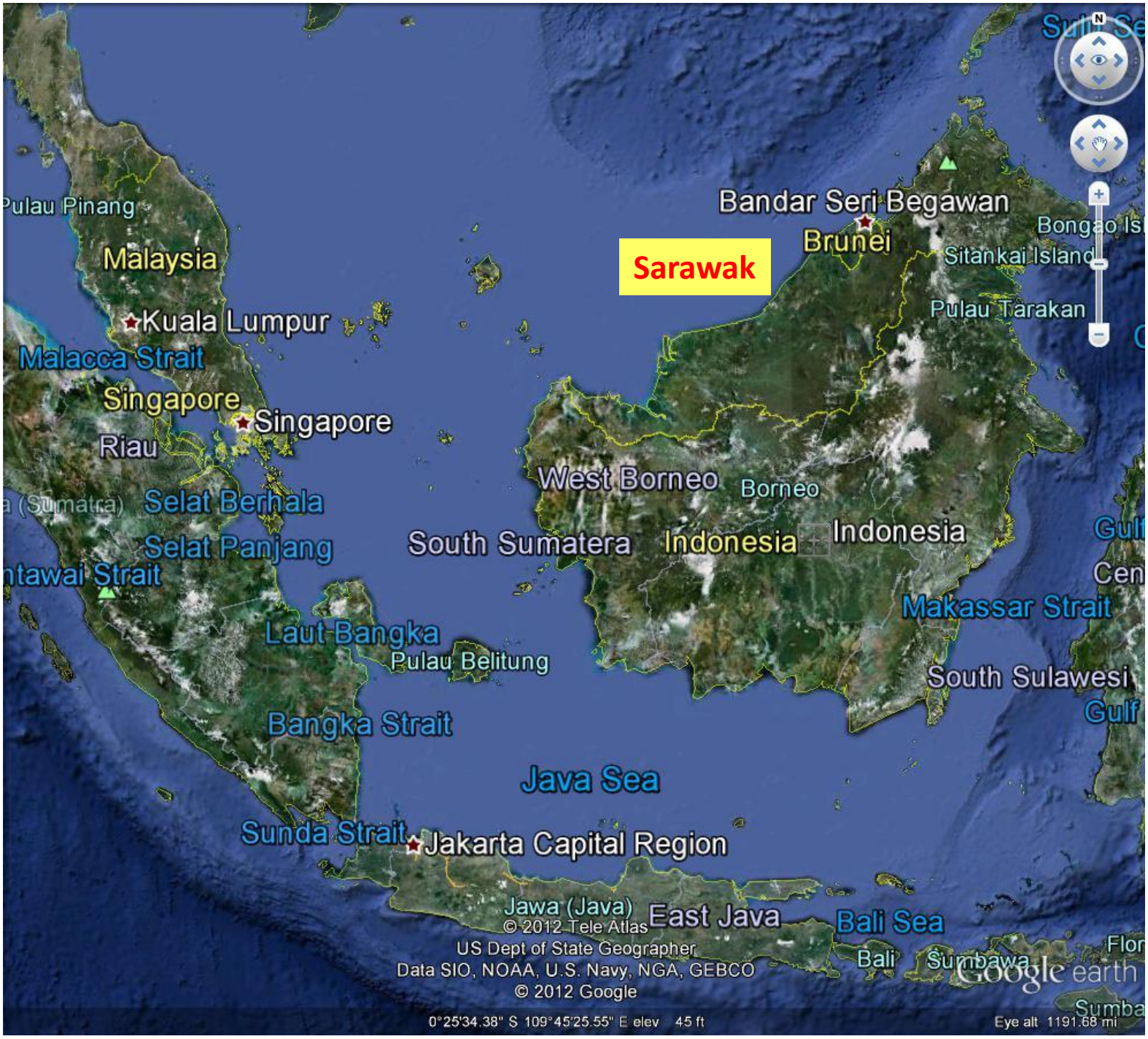
Proposed Restoration of Ramin (*Gonystylus bancanus*) in Peatlands in Sarawak, Malaysia.

By

Ernest Chai
Tropical Evergreen Enterprise
Kuching, Sarawak, Malaysia
Tel/Fax : 60 82 455 195
H/phone: 60 19 888 9737

email: tropictrees@yahoo.com or
echai@streamyx.com

Workshop on Peatlands sustainability at Bogor, Indonesia
27 to 29 June 2012


Sarawak
Pulau Pinang
Malaysia
Kuala Lumpur
Malacca Strait
Singapore
Singapore
Riau
Selat Berhala
Selat Panjang
Laut Bangka
Pulau Belitung
Bangka Strait
Java Sea
Sunda Strait
Jakarta Capital Region
Jawa (Java)
East Java
Bali Sea
Bali
Sumbawa
Bandar Seri Begawan
Brunei
Sitankai Island
Pulau Tarakan
West Borneo
Borneo
South Sumatera
Indonesia
Indonesia
Makassar Strait
South Sulawesi
© 2012 Tele Atlas
US Dept of State Geographer
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2012 Google
Google earth
0°25'34.38" S 109°45'25.55" E elev 45 ft
Eye alt 1191.68 mi

A Ramin tree
In a natural
Peat swamp
Forests
In Lingga.
DBH 45 cm

Ramin has been
Listed in CITES
In Appendix II

Objectives:

Proposed Three Restoration Plans of Ramin/Other spp:

1. **Peat Land Stakeholder – government to initiate rehabilitation.**
2. **Restoration of suitable peat lands by local communities.**
3. **Trial planting of Ramin/others in oil palm estates in peat lands.**

Sarawak is the largest State in Malaysia.

