



# ASEAN Peatland Forests Project (APFP)



## Overview of Peatlands and climate change in SE Asia

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Workshop on **Options for Carbon Financing to  
Support Peatland Management,**  
Pekanbaru, Indonesia 4-6 October 2010

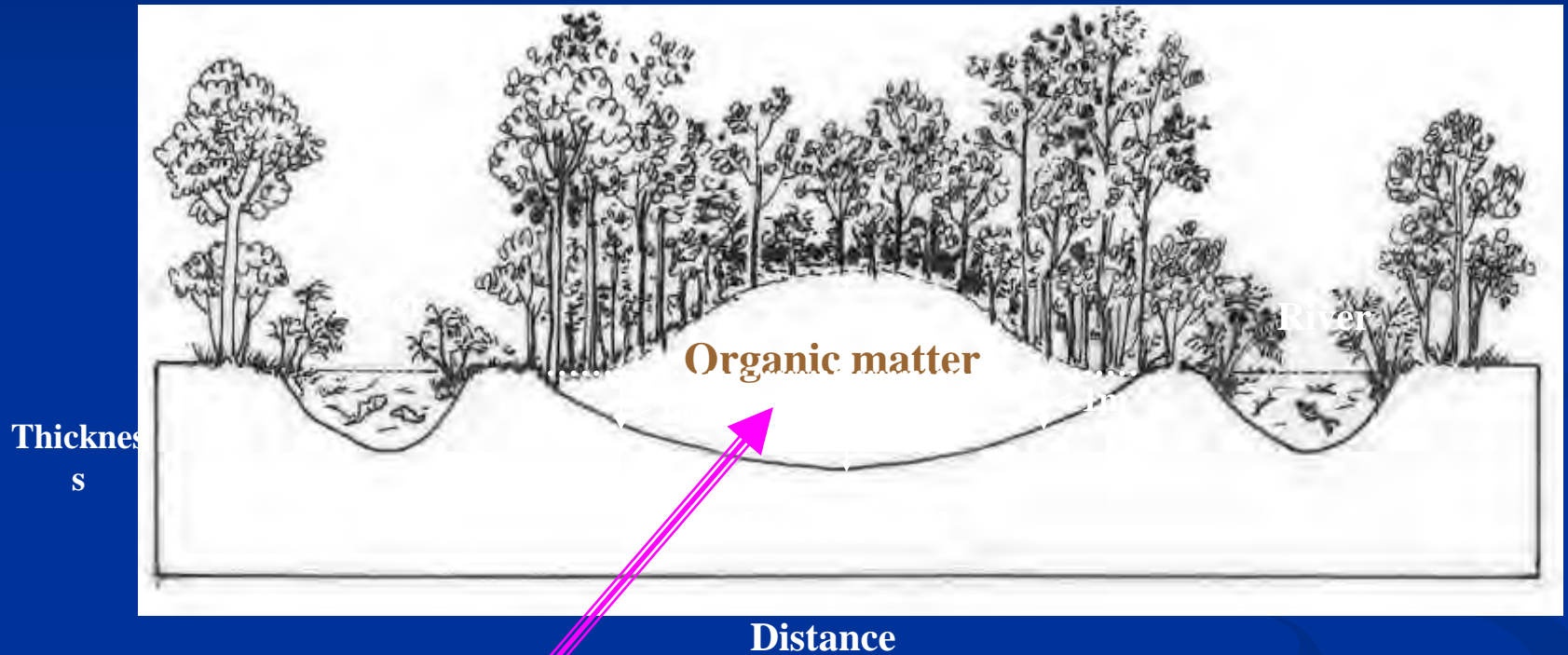
# Peat Swamp Forest is the main wetland type in Se Asia



