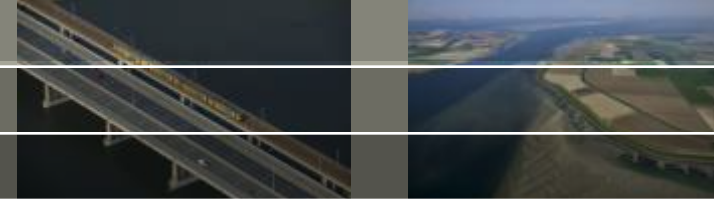




Challenges and solutions for peatland lowland development by private sector

Recent experiences in advisory projects in Indonesia

Al Hooijer, 21 January 2009
(Deltares, Singapore-Delft-Water-Alliance Peatland Programme)



Peatland development and conservation as key part of lowland development in Indonesia

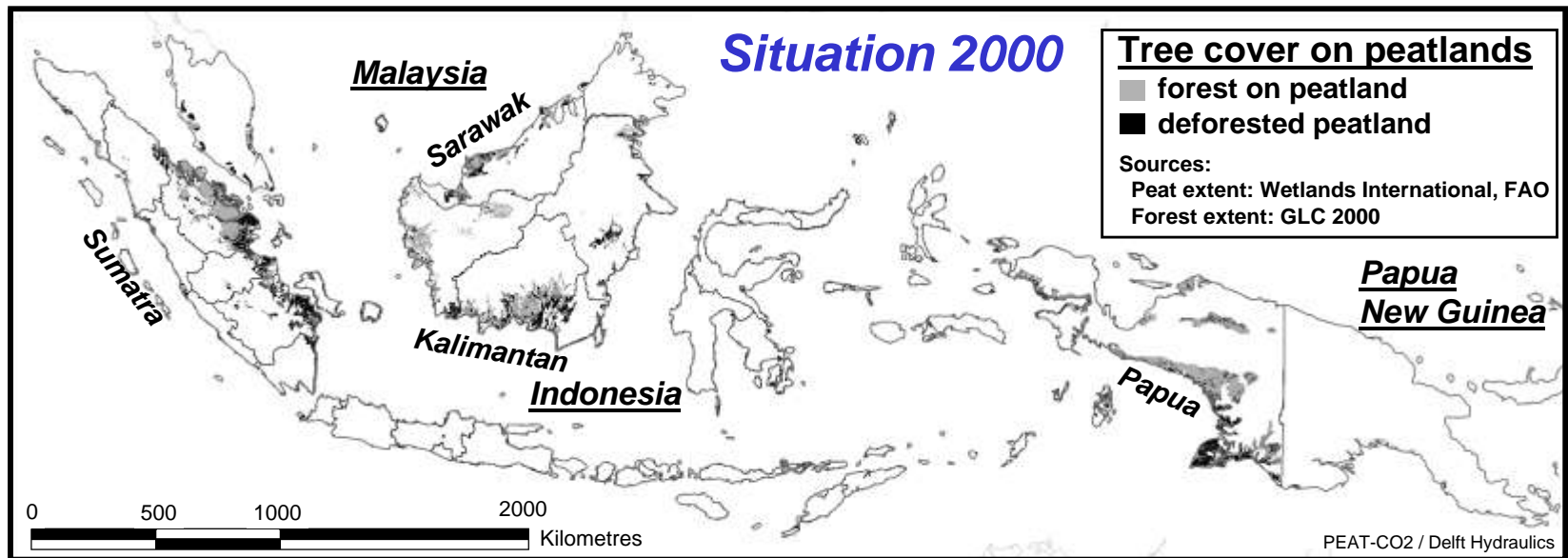
Key issues and challenges in peatland development and conservation

Current projects: steps towards finding solutions for sustainable peatland development and conservation

Peatland development and conservation as key part of lowland development

Peatlands in Indonesia; extent and status:

- Total peatland area in Indonesia: 22 Mha (SE Asia: 27 Mha)
- This is 12% of land area, ~60% of lowland area
- Over 50% deforested in last 20 years, mostly not productive
- Over 90% deforested in coming 10-20 years if trends continue
- Sustainable development of degraded peatlands is needed by private sector