Has a total land area of 12.3 million ha.

Of which 1.3 million ha are peatlands or peatswamp forests.

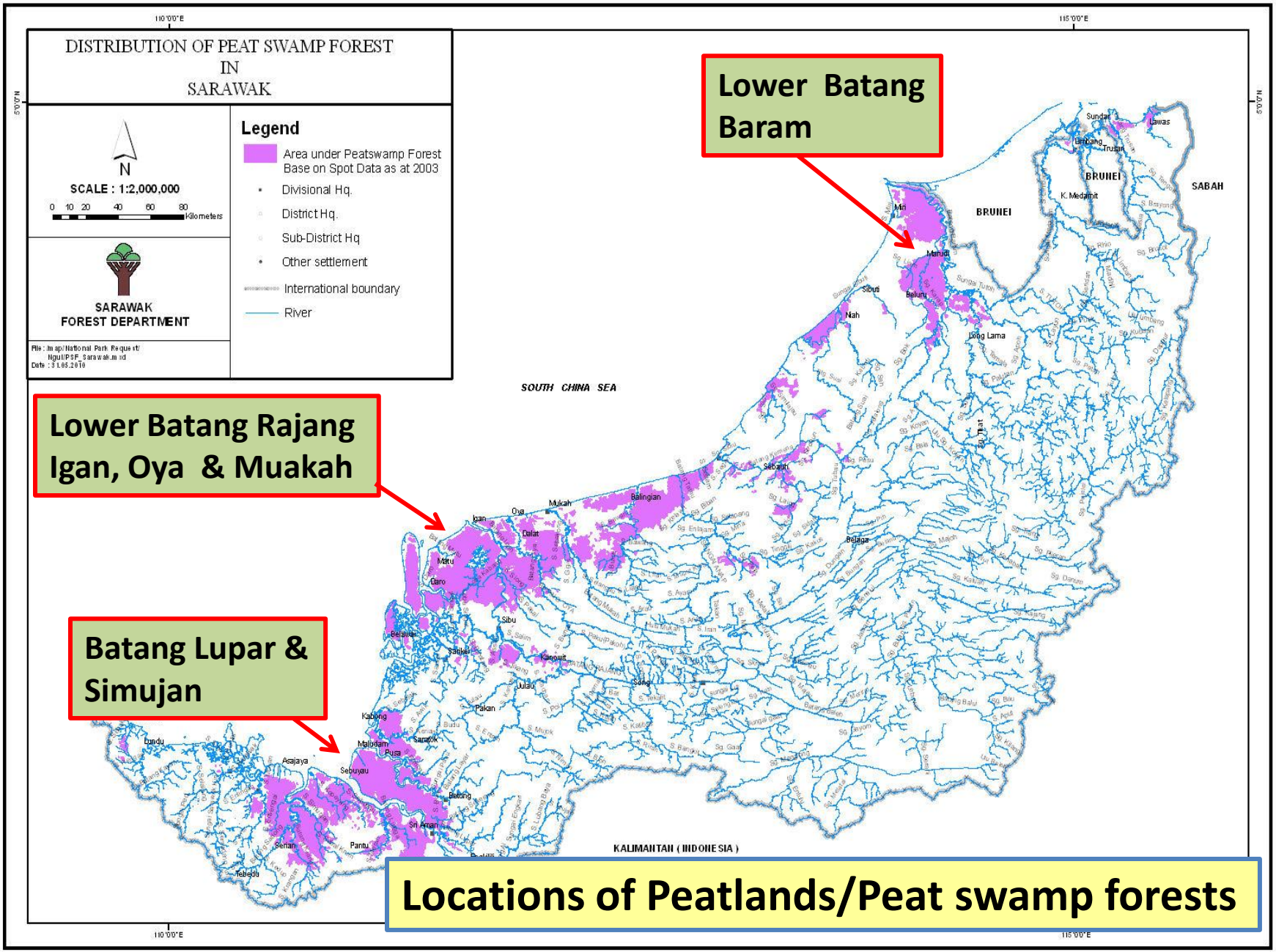
Peatlands Located along costal lowland areas and lower parts of river mouths.

750,000 ha of peatlands constituted as Permanent Forest Estates (PFE)

Flooded with brackish water annually with pH as low as 4.

