



MINISTRY OF ENERGY AND MINERAL RESOURCES
REPUBLIC OF INDONESIA

BIOFUEL DEVELOPMENT IN INDONESIA

Dr.-Ing. Evita H. Legowo
Yanni Kussuryani and Iman K. Reksowardojo

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Research and Economic**

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OUTLINE

- I. Introduction
- II. Biofuel Development
- III. Progress of Biofuel Development and Implementation
- IV. Challenges
- V. Conclusion



INTRODUCTION

WHY BIOFUEL?

1. BIOFUEL have a long and distinguished pedigree
2. BIOFUEL could guarantee energy security and prevent climate change
3. BIOFUEL are significantly reduce greenhouse gas emission, especially in transportation sector
4. BIOFUEL also provide important opportunities for industrial development, innovation and jobs creation
5. BIOFUEL industry allows community participations, including farmer
6. BIOFUEL offer us an option that is full of promise and are developed in ways that protect our planet

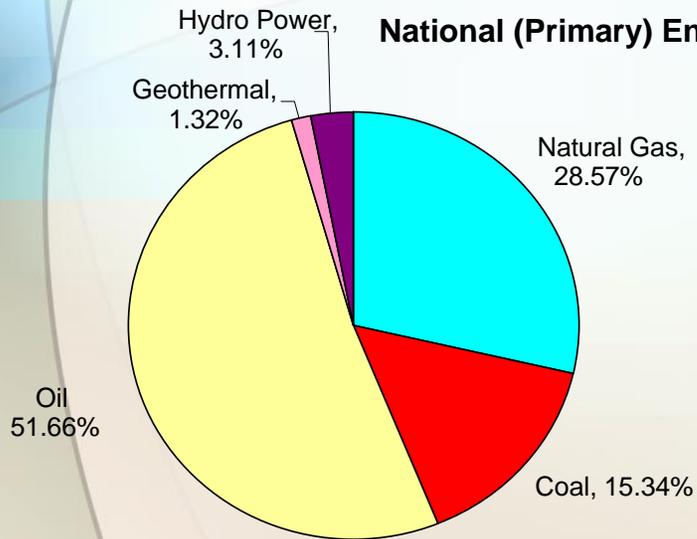
WHY BIOFUEL? (continuation)

7. Indonesia has high biodiversity for BIOFUEL feedstock supply and land availability that suitable for BIOFUEL plantation
8. Proven BIOFUEL technology by domestic potential (Engineering, Research and Development)
9. High number of unemployment in Indonesia - that could be transferred to BIOFUEL sector - and poverty
10. Opportunity for Regional Governments to increase their economic development
11. Opportunity to substitute fossil fuel using BIOFUELS
12. Opportunity in exporting BIOFUELS products

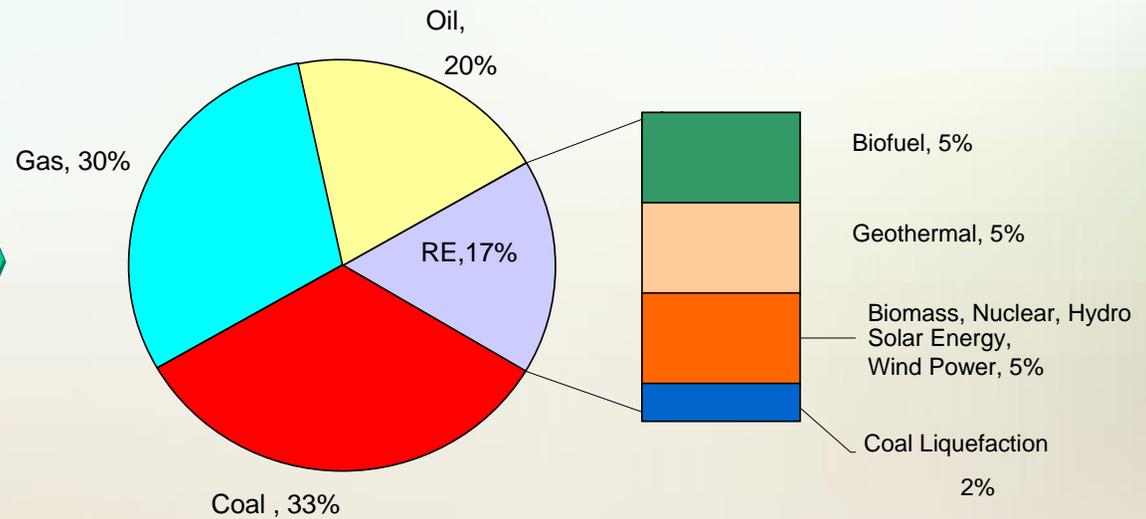
NATIONAL ENERGY POLICY (PRESIDENTIAL DECREE NO. 5 YEAR 2006)

CURRENT ENERGI MIX (1 million BOE)

National (Primary) Energy Mix



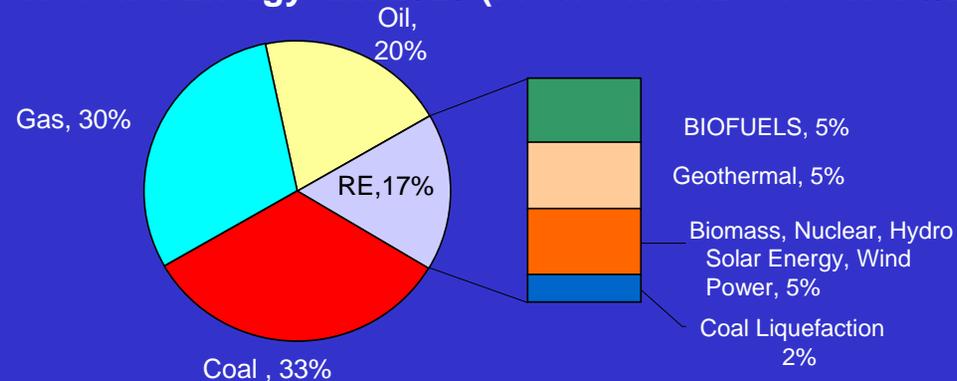
**National Energy Mix 2025 (3 million BOE)
(Presidential Decree No. 5/2006)**



BIOFUELS ACCELERATING PROGRAM

NATIONAL ENERGY POLICY

National Energy Mix 2025 (Presidential Decree No. 5/2006)



**Presidential Decree No. 10/ 2006
on National Team on BIOFUELS
Development**

**BLUEPRINT,
ROADMAP,
RECOMMENDATION**

**Presidential Instruction No. 1/ 2006
to 13 Gov't Institutions & Regional
Gov't on BIOFUELS Supply and
Utilization as an Alternative Energy**

