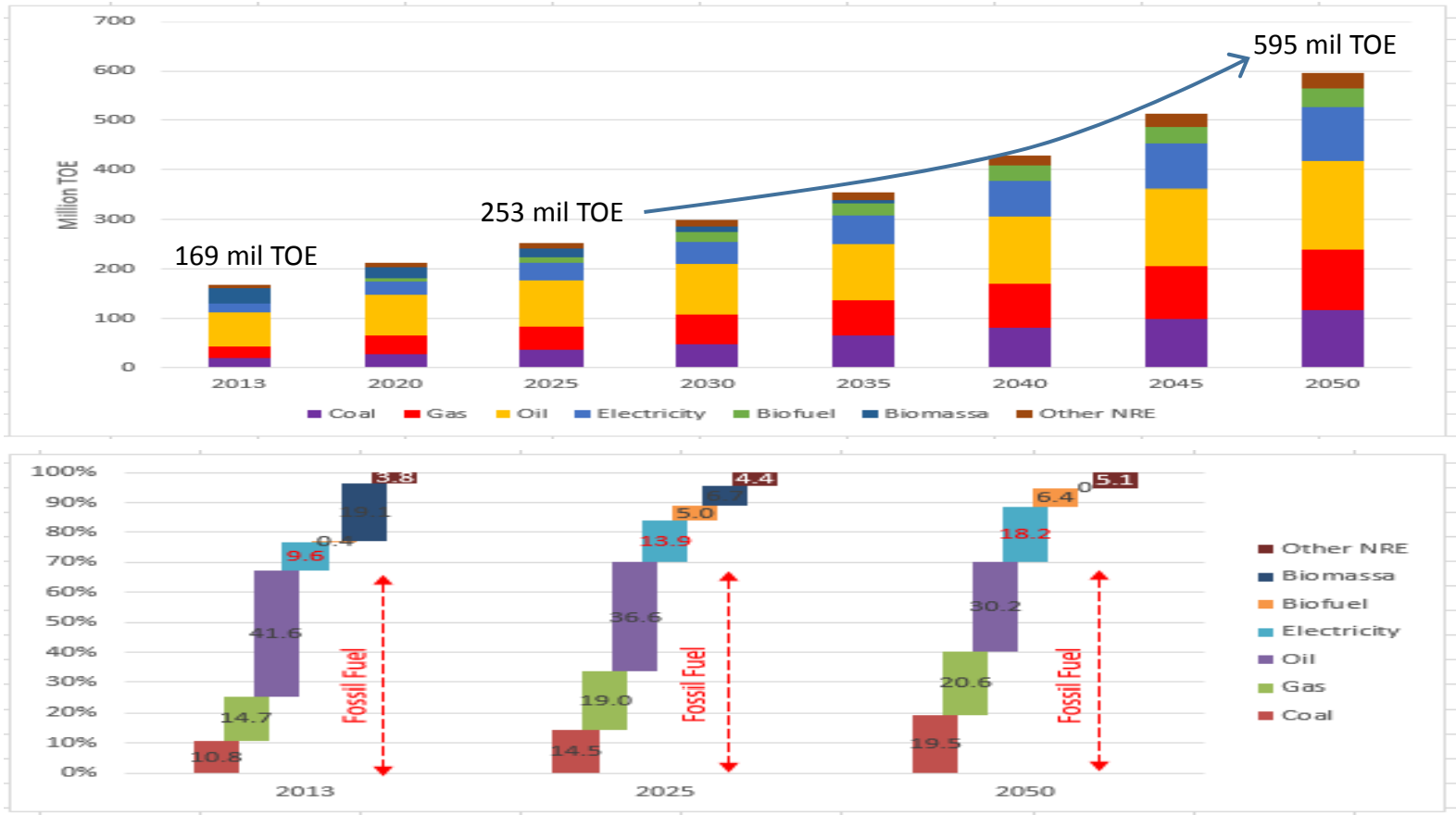
Keywords:
(1) Emphasizing on renewable energy; (2) Demand side management; and (3) Domestic energy to supply domestic demand

Targets of National Energy Policy

a. Shifting the paradigm → energy as national capital for national development
b. Energy elasticity is less than 1 (one) in 2025
c. Final energy intensity is 1% (one) percent per year until 2025
d. Electrification ratio is 85% in 2015 and 100% in 2020
e. City gas ratio is 85% in 2015
f. Optimum primary energy mix:



ENERGY OUTLOOK – FINAL ENERGY DEMAND



source: National Energy Council

BOTTLENECKS

- Securing primary energy for domestic usage
  - *Push* and also *Pull* factors
- Limited energy infrastructure
  - Refinery, power plant, pipeline
- Land acquisition
  - Time consuming, no certainty
- Subsidy and pricing policy
  - Not targeted, increasing, based on non-renewable
- Funding/Investment
  - Huge capital investment, rely on foreign sources

AREA OF INTEREST

- Policy formulation
- Methods of energy supply-demand forecasting
- Cost and benefit analysis
- Energy market