Peat was reported as deep at as 15 meters from surface.

Peatlands are considered as infertile and unsuitable for agricultural crops.


DISTRIBUTION OF PEAT SWAMP FOREST
IN
SARAWAK
N
SCALE : 1:2,000,000
0 10 20 40 60 80
Kilometers
SARAWAK
FOREST DEPARTMENT
Legend
Area under Peatswamp Forest
Base on Spot Data as at 2003
Divisional Hq.
District Hq.
Sub-District Hq
Other settlement
International boundary
River
Lower Batang
Baram
Lower Batang Rajang
Igan, Oya & Muakah
Batang Lupar &
Simujan
Locations of Peatlands/Peat swamp forests
SOUTH CHINA SEA
KALIMANTAN (INDONESIA)
BRUNEI
SABAH
Miri
Marudi
Sibuti
Beluru
Niah
Long Lama
Sebauh
Belaga
Mukah
Oya
Igan
Dalat
Balingian
Matu
Daro
Sibu
Belawai
Kanowit
Julau
Song
Pakan
Kabong
Sarikei
Meludam
Pusa
Sebuyau
Asajaya
Betong
Sri Aman
Pantu
Serian
Tebedu
Lundu

Timbers from peatswamp forests were considered important sources of revenue in 1950s to 1980s.

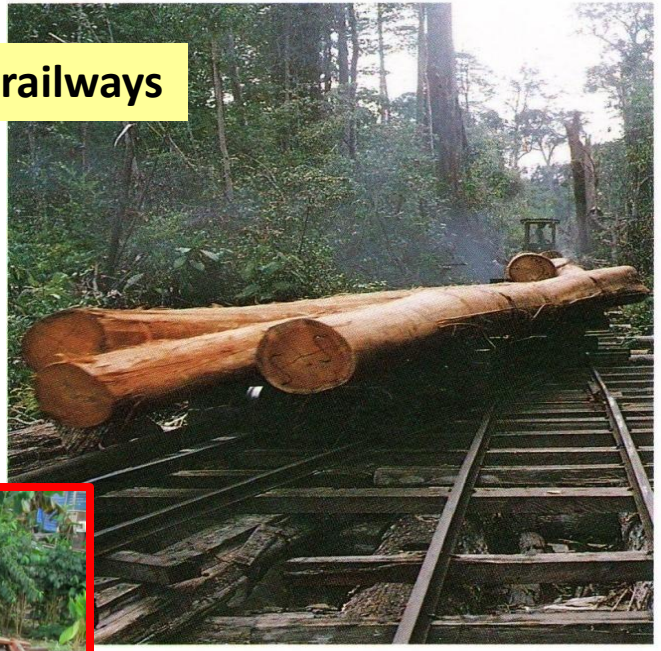
Most common timbers found in the peatlands were Ramin (*gonystylus bancanus*), Jongkong (*dactylocladus stenostachya*) , Sepitir (*Copaifera palustris*), swamp Meranti (*shorea spp*), Medang (*Litsea spp.*) & others.

Some peatswamp forests were typically dominated by Alan (*Shorea albida*) in the natural forests.

Above: Dr Peter J. Ven der Meer (right) from Alterra, Wageningen, Netherlands – An active scientist on tropical Peat lands research. Note the brackish water level.

Showing peat swamp forest and Ramin seedlings on the right.

Locomotive and railways



Illegal Logging

From 1980s onwards, most peatswamp/peatland forests were almost being logged.

Silviculture treatments were carried out in the logged-over PFEs.

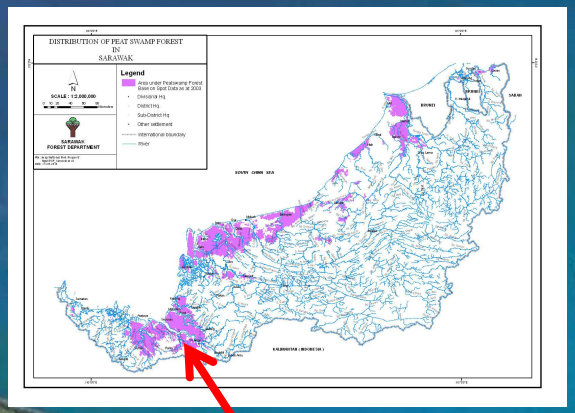
Yield plots (YP) were established in silviculture treated PSF.

Regeneration was not promising and the growth rate was slow compare to the hill species.

Results showed – abundant seedlings , pole-size damage & little intermediate-size trees left

Due to oil palm plantation development pressuring for land, peat swamp forests were excised for oil palm.

Peat swamp PFE was reduced from 780,000 ha to less than 320,000 ha in 2004.

