

Integrated Tropical Peatland Management in Southeast Asia

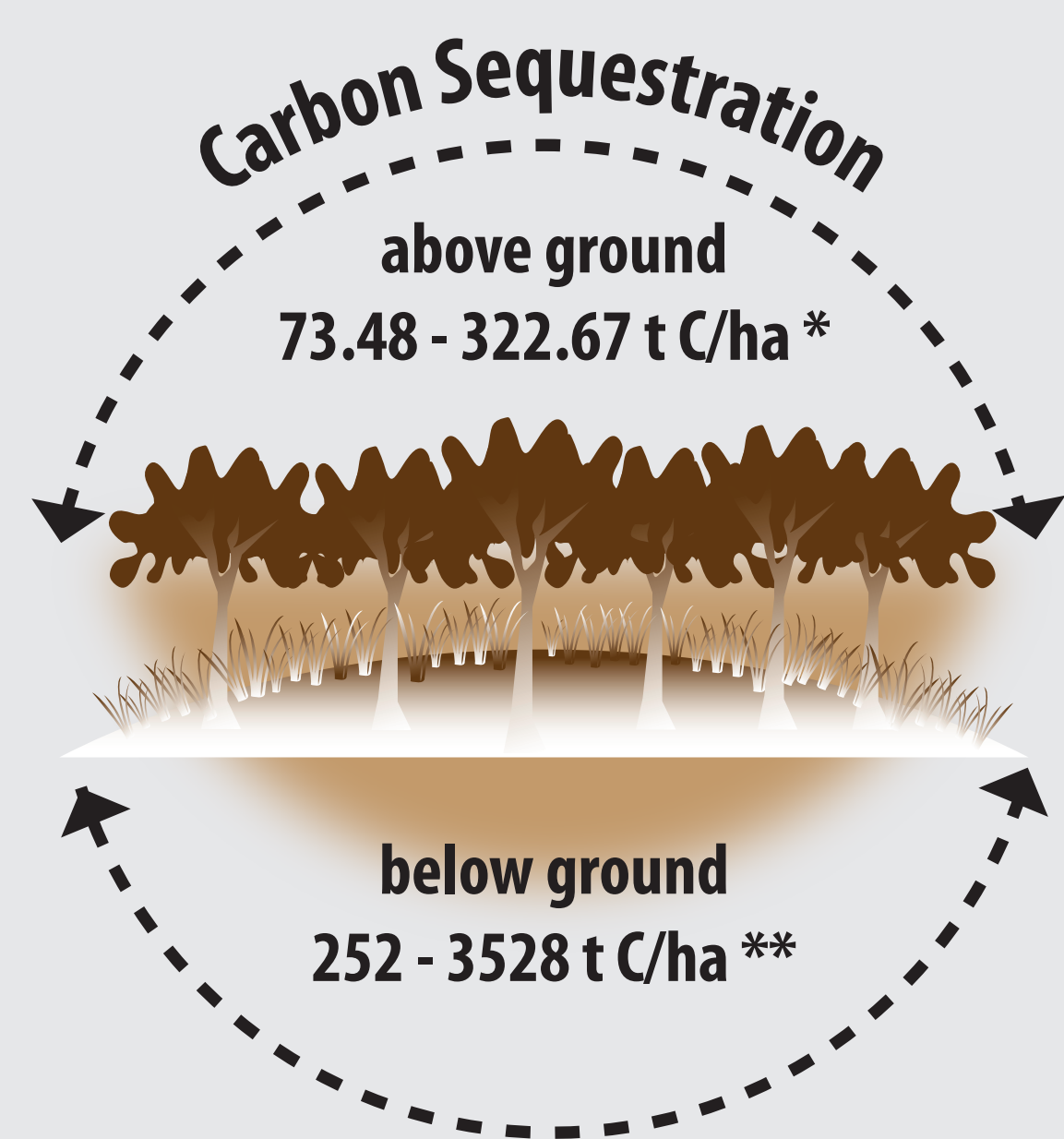
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What Are Peatlands?

Peatlands are wetland ecosystems that are characterised by the accumulation of organic matter (mostly semi-decomposed plant matter: trees, sedges, mosses) in waterlogged conditions over thousand of years.

Importance Of Peatlands

Climate Regulation: One of the world's largest carbon stores. Peatlands cover approximately 3% of Earth's surface but store 20-35% of all carbon on land.



* Page *et al.*, 2012, ** Verwer, C. & Va der Meer, P., 2012