IMPLEMENTATION

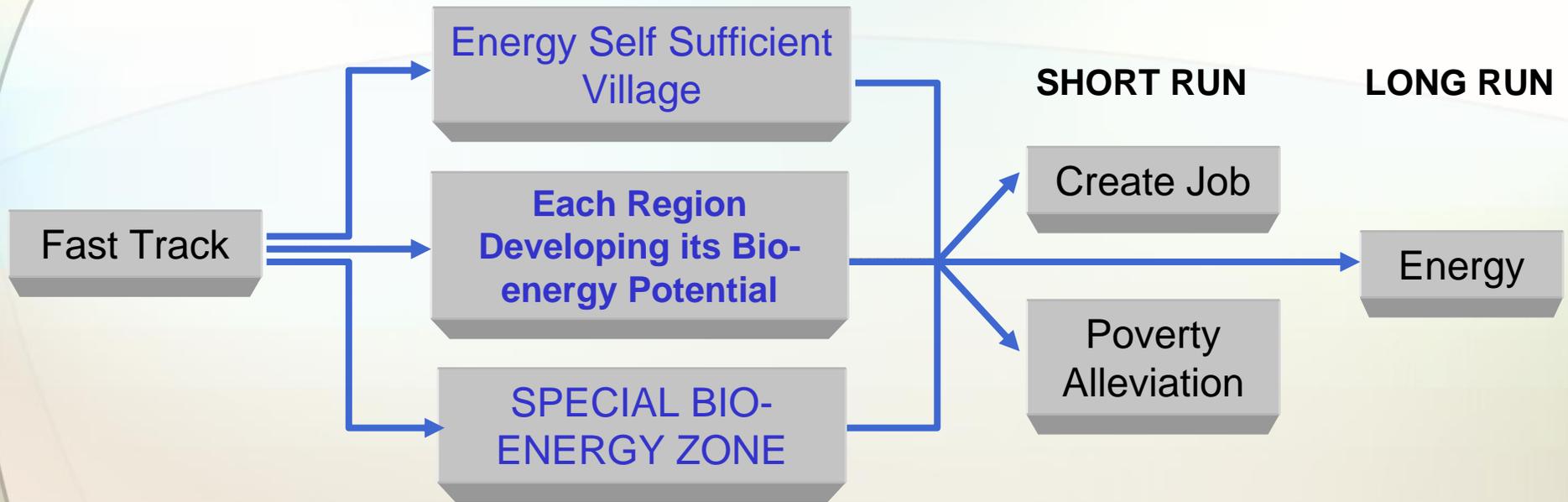


BIOFUEL DEVELOPMENT

OBJECTIVE OF BIOFUEL DEVELOPMENT

1. Poverty alleviation and job creation
2. Encourage enhancement of sustainable economical activities, through biofuel development :
 - Meet quantity and quality requirements
 - Reasonable price
 - Efficient, reliable, save and environmental friendly
3. Reducing domestic fossil fuel consumption

FAST TRACK BIO-ENERGY DEVELOPMENT

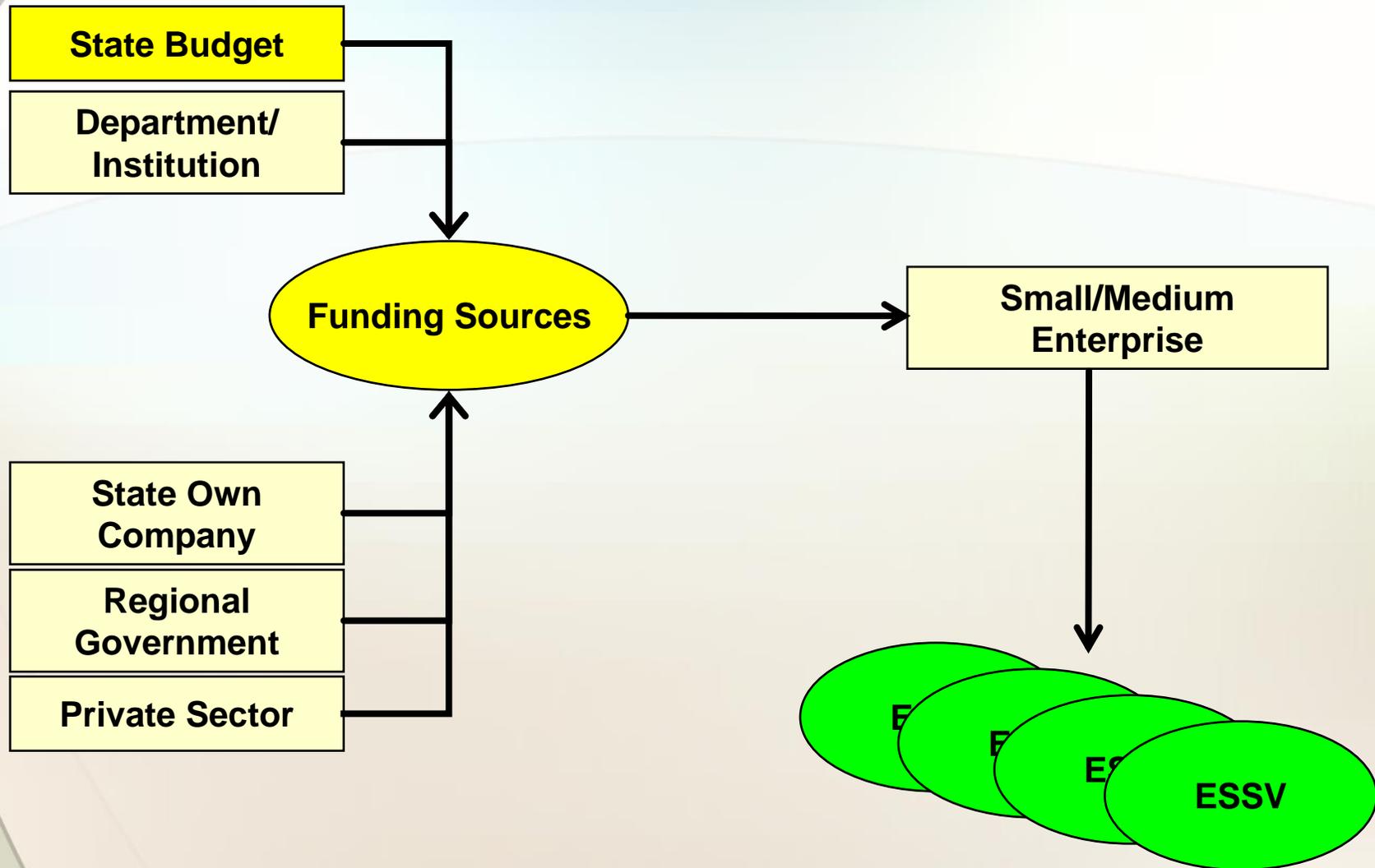


- **Infrastructure**
- Demplot
- On time schedule
- Explicit investment employment ratio