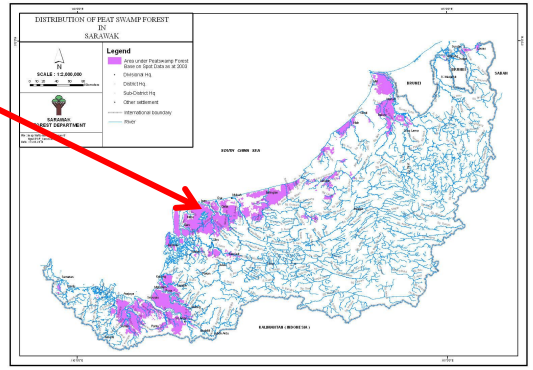


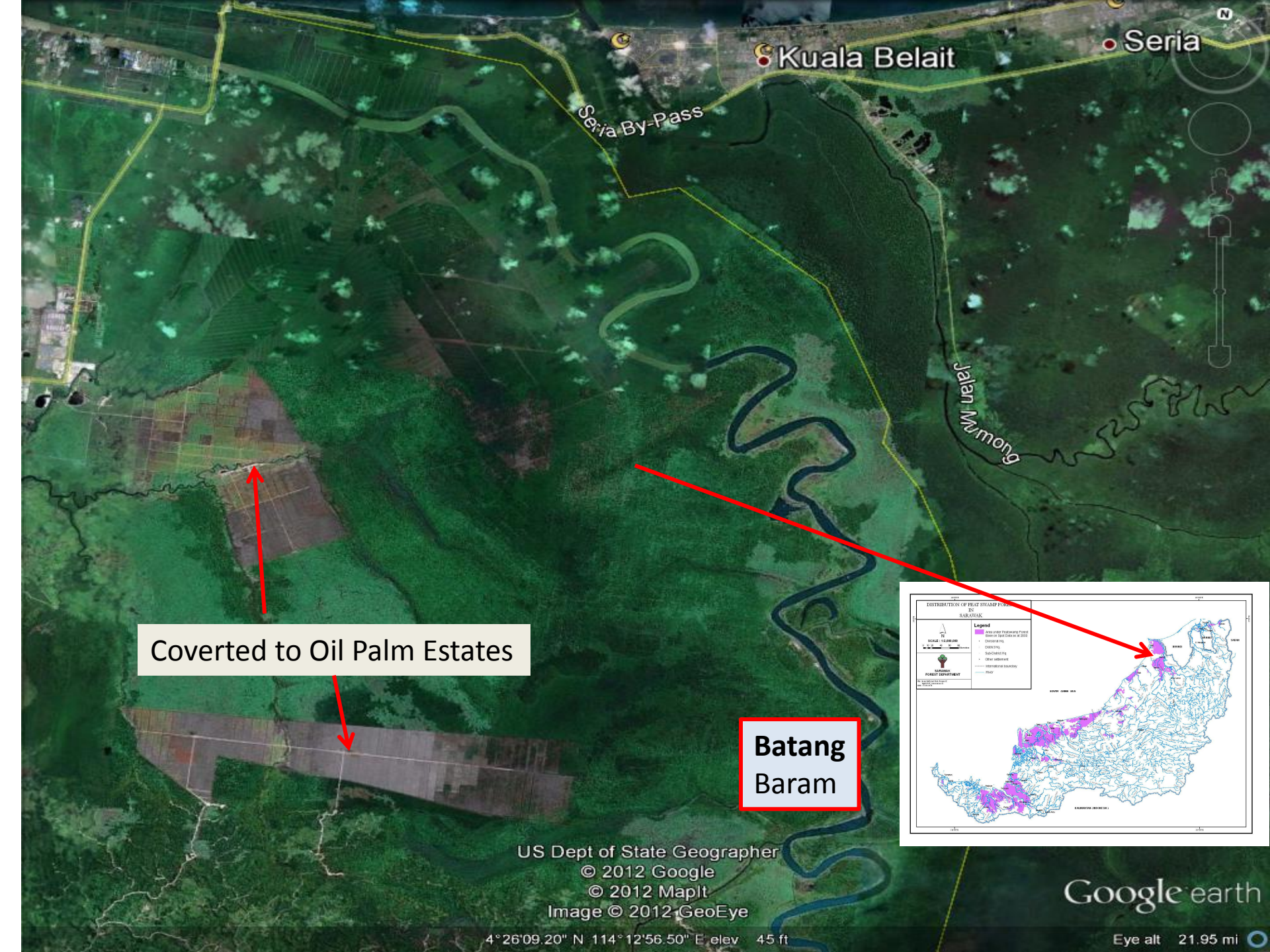
Bantang Lupar

South China Sea

Oil Palm Estates

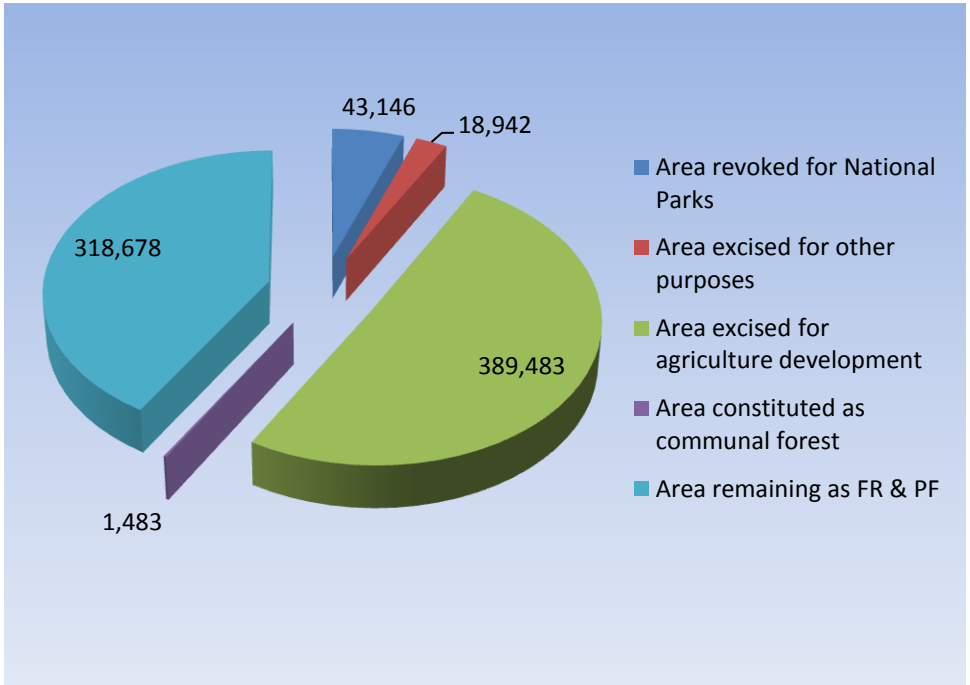
Igan, Mukah & Oya peat lands




Kuala Belait
Seria
Seria By-Pass
Jalan Mumong
Coverted to Oil Palm Estates
Batang
Baram
DISTRIBUTION OF PEAT SWAMP FOREST
IN
SARAWAK
Legend
SCALE : 1:2,000,000
SARAWAK
FOREST DEPARTMENT
US Dept of State Geographer
© 2012 Google
© 2012 MapIt
Image © 2012 GeoEye
4°26'09.20" N 114°12'56.50" E elev 45 ft
