

# NATIONAL POLICY ON BIOENERGY

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# Outline

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1. Introduction on recent issues on energy
  2. Biomass for fuel
  3. Biomass for electricity generation
  4. Closing remarks
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# ERA OF ENERGY RESURGENCE IN INDONESIA

No	Item	1966	2006
1	Initial momentum	Oil expansion	Expansion of alternative energy
2	Share of oil revenue on government budget	70-80 %	20-30%
3	Oil lifting	400 thousand BOPD	1050 thousand BOPD
4	Energy consumption per capita (TOE/capita)	Very low (0,07)	Still Low (0,47)
5	Growth rate of energy consumption	Low	High
6	Data of energy reserves	Closed	Open
7	Paradigm of subsidy	Tariff subsidy	Direct subsidy
8	Development/management	Lex specialist (energy sector)	lex generalist (multi sectors)
9	Priority	SSM	DSM
10	<i>Sharing to national development</i>	Growth → trickle down effect	3 P : - Pro poor - Pro jobs - Pro growth

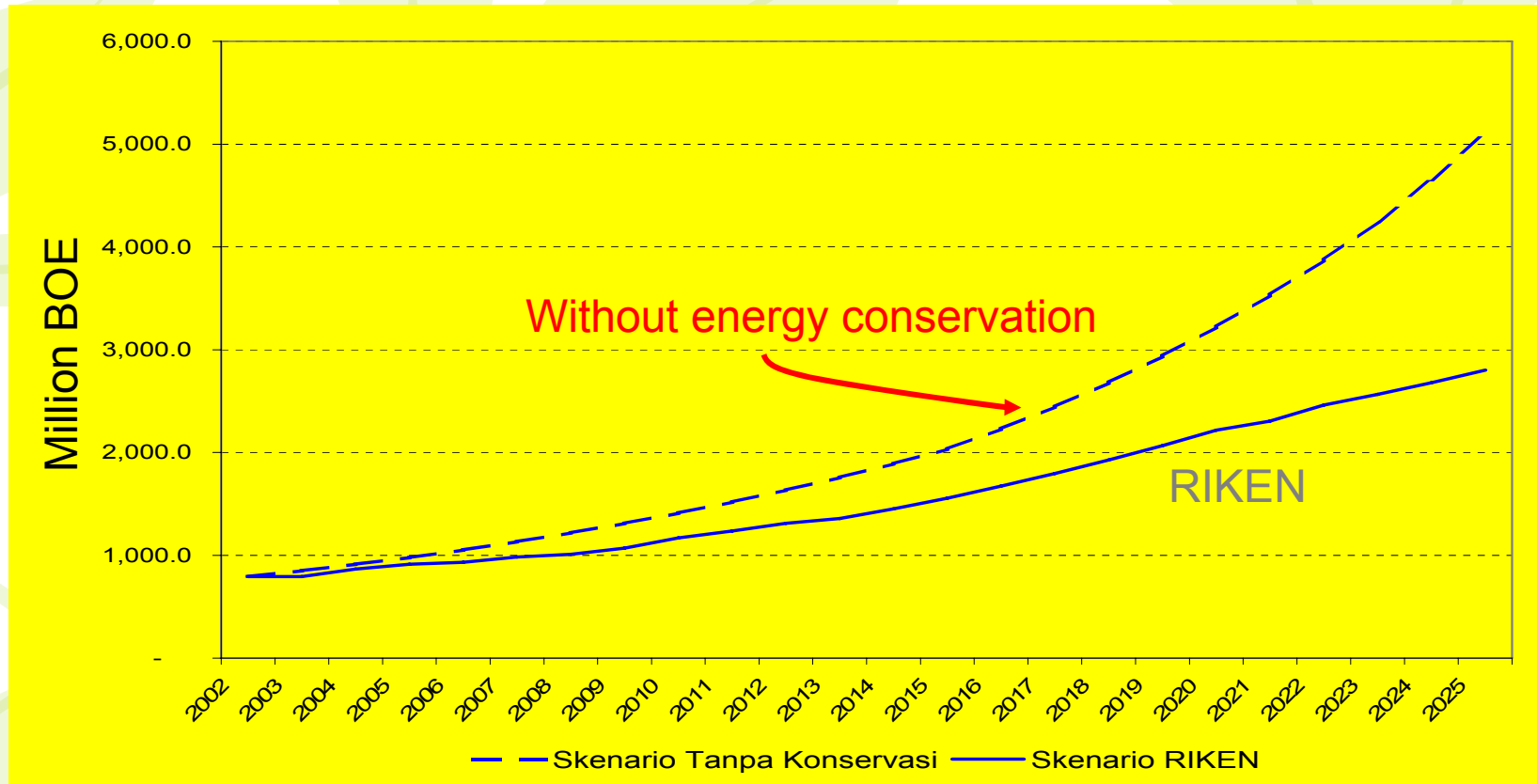
- *National fossil reserves are limited; especially for oil. Production to reserve ratio is only 23 years*
- *Abundant reserve of unutilized renewable energy*