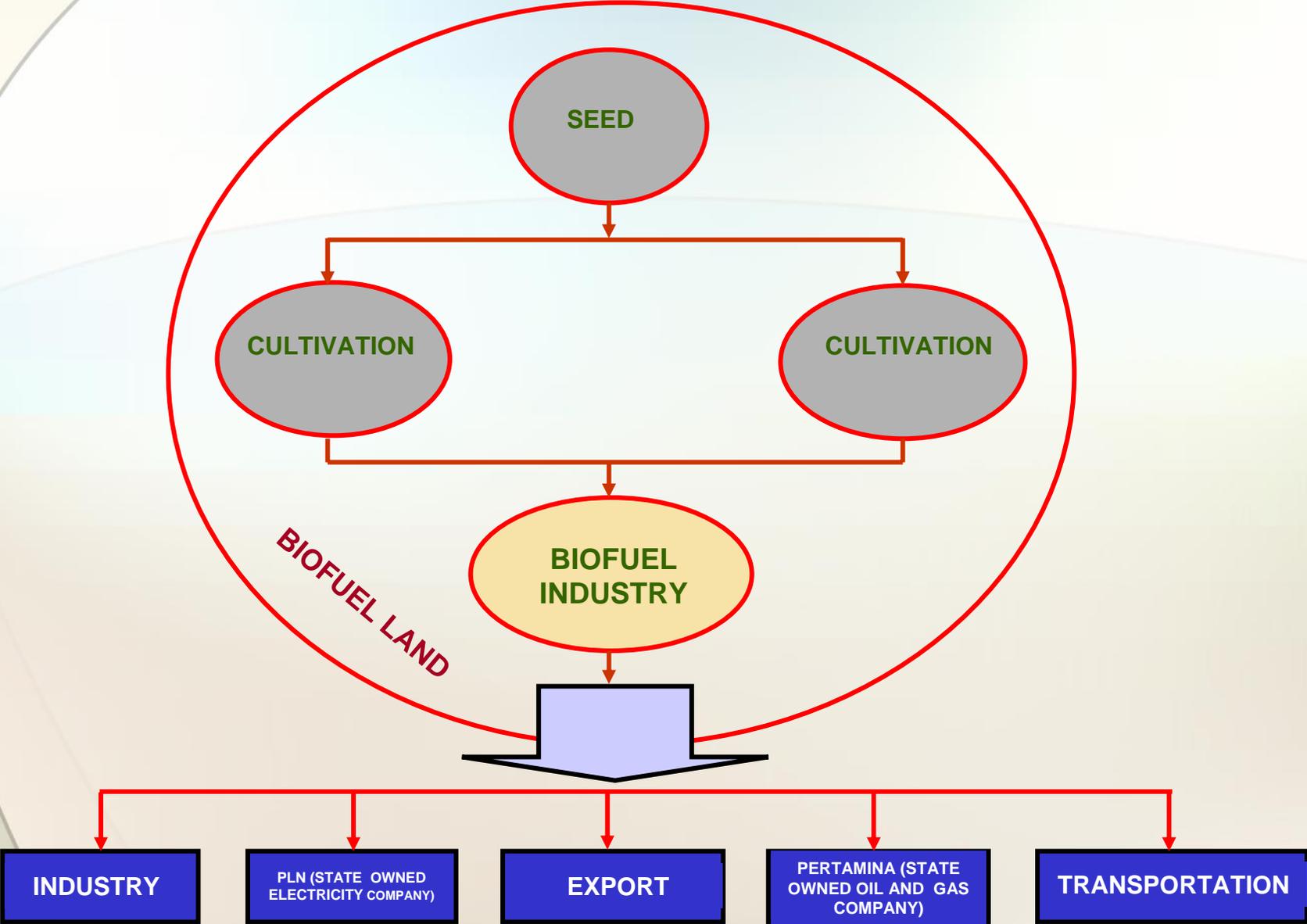
BACKGROUND OF ENERGY SELF SUFFICIENT VILLAGE (ESSV) DEVELOPMENT

1. Indonesia has more than 70,000 villages, 45% of which are under poverty line.
2. Energy Self Sufficient Village is a program to fulfill the village's needs on energy, to create job and to alleviate poverty through optimizing local community capabilities.
3. The target of this program is to release local community dependency on fossil fuel.
4. Energy Self Sufficient Village is implemented gradually, starting from the villages that have been prioritized by the Government.

ENERGY SELF SUFFICIENT VILLAGE (ESSV) FUNDING



DEVELOPMENT OF SPECIAL BIOFUEL ZONE



BIOFUEL FEEDSTOCK

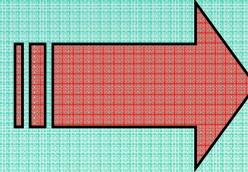
MAIN FEEDSTOCK

Palm Oil

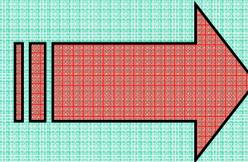
Jatropha curcas

Cassava

Sugar cane



BIOOIL
BIODIESEL



BIOETHANOL

UNDER DEVELOPMENT

Coconut

Seed of Hevea
braziliancis

Aleurites molucana

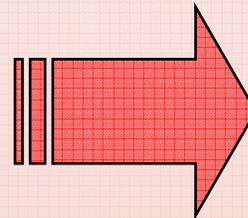
Micro algae

Sweet sorghum

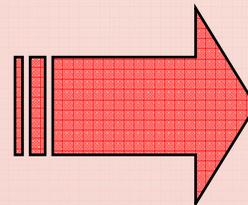
Sugar palm

Sago

Corn



BIOOIL
BIODIESEL



BIOETHANOL

TARGET 2010

1. Job creation for 3.5 million unemployment
2. Increasing income for On-Farm and Off-Farm workers in biofuel sector up to the Regional Minimum Payment
3. Development of biofuel plantation in 5.25 million ha unused land
4. 1000 Energy Self Sufficient Villages and 12 Special biofuel Zone
5. Reducing Fossil Fuel for transportation up to 10%
6. Reducing fuel subsidy
7. Achievement of biofuel target

ROADMAP FOR BIOFUEL DEVELOPMENT

Year	2005-2010	2011-2015	2016-2025
Biodiesel	Biodiesel Utilization 10% of Diesel Fuel Consumption 2.41 million kL	Biodiesel Utilization 15% of Diesel Fuel Consumption 4.52 million kL	Biodiesel Utilization 20% of Diesel Fuel Consumption 10.22 million kL
Bioethanol	Bioethanol Utilization 5% Gasoline Consumption 1.48 million kL	Bioethanol Utilization 10% Gasoline Consumption 2.78 million kL	Bioethanol Utilization 15% Gasoline Consumption 6.28 million kL
Bio-oil - Biokerosene	Biokerosene Utilization 1 million kL	Biokerosene Utilization 1.8 million kL	Biokerosene Utilization 4.07 million kL
- Pure Plantation Oil for Power Plant	PPO Utilization 0.4 million kL	PPO Utilization 0.74 million kL	PPO Utilization 1.69 million kL
BIOFUEL	BIOFUEL Utilization 2% of energy mix 5.29 million kL	BIOFUEL Utilization 3% of energy mix 9.84 million kL	BIOFUEL Utilization 5% of energy mix 22.26 million kL