Google earth
Eye alt 21.95 mi

Status of PFE (PSF) areas in ha in Sarawak

Total area PFE (PSF original)	**771,732**	**100%**
Area set for National Parks	43,146	5.6%
Area set for other purposes	18,942	2.5%
Area excised for agriculture oil palm development	**389,483**	**50.4%**
Area constituted as communal forest	1,483	0.2%
Area remaining as FR & PF	318,678	41.3%
Remaining PFE in PSF as of 2005	**320,161**	**41.5%**



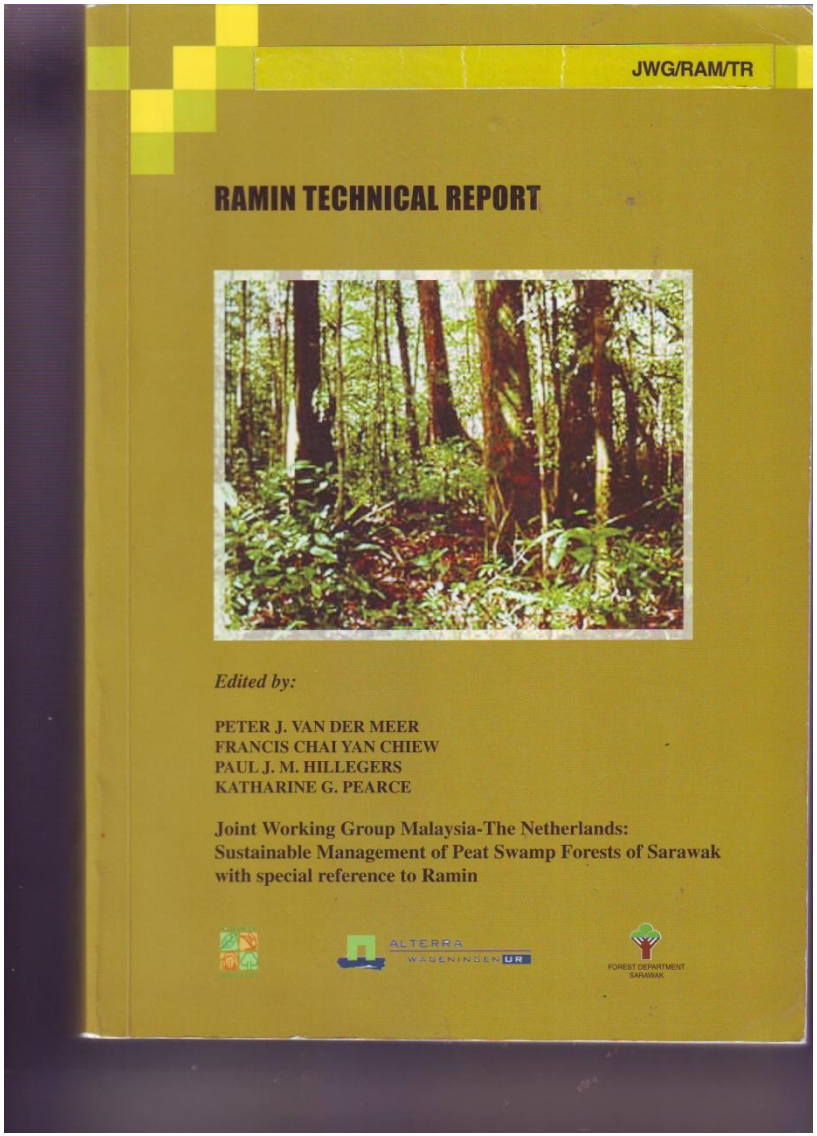
Proposed Actions to be taken in Peatlands/PSF :

