

Current Status of Woody Biomass in Eastern Part of Thailand

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Background

Over-consumption of fossil resources results in serious environmental disruption and warming climate by increasing CO₂ concentration in atmosphere globally, whereas the depletion of the resources would take place in the near future. Recently, another issue has occurred, which is the increase of the price of petroleum. Considering these situations, we must tackle to develop environmentally friendlier alternatives using natural renewable resources, particularly woody biomass, instead of the fossil resources.

In this connection, we have investigated the utilization of woody biomass in ASEAN countries. This is mainly because ASEAN countries certainly have large availability and potential of woody biomass. We reported the feasibility on utilization of wood residues in Sabah, Malaysia in the previous workshop held at Tsukuba, January 2005. We then visited and surveyed several wood-processing factories and plantations located in eastern part of Thailand (Figure 1), such as Khon Kaen, Prachin Buri, Trat, and Chon Buri from September to October 2005. In this paper, we report the current status of woody biomass in these places.



Figure 1. Eastern part of Thailand

Industries using wood resources

(1) Pulp mill (Phoenix Pulp & Paper Public Co. Ltd., Khon Kaen)

- Activities
- Pulp production
 - Plantation promotion and Civilcultural management
 - Wood procurement

Production capacity: 230,000 ton/year

Raw materials: Eucalyptus 80% (Figure 2), Bamboo 10%, Kenaf 10%

Fuels for steam generation (Co-generation plant system):

Black liquor 82.5 %, Bark + Dust 7.5%, Petrorium 10%

The company-owned plantation

Total Area in Thailand: 4,800,000 ha (Northeast 47%, East 27%, others 26%)

Target area: Within 150 km radius from the factory

Annual increase: 20,000 ha/year (planned)



Figure 2. Eucalyptus for pulp

(2) Board making factory (Vanachai Group Public Co. Ltd., Chon Buri)

Production capacity: Particle board (PB) 1000 m³/day

MDF 3000 m³/day

Raw materials: Rubber wood 90%, others 10%

Usage of wood wastes: Saw dust and bark are used for energy in the manufacturing process (Figure 3).



Figure 3. Waste from board making

Examples of plantation sites in the area

(1) Eucalyptus plantation in Khon Kaen (Figure 4)

A side job of farmers / grown as “agricultural products”

An area owned by each farmer: 1.5 ~ 4 ha

Harvesting cycle: 3-4 years,

Usage: Mainly raw material for pulping



Figure 4. Eucalyptus plantation

(2) Rubber wood plantation in Trat (Figure 5)

Felling of rubber wood over 20 years old due to the depletion of latex production

Usage: Raw materials of lumbers or boards



Figure 5. Rubber wood plantation

(3) Teak plantation in Khon Kaen (Figure 6)

Usage: Raw materials for furniture production



Figure 6. Teak plantation

(4) Seedlings of oil palm in Chantha Buri (Figure 7)

For supply to plantation and gardening



Figure 7. Seedlings of oil palm

Agroforestry systems

(1) Rubber wood and Pineapple

Pineapple: 2 years cycle, 2 times harvest (total 4 years cultivation)

Rubber wood: Latex production starts 7 years after the planting.

(2) Eucalyptus and paddy field (rice crop) in Prachin Buri (Figure 8)

Synergy effect: both crops need much water for growth



Figure 8. Agroforestry system

Summary

In the eastern part of Thailand, plantation areas of eucalyptus and rubber wood are widely spread and both trees have been used efficiently as raw materials for charcoal, pulp, and board manufacturing including short twigs. Thus, there is little expectation of the availability of these woody biomass for alternative resources. In addition to this, oil palm plantation will be promoted by the Thai government in the eastern region for the production of bio-diesel fuel. If oil palms grow well under the climate of the eastern region, residues of oil palm may facilitate the utilization of woody biomass for alternative materials and energy resources.

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