Present Status of Mangrove Ecosystem in East Kalimantan, Indonesia

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PRESENTATION OUTLINE

1. Coastal Resources Profile in East Kalimantan
2. Present Status and Main Issues of Mangrove Ecosystem
3. Problems on Sustaining Mangrove Ecosystem
4. Current Mangrove Management
5. Alternative Research Sites
INDONESIAN COASTAL RESOURCES

- > 81,000 km coast line (2nd longest)
- 60% from 230 millions of population are living at 50 km around coastal zone
- 80% of them are dependent upon economic activities related to coastal resources
- Fish production contributes 2/3 from animal protein consumption
- 24% GDP comes from ocean and coastal industries including oil and gas mining
Coastal Resources Profile of East Kalimantan

Area: Mainland 21,144,000 ha; Coastal and Ocean: 13,536,000 ha
Numbers of District / Town: 9 Districts, 4 Cities
Population: 2.6 million people;
Density: 4.5/km²
Length of Coastal line: 1.185 km
Small Island: 368 Islands
Annual precipitation: > 2000 mm
Big Rivers: Sesayap, Kayan, Sekatak, Berau, Mahakam, Kendilo.
Ecosystem Variation: Estuary, mangrove, sea grass, coral reef, sandy beach, muddy beach, small island
Economic Activities in Coastal Zone: Oil and Gas Industry, Petrochemical Industry, Coal Mining, Timber Industry, Port and Ship Dockyard, Trading, Fisheries and Agriculture, Tourism and Hotels, Public Transportation, and General Services.

FISHERY ACTIVITIES

Fisheries Production (1998-2002): 124,266.8 ton/year

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>CONTRIBUTION (%)</th>
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<tbody>
<tr>
<td>Marine Fishing</td>
<td>62.90</td>
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<tr>
<td>Inland Fishing</td>
<td>22.30</td>
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<tr>
<td>Fresh Water Pond Culture</td>
<td>0.42</td>
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<td>Cages Culture</td>
<td>5.24</td>
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<tr>
<td>Coastal Ponds Culture</td>
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</table>

Resources Utilization Profiles

- **FISHING AREA**: 4-12 miles
- **NUMBER OF FISHER**: 14,890 HH
- **EDUCATION**: 78.2% not passed ES, 18.46% ES, 1.9% SHS, 1.4% HS, 0.03% undergraduate
- **FISHING BOAT**: 87% under 5 GT, attached engine, and without engine
- **MARKETING**: 93.1% local market, 1.9% inter island trading, 5% export
- **ENTERPRENUER**: 86% small scale, 11% middle scale, 3% culture fisheries

Competitive Commodity

- **HEADLESS SHRIMP**
- **MUD CRAB**
PRESENT STATUS of MANGROVE ECOSYSTEM

**Area (2005)**: 447,000 ha, but about 60% was lost due to conversion for various purposes

**Distribution**: found almost in all Coastal Zone with different density and diversity

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**Main Species**

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<td>11</td>
<td>Cerops tatah</td>
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<td>12</td>
<td>Cerops decandia</td>
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<td>13</td>
<td>Bruguiera gymnorrhiza</td>
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## UTILIZATION PATTERN

### Spatial Utilization

<table>
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<tr>
<th>SECTOR</th>
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<tr>
<td>Big Industry</td>
<td>Oil and Gas, Petro-chemical, Timber, Coal Mining,</td>
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<tr>
<td>Middle Industry</td>
<td>Port and Ship Dockyard, Trading, Hotel /Tourism, Public Transportation</td>
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<tr>
<td>Settlement</td>
<td>Traditional Village and Modern Settlement</td>
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<tr>
<td>Agriculture</td>
<td>Coconuts culture, Rice Farming</td>
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<tr>
<td>Fisheries</td>
<td>Shrimp/Fish pond, Cages</td>
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## MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

**OIL AND GAS INDUSTRY**
MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

Coal Mining Aerial View

COAL BARGE

MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

TRADITIONAL VILLAGE

GOLF FIELD AND HOTEL
MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

PORT AND SHIP DOCKYARD

PUBLIC TRANSPORTATION

MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

TRADITIONAL MARKET

CAMPAIGN FOR LOCAL ELECTION
MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

- NURSERY GROUND FOR SHRIMP AND FISH
- CRABS CULTURE IN CAGES

MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

- GILL NET BOATS
- MINI TRAWLER FOR SHRIMP
MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

FRESH WATER POND

COCONUTS CULTURE

MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

EXTENSIVE SHRIMP PONDS IN MAHAKAM DELTA
MAIN ECONOMIC ACTIVITIES AROUND / AT MANGROVE ECOSYSTEM

ICE BOXES USED BY SMALL SHRIMP COLLECTOR/TRADER

COLD STORAGE INDUSTRY

UTILIZATION PATTERN

Utilization of Mangrove Goods

- House material
- Fire Wood
- Pond gate
- Roof (Nypa)
- Charcoal
- Handy Craft
- Fish Trap
- Food
- Cosmetics
MANGROVE UTILIZATION AS GOODS