1. **Cease immediately on the excision of peatlands for oil palm plantations.**
2. **Stop all logging & encroachment in the peatswamp forests in the PFE.**
3. **Carry out an inventory of the remaining PFE in the peatswamp forests.**
4. **Identify suitable areas in the peatlands for restoration of Ramin and other common peatswamp timber species.**
5. **Forest Department to continuously in R&D with local as well overseas institutions.**

Many researches had been done on peatswamps forests by Sarawak Forest Department and Sarawak Forestry Corporation.

The most recent one would be the "Joint Working Group Malaysia-The Netherlands: Sustainable Management of Peatswamp Forests of Sarawak with special reference to Ramin" implemented from 2001 to 2004.

The Ramin Technical Report contains 17 individual technical reports.



Malaysia's Peat Swamp Forests – Conservation and Sustainability Report

Jointly by Ministry of Natural Resources & Environment, DANIDA, GEF and UNDP

Some Ramin papers are posted in Website

This Ramin Technical Report contains 17 individual technical papers/reports.

TABLE OF CONTENTS

PREFACE ii
FOREWORD iii
ACKNOWLEDGEMENTS iv
EXECUTIVE SUMMARY v
INTRODUCTION
- Background and main technical results of the Ramin Project 1
  Paul J.M. Hillegers, Penguang Manggil, Francis Chai Yan Chiew and Peter J. van der Meer

SECTION 1. STATUS OF AND THREATS TO PEAT SWAMP FOREST
- Status of peat swamp forest in Sarawak 7
  Josephine Wong Lua Ming
- Threats to peat swamp forests of Sarawak 49
  Peter Sawal

SECTION 2. MONITORING PEAT SWAMP FOREST
- Growth and yield of the logged-over peat swamp forests of Sarawak 107
  Sia Puon Chiew
- Development of a monitoring system 185
  Sander M.J. Wijdeven, Peter J. van der Meer, Francis Chai Yan Chiew, Mohizah Mohamad, Sylvester Tan Kheng San and Liam Dibor
- Manual for the establishment and enumeration of permanent sample plots in a monitoring system for the peat swamp forest in Sarawak 213
  Sylvester Tan Kheng San
- Floristic and structural diversity of peat swamp forest in Maludam National Park 265
  Sylvester Tan Kheng San
- Litter-trap survey in Maludam National Park 295
  Malcom Demies

SECTION 3. ECOLOGY OF PEAT SWAMP FOREST AND RAMIN
- Phenology of Ramin (*Gonystylus bancanus*) in logged-over peat swamp forest in Sarawak 315
  Liam Dibor
- Effect of light on Ramin (*Gonystylus bancanus*) germination 331
  Liam Dibor
- Regeneration of a mixed swamp forest in Sarawak (Malaysia) - Study based on 6 typical Mixed Swamp Forest species 355
  Pascal Truong
- Seedling distribution of Ramin and seed dispersal in Sarawak, Malaysia 429
  Paul L.B. Kunne
- Ramin (*Gonystylus bancanus*) regeneration and growth in Sarawak's Peat Swamp Forests 475
  Peter J. van der Meer, Sylvester Tan Kheng San, Francis Chai Yan Chiew and Liam Dibor
- Leaf properties, photosynthetic rates and growth strategies of Ramin 495
  Wilma W.P. Jans, Liam Dibor, Bart Kruijt, Peter J. van der Meer and Sylvester Tan Kheng San

SECTION 4. SUSTAINABLE USE OF PEAT SWAMP FOREST
- Improving biodiversity and sustainability of peat swamp forests of Sarawak 527
  Lee Hua Seng
- A rapid diagnostic appraisal report of the socio-economic value of forest products for the population in the vicinity of the Maludam National Park 569
  Jolanda van den Berg, Mohd. Nasrudin Salleh, Malcom Demies and Jeneri Amir.
- Constraints and opportunities of the non-timber forest products (NTFPs) activities among the Iban communities living adjacent to the Maludam National Park, Sarawak 625
  Mohd. Nasrudin Salleh and Jolanda van den Berg.
- Restoration of Ramin in PSF of Sarawak 689
  Ernest Chai Oi Khun