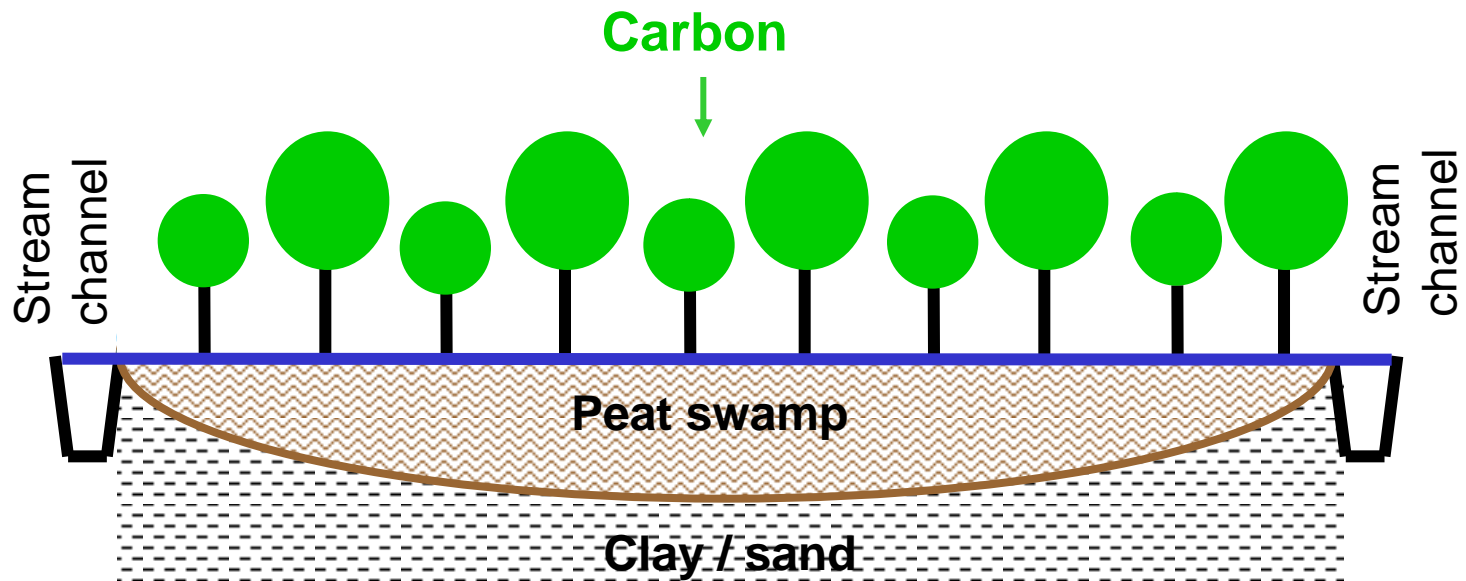


Key issues and challenges in peatland development

Brief introduction

How do peatlands develop?

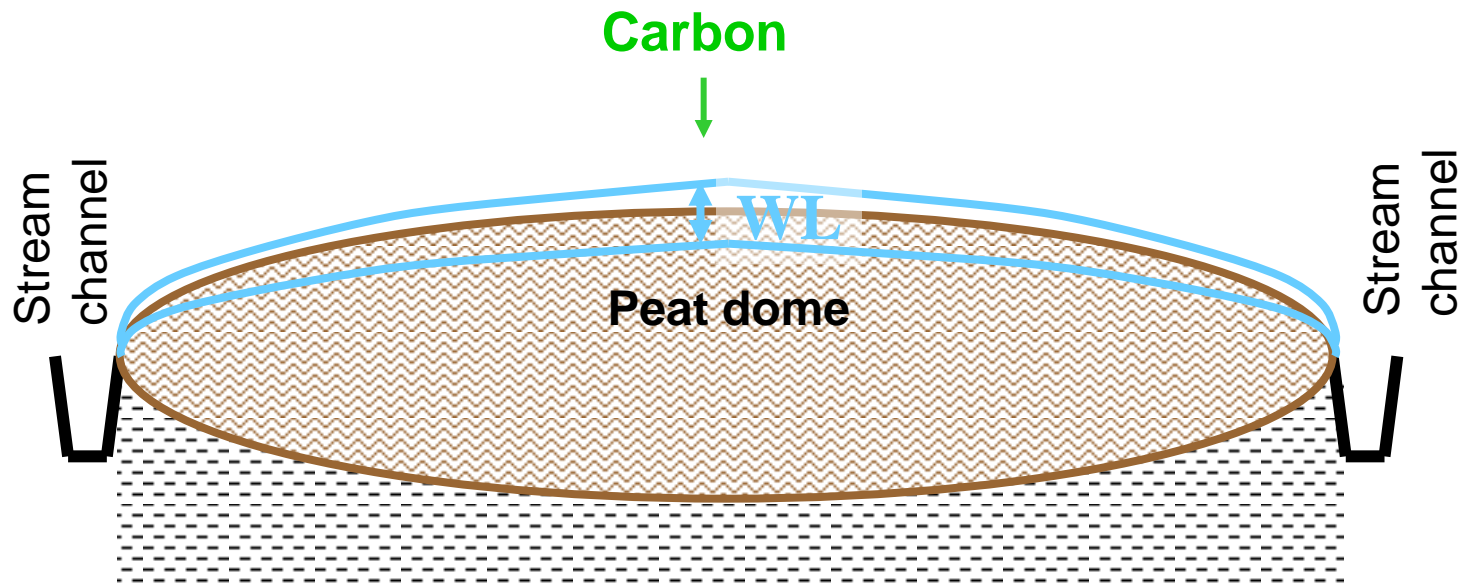
Peatlands develop where dead vegetation (carbon) accumulates over thousands of years, in water-saturated conditions



Key issues and challenges in peatland development

How do peatlands develop?

Peat accumulation continues as long as water tables are near the soil surface: 'carbon sink'

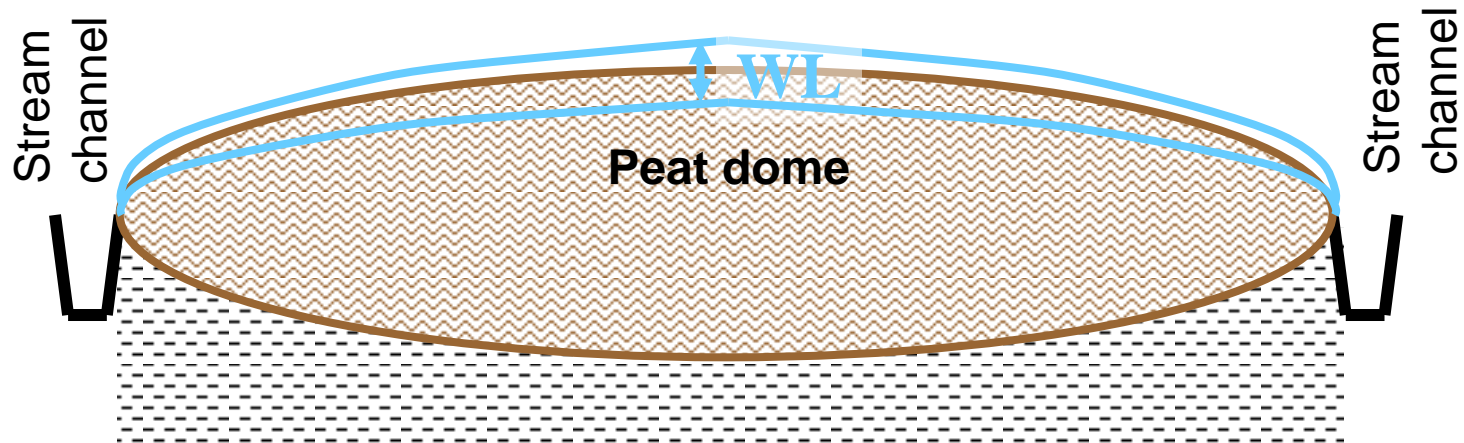


Key issues and challenges in peatland development

Why are peatlands different from other lowland areas?