ENERGY TYPE	TOTAL RESERVE	PROVEN RESERVE	PRODUCTION	RATIO (Reserve/ Production)
Oil	86.9 billion bbl	9 billion bbl	400 Million bbl	23 year
Natural Gas	385 TSCF	188 TSCF	3.0 TSCF	62 year
Coal	57 billion Ton	19.3 billion Ton	130 Million Ton	147 year

	POTENTIAL	INSTALLED CAPACITY
Hydro Power	75.67 GW	4200 MW
Geothermal	27 GW	807 MW
Mini/Micro-hydro	500 MW	84 MW
Biomass	49.81 GW	445 MW
Solar Energy	4.8 kWh/m <sup>2</sup> /day	8 MW
Wind Energy	3-6 m/sec	0.6 MW

Note: As data in 2004

# Projection of primary energy utilization



Source: Blue Print PEN

**Growth rate 2002-2025:**

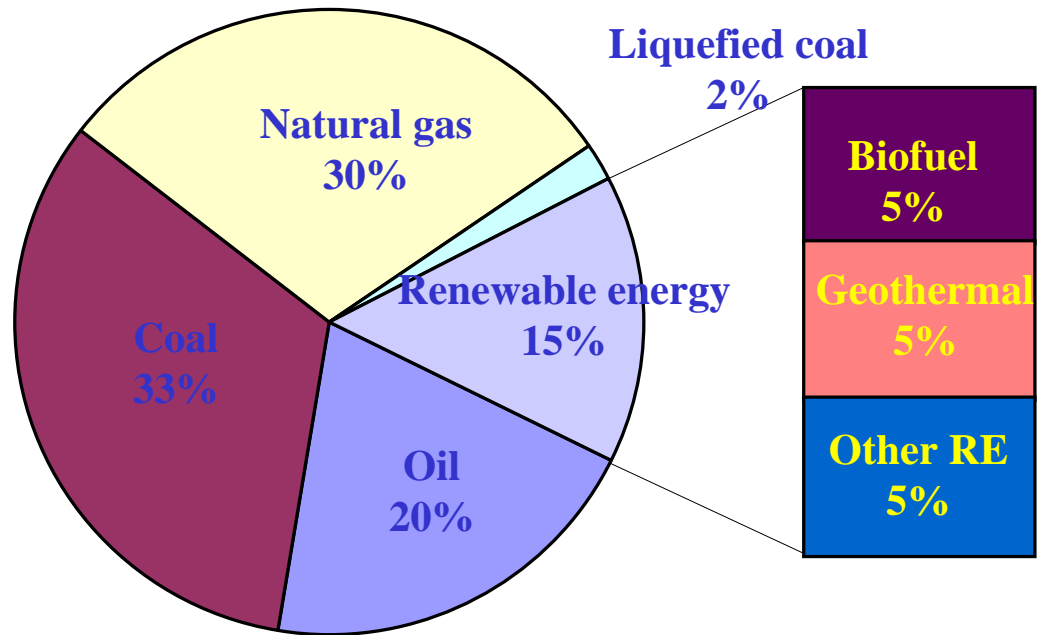
- **Without conservation = 8,4%**
- **RIKEN = 5,6%**