Borneo

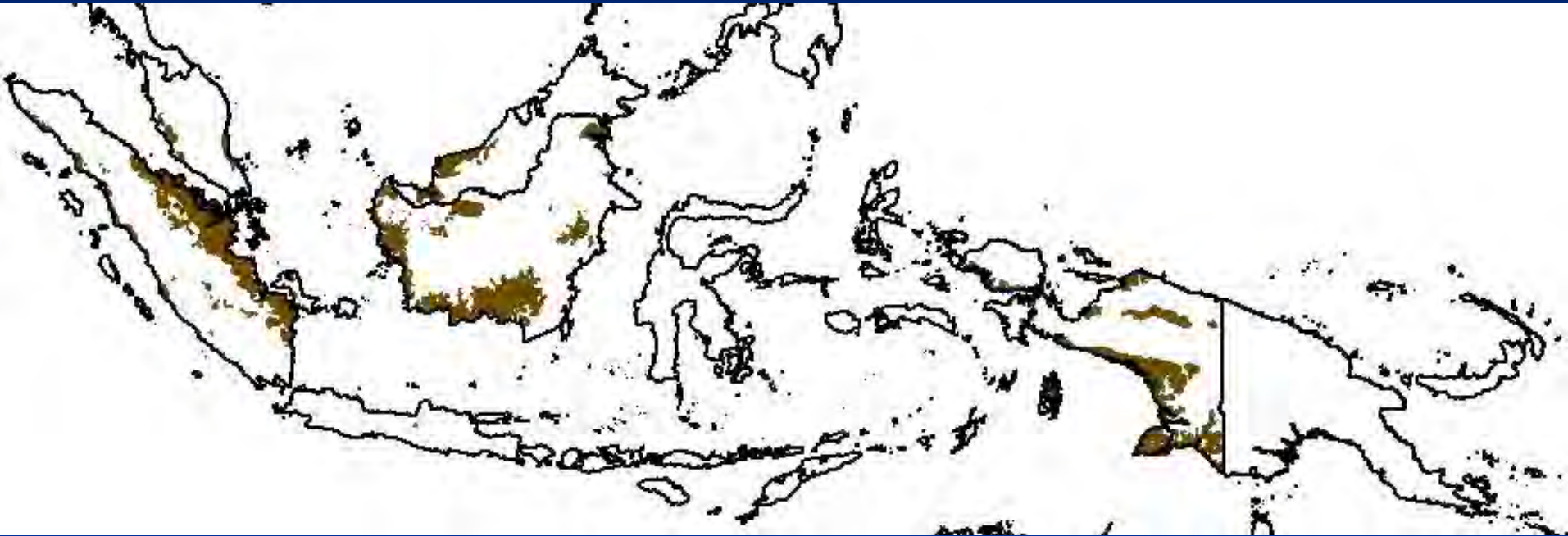


# Peat accumulates in thick layers over thousands of years

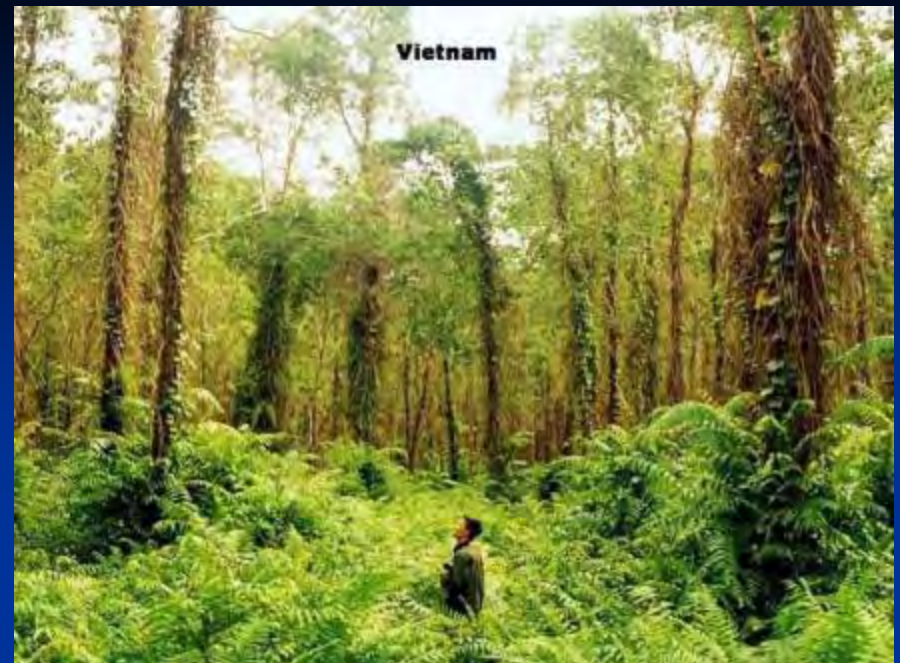


Peat layer up to 20 m thick

# Peatlands cover 25 million ha in Se Asia

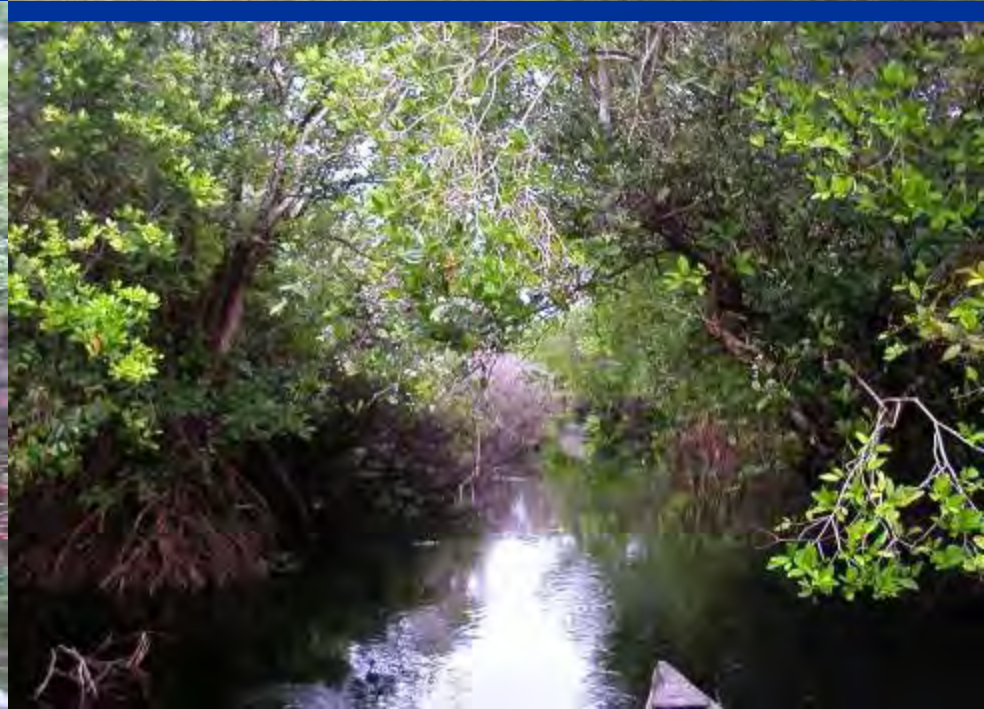








# Peatlands provide water and prevent floods



Peatlands have high Biodiversity





# Peatlands Feed communities



Fishing, Pahang, Malaysia

