



# **Comment on the Concept of Palm Biomass Complex and Its Recent Progress in Malaysia**

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**Agency for Assessment and Application of Technology  
(BPPT-Indonesia)**

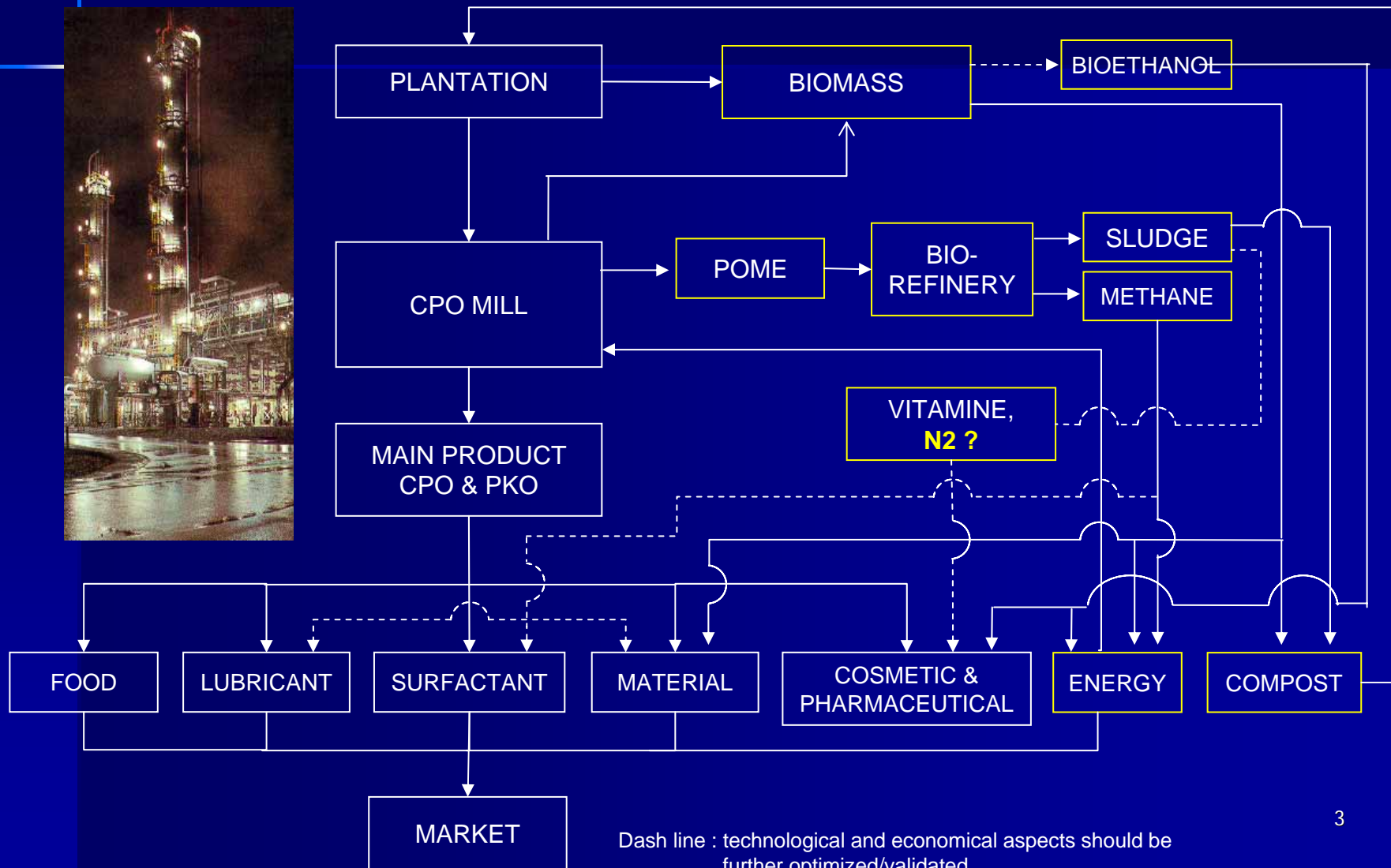
**The 6<sup>th</sup> Biomass Asia Workshop, Hiroshima, Japan  
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## Outline of comment

