



**Ministry of  
Industry**

REPUBLIC OF INDONESIA

*Overview :*

*Biomass Resources and Utilization in Indonesia*



**By:**

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# I. BACKGROUND

# I.1. STRATEGY OF NATIONAL INDUSTRY DEVELOPMENT

**Vision 2014**

**To strengthening market competitiveness of sustained manufacturing based industries and developing of future industrial pillar**



**Strategic  
Target  
2010-2014**

- a. Increasing of industrial added-value;
- b. Enlarging domestic and international market power;
- c. Increasing competency of industry, R & D and bussines human resources ;
- d. To increase skill and know-how on industrial technology;
- e. Strengthening industrial structure;
- f. Spreading industrial localitation out of Java Island
- g. Increase small and medium scale industries on GDP achievement.

## I.2. DEVELOPMENT TARGETS OF NATIONAL INDUSTRY (2014)

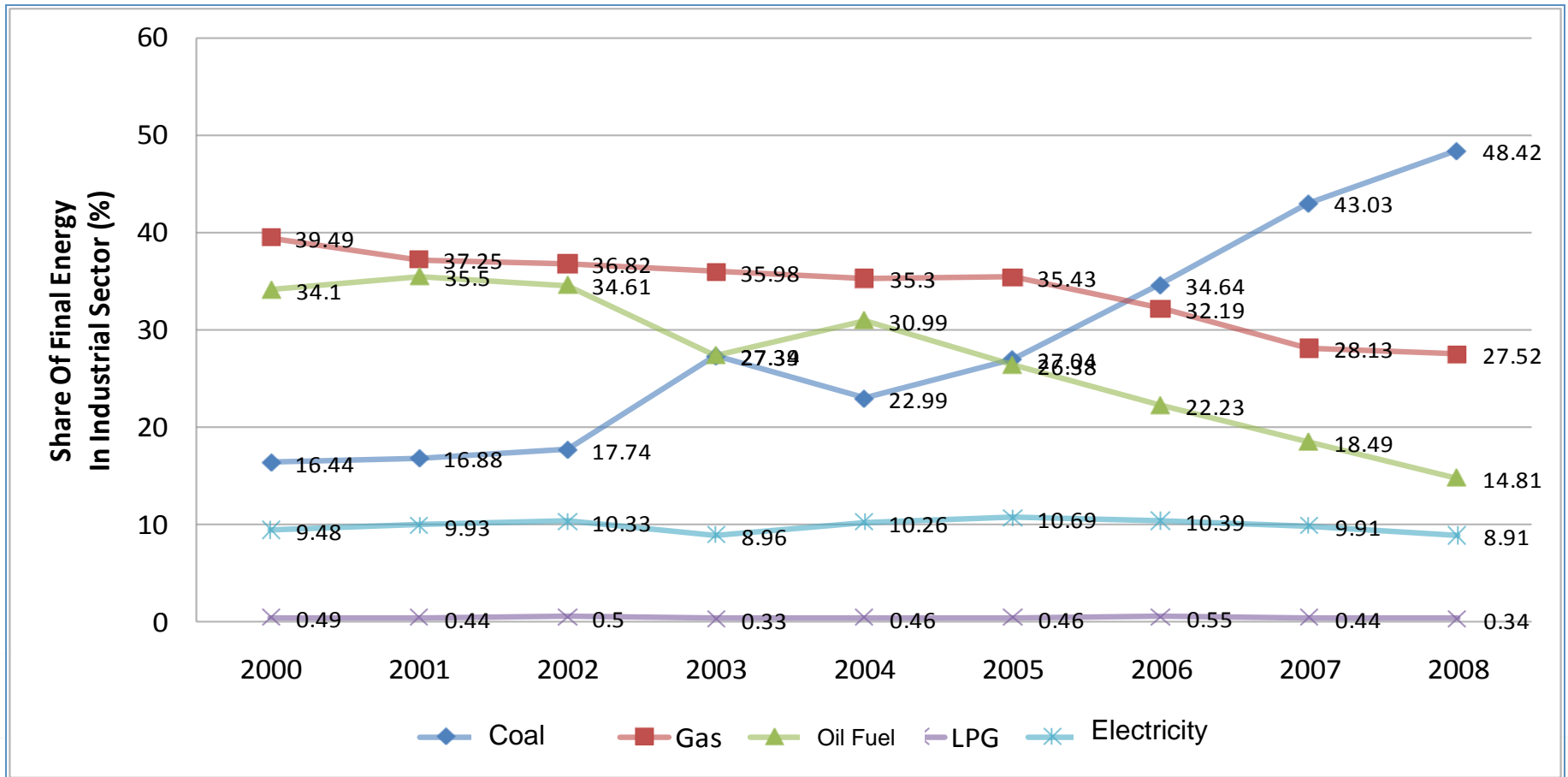
- GDP Growth of **7,7%**;
- Growth of non oil and gas industry **8,95%**
- Contribution of Manufacturing Products on GDP **24,67%**
- Employment in Manufacturing Industries are 17,7 Million persons
- Total of Investment during 2010-2014 is Estimated  
Rp. 735,9 Billion