Source: UNDP-GEF PSF Project



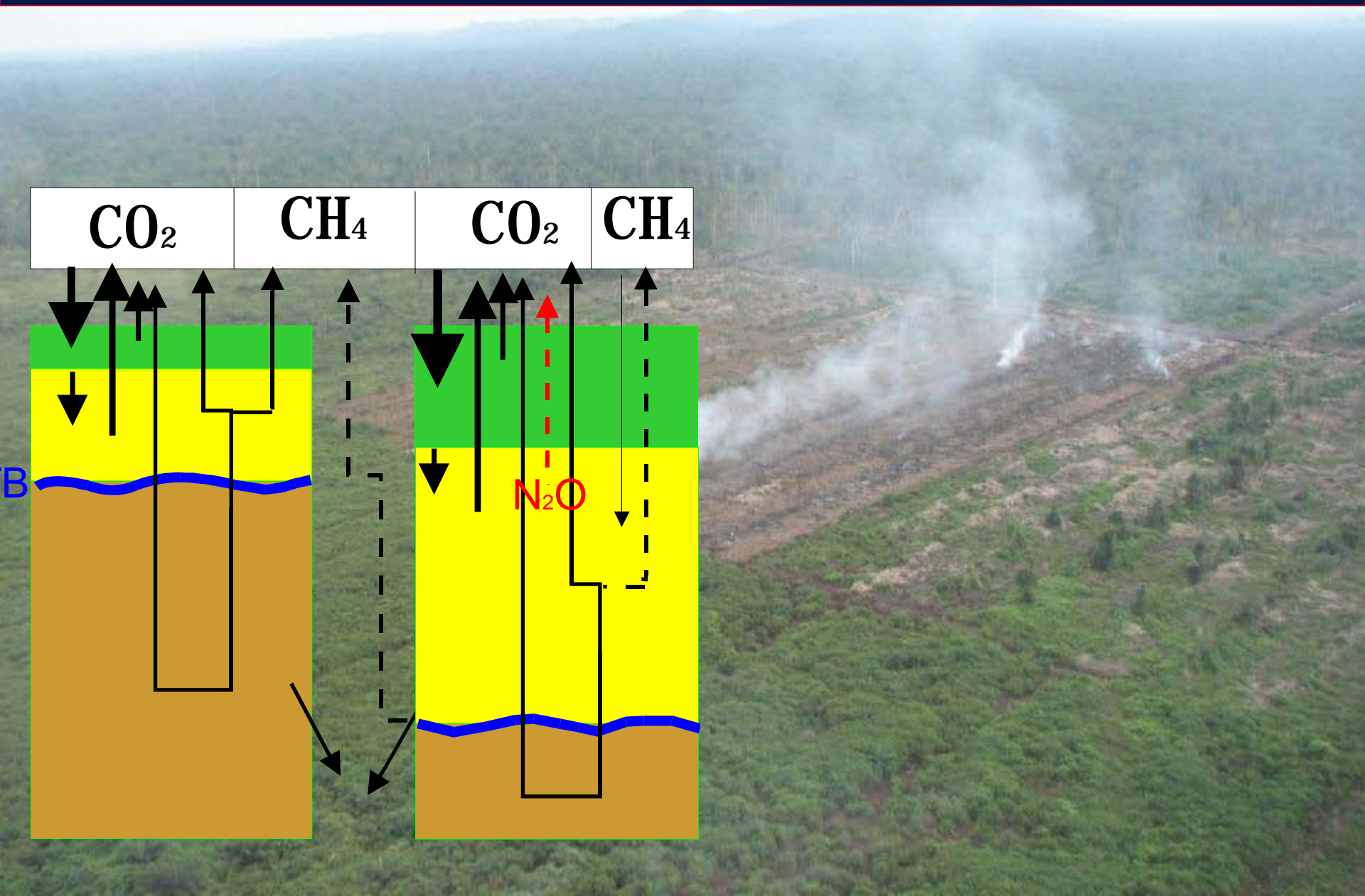
# Peatlands support communities



Jelutong - Chewing Gum tree, Indonesia



# Peatlands regulate climate





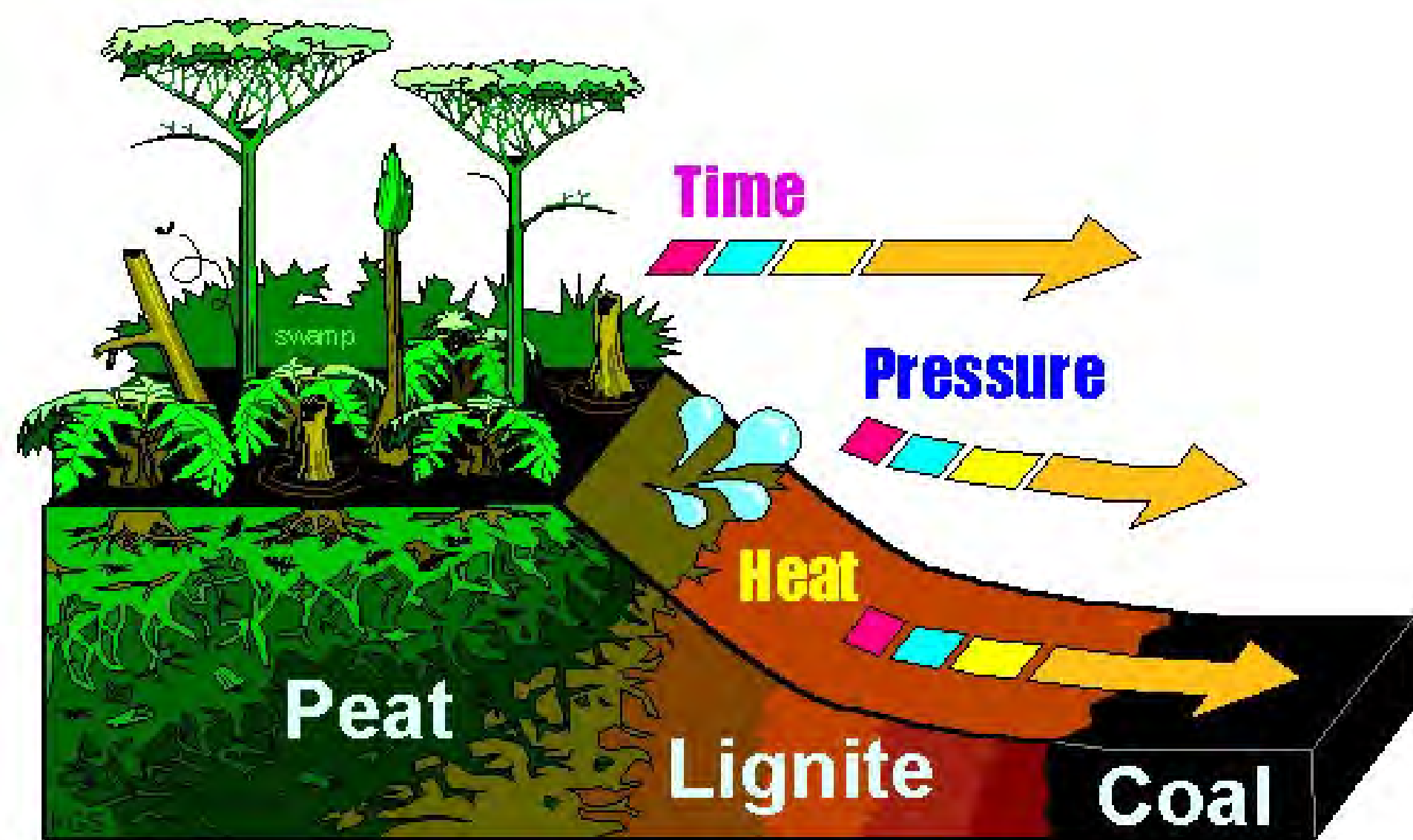


**While covering only 3% of the World's land area, peatlands contain 550 Billion tonnes of carbon In SE Asia peatlands store over 50 billion tonnes of carbon**