1. Summary of the Concept "Oil Palm Complex Model" (OPCM)
2. Recent Development of Oil Palm Plantation and Related Subject in Indonesia
3. Recommendation

# PALM COMPLEX MODEL

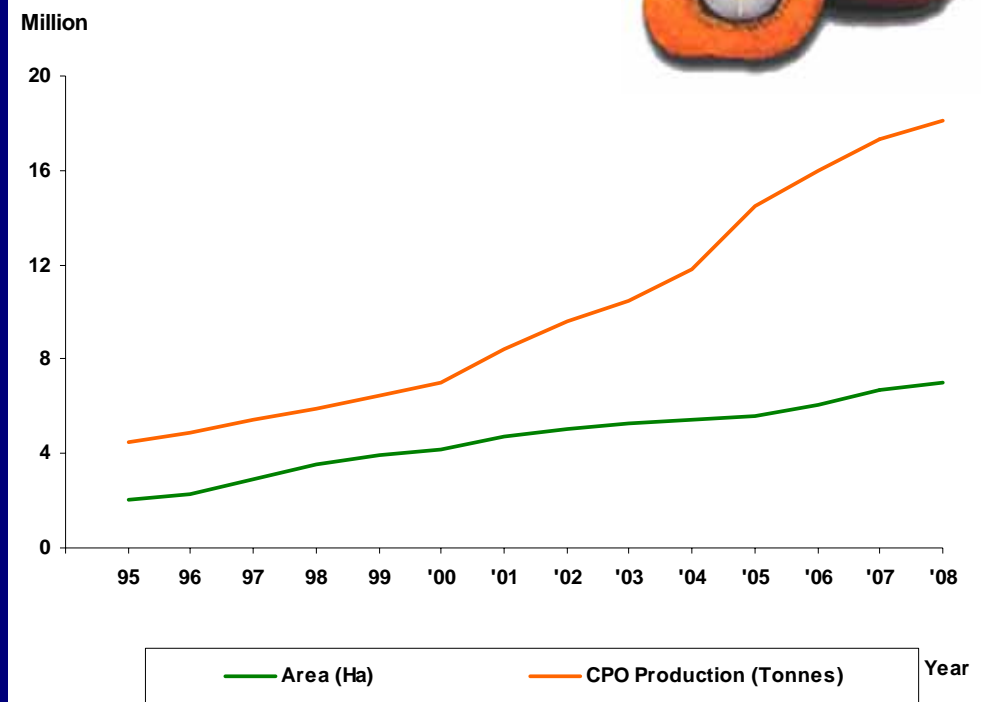
(summary of the concept)