### I.3. INDUSTRIAL GROWTH TARGET IN 2010 – 2014 (%)

Industrial Sector	2009	2010	2011	2012	2013	2014	Rata-rata 2010-2014
Food & Beverage and Tobacco	11,29	6,64	7,92	8,15	8,94	10,40	8,41
Textile, Leather and Footwear	0,53	2,15	3,40	3,75	4,30	5,60	3,84
Wood and Other Forest Products	-1,46	1,75	2,75	2,90	3,40	3,90	2,94
Paper & Print items	6,27	4,60	4,80	4,90	5,30	5,58	5,04
Fertilizers, Chemicals and Rubber Goods	1,51	5,00	5,46	5,75	7,00	8,30	6,30
Cement and Non Metal Goods	-0,63	3,25	3,74	4,05	4,60	5,30	4,19
Basic Metal, Iron and Steel	-4,53	2,75	3,40	4,00	4,50	5,50	4,03
Transportation, Machinery and Fittings	-2,94	4,00	6,40	7,78	8,30	10,20	7,34
Other s	3,13	5,18	5,60	6,00	6,40	6,80	6,00
<b>Total Industry</b>	2,52	4,65	6,10	6,75	7,47	8,95	6,78
<b>GDP Growth in Percentage</b>	<b>4.50%</b>	<b>5.50%</b>	<b>6.15%</b>	<b>6.65%</b>	<b>7.05%</b>	<b>7.70%</b>	<b>6.25%</b>