**This is equivalent to twice the carbon stock in the entire forest biomass.**





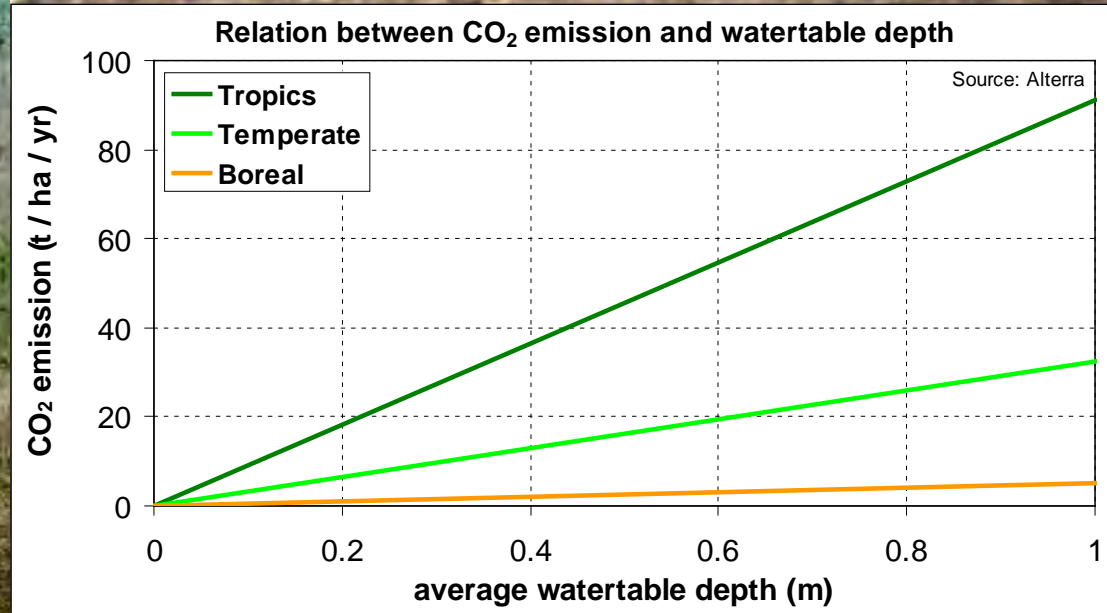
All Coal and lignite and part of the “mineral” oil and natural gas originated from peat deposits of previous geological periods.



**Peatland drainage and fires are one of the main sources of carbon released to the atmosphere from the land use sector.**



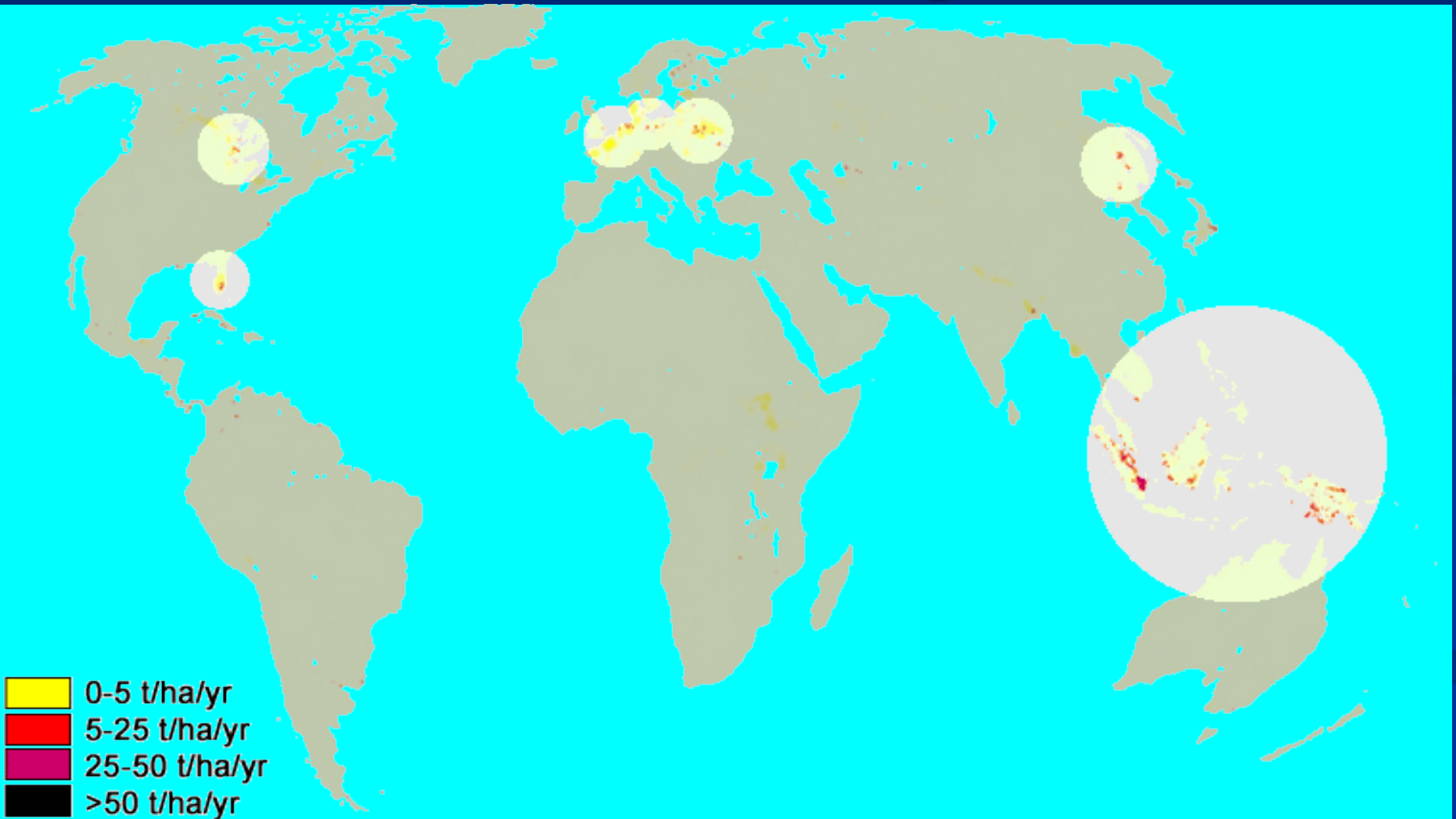
# Drained peat releases carbon



- **Drainage to 1 meter = emission of 90 ton CO<sub>2</sub>/ha/yr in tropics - 30 ton CO<sub>2</sub>/ha/yr in temperate region**
- SE Asia: Agriculture & agro-forestry on 12 million ha contributes around **600 MtCO<sub>2</sub>/yr** (drainage only)