Proposed Ramin Restoration Plans:

1. **Authorities' Active Participations**

2. **Local communities' participations**

3. **Trial Planting of Ramin in oil palm estates in peatlands.**

1. Authorities' Active Participations

Government's support and commitment are critical

- **Financial commitments**
- **Legislative support**
- **Staffing**
- **Initiate restoration of Ramin in peatlands in the permanent forest estates**
- **Continue in Research & Department**
  - **– Local and overseas institutions**

2. Local Communities' Participations in restoring peat lands

Identified suitable peatlands areas for planting Ramin/others peatswamp species

Roles of Stakeholders to invite the local communities to participate

Forest Department - government agencies – peatlands in PFE

Implementing Agencies or authorities – forest department / SFC

Financing & administrators by – implementing agencies & corporate companies

Integrated approach – agroforestry concepts

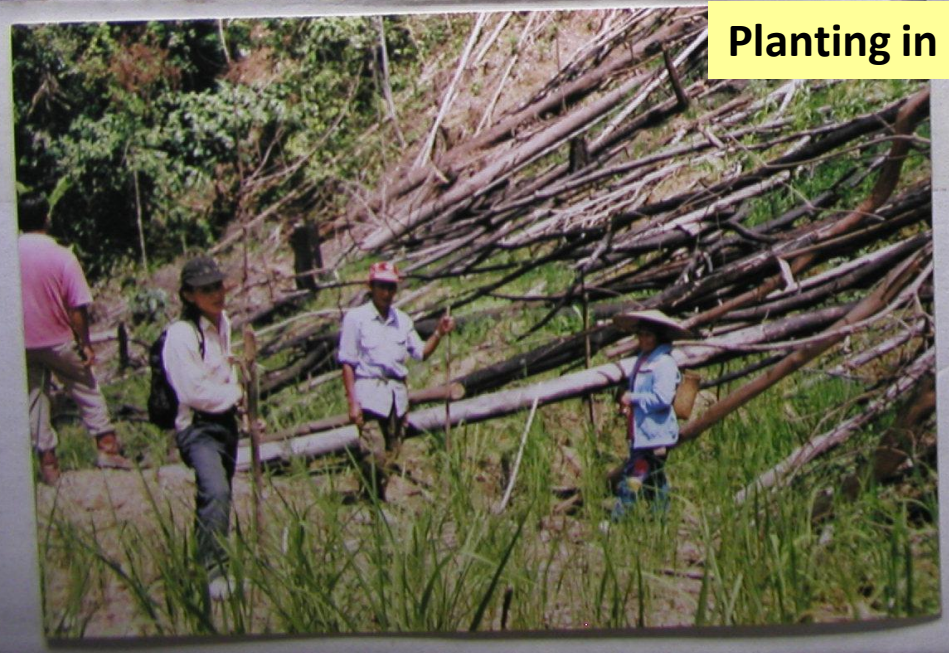
Manpower input – from the local communities

Dialogue - A case in Restoration of Shifting Cultivation Areas in Sarawak

Dialogues with the Local Communities

Launching of the Planting Project

Planting in SC Areas



3. Trial Planting of Ramin in oil palm estates in peat lands.

Propose five trial planting (Ramin) experimental blocks

(1) Baram Miri (PSF)

90 ha - 3 block x 30 ha/block

(2) Central Sarawak, Belaga (Lowland)