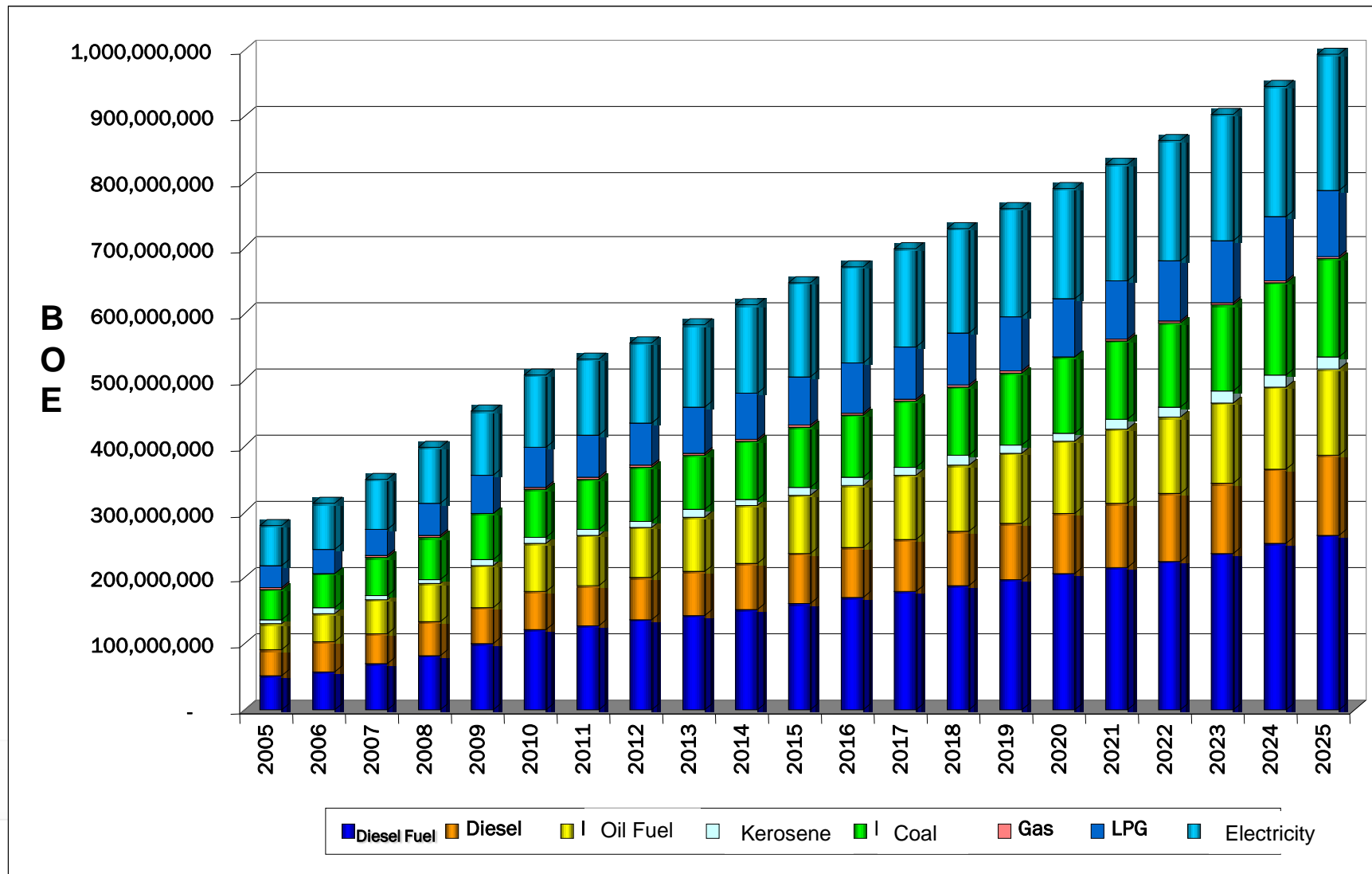
Source: BPS (2008), calculated by MOI

# I.4. SHARE OF FINAL ENERGY IN INDUSTRIAL SECTOR



Source : Energy Handbook 2008, KESDM

# I.5. TREND OF ENERGY NEEDS IN INDUSTRIAL SECTOR



# I.6. NATURAL GAS UTILIZATION FOR NATIONAL ENERGY

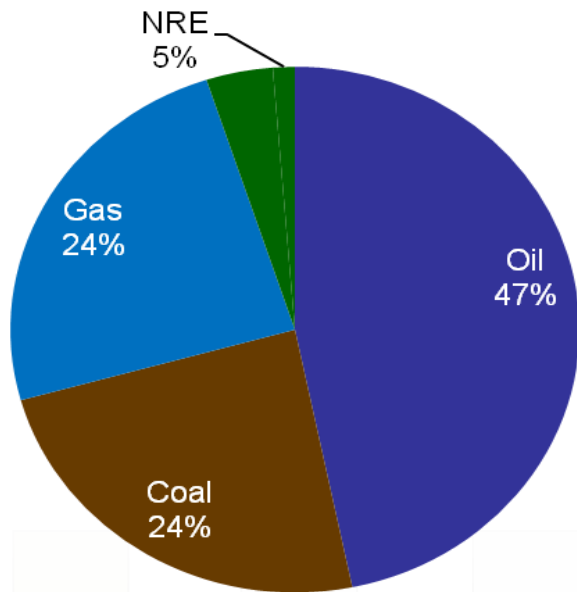
NO	INDUSTRY	MMSCD	NO	INDUSTRY	MMSCD
A	MANUFACTURING INDUSTRY		B	IFERTILIZER INDUSTRY	
1	Ceramic	130.65	1	Fertilizer	807.2
2	Glassware	18.9	2	Amonia	120.5
3	Gas	2.68	3	Petrochemical	318.88
4	Flatted Glass	60.31			
5	Steel	964.82			
6	Textile	20.38			
7	Cement	5.05			
8	Food and Beverage	26.08			
9	Pulp & Paper	245.7			
10	Carbide	26.27			
11	CPO	15.38			
12	Feed	2.27			
13	Monosodium Glutamate	1.21			
14	Cacao	0.51			
15	Sorbitol	0.11			
16	Zinc Oxide	0.11			
17	Industrial gas	0.31			
	SUB TOTAL	1520.74		SUB TOTAL	1246.58
	TOTAL (A+B)				2767.32