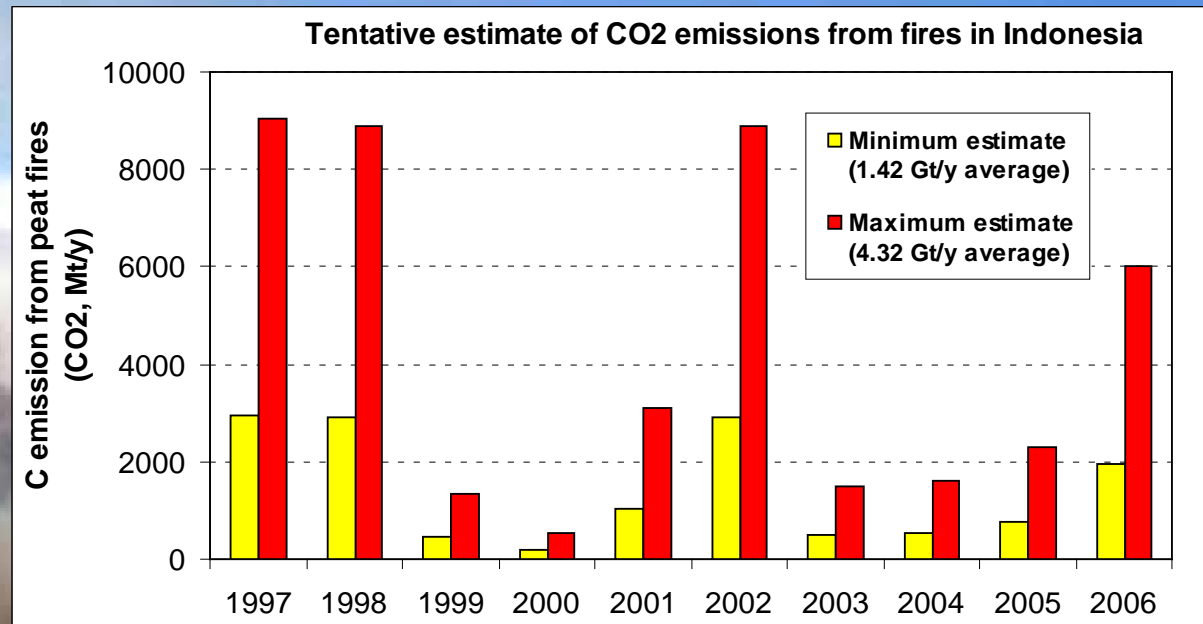


# Main regions with peatland emissions from drainage





# Burning peat releases more carbon



- Tentative average annual emissions estimate:
- 500 to 1400 Mt CO<sub>2</sub>/y

# Peatlands in 5 SE Asia countries impacted by fire



**Peatland Fire, Thailand**



**Peatland Fire, Vietnam**



**Peatland Fire, Sabah Malaysia**



**Peatland Fire, North Selangor, Malaysia**



# Peatland fires lead to transboundary Smoke haze

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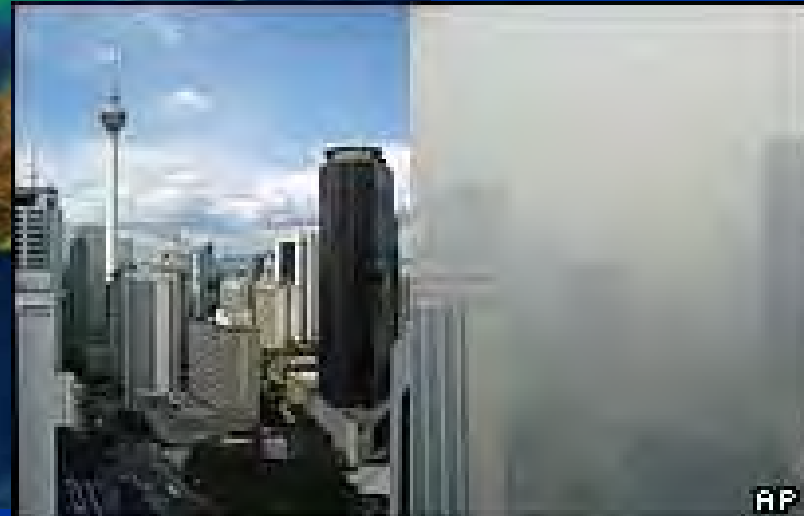
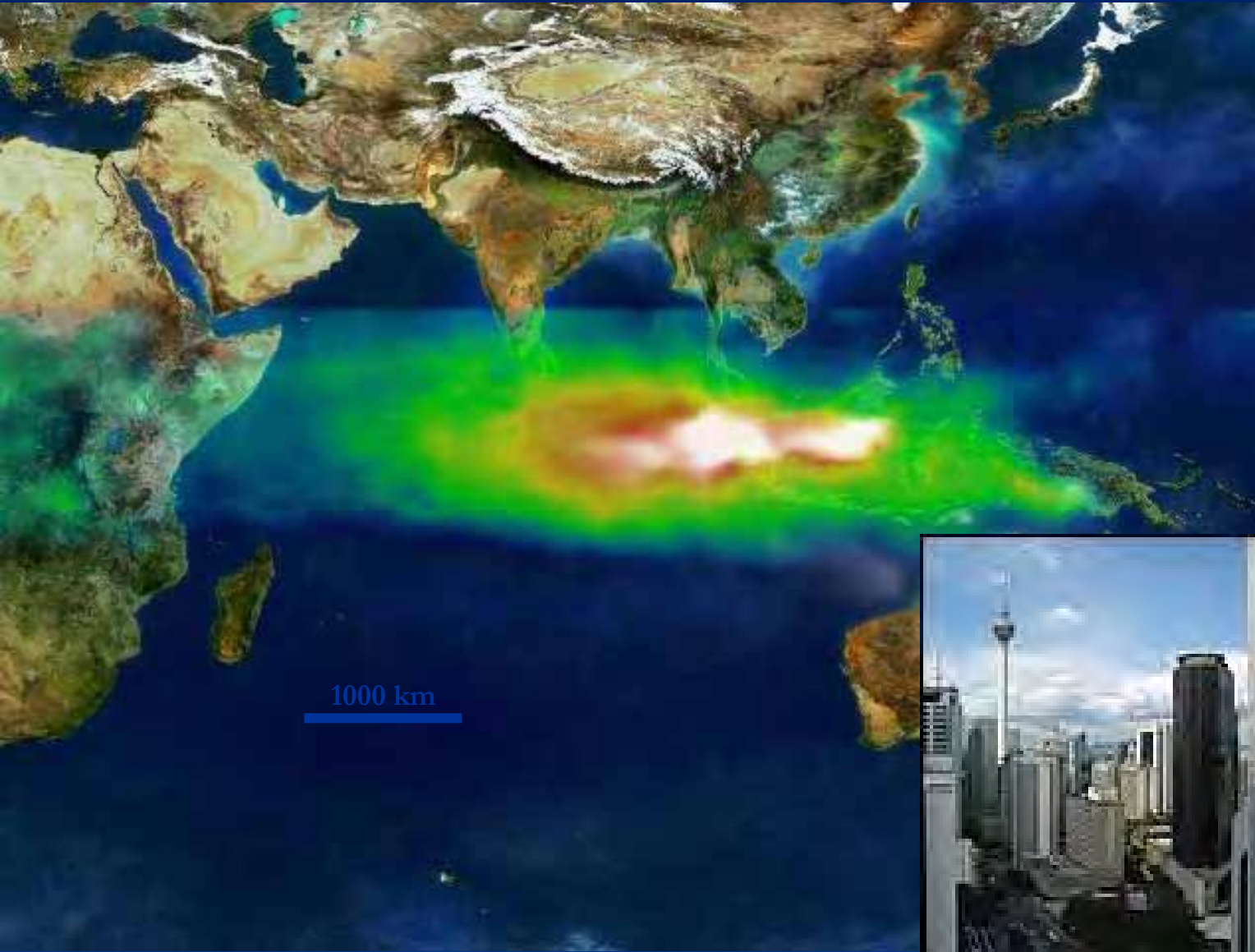