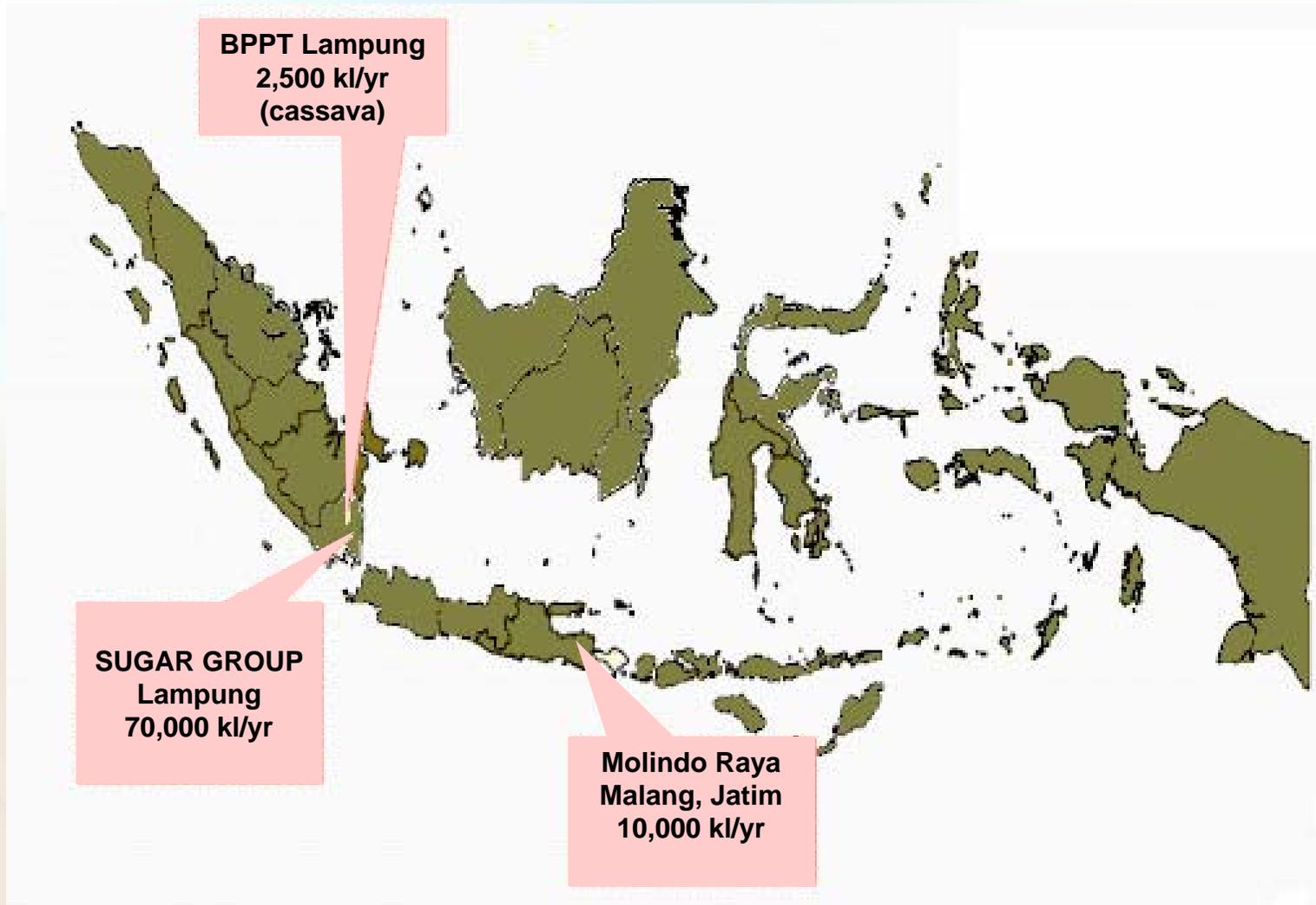


PROGRESS OF BIOFUEL DEVELOPMENT AND IMPLEMENTATION

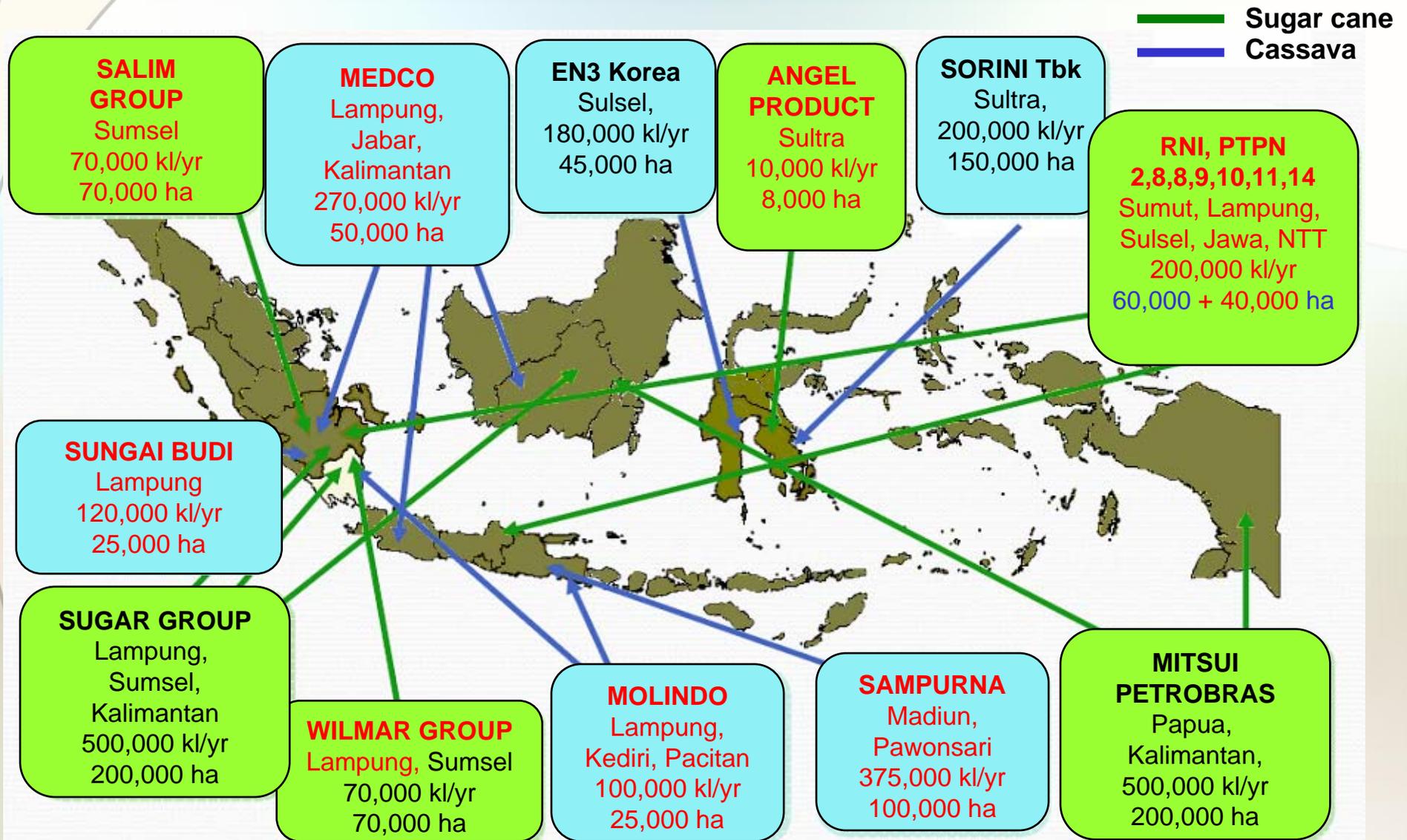
BIOFUEL DEVELOPMENT PROGRESS

- Availability of biofuel Development Blue Print and Road Map
- Availability of biofuel Development Regulations and Standards
- Biodiesel (B-5), has been sold in 201 gas stations in Jakarta and 15 gas stations in Surabaya
- Bioethanol (E-5), biopremium has been sold in 1 gas station in Malang. Started December 2006 Bio-Pertamax has been sold in 4 gas stations in Jakarta, 5 gas stations in Surabaya and 3 gas stations in Malang.
- Started of Energy Self Sufficient Village using biofuel
- Commitments of Investor to develop biofuel