Peat soils consist mostly of water (90%), held together by vegetation remains i.e. mostly carbon (10%)

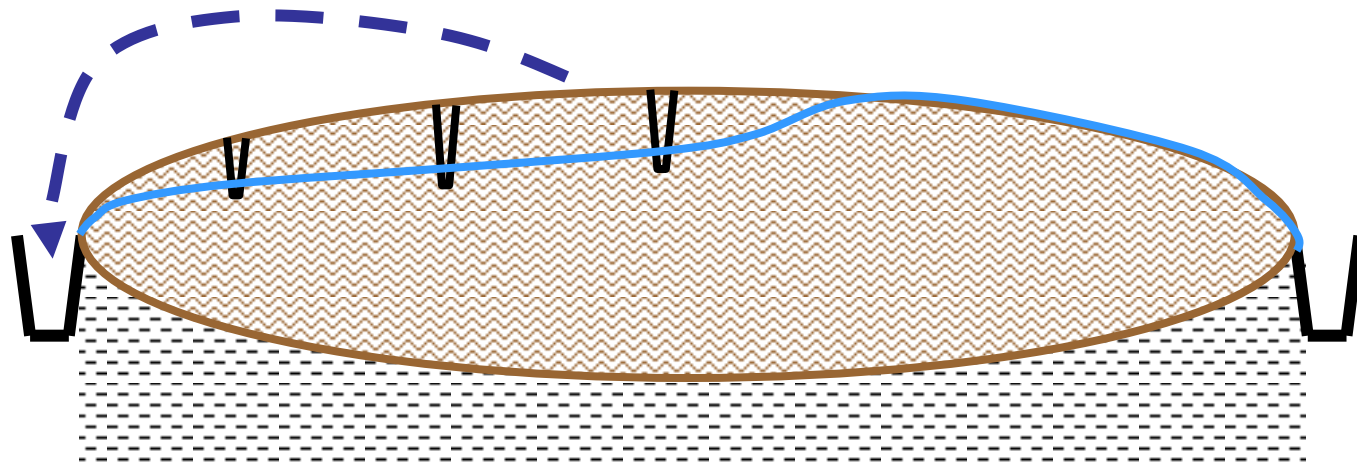
Peatlands are in some ways more like lakes than land: wetlands



Key issues and challenges in peatland development

Why does peatland drainage lead to subsidence, flooding, fire and CO₂ emissions?

Drainage lowers water table and dries the peat

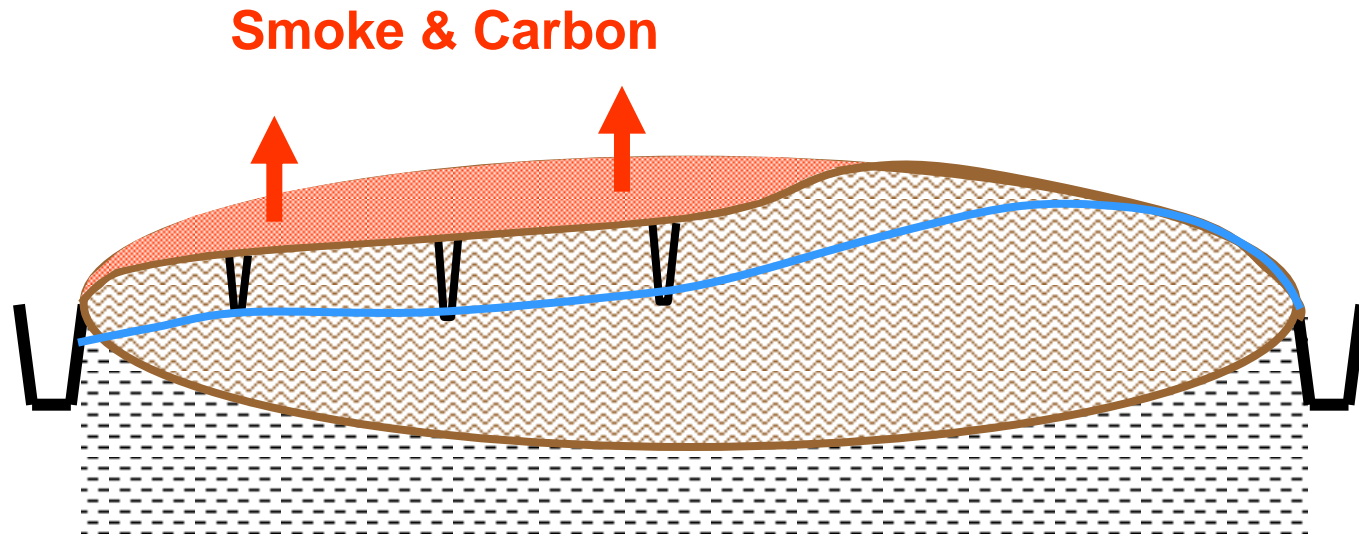


Key issues and challenges in peatland development

Why does peatland drainage lead to subsidence, flooding, fire and CO₂ emissions?