MODIS image June  
2005 -

Red dots: fires

Courtesy MODIS Rapid Response  
Team

# Smoke Haze is the most serious regional environment problem in ASEAN





# Emissions from peatlands globally

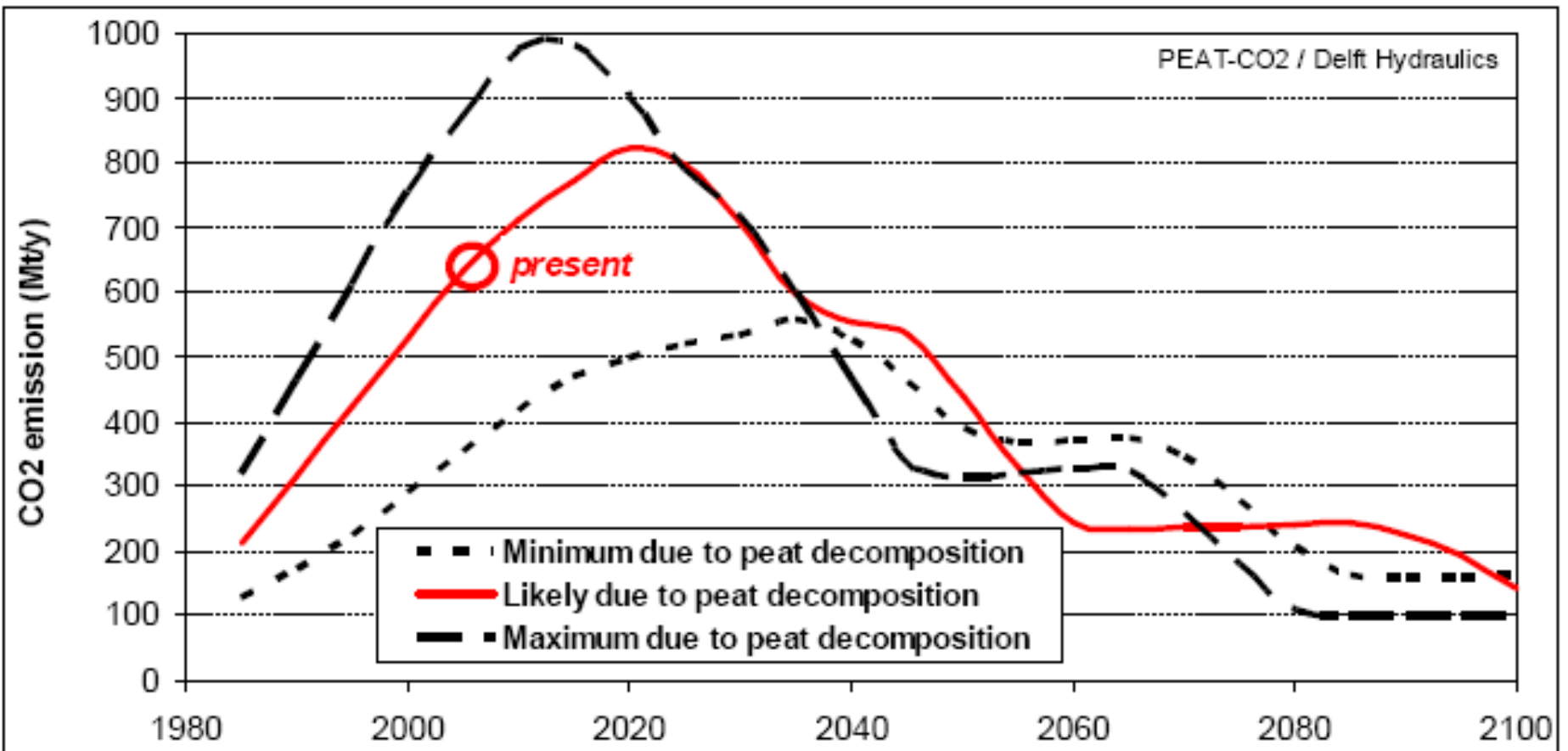
Cause	Drained area	CO <sub>2</sub> emission	Total CO <sub>2</sub> emission
Unit	M Ha	Ton CO <sub>2</sub> ha <sup>-1</sup> a <sup>-1</sup>	Mton a <sup>-1</sup>
Drained peatlands in SE Asia	12	50	600
Peatland fires in SE Asia			500-1,000
Peatland agriculture outside SE Asia	30	25	750
Urbanisation, infrastructure on peatland	5	30	150
Peat extraction			60
Boreal peatland forestry	12	1	12
Temperate/tropical peatland forestry	3.5	30	105
<b>Total</b>	<b>63</b>		<b>2,100-2,700</b>