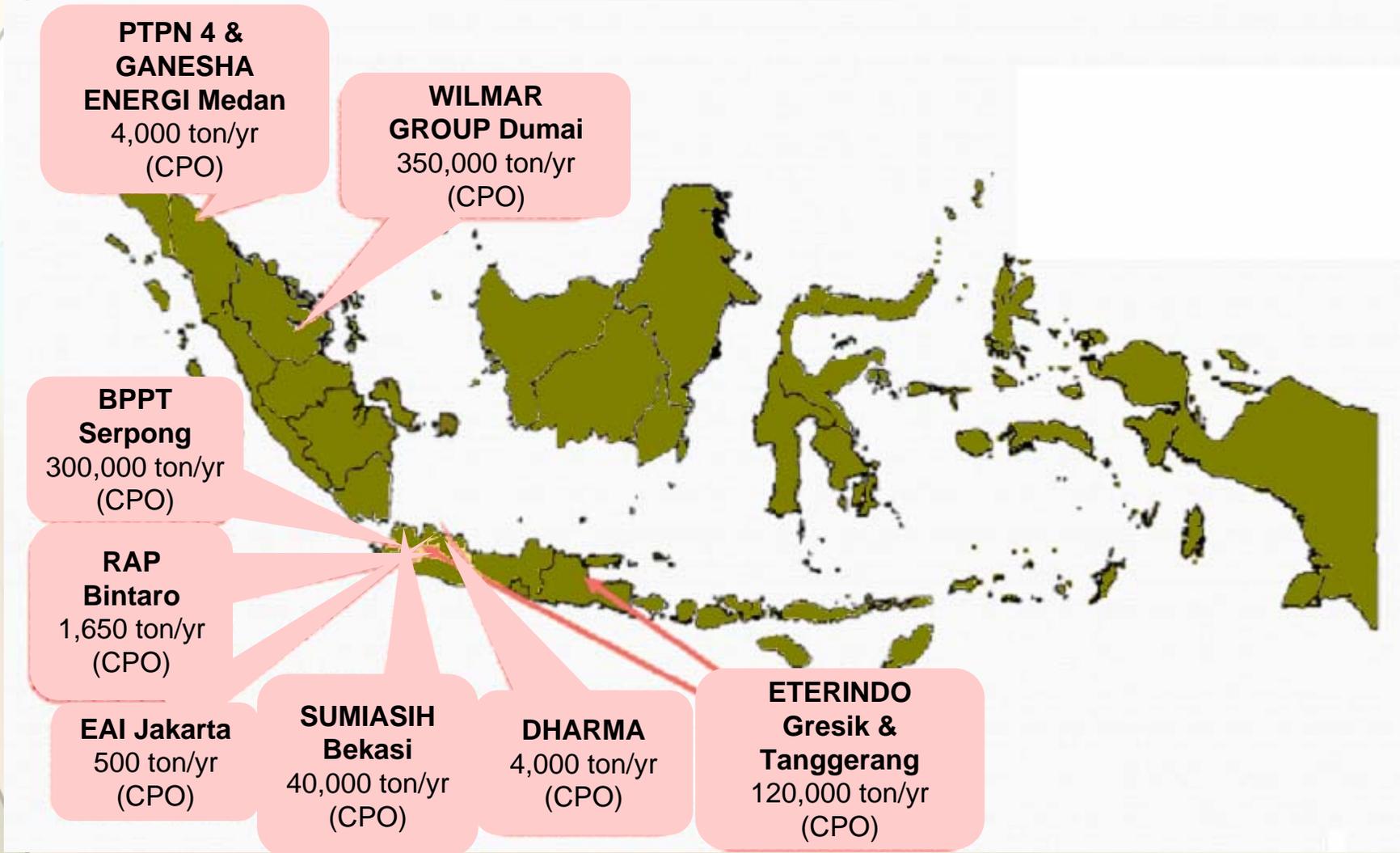
PRODUCTION OF FUEL GRADE BIOETHANOL – April 2007: 82.500 KL



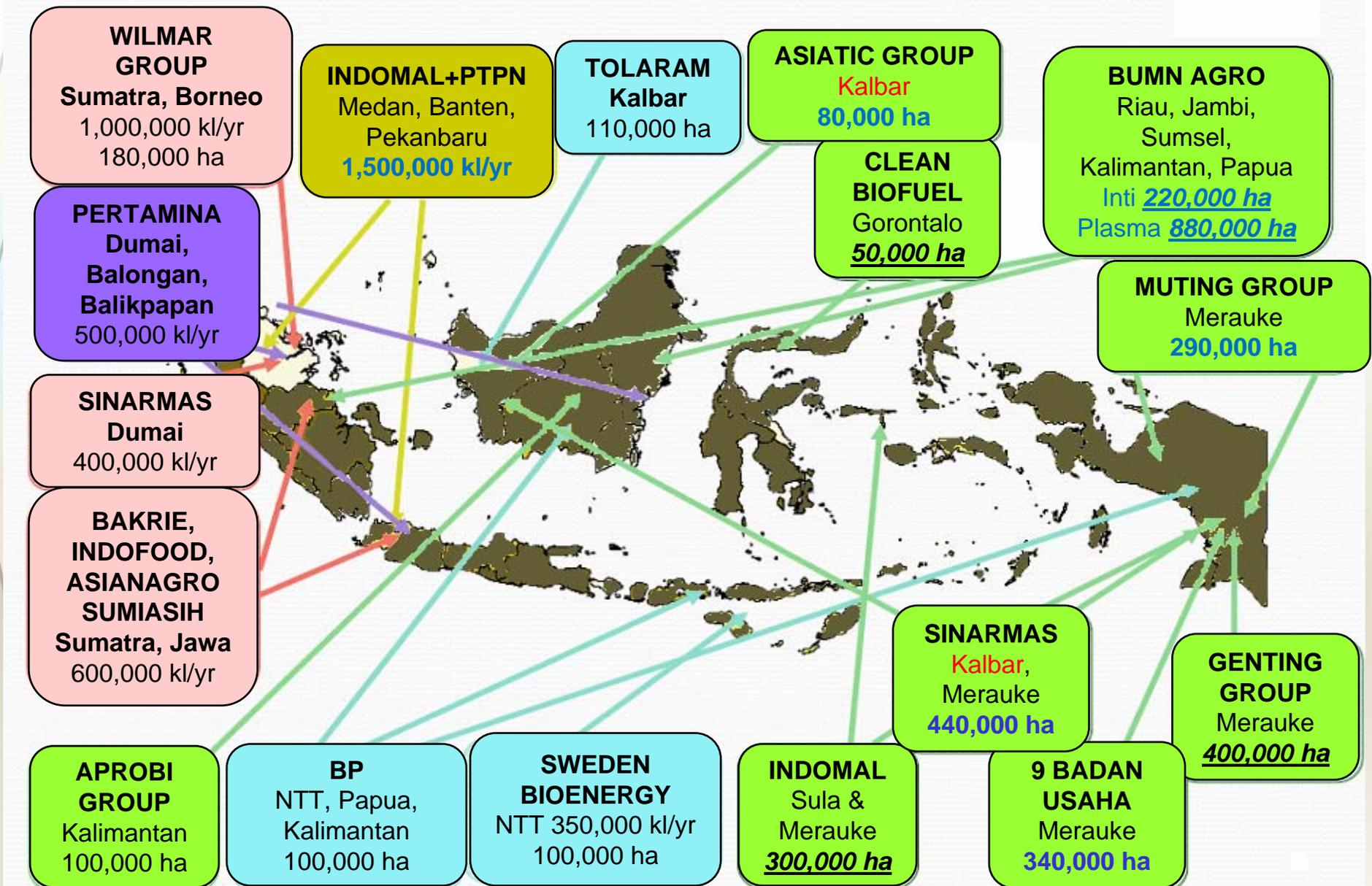
**ADDITIONAL PRODUCTION OF FG BIOETHANOL:
2 million up to 2,7 million kL/year (1,1 million ha): 2007 – 2010**