MATERIAL FOR ROOF AND CONSTRUCTION

HANDY CRAFT

MANGROVE UTILIZATION AS GOODS

MATERIAL FOR FISH TRAPS

FOR COSMETIC

FOR MANGROVE CAKES
MAIN ISSUES ON MANGROVE ECOSYSTEM:

**DEFORESTATION**

- FOR POND
- FOR SETTLEMENT
- FOR OIL AND GAS INDUSTRY
- FOR HOTELS

MAIN ISSUES ON MANGROVE ECOSYSTEM:

**LAND USE CONFLICT**

- OIL AND GAS INDUSTRY AS FIRST PRIORITY
- BETWEEN INDUSTRY, TRADITIONAL FISHING AND MANGROVE PROTECTED AREA
MAIN ISSUES ON MANGROVE ECOSYSTEM:
ENVIRONMENT DEGRADATION

- WATER POLLUTION BY TOXIC MATERIALS
- TURBIDITY AND SEDIMENTATION
- LOST OUR HOME
- EMPTY, HOT AND DRY: MICRO CLIMATE CHANGES

MAIN ISSUES ON MANGROVE ECOSYSTEM:
DRASTIC LOST OF NATURAL PRODUCTIVITY

- LOW PRODUCTIVITY OF SHRIMP POND
- ABANDONED SHRIMP POND
MAIN ISSUES ON MANGROVE ECOSYSTEM:
POVERTY

BAD HYGIENE AND SANITATION

WHERE WILL WE GO AFTER PASSED ELEMENTARY? THERE IS NO, EVEN JUNIOR HIGH HERE...
MAIN ISSUES ON MANGROVE ECOSYSTEM: GENDER AND DEVELOPMENT

WORK AS SMALL COLLECTOR TRADER

WORK AS LABOUR AT HARVEST SEASON

PROBLEMS ON SUSTAINING MANGROVE ECOSYSTEM

ENVIRONMENTAL BIOPHYSIC
1) UNSTOPABLE DEFORESTATION
2) Pollution from industrial, transportation and domestic wastes
3) Sedimentation
4) Coastal Abrasion

SOCIO-ECONOMY AND LAW
1) Weak regulation at coastal management
2) Non-applicable spatial planning
3) Prosperity of fishermen
4) Opportunistic capital penetration
5) Lack of knowledge and technology
6) Lack of investment and market access
7) Weakness of law enforcement
CURRENT MANAGEMENT ON SUSTAINING MANGROVE ECOSYSTEM

ENVIRONMENTAL RECOVERY PROGRAMMES
1) Reforestation Project (by National/Local Government, Private Company, Local NGO, Local Community)
2) Integrated Pond-Mangrove Management (by Local Government, University and Local Community)
3) Mangrove Protected Area Development (by NGO and Local Government)
4) Community Based Mangrove Management (by NGO, Local Government, and Local Community)

SOCIO-ECONOMY AND LAW APPROACHES
1) Drafting Integrated regulation at coastal management
2) Drafting legalized spatial planning for coastal management
3) Reconstructing stakeholders perception
4) Finding alternative micro financing for grass roots
5) Bridging the lack of knowledge and technology
6) Bridging the lack of investment and market access
7) Strengthening law enforcement and institutional networking

CURRENT MANAGEMENT ON SUSTAINING MANGROVE ECOSYSTEM

PUBLIC CONSULTATION

REVEGETATION PARTNERSHIP PROGRAMME

TRAINING OF TRAINERS ORGANIZING BY UNIVERSITY

STAKEHOLDERS DIALOGUE
CURRENT MANAGEMENT ON SUSTAINING MANGROVE ECOSYSTEM

INTEGRATED POND – MANGROVE SYSTEM
ALTERNATIVE RESEARCH SITE: BONTANG CITY

MANGROVE ECOSYSTEM

MANGROVE ECOSYSTEM MAY POTENTIALLY BE CONVERTED INTO POND & INDUSTRY.
ALTERNATIVE RESEARCH SITE: BALIKPAPAN BAY

BALIKPAPAN BAY MANAGEMENT COUNCIL

ALTERNATIVE RESEARCH SITE: MAHAKAM DELTA

MAHAKAM DELTA MANAGEMENT COUNCIL
Figure 8. Trend of tambak development in Mahakam Delta.
# Alternative Research Sites: Comparative Analysis (Scoring 1 – 5)

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>BALIKPAPAPAN BAY</th>
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<td>Utilization Pattern</td>
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**Thank You**