## II. NATIONAL ENERGY CONDITION

# II.1. CONDITION OF ENERGY

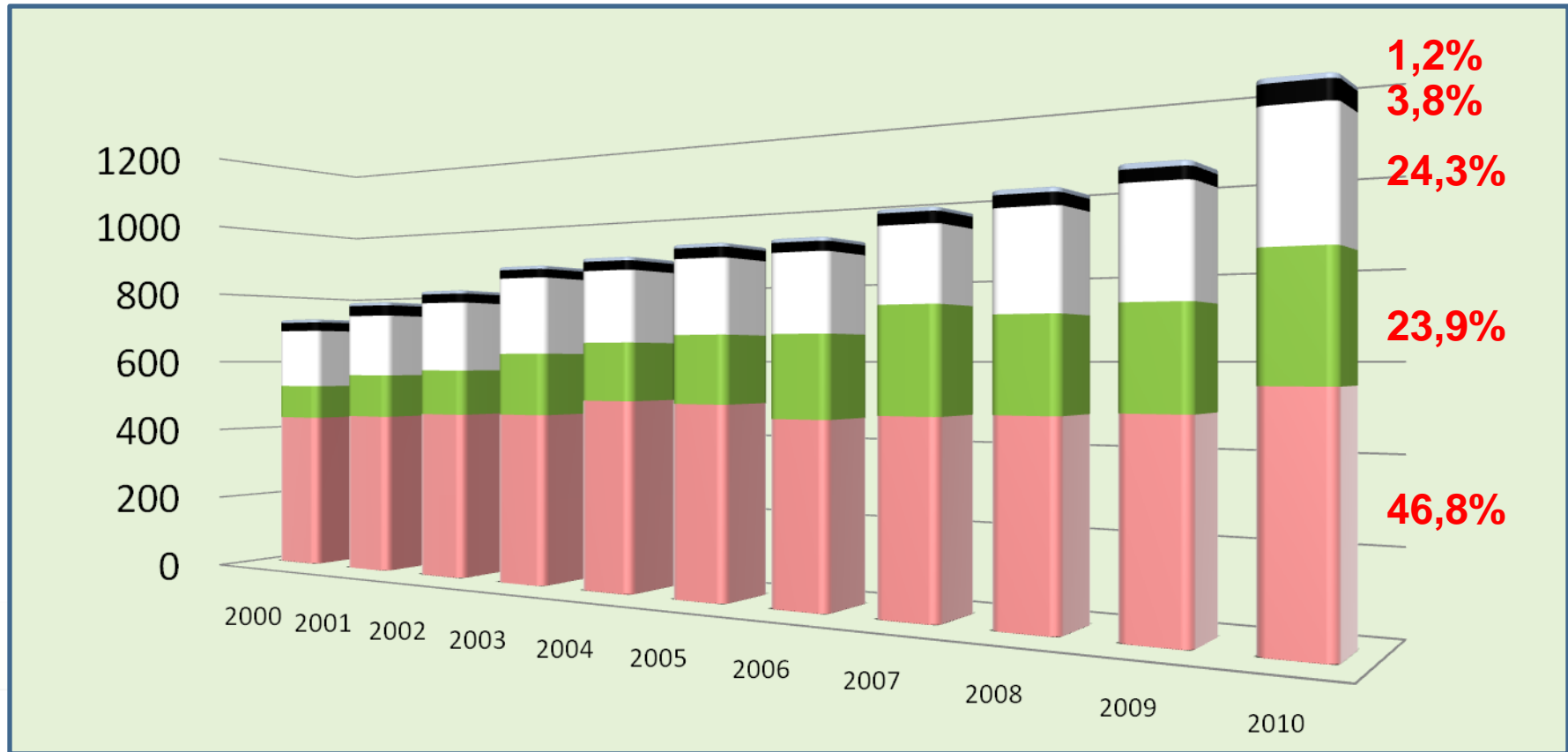
**National Energy Mix Total  
on 2010  
1081 million BOE**



Elasticity of Energy = 1,60  
Share of Non Fossil Energy < 5%

1. High dependence on fossil energy while its reserves are more limited;
2. The average of growth rate of energy consumption is 7% per year ;
3. Utilization of renewable energy and implementation of Energy Conservation is not optimal;
4. Public access to energy (modern) is still limited:
5. Linkage to environmental issues:
  - a. Mitigation of climate change;
  - b. Carbon trading;
  - c. National commitment to reducing emissions 26% by 2020;