PRODUCTION OF BIODIESEL – April 2007: 520.000 Ton/Year

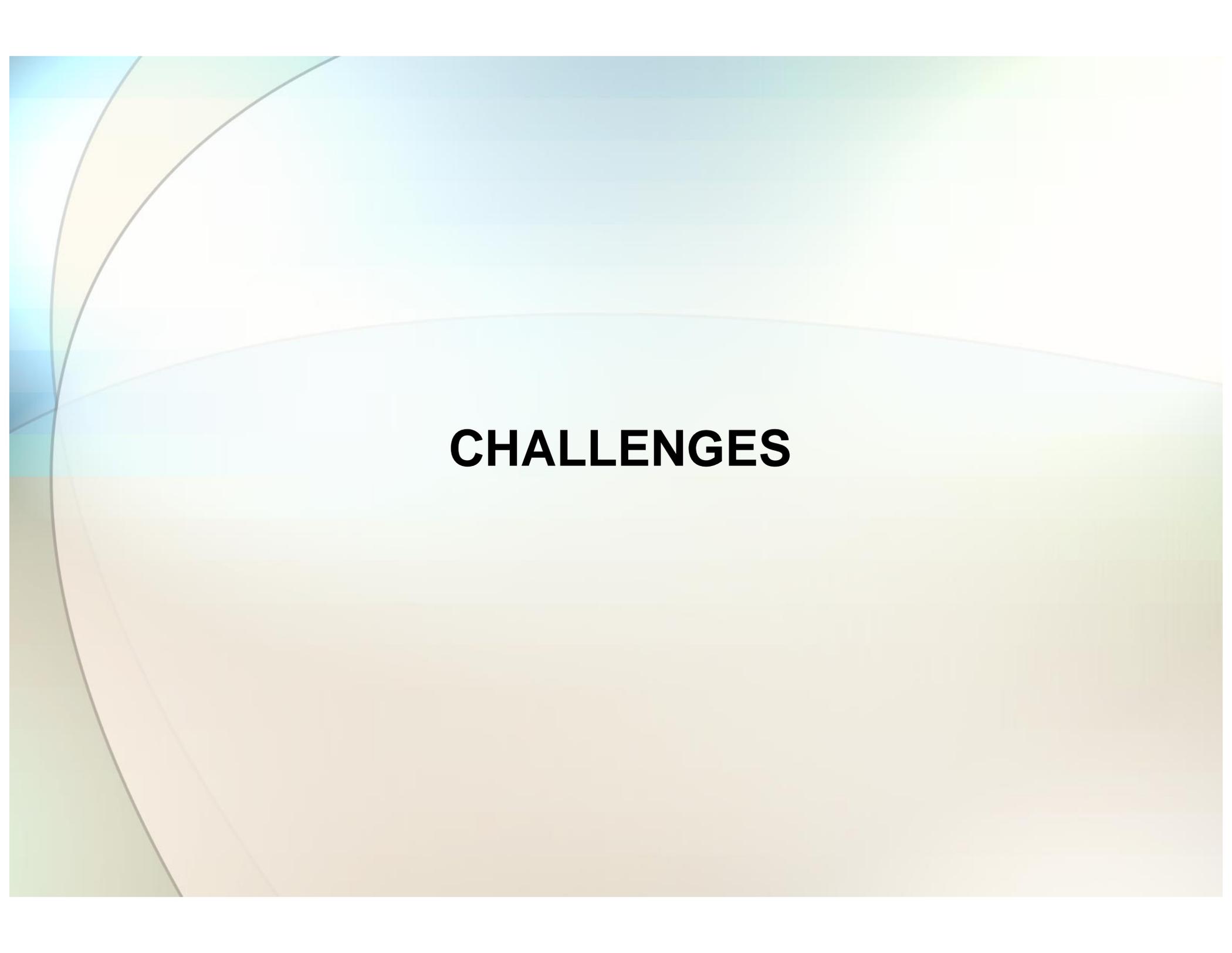


ADDITIONAL PRODUCTION OF BIODIESEL : 2 million kL/year (3,6 million ha): 2007 – 2011



BIOFUEL POWER GENERATOR 2007

No.	Location	Numbers of Power Generator	Total Capacity (MW)
1	North Sumatera	1	4.5
2	Maluku	7	4.0
3	Riau and The Islands of Riau	2	14.1
4	Lampung	1	11.0
5	Bali	1	1.5
6	South Kalimantan	5	19.8
7	East Kalimantan	7	16.0



CHALLENGES

CHALLENGES

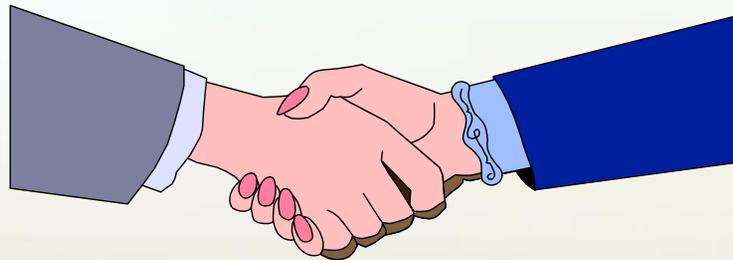
1. Land availability for Biofuel Development
 - Land availability inventory, synchronizing data among Forestry Department, National Land Affairs Agency and Regional Government
2. High price of biodiesel feedstock, especially CPO
 - Feedstock diversification is needed
3. Improving quality of Biofuel commodities
 - Agricultural research on biofuel commodities sector
4. Improving national technological capabilities on biofuel processing
 - Research and Development, technology transfer on biofuel processing with more experienced parties
5. The price of biofuel that has not yet competitive in compare with fossil fuel
 - Feedstock diversification and effective technology will decrease the price of biofuel

CONCLUSION

CONCLUSION

1. Biofuel is an alternative energy which can substitute fossil fuel
2. Biofuel industry allows community participations, including farmer
3. Optimizing biofuel processing technology from upstream to downstream is very important to meet efficiency and to reduce the price of biofuel