# Peatlands in relation to other emissions

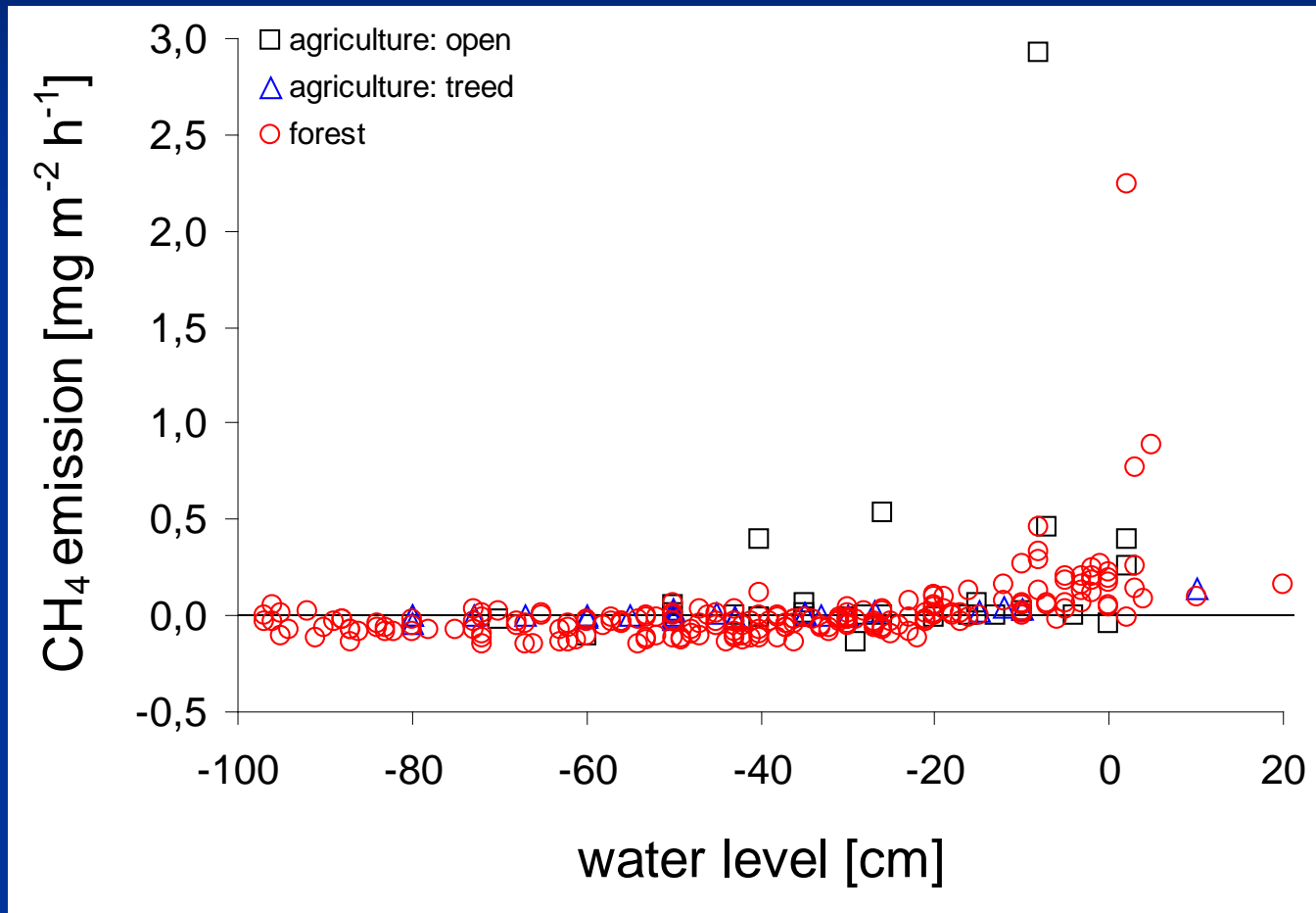
- Peatland global emissions – 2.1-2.7 billion tonnes CO<sub>2</sub>
- Global Land Use Change 5.3-7 Billion tonnes
- Peatland emissions are 30-40% of global land use change emissions