60 ha - 2 block x 30 ha/block

Total Area - 150 hectares

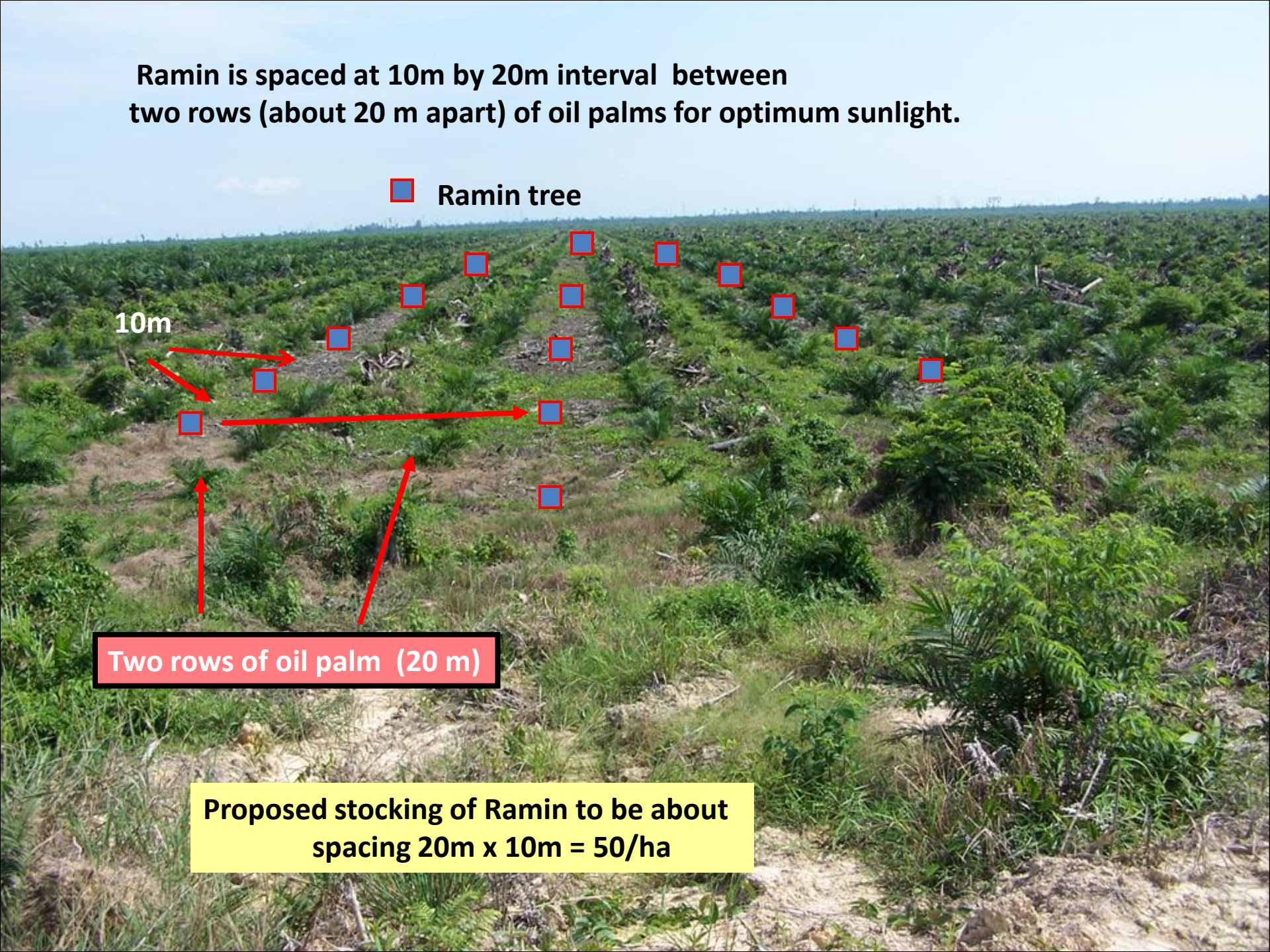
New site of PSF being converted for oil palm plantation.

PS Forest – these oil palms were just planted. Infrastructures of roads and drainage systems were well laid.

Three years old Oil Palm

Established Oil Palm Estate Planted in peat lands.

Oil Palms about 1.5 yrs old


Ramin is spaced at 10m by 20m interval between two rows (about 20 m apart) of oil palms for optimum sunlight.
Ramin tree
10m
Two rows of oil palm (20 m)
Proposed stocking of Ramin to be about spacing 20m x 10m = 50/ha

PS Forest converted – Five-years old Oil Palms

Research Methodology

Experimental Design – 5 RANDOM BLOCKS EACH BLOCK 30 HECTARES

PSF in Miri

Three Exp. Blks

New Site	1 yr old OP	5 yr old Oil Palm
1. Control Ramin (no oil Palm)	2. Ramin + Oil Palm	3. Ramin + Oil Palm

Lowland in Belaga

Two Exp. Blks

1 yr old OP (or new site)	5 yr old Oil Palm
4. Ramin or + Oil Palm	5. Ramin + Oil Palm

Project Cost – Trial planting of Ramin over a period of Four Years in established oil palm estates in peat lands

Items	2006-2007 Yr One	2007-2008 Yr Two	2008-2009 Yr Three	2009-2010 Yr Four	Total Amount (RM)
1. Project Cost	434,831	236,503	225,037	222,036	1,118,407 (100.0%)
2. Requested grant from an agency	324,118	150,870	139,404	134,403	748,795 (67.0%)
3. Contributions by corporate companies	110,713	85,633	85,633	87,633	369,612 (33.0%)

US $ 1.00 = RM 3.00

Thank you for Your Attention

Acknowledgements

I would like to thank the following:-

Sarawak Forest Department, Sarawak, Malaysia.
Sarawak Forestry Corporation, Sarawak, Malaysia.

Mr Chee Tong Yew,
APFP Regional Project Manager.

Asean Peatland Forests Project (APFP) &
Sustainable Management of Peatland Forests in South East Aisia (SEApeat).

Google earth – making use of the free satellite images.

The Workshop Organisers and Supporters below:-