## II.2. ENERGY PRIMER 2000–2010 (Million BOE)



Oil

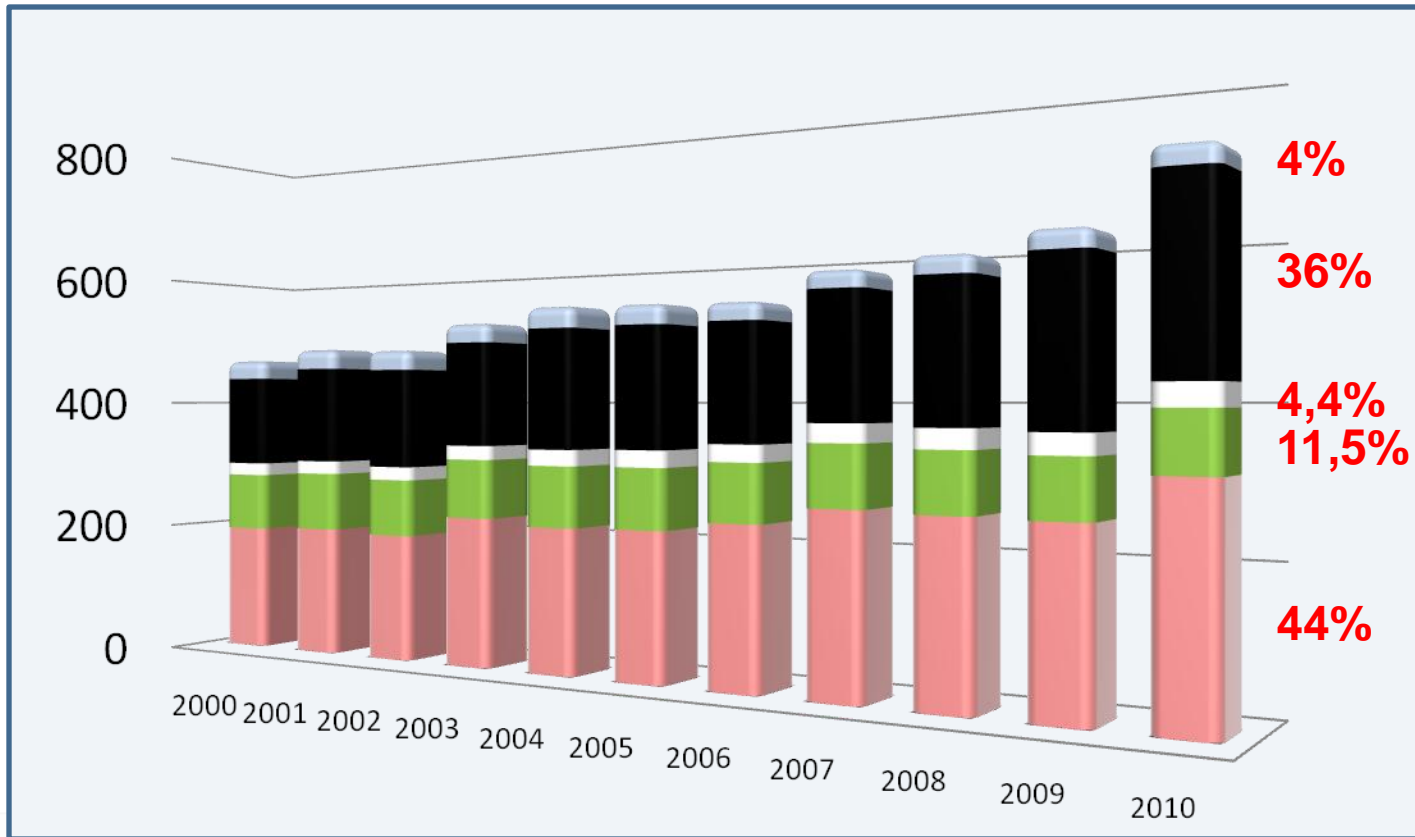
Coal

Gas

Water Energy

Geothermal

## II.3. ENERGY FINAL 2000–2010 (Million BOE)



Industry

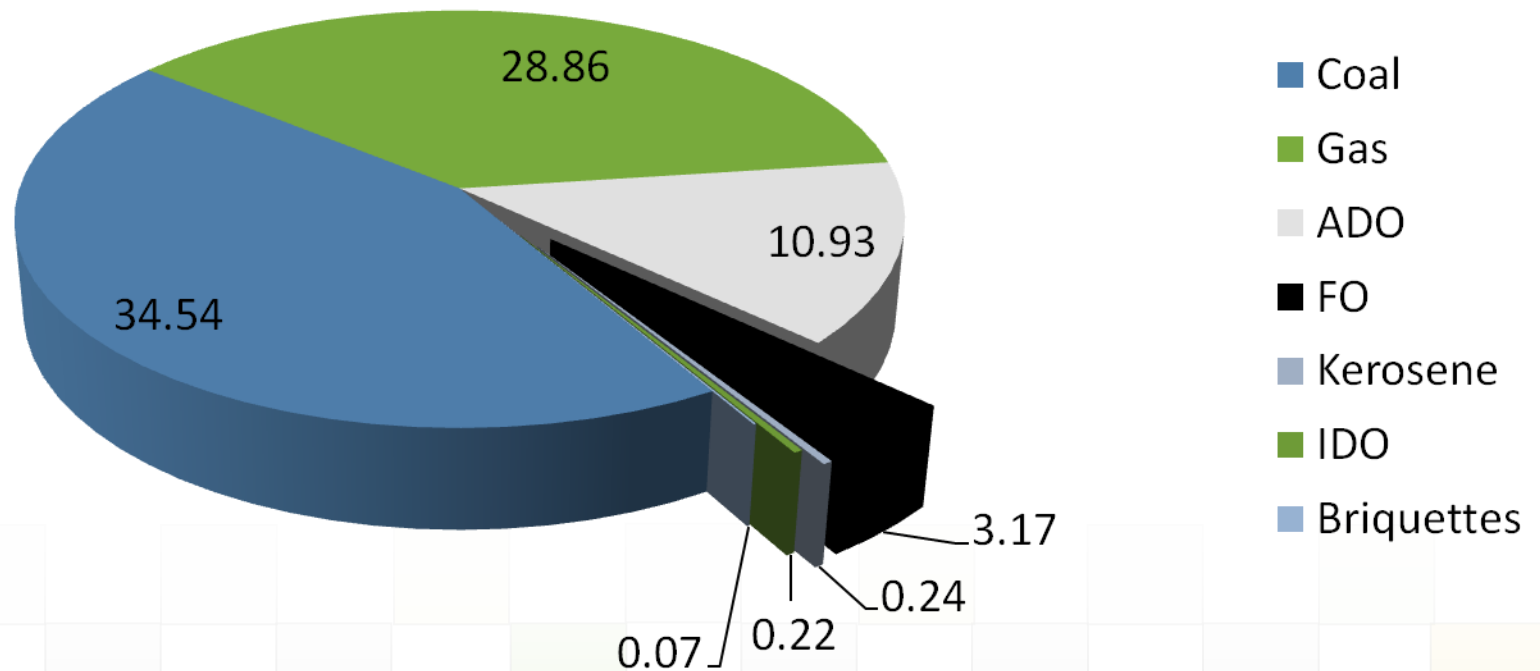
Household

Commercial

Transportasi

Other

## II.4. SHARE USE OF ENERGY IN INDUSTRIAL SECTOR 2010 (%)



# III. BIOMASS RESOURCE & UTILIZATION IN INDONESIA

# III.1. NEW RENEWABLE ENERGY POTENTIAL (2010)



NO	NEW RENEWABLE ENERGY	RESOURCE (R)	INSTALLED CAPACITY (IC)	RATUJO R/IC (%)
1	2	3	4	5 = 4/3
1	Water Energy	75,670 MW	5,705.29 MW	7.54
2	Geothermal	29,038 MW	1,189 MW	4.00
3	Mini/Micro Hydro	769.69 MW	217.89 MW	28.31
4	Biomass	49,810 MW	1,618.40 MW	3.25
5	Solar Energy	4.80 kWh/m <sup>2</sup> /day	13.5 MW	-
6	Wind Energy	3 – 6 m/s	1.87 MW	-
7	Uranium	3.000 MW (e.q. 24,112 ton) for 11 years*)	30 MW	1.00