# Future trends in emissions

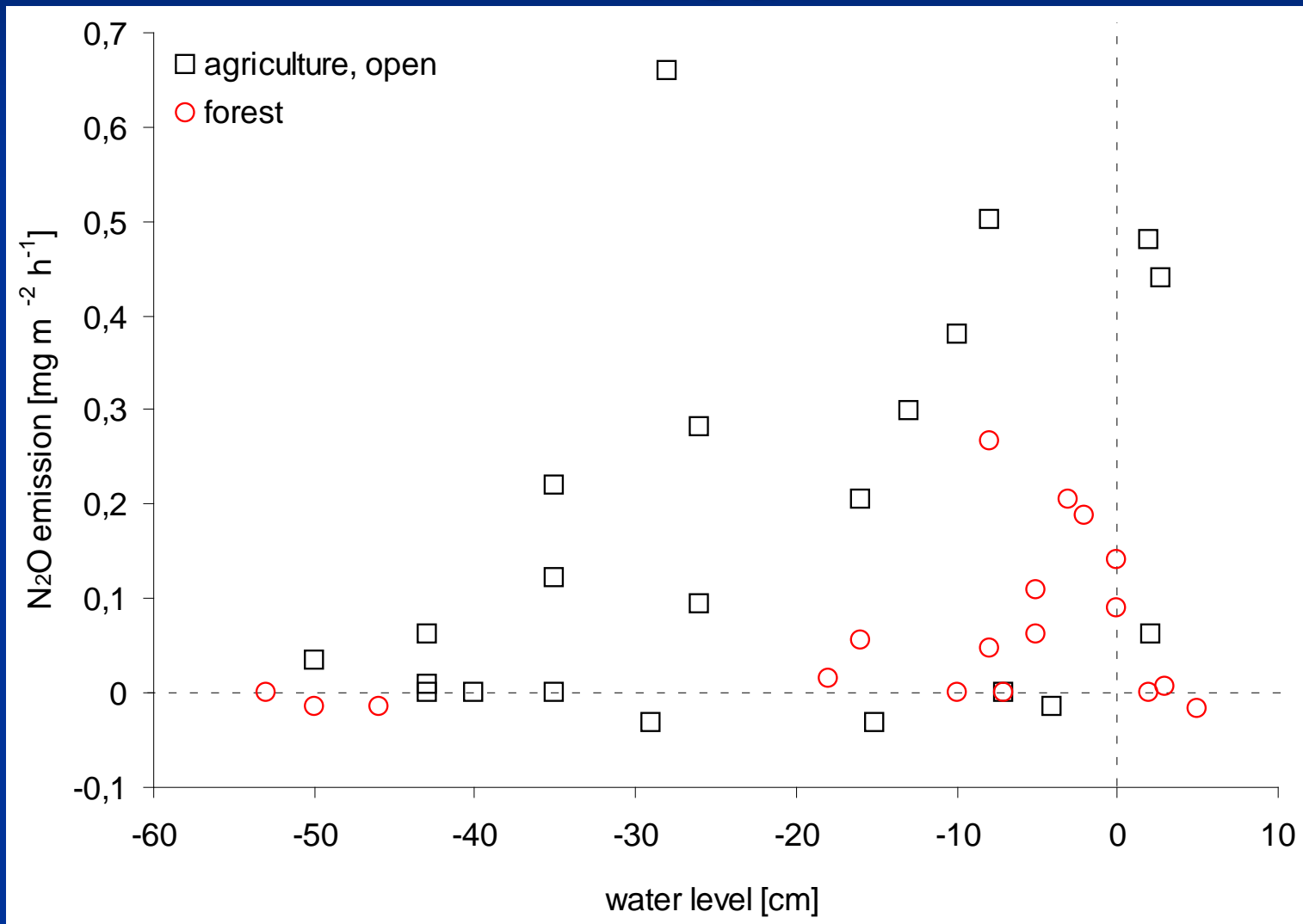


# *Water levels and methane emissions in tropical peatlands per hour*





# *Water levels and nitrous oxide emissions in tropical peatlands per hour*



# Emission reduction

- Stopping or controlling drainage and fire are the most important and cost effective measures to reduce peatland emissions.
- Increasing water levels in peatlands decreases Carbon dioxide and nitrous oxide emissions but may increase methane only in non-forested peatlands. The result is a net reduction in GHG emission.
- Pilot emission reduction projects have demonstrated that rapid reductions in emission can be achieved within months or at most a few years after the management interventions.
- Large scale emission reductions are possible at relatively low cost of \$1-5/tonne of Carbon dioxide.
- Emission reductions often have more permanence and less leakage than other land use emission reduction options.



# Institutional Frameworks provided by ASEAN Countries

- ASEAN Agreement on Transboundary Haze
- ASEAN Peatland Management Initiative (APMI) & ASEAN Peatland Management Strategy (APMS)
- National Action Plan on Peatland (NAP)
- APMS identifies key actions related to maintaining carbon storage and minimizing GHG emissions.





## Pedoman Pelaksanaan Kebijakan ASEAN tentang Penyiapan Lahan Tanpa Bakar

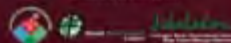


## Pedoman Pelaksanaan Praktek Pembakaran Terkendali

Dilukung Oleh :



Dilaksanakan Oleh :



Penyusunan Pedoman ini dibantu oleh :



ASEAN haze Action Online  
[www.haze-online.or.id](http://www.haze-online.or.id)







Formal and informal training through intensive socialization



Adoption of zero burning and best management practices

# Root Cause: Linkage between Drainage and Fires







Blocking of canals

■ Rehabilitation of Degraded peatlands through blocking abandoned drainage



Blocking of canals





Canal block constructed by local communities.



water storage wells.

# Alternative Livelihoods

Community based Sustainable peatland management

- Non-timber forest products
- Agriculture – appropriate species
- Fisheries
- Animal Husbandry
- Appropriate financing mechanisms ( eg Biorights)







# Thailand – Peat Reforestation



# Peatlands and carbon finance

- Peatlands are the most important carbon stores in Se Asia as well as the largest source of emissions
- Therefore there is significant scope to develop carbon finance initiatives related to peatlands
- Options
  - CDM
  - REDD
  - Voluntary Carbon market



# Initial experience

- 2002-2007 WI-GEC Integrated management of peatland for biodiversity and climate change (UNEP-GEF)
- 2002-2007 WI-GEC-WHC CCFPI project 2002-2007 – pioneered approaches for community based peatland rehabilitation linked to climate change ( Canada).
- 2007-2009 Kalimantan Peatland Conservation programme (Netherlands)
- 2009-2013 Kalimantan Forest and Climate Initiative (Australia)
- 2009-2010 – various pilot project for voluntary carbon market in Kalimantan, Sumatra, Malaysia under initial development
- 2010- **Norwegian International Climate and Forest Initiative** - Proposed moratorium on peatland development.

# ASEAN Peatland Forest Project

- Support implementation of ASEAN peatland Management Strategy 2006-2020
- Development of pilot projects in 4 ASEAN countries – Indonesia, Malaysia, Philippines and Viet Nam
- Identification and promotion of BMP for peatland
- Reduction in peatland fire and degradation
- Development of innovative Finance options
- Implemented 2009-2013

# Indonesia

- National activities – policy and capacity building
- Focus – integrated planning, community and plantation sector involvement
- Proposed Pilot sites:
  - Kampar, Siak and Rokan Hilir Districts, Riau Province

Demo sites:

- Central Kalimantan Province (ex Mega Rice Project)
- Lake Sentarum, West Kalimantan Province





Riau, Sumatera



Lake Sentarum, West Kalimantan



# Malaysia

- National: policy support and capacity building, sharing experience and lessons learned
- Pilot area: North Selangor Peat Swamp Forest
- Demonstrating rehabilitation through partnership with private sector





# Philippines

- Pilot site:
  - Leyte Sab-a Basin, Visayas – 1,740 ha
- Caimpugan Peatlands, Agusan Marsh, Mindanao – est. 1,000 ha – target for pilot activities





# Viet Nam

- National component:  
Awareness and capacity building
- Pilot Area:
  - U Minh Thuong National Park -  
**21,000 ha**
    - Core Zone: 8,509 ha
    - Buffer Zone: 13,292 ha



# Conclusions

- Peatlands globally and in Se asia are the most important terrestrial carbon store.
- Peatland drainage and fire releases about 1 billion tonnes of Carbon dioxide per year in Se Asia – equivalent to about 15-20% of global emissions from land use change.
- Reductions in emissions can be achieved through sustainable forest and land management and rehabilitation of degraded peatlands.
- Significant progress has been made in South East Asia, through regional cooperation and action at national and local levels
- Carbon finance may be one of the important new mechanisms to support the sustainable management of peatlands in the region

# Thank you



**Livelihood in Sumatera Indonesia**