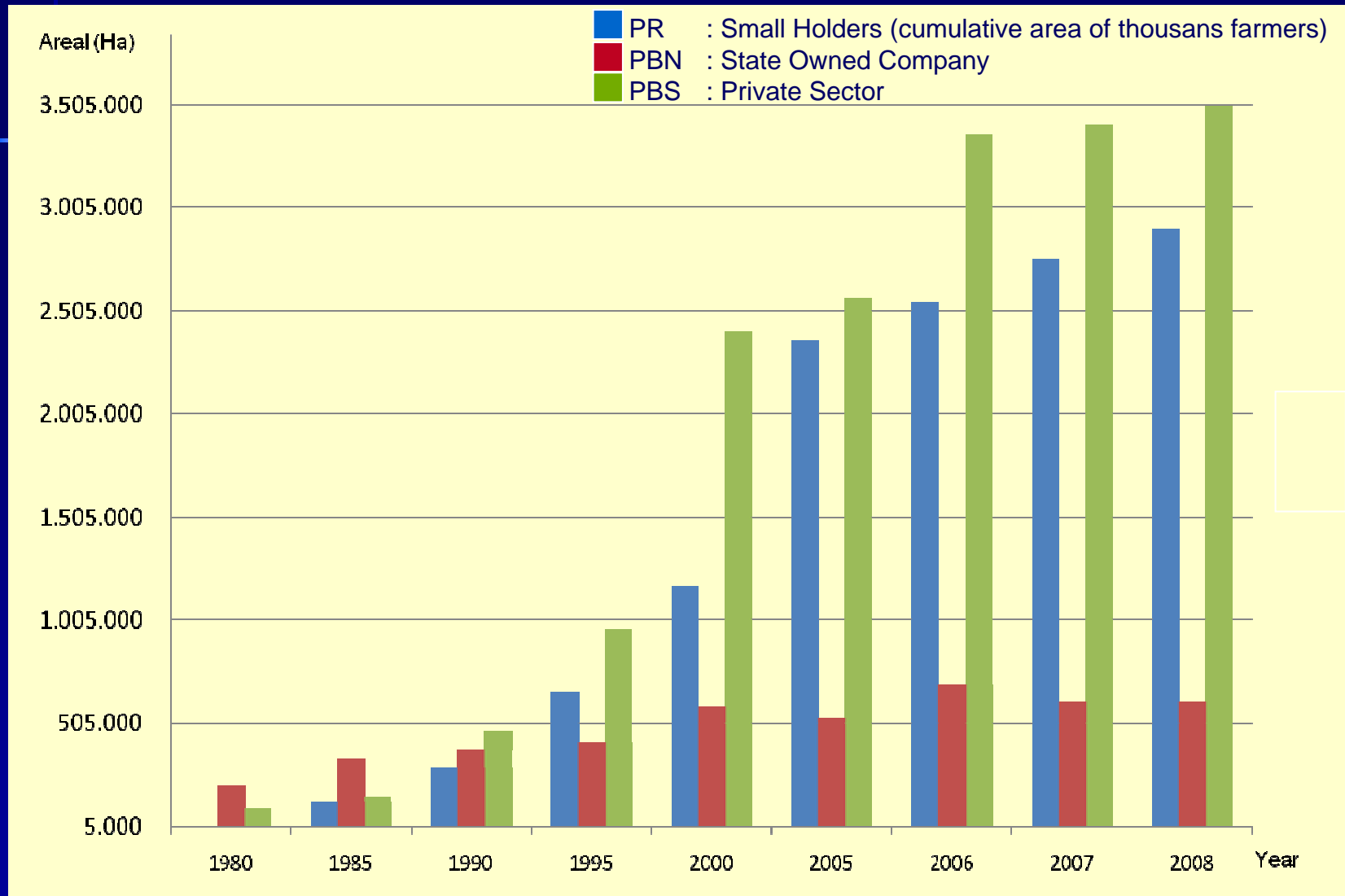
# RECENT DEVELOPMENT IN INDONESIA

## 1. Area & Production Indonesian Oil Palm Plantation

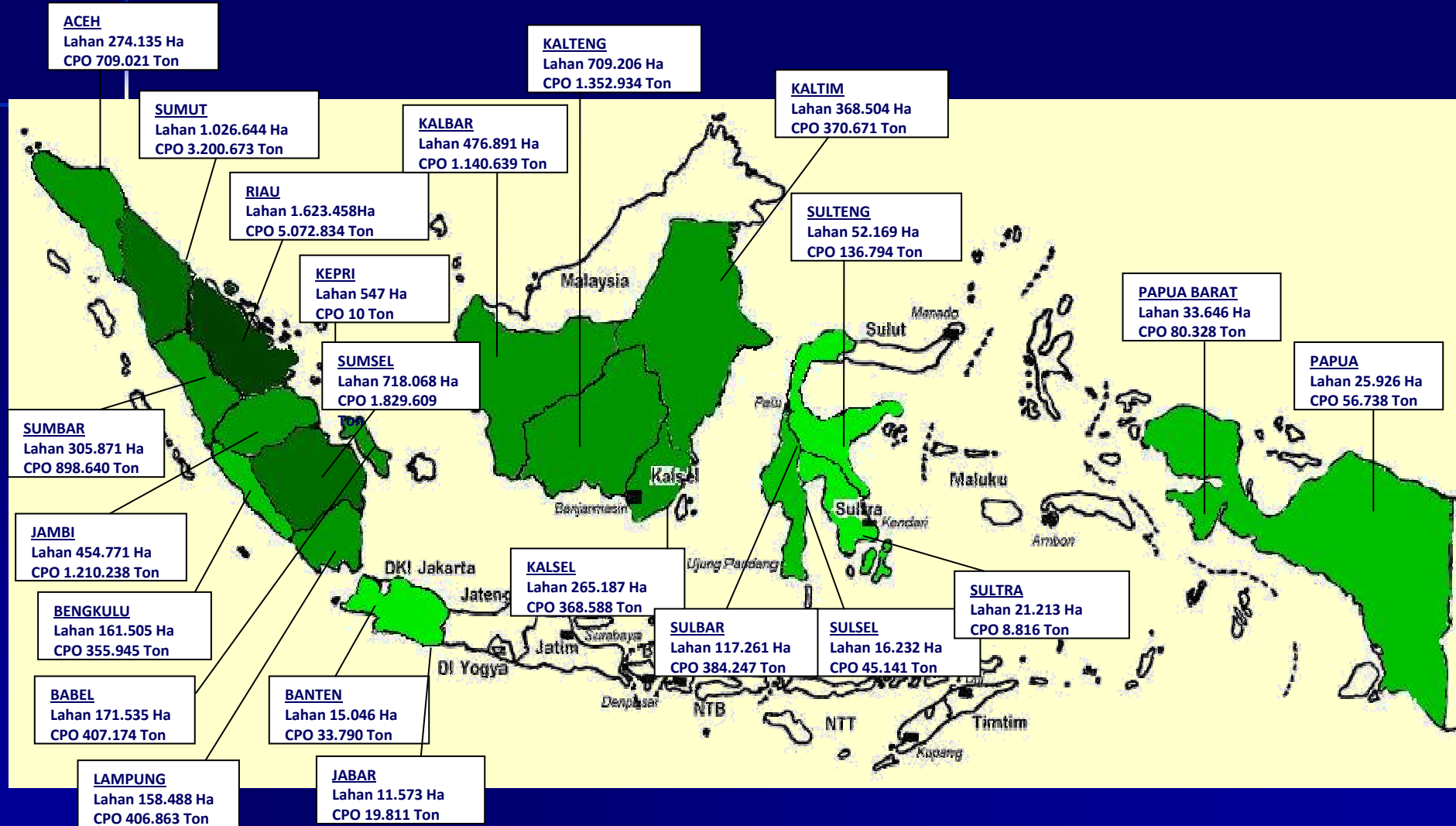
Year	Area (Ha)	Production (Tonnes)
1995	2,024,986	4,479,670
1996	2,249,514	4,898,658
1997	2,922,296	5,448,508
1998	3,560,196	5,930,415
1999	3,901,802	6,455,590
2000	4,158,077	7,000,508
2001	4,713,435	8,396,472
2002	5,067,058	9,622,345
2003	5,283,557	10,440,834
2004	5,447,562	11,810,000
2005	5,597,158	14,520,000
2006	6,075,000	16,000,000
2007	6,700,000	17,300,000
2008	7,007,876	18,089,503