THANK YOU

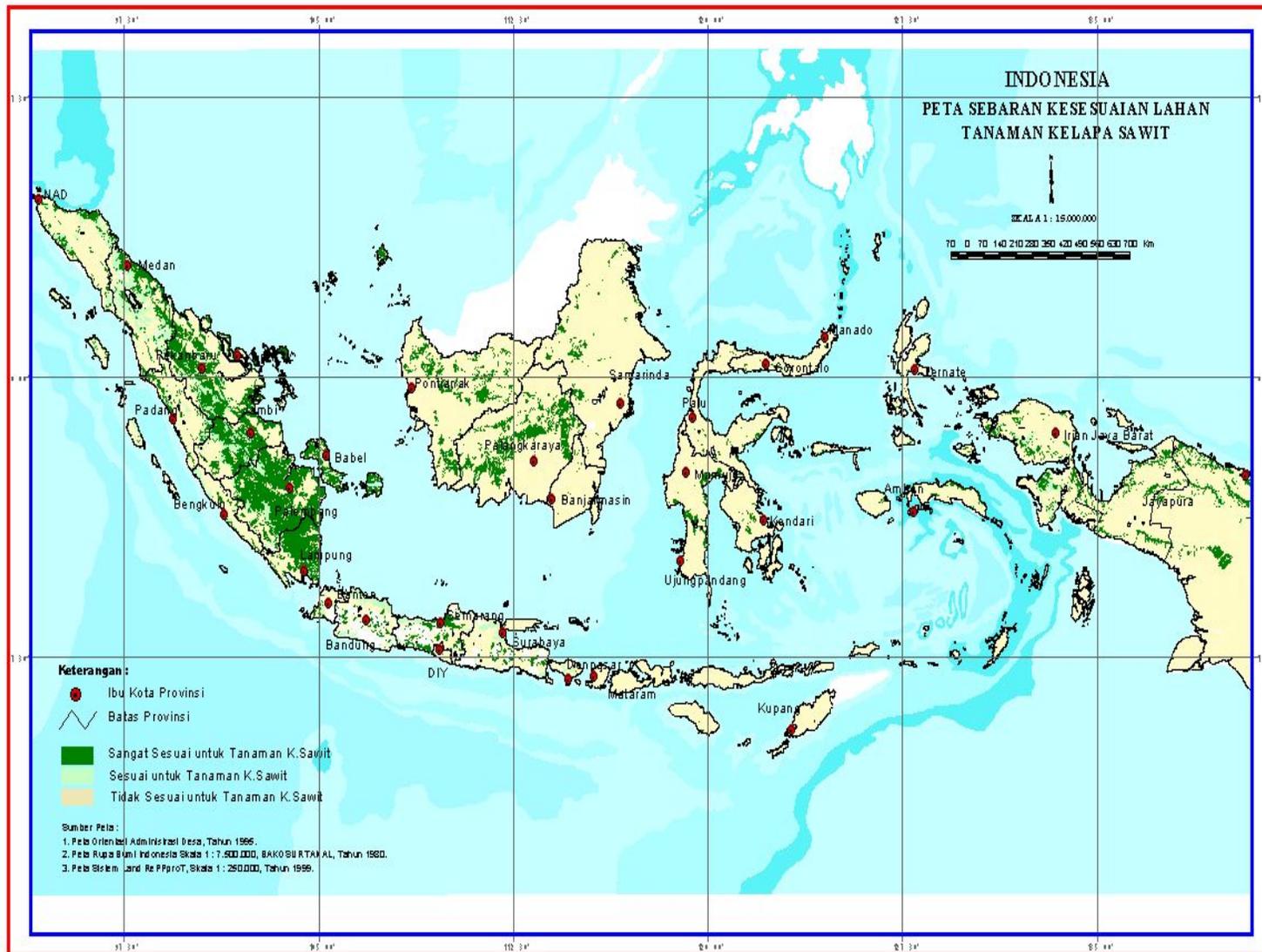


Energy and Mineral Resources Department

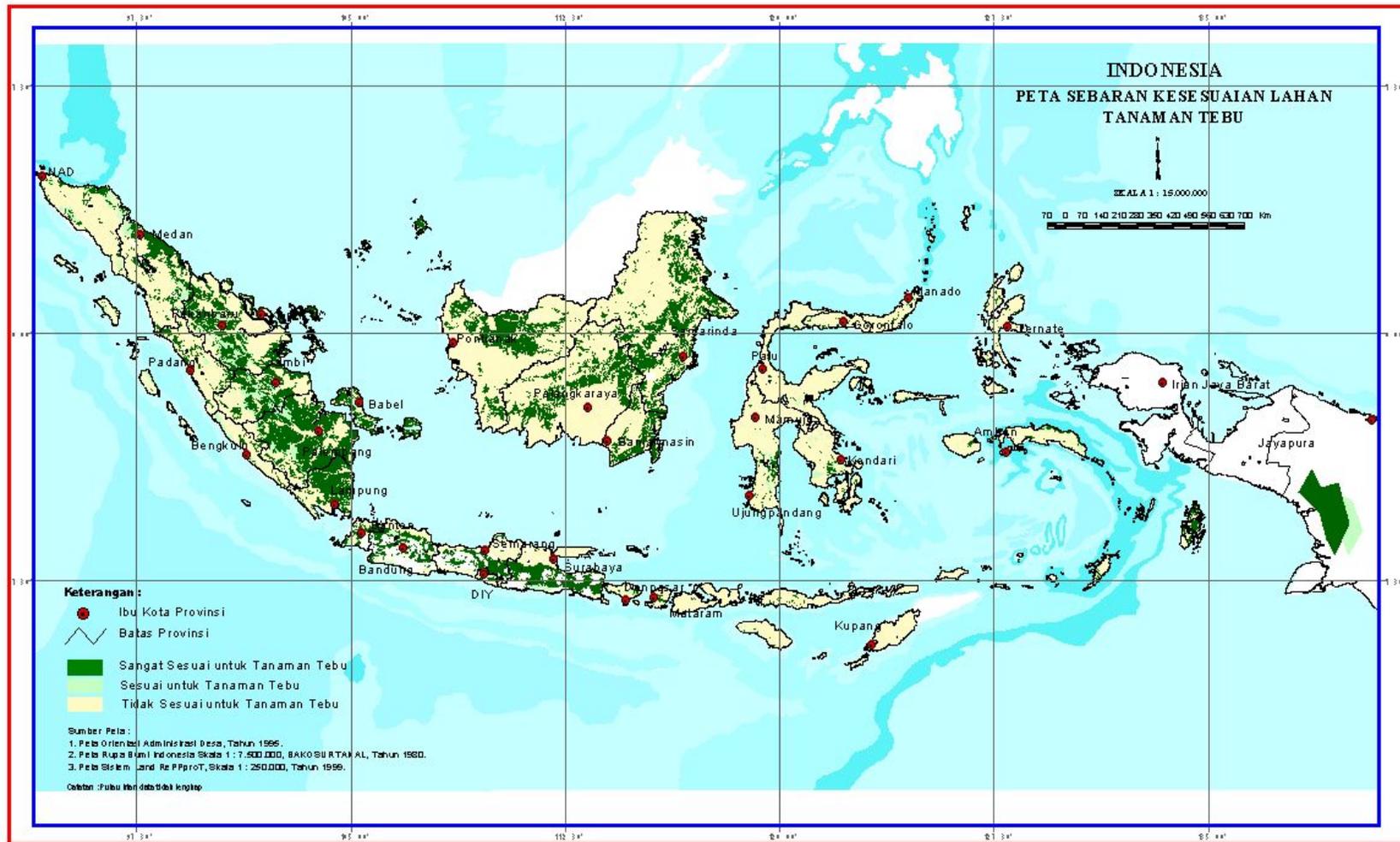
www.esdm.go.id

www.mesdm.net

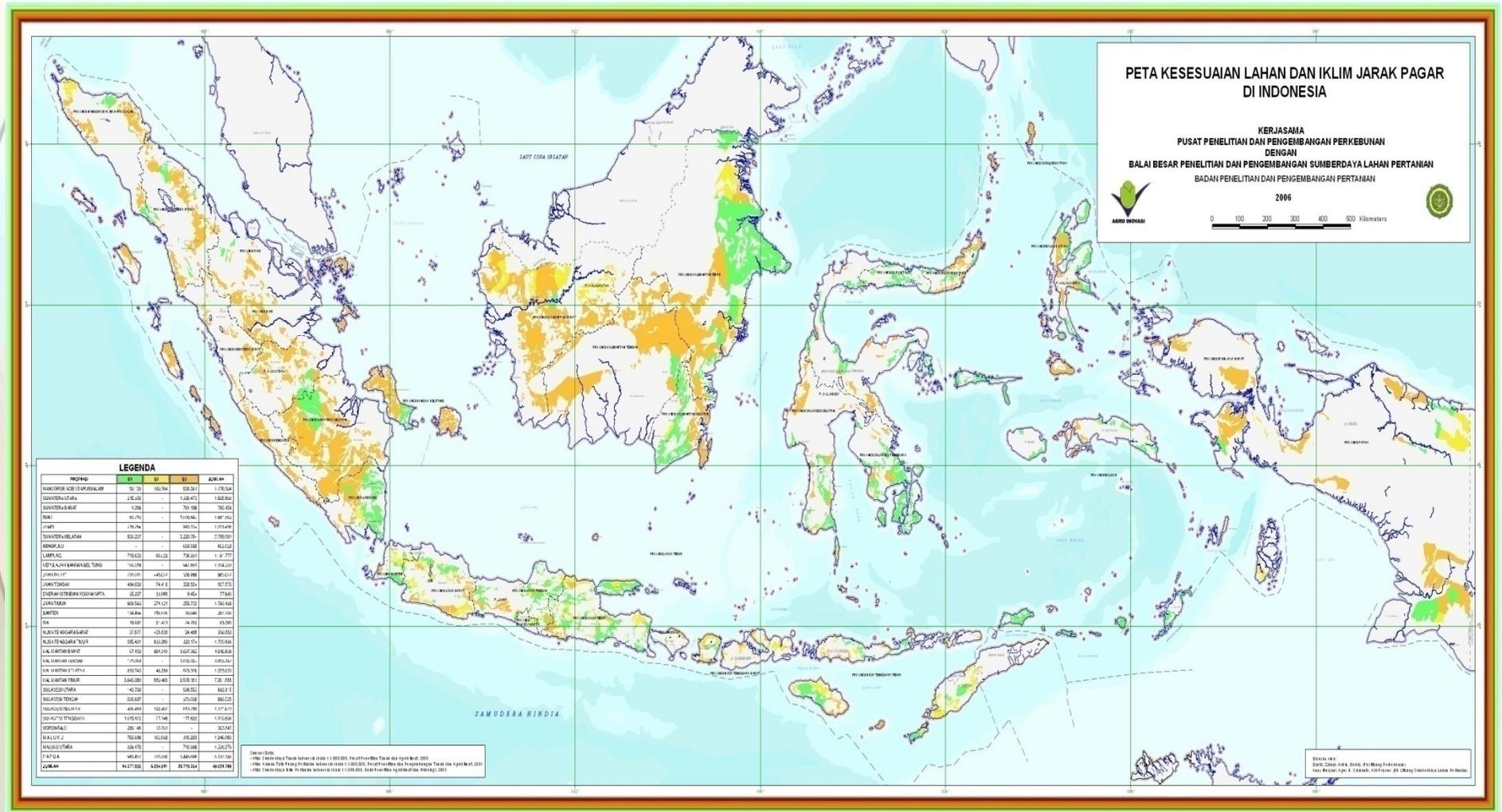
LAND AND CLIMATE COMPATIBILITY MAP FOR PALM (3 million hectares)



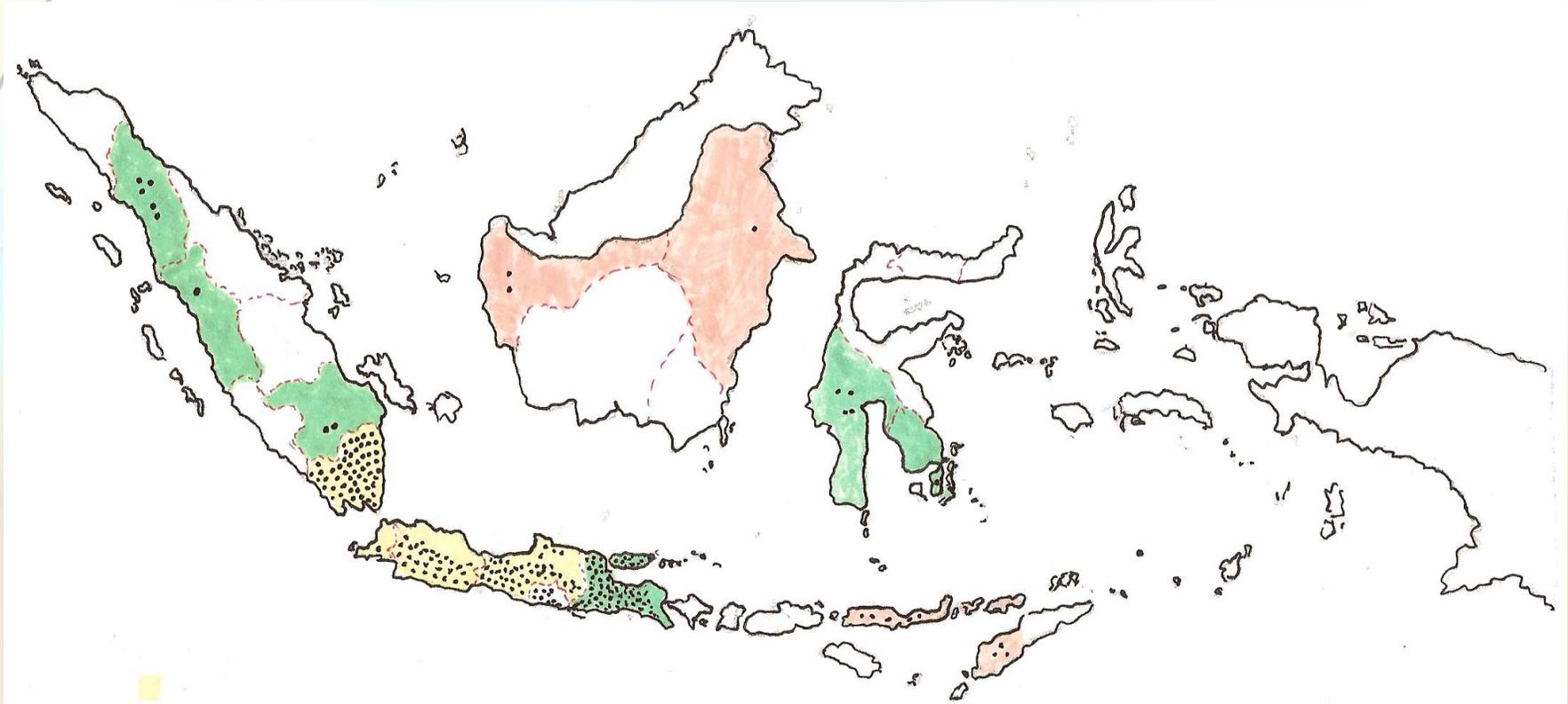
LAND AND CLIMATE COMPATIBILITY MAP FOR SUGARCANE (0.5 million hectares)



LAND AND CLIMATE COMPATIBILITY MAP FOR JATROPHA CURCAS (million hectares)



POTENTIAL LAND FOR CASSAVA PLANTATION (million hectares)



Potential land

- : < 75 ha
- : 75 – 200 ha
- : 201 – 400 ha
- : 401 – 1.800 ha

Production projection 100 ton cassava per dot