\*) Just in Kalan – West Kalimantan

## III.2. ELECTRIC POTENTIAL OF WASTE BIOMASS



No	Biomass Source	Production of Biomass Source (ton/th)	Potential for Liquid Fuel (liter/th)	Electric Potential (KWH)
1	Palm Bunches	3.979.691	497.461.375	1.326.908.000
2	Corn cob	4.001.724	500.215.500	1.333.908.000
3	Husk Rice	21.114.074	2.639.259.250	7.038.024.667
<b>TOTAL</b>				<b>9.698.496.334</b>



### III.3. COMMERCIAL BIOMASS AVAILABILITY

No	Biomass	Potency (MT/month)	Supplier
1	Palm Kernel	-	Asia Biomass Co.Ltd
2	Palm Kernel Shell	14.000	Gaia Sumber Pustaka Group, CV. Agrotech
3	CPO (Crude Palm Oil)	50.000	Trading Company, Agent
4	Palm Acid Oil	10	Trading Company, Agent
5	Palm Fiber	8.000	Trading Company, Agent
6	Coffee Shell	-	Trading Company, Agent
7	Coconut Shell	-	Trading Company, Agent
8	Corn Straw	15	Trading Company, Agent
9	Saw Dust	-	Trading Company, Agent
10	Biomass Briquette	-	PT. Skill Mandiri Nusantara
11	Biomass Wood Pellets	2,5	Indonesia Charcoal Factory
12	Wood Chips/ Pellet	2.000	CV. AJD
13	Bamboo	-	PT. Bambu Nusa Verde
14	Charcoal	-	CV. Anugerah Bahagia
15	VCO	-	Biomass Healthier Lestari

## III.4. BIOMASS UTILIZATION IN INDUSTRIAL SECTOR

### 1. CEMENT INDUSTRY

- ✓ Palm Bunches;
- ✓ Rice Husk;
- ✓ Munciple Waste

### 2. PULP & PAPER INDUSTRY

- ✓ Kulit Kayu
- ✓ Palm Bunches

### 3. TAPIOCA / CASSAVA FLOUR

- ✓ Palm Bunches
- ✓ Cassava Flour Waste

### 4. PETROCHEMICAL/ FERTILIZER

- ✓ Jathropha (biji jarak)

### III.5. LIST OF BIOMASS POWER PLANT

No	Company Name	COD	Type of Contract	Location	Buyer (Regional PLN Area)	Type of Biomass	Capacity Contract (MW)	Price Rp/KWh
1	PT Riau Prima Energy	2001	Excess power	Riau	PLN Wilayah Riau	palm waste	5	787
2	PT Listrindo Kencana	2006	IPP	Bangka	PLN Wilayah Bangka	Palm waste	5	766
3	PT Growth Sumatra	2006	Excess power	Sumatera Utara	PLN Wilayah Sumut	Palm waste	6	785.4
4	PT Indah Kiat Pulp & Paper	2006	Excess power	Riau	PLN Wilayah Riau	palm waste	2	650
7	PT Belitung Energy	2010	IPP	Belitung	PLN Wilayah Babel	Palm waste	7	787
8	PT Growth Sumatra	2010	Excess power	Sumatera Utara	PLN Wilayah Sumut	Palm waste	9	785.4
9	PT Pelita Agung	2010	Excess power	Riau	PLN Wilayah Riau	Palm waste	5	764
10	Permata Hijau Sawit	2010	Excess power	Riau	PLN Wilayah Riau	Palm waste	2	764
11	PT Navigat Organic	2011	IPP	Bali	PLN Dist Bali	MSW	2	820
12	PT Navigat Organic	2011	IPP	Bekasi	PLN Dist Jabar	MSW	4	820
						Total MW	47	

### III.6. BIOMASS POWER PLANT IN PROGRESS OF CONTRACT WITH PLN (21 MW)

No	Company Name	COD	Type of Contract	Location	Buyer (Regional PLN Area)	Biomass	Capacity Contract (MW)	Price Rp/KWh
1	PT Victorindo	PLTBiomassa Padang Lawas	2011 progress	Excess power	Sumatera Utara	Palm waste	5	787
2	PT Nubika Jaya	PLTBiomassa Pinang	2011 progress	Excess power	Sumatera Utara	Palm waste	6	787.2
3	PT Growth Asia	PLTBiomassa Growth Sumatra 3	2011 progress	Excess power	Sumatera Utara	Palm waste	10	787.2

Source: PT. PLN (Persero)



*Thank You*