Note: RIKEN is the Master Plan for Energy Conservation

# Presidential Regulation No. 5 Year 2006 on National Energy Policy

## Target in 2025

1. Less than 1 for energy elasticity
2. Optimized energy (primer) mix



# Biomass utilization

Type (form)	Product name	Feedstock	Utilization
Liquid	Biofuel -Biodiesel -Bioethanol  -Biooil/biokerosene	Plant oil Starch/sugar or cellulose  Plant oil//biomass	Diesel fuel substitution Gasoline substitution  Diesel fuel/kerosene substitution
Solid	Biobriquette, wood-fuel	Any kind of solid biomass	Substitution of kerosene for household and diesel fuel for electricity generation
Gas	Biogas	Agro-industrial organic waste	Substitution of kerosene for household and diesel fuel for electricity generation

# Utilization of Biomass for Energy

## 1. Fuel

- Priority for petroleum-based fuel substitution on transportation sector
- Kerosene substitution in household sector
- Generally in liquid form

## 2. Electricity generation

- Diesel fuel substitution for electricity generation
- In large scales, generally in solid form; liquid (biooil) or gas (biogas) may be used in small/medium scales

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# Policies and Regulations on Biofuel

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1. Government Regulation No.1/2007 on Income Tax Facilities to Investment Activities in Specific Industries and Particular Regions;
2. Government Regulation No.8/2007 on the Establishment of Government Investment Board;
3. Presidential Decree No. 10 Year 2006 on Establishment of National Team for Biofuel Development;
4. Presidential Decree No. 1 Year 2006 on Supply and Utilization of Biofuel;
5. Ministerial Decree No. 0051 year 2006 on Guideline and Procedure for Business Licensing of Biofuel;
6. Minister of Finance Decree No.117/PMK.06/2006 on Credit for the Development of Bio-fuel Energy and Plantation Revitalization;

# Policies and Regulations on Biofuel

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7. Director General for Oil and Natural Gas Decree No. 3675 K/24/DJM/2006 on Diesel Fuel Specification;
8. Director General for Oil and Natural Gas Decree No. 3675 K/24/DJM/2006 on Gasoline Specification.
9. Head of National Standardization Agency Decree No. 73/KEP/BSN/2/2005 on Biodiesel Specification Standard (SNI 04-7182-2006)
10. Head of National Standardization Agency Decree No. 172/KEP/BSN/12/2006 on Bioethanol Specification Standard (SNI DT 27-0001-2006)
11. Draft of Blue Print and Road Map Biofuel Development

# ROADMAP BIOFUEL DEVELOPMENT<sup>\*)</sup>

Tahun	2005-2010	2011-2015	2016-2025
<b>Biodiesel</b>	10% of diesel fuel consumption 2.41 million KL	15% of diesel fuel consumption 4.52 million KL	20% of diesel fuel consumption 10.22 million KL
<b>Bioethanol</b>	5% of gasoline consumption 1.48 million KL	10% of Gasoline consumption 2.78 million KL	15% of Gasoline consumption 6.28 million KL
<b>Biooil</b>			
- Biokerosene	Utilization of 1 million KL	Utilization of 1.8 million KL	Utilization of 4.07million KL
- PPO for electricity generation	Utilization of 0.4 million KL	Utilization of 0.74 million KL	Utilization of 1.69 million KL
	National Standard of Biofuel		
<b>Biofuel</b>	Biofuel utilization for 2% of mix energy 5.29 million KL	Biofuel utilization for 3% of mix energy 9.84 million KL	Biofuel utilization for 5% of mix energy 22.26 million KL

<sup>\*)</sup> As in Strategic Planning on National Energy Development

# Commercially-Traded Fuel Specification

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- Fuel specifications were revised on 17 March 2006 for both gasoline and diesel;
- Biodiesel and bioethanol are allowed to be blended with diesel and gasoline at **maximum 10%**, respectively; Technical specifications for biodiesel and bioethanol follow the government standards.
- Under calculation of 10% biofuel blended with petroleum fuel, 5% of biofuel utilization target in national primary energy mix as stated in Perpres 5/2006 **would not be achieved.**

# Biofuel Utilization Target

Fuel	Gasoline	Diesel fuel (ADO)	Kerosene and diesel fuel	Total
Consumption in 2005 (million KL)	17,47	27,53	16,91	61,91
Prediction on fuel consumption based on Perpres 5/2006 (million KL)	25,11	39,58	24,31	89,00
Biofuel utilization based on existing regulation in 2025 (million KL)*	2,51	3,96	0,00	6,47
Biofuel target on Perpres 5/2006 in 2025 (million KL)	6,28	10,22	5,76	22,26
Differences (million KL)	(3,77)	(6,26)	(5,76)	(15,79)