Thanks
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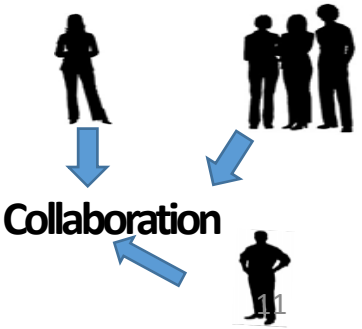

NATIONAL ENERGY DEVELOPMENT PLANNING 2015-2019

INDICATOR	Baseline - 2014	2019
a. Electricity:		
Electrification Ratio (%)	81.5	96.6
Power Consumption per Capita (kWh)	843	1,200
b. Production:		
Oil (boepd)	818	700
Natural Gas (boepd)	1,224	1,295
Coal (million tons)	421	400
c. Domestic Usage:		
Natural Gas (%)	53%	64%
Coal (%)	24%	60%
d. Energy Infrastructure:		
FSRU/regasification/LNG terminal (unit)	2	7 (total in 5 years)
Gas pipelines (km)	11,960	17,960
Pembangunan SPBG (unit)	40	118
City Gas services (households)	200 thousand	1,0 million
Additional Oil Refinery (unit)	-	1 unit (capacity: 300 mboepd)

POLICY DIRECTION

1. Increase the primary energy production, especially oil and gas
2. Increase the domestic utilization of natural gas and national coal (domestic market obligation)
3. Improve the accessibility and quality of energy services and electricity
4. Increase the role of renewable energy in the energy mix
5. Improve the management of energy subsidies to be more transparent and targeted

Source: National Mid-Term Development Plan 2015-2019

G-20 Members

Member	Trade mil. USD (2014)	Nom. GDP mil. USD (2014)[46]	PPP GDP mil. USD (2014)[47]	Nom. GDP per capita USD (2014)[48]	PPP GDP per capita USD (2014)[49]	HDI (2014)	Population (2014)	P5	G7	BRICS	MINT	DAC	OECD	Economic classification (IMF)[50]
European Union	4,485,000	18,495,349	18,526,477	36,638	36,700	0.876	505,570,700	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	3,944,000	17,418,925	17,418,925	54,597	54,597	0.914	318,523,000	✓	✓	✗	✗	✓	✓	Advanced
China	4,201,000	10,380,380	17,617,321	7,589	12,880	0.719	1,367,520,000	✓	✗	✓	✗	✗	✗	Developing
Japan	1,522,400	4,616,335	4,750,771	36,332	37,390	0.890	127,061,000	✗	✓	✗	✗	✓	✓	Advanced
Germany	2,866,600	3,859,547	3,721,551	47,590	45,888	0.911	80,940,000	✗	✓	✗	✗	✓	✓	Advanced
United Kingdom	1,189,400	2,945,146	2,548,889	45,653	39,511	0.892	64,511,000	✓	✓	✗	✗	✓	✓	Advanced
France	1,212,300	2,846,889	2,580,750	44,538	40,375	0.884	63,951,000	✓	✓	✗	✗	✓	✓	Advanced
Brazil	484,600	2,353,025	3,263,832	11,604	16,096	0.744	202,768,000	✗	✗	✓	✗	✗	✗	Developing
Italy	948,600	2,147,952	2,127,743	35,823	35,486	0.872	59,960,000	✗	✓	✗	✗	✓	✓	Advanced
India	850,600	2,049,501	7,375,898	1,627	5,855	0.586	1,259,695,000	✗	✗	✓	✗	✗	✗	Developing
Russia	844,200	1,857,461	3,564,549	12,926	24,805	0.778	143,700,000	✓	✗	✓	✗	✗	✗	Developing
Canada	947,200	1,788,717	1,591,580	50,398	44,843	0.902	35,467,000	✗	✓	✗	✗	✓	✓	Advanced
Australia	496,700	1,444,189	1,095,384	61,219	46,433	0.933	23,599,000	✗	✗	✗	✗	✓	✓	Advanced
South Korea	1,170,900	1,416,949	1,778,823	28,101	35,277	0.891	50,437,000	✗	✗	✗	✗	✓	✓	Advanced
Mexico	813,500	1,282,725	2,140,564	10,715	17,881	0.756	119,581,789	✗	✗	✗	✓	✗	✓	Developing
Indonesia	346,100	888,648	2,676,081	3,534	10,641	0.684	251,490,000	✗	✗	✗	✓	✗	✗	Developing
Turkey	417,000	806,108	1,508,102	10,482	19,610	0.759	77,324,000	✗	✗	✗	✓	✗	✓	Developing
Saudi Arabia	521,600	752,459	1,605,703	24,454	52,183	0.788	30,624,000	✗	✗	✗	✗	✗	✗	Developing
Argentina	142,370	540,164	947,573	12,873	22,582	0.808	42,961,000	✗	✗	✗	✗	✗	✗	Developing
South Africa	200,100	350,082	704,514	6,483	13,046	0.658	53,699,000	✗	✗	✓	✗	✗	✗	Developing

Source: Wikipedia

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