Drainage lowers water table and dries the peat

Dry peat will burn easily, but also decomposes ('rotting') without fires:
'carbon source'

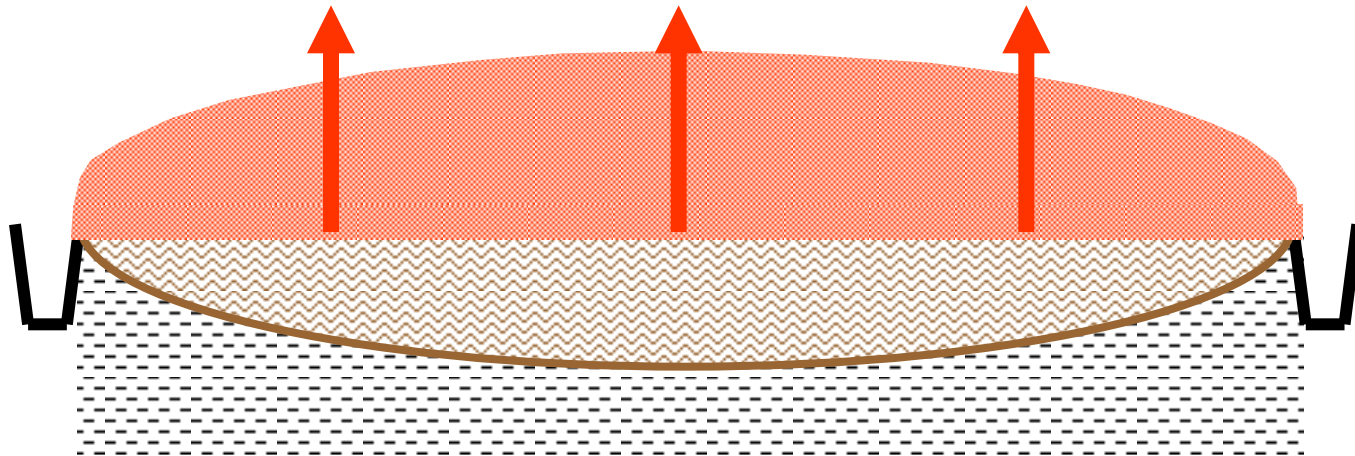


Key issues and challenges in peatland development

What is the long-term impact?

Peat loss can be quick (fires) or slow (decomposition)

Without rewetting all peat above drainage base (River) will be lost



Key issues and challenges in peatland development

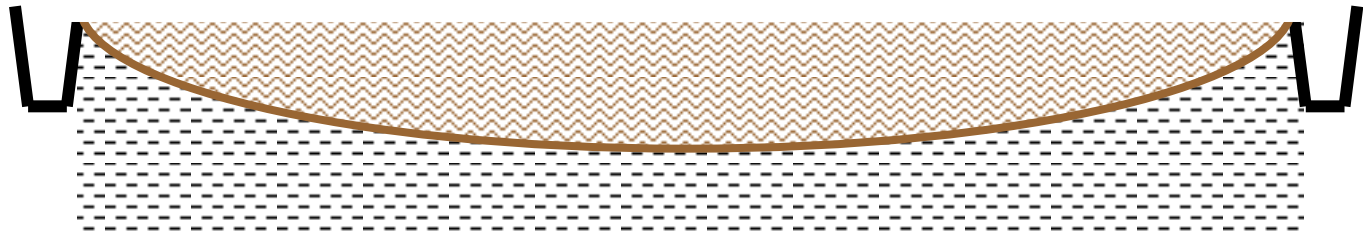
What are the impacts of peatland drainage?

General environmental impacts:

Smoke emissions: local health problems and regional haze

CO₂ emissions (and other greenhouse gases)

Remaining conservation forest progressively drained and lost



Key issues and challenges in peatland development

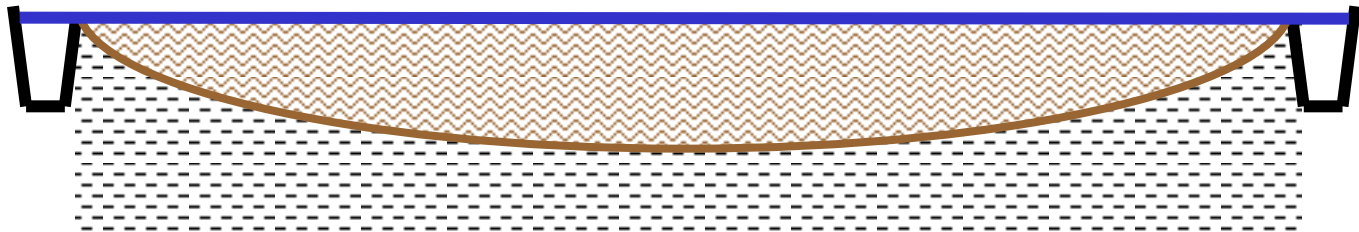
What are the impacts of peatland drainage?

Impacts directly relevant to peatland agricultural productivity:

Peat subsidence increases flooding and reduces drainability: will be less productive / unproductive in future; many drained peatlands already frequently flooded now

Further production loss if peat underlain by 'acid sulphate' soils

Possible downstream production loss if river flood flows increase

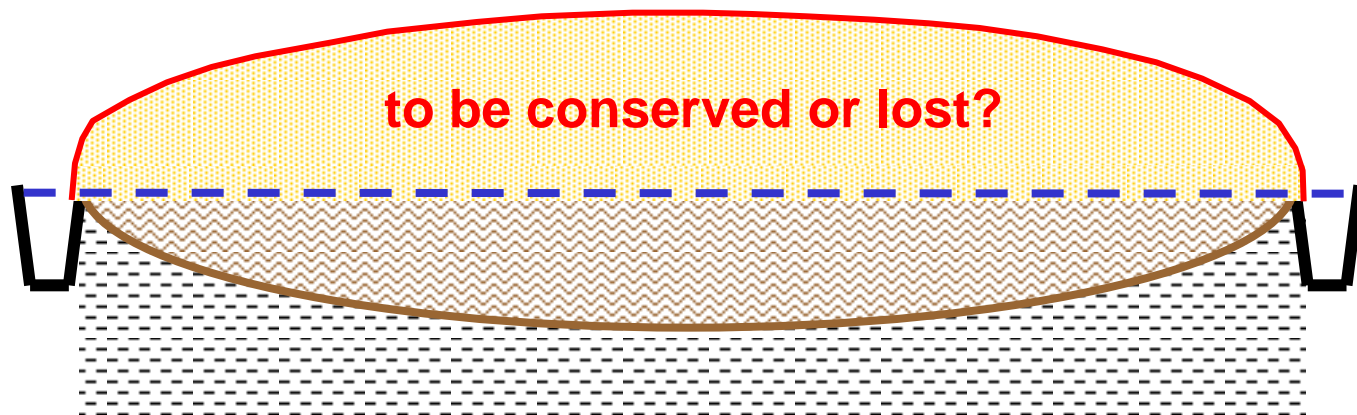


Key issues and challenges in peatland development

How can these impacts be stopped or reduced?