\*) Currently, commercially traded biofuel is only available at 5% blending

Note: 1 million KL = 6289 SBM

# Efforts to achieve biofuel target as set in Perpres 5/2006

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- ❑ Biofuel utilization for other activities such as electricity generation and household sectors; Development of Energy Self-Sufficient Village;
- ❑ Increase the blending content of biofuel for commercially traded fuel;
- ❑ Establishment of competitive pricing policy for biofuel

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# Policies and Regulations on Biomass for Electrification Generation

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1. Regulation on Electricity Supply and Utilization (Government Regulation No. 26/2006)
  2. Medium Scale Power Generation Using Renewable Energy (Ministerial Regulation No. 002/2006)
  3. Small Distributed Power Generation using Renewable Energy (Ministerial Decree: No. 1122 K/30/MEM/2002)
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# ***Small Distributed Power Generation using Renewable Energy***

***(Ministerial Decree: No. 1122 K/30/MEM/2002)***

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- ❑ Developer : Small Enterprises**
  - ❑ Capacity :  $\leq 1$  MW**
  - ❑ Electricity Price by Utility :**
    - 60% x Utility's Production Cost, if connected to the low voltage grid**
    - 80% x Utility's Production Cost, if connected to the medium voltage grid**
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# ***Medium Scale Power Generation using Renewable Energy***

***(Ministerial Regulation : No. 002/2006)***

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- ❑ Developer : Business Entity**
- ❑ Capacity :  $1 < \text{Cap} \leq 10 \text{ MW}$**
- ❑ Electricity Price by Utility :**
  - 60% x Utility's Production Cost, if connected to the low voltage grid**
  - 80% x Utility's Production Cost, if connected to the medium voltage grid**
- ❑ Purchase Contract : 10 years and could be extended**



**Capacities, Contracts (PPA), Regional production cost and its declaration**

# Biomass Development for Electricity Generation

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- ❑ Power generation with biomass waste as fuel; currently being utilized in most palm oil mills for their own uses;
- ❑ Utilization of biomass waste as fuel blending in coal fire power plant; PT. Pura in Kudus operates power plants using 80% coal and 20% rice husk as fuel;
- ❑ Biooil for diesel generator (PLTD); PT PLN has developed the use of biooil for diesel generators in Lampung.

# THE PILOT PROJECT REPORT

## Biooil for Diesel Generator

- **CASE OF : TALANG PADANG DPP 4 X 200 KW, YANMAR UNIT 1 TO 4**
- **DATE : JULY 2006**
- **PRODUCTION : 201 690 KWH**
- **FUEL CONSUMPTION**
  - **HSD : 38 103 LTR ( 61.5 % )**
  - **PPO : 23 897 LTR ( 38.5 % )**
- **SPECIFIC FUEL CONSUMPTION**
  - **PURE HSD : 0.3 LTR/KWH ( AVERAGE )**
  - **MIXTURE : 0.3 LTR/KWH**
- **COST SAVING**
  - **HSD PRICE : 6376 RP/LTR**
  - **PPO PRICE : 3846 RP/LTR**
  - **HSD COST : 1973 RP/KWH**
  - **MIXTURE COST : 1662 RP/KWH**
  - **COST SAVING : 310 RP/KWH , 16 % REDUCTION**

# Challenges

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- Pricing policy for biofuel
  - Solid biomass for electricity generation
  - Direct utilisation of biofuel for rural/remote communities
  - Implementation of bioenergy for improving economic activities in rural (creation of Energy Self-Sufficient Village)
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# ENERGY SELF-SUFFICIENT VILLAGE (ESSV)

- **ESSV is a village having capability to produce a part/whole their energy demand for consumptive and productive use.**
- **CRITERIA**
  - Utilization of locally available energy (renewable energy)
  - Creation of productive activities
  - Job creation
- **PROGRAM:**
  - Utilization of locally available energy resources
  - Development of productive activities
  - Development of applicable technologies
  - Development of institution and people participatory

## TARGET SSEV (Cumulative)

Program	2007	2008	2009
Biofuel-based ESSV	100	500	1000
Non-biofuel-based ESSV	100	500	1000

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# Summary

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- ❑ The government puts priority on energy alternative including renewable energy to substitute petroleum-based fuel;
- ❑ Depending on its type, biomass/biofuel is directed to substitute fuel in transportation, power generation and household;
- ❑ Main issue on biomass development is economic consideration;
- ❑ Implementation of biomass and creation of economic activities are not indispensable to increase the load factor.