## 2. Area By Category Of Producer, Comparison Graph

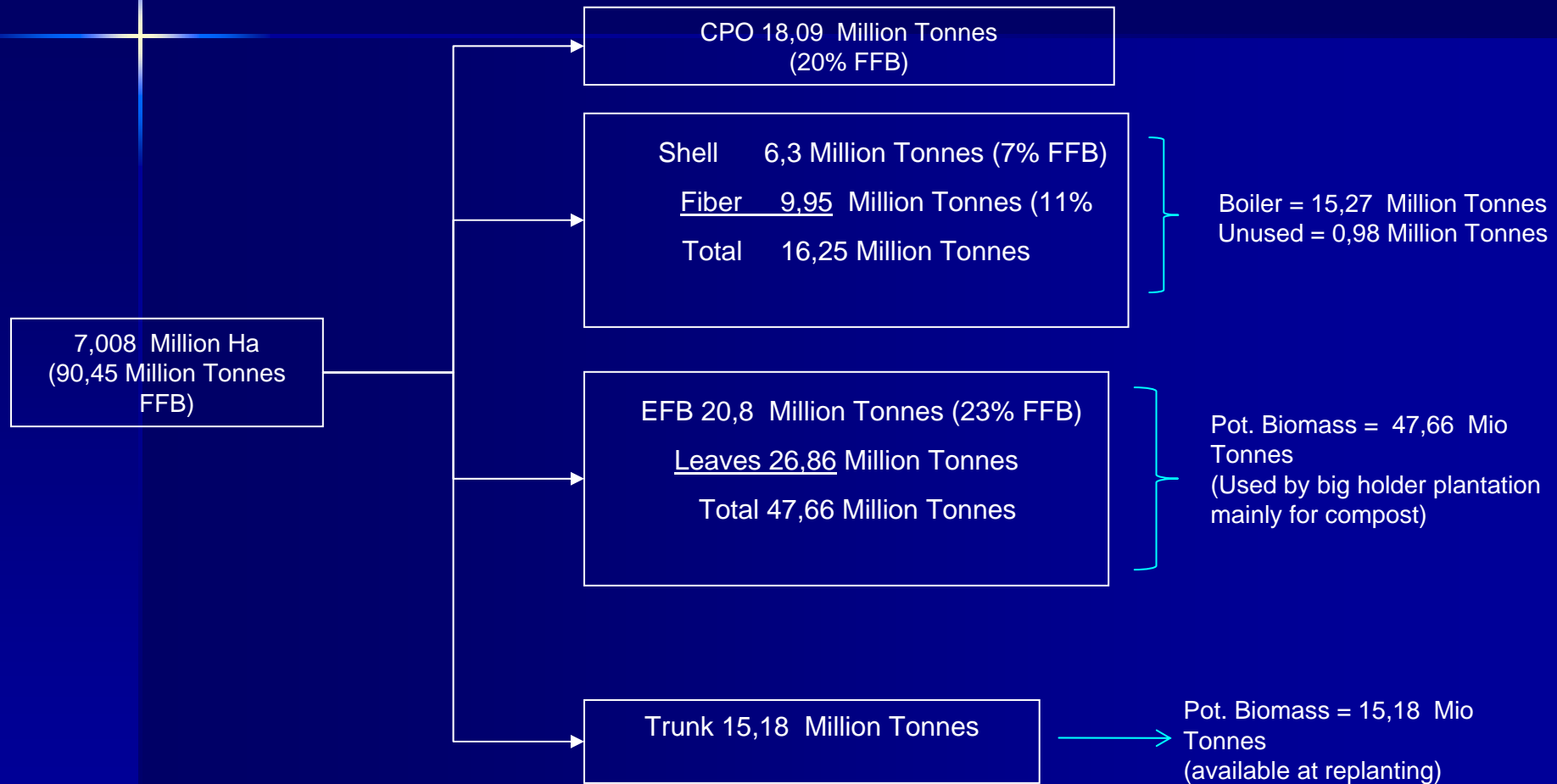


### 3. Distribution Area & Production Indonesian Oil Palm Plantation 2008

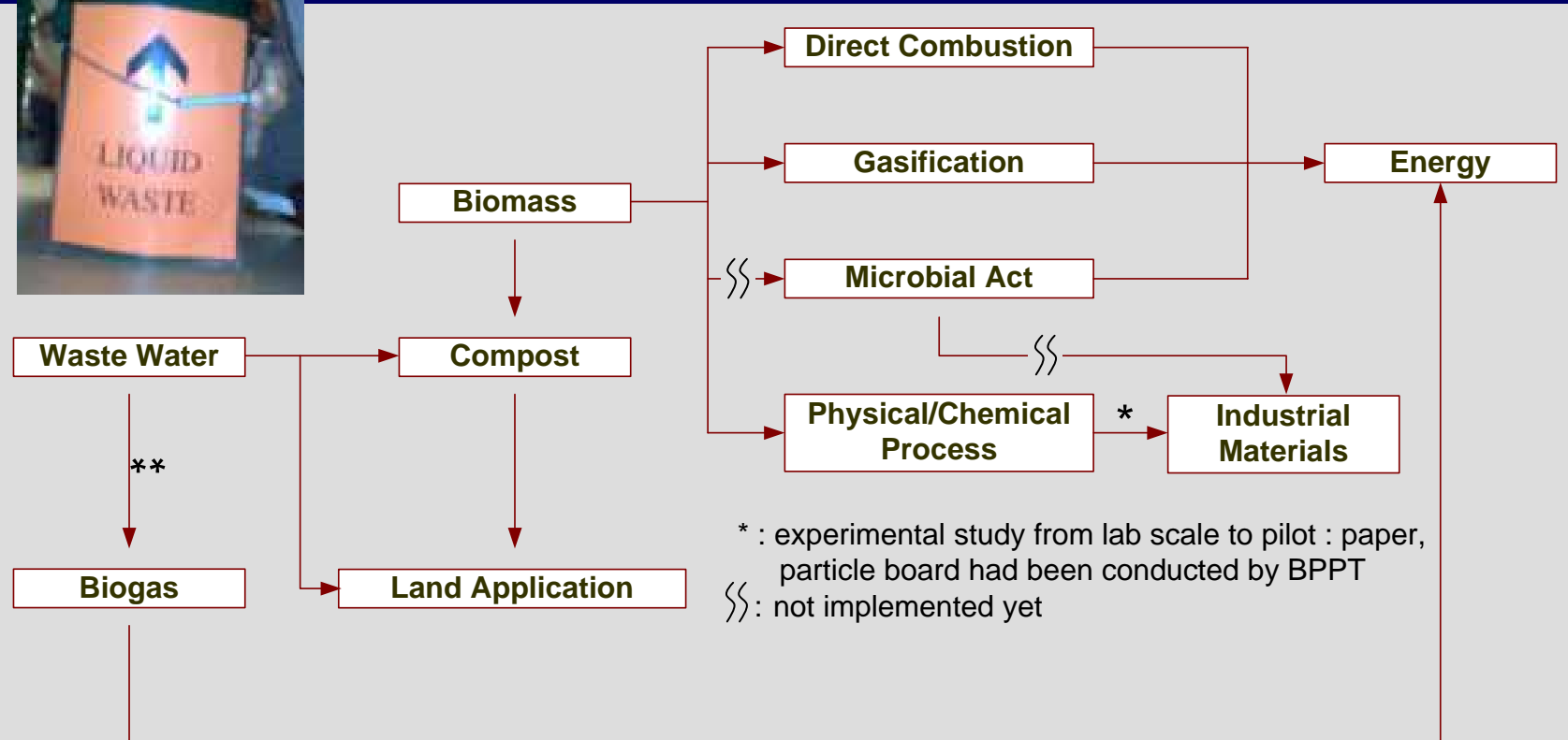


Source : Ministry of Agriculture (modified)

## 4. Product and Byproduct/Waste of Palm Oil Plantation 2008 (rough calculation)



## 5. Biomass and Waste Water Utilization



\* : experimental study from lab scale to pilot : paper, particle board had been conducted by BPPT  
 }} : not implemented yet

\*\* : had been studied at PTPN IV (North Sumatera) by Ministry of Agriculture

Biomass : Shafts, roots, flowers, empty fruit bunches

## 6. Daily/Field Practice

- Biomass Production from the Field:
  - Some Big Plantation Concern for Returning As Much As Possible Biomass Back to the Plantation for Mulching and Fertilizing the soil.
  
- Liquid/Sludge Waste
  - Letting Biogas Escape to the Atmosphere without appropriate utilization.

# Recommendation

## Action Plan to be suggested :

- Validation of the technological, financial, and environmental aspects of the **Oil Palm Complex Model (OPCM)**, particularly in the utilization of **Solid Biomass** and **Liquid Waste** for beneficial products.
- Developing technology of **boiler** in order to achieve **more efficient energy conversion** in burning fiber, shell, and might be a part ammount of EFB.
- Optimizing process technology to convert **biomass (EFB)** to **bioethanol**.
- Establishing efficient and environmental friendly **power plant ("Biomass Cogeneration Plant")** using excessive biomass from oil palm plantation.
- **Dissemination the result** of succes pilot project to other countries which have rich of oil palm plantation based on mutual benefits.
- Using the model **Public-Private-Partnership (P3)** in the implementation at commercial stage.

MAFF METI  
Biomass - Asia  
Research Consortium



ありがとうございます



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THANK YOU

6th Biomass Asia Workshop  
Nov. 18-20, 2009  
Hiroshima-Japan,