Peat loss only stops when the peat is 'rewetted'

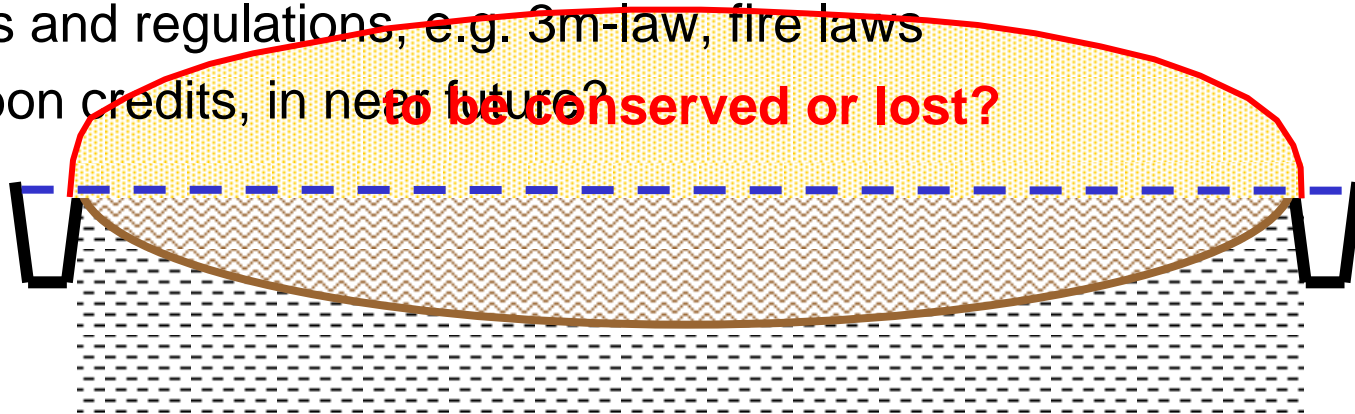
For rewetting, water levels must be brought up: water management



Key issues and challenges in peatland development

What interest does private sector (palm oil plantations, pulp wood plantations) have in reducing these impacts through improved land and water management in peatlands?

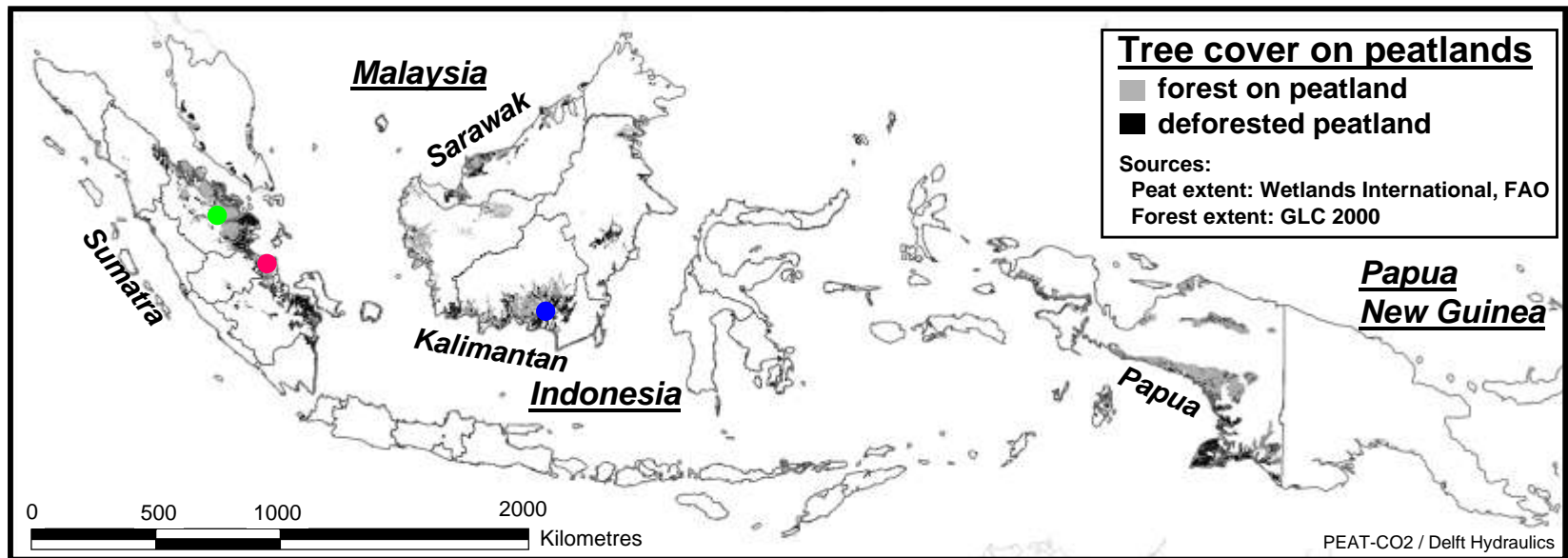
- Reduced production loss in medium term (<20y) to long term (<50y)
- Reduced environmental impacts; better chance of certification, exports
- Laws and regulations, e.g. 3m-law, fire laws
- Carbon credits, in near future? **to be conserved or lost?**



Steps towards finding solutions for sustainable peatland development and conservation

Some current projects in support of sustainable peatland development by private sector and GoI:

- 1 Master Plan for the Ex Mega Rice Project, Central Kalimantan (DGIS)
- 2 Kampar Science Based Management Support Project, Riau (APRIL)
- 3 'Collaboration agreement' WM training programme, Jambi (SingNEA, KLH)

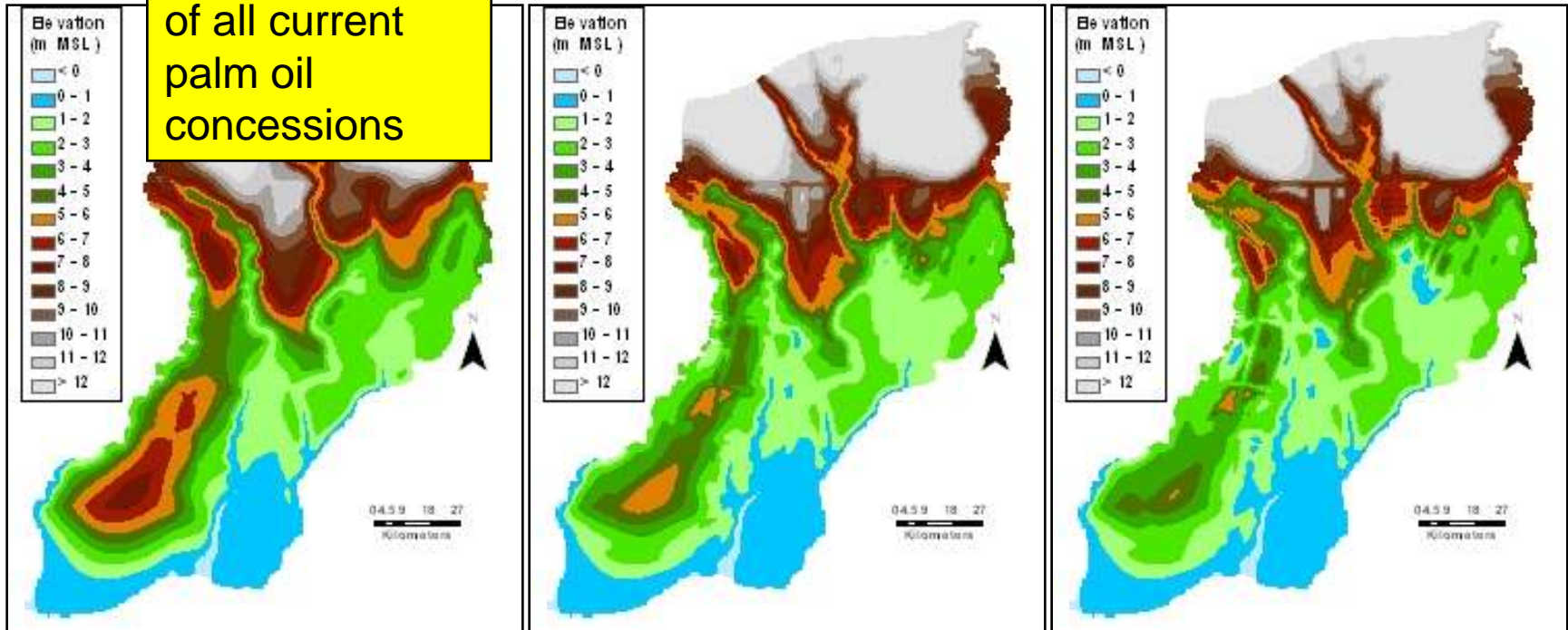


Steps towards finding solutions for sustainable peatland development and conservation

Master Plan for the Ex Mega Rice Project

Impact on subsidence and flooding of different development strategies shown

Scenario:
implementation
of all current
palm oil
concessions



present land elevation

25 years

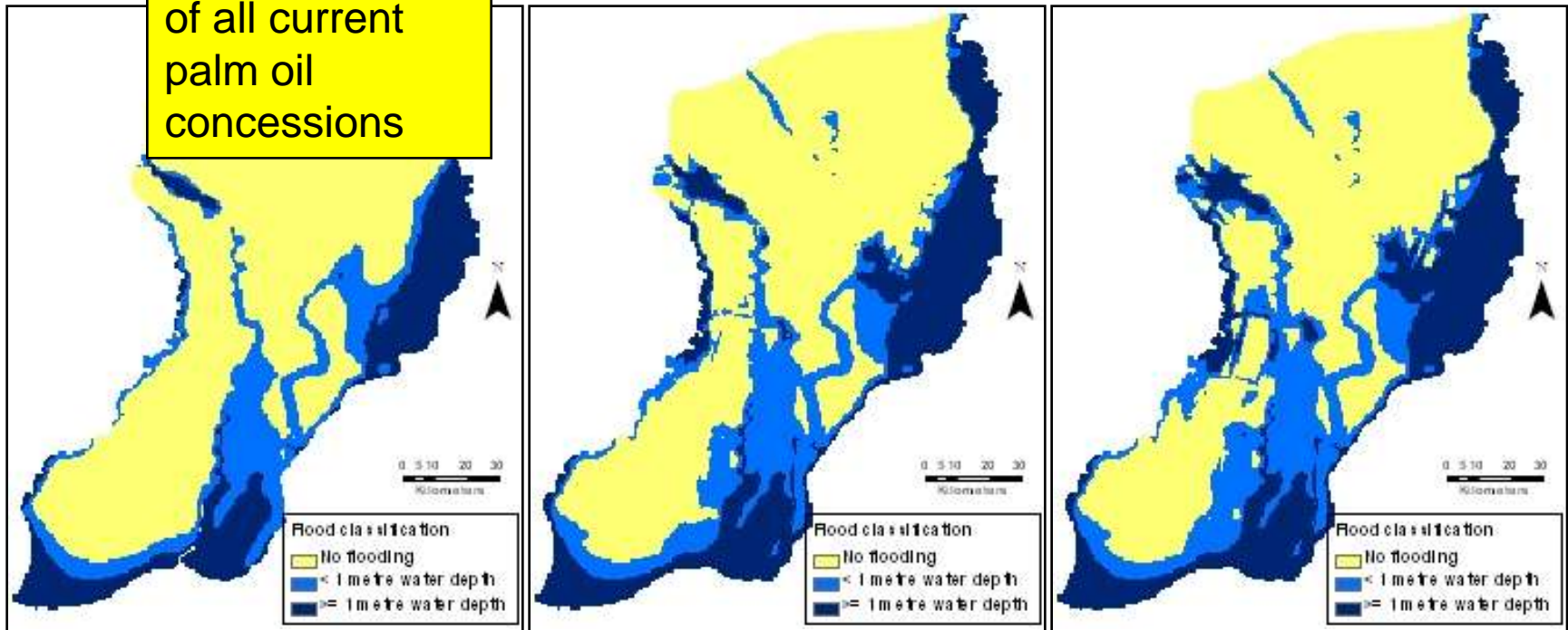
50 years

Steps towards finding solutions for sustainable peatland development and conservation

Master Plan for the Ex Mega Rice Project

Impact on subsidence and flooding of different development strategies shown

Scenario:
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present

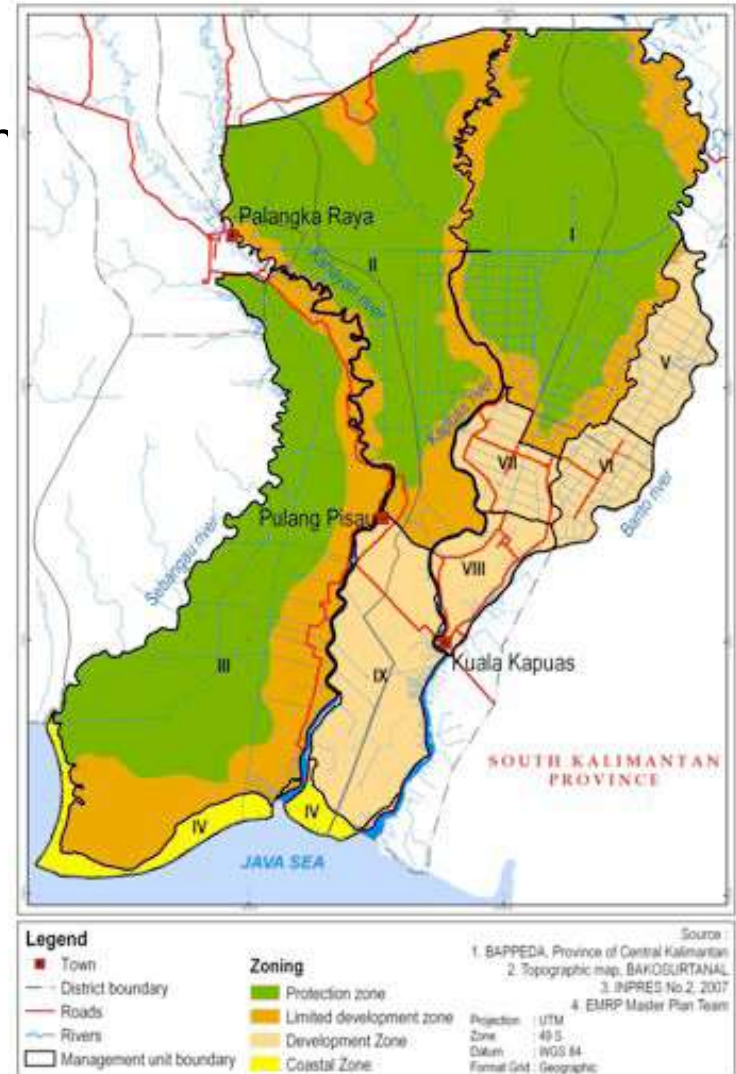
25 years

50 years

Steps towards finding solutions for sustainable peatland development and conservation

Master Plan for the EMRP

- Zoning map produced for development and conservation within EMRP area
- New developments to be supported on mineral soil areas
- Impacts of existing developments on peat to be mitigated
- Peatland forest to be rehabilitated where possible
 - Private sector (palm oil, pulp) developments to be encouraged and supported within this framework



Steps towards finding solutions for sustainable peatland development and conservation

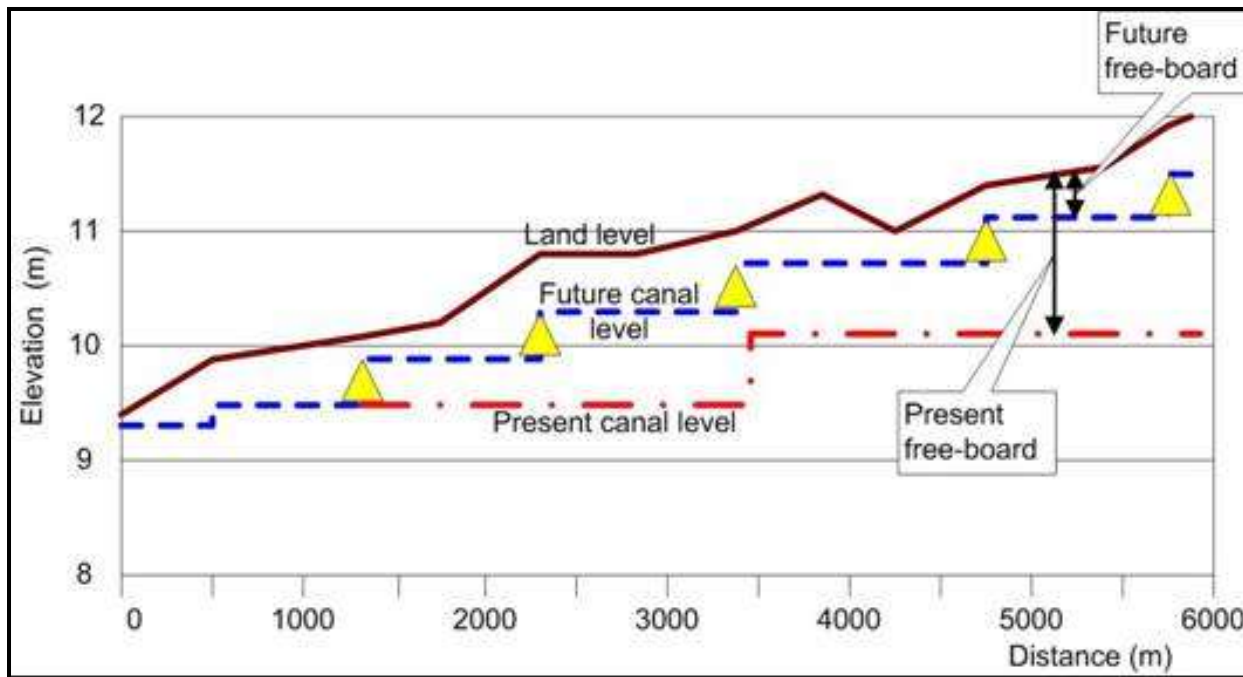
Kampar Science Based Management Support Project (for APRIL; pulp & paper)

- The company accepts that drained acacia plantations on peatland will have impacts.
- It therefore supports and funds research into these impacts:
 - ⇒ Carbon emissions from plantations, and ways to reduce them.
 - ⇒ Impacts of plantation drainage on surrounding conservation forest, and ways to reduce this.
 - ⇒ Methods to reduce impacts by raising plantation water levels without production loss.
- Research is ongoing, and pilot studies have started to implement and evaluate mitigation measures.

Steps towards finding solutions for sustainable peatland development and conservation

Kampar Science Based Management Support Project (APRIL)

Main aim of pilot studies is to evaluate measures to bring up water levels.



Steps towards finding solutions for sustainable peatland development and conservation

Kampar Science Based Management Support Project (APRIL)

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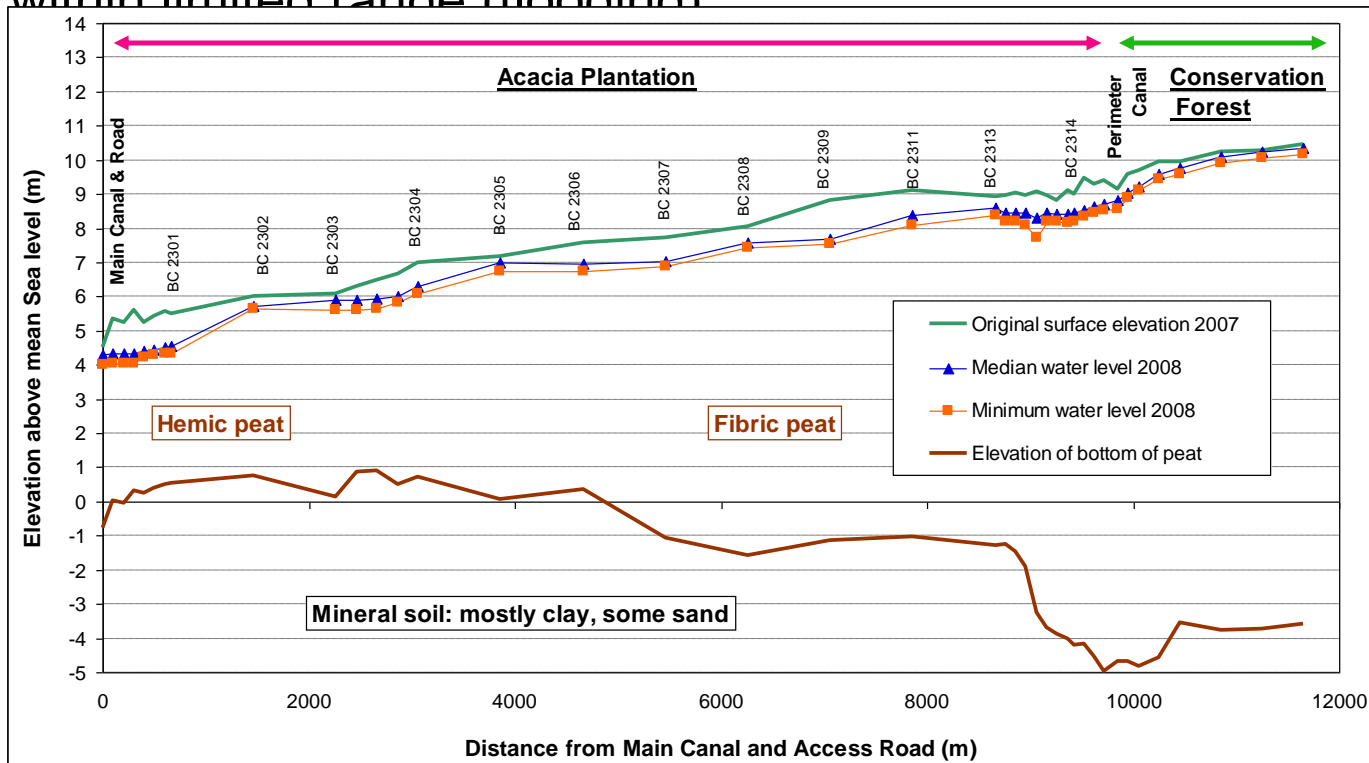
More than 100 dam-and-bypass systems already built in last few years; several different designs being tested.

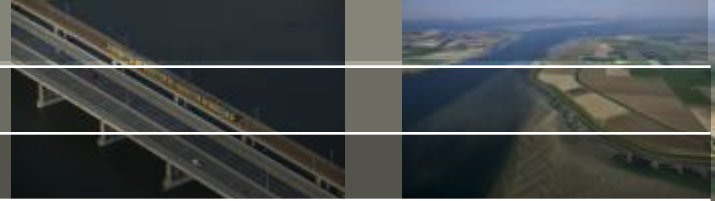


Steps towards finding solutions for sustainable peatland development and conservation

Kampar Science Based Management Support Project (APRIL)

- Dam-and-bypasses are effective; water levels higher now than before.
- Difficult but possible to develop robust systems that control water level within limited range (flooding)





Questions?