The background of the slide features several large, stylized green leaves with prominent veins, set against a light green gradient. The leaves are semi-transparent and layered, creating a sense of depth.

# Thank You

[www.djlpe.esdm.go.id](http://www.djlpe.esdm.go.id)

[www.energiterbarukan.net](http://www.energiterbarukan.net)



# Interrelation between Sectors in Developing Biomass

Sector	Upstream (Feedstock preparation)	Middle-stream (Processing)	Downstream (Utilization)
Responsible institution	Ministry of Agriculture	Ministry of Industry	Ministry of Energy and Mineral Resources
Related institutions	Ministry of Forestry, National Land Agency, Ministry of Internal Affairs, Local Government, Ministry of State Owned Enterprises, Investment Coordinating Agency, Coordinating Ministry on Economic, Coordinating Ministry on Social, Ministry of Cooperatives and SME, Banks	Ministry of Energy and Mineral Resources, Ministry of Trade, Ministry of Research and Technology, Ministry of State Owned Enterprises, Investment Coordinating Agency, Coordinating Ministry on Economic	Ministry of State Owned Enterprises, Ministry of Environment, Ministry of Finance, Ministry of Transportation, PERTAMINA, PLN & BUMN Agro & Logistic, Banks, BKPM, Local Government
Permit/licensing	Land Permit (HGU) Location permit Plantation permit Forestry for Plantation Permit Seed certification	Production permit	Business permit
Possible Incentive	<ul style="list-style-type: none"> <li>- Capital</li> <li>- Production facilities</li> <li>- Cost for Land and Building Acquisition (BPHTB), retribution</li> </ul>	<ul style="list-style-type: none"> <li>-Tax, custom</li> <li>-Capital</li> <li>-Local tax (retribution)</li> </ul>	<ul style="list-style-type: none"> <li>- VAT</li> <li>- Income tax</li> </ul>

# Additional Information

## Government Facilities:

- **Tax Incentives;**
- **Interest Rate Subsidy;**
- **Government Investment Board.**

# Tax Incentives

- Government Regulation No.1/2007, on the income tax facilities to investment activities in specific industries and particular regions;
  - 30% reduction of net income from the total investment, applied for 6 yrs, or 5% every year;
  - Expediting depreciation and amortization method;
  - Lower income tax (10%) compared to before (15%) to royalties earned by foreign tax payers;
  - Longer period of compensation of loss—more than 5 yrs but less than 10 yrs.
- Among others, applies to Bio-energy industries, such as bio-diesel, bio-oil, bio-ethanol and bio-lube.

# Interest Rate Subsidy

- MOF Regulation No.117/PMK.06/2006 on the Credit for the Development of Bio-fuel Energy and Plantation Revitalization;
- A subsidized credit scheme for farmers, involving several government owned banks—PT. BRI, PT. Bank Mandiri, PT. Bank Bukopin, PT. Bank Sumut, and BPD Sumbar;
- Agreement was signed by the government an the above banks, on December 20, 2006
- IDR 1 Trillion for interest rate subsidy was allocated for FY 2007;
  - **Palm, Rubber and Cocoa**
    - Market rate—LPS+5%; Charged to farmers only 10%;
    - Applied 5 yrs for palm and cocoa; and 7 yrs for rubber.
  - **Cane and Cassava**
    - For cassava: market rate—18%; charged to farmers only 9%;
    - For cane: market rate—18%; charged to farmer only 12%.
- Special treatment for **Jatropha**
  - Pioneer Industry, difficult to leave it totally to private sector;
  - Need proven experiences;
  - Need more government role.

# Government Investment Board

- Government Regulation No.8/2007 on the Public Investment Management;
- Established Government Investment Board;
- Provide funds to finance investment activities conducted jointly between government and private sector based on the spirit of Public Private Partnership;
- Sectors: Infrastructure and non-infrastructure including agriculture and plantation as well as land acquisition;
- IDR 2 trillion in FY 2006;
- Another IDR 2 trillion in FY 2007;
- Will establish “Fund Company” jointly with Qatar Investment Fund—USD 1 Billion;
- Will participate on the Green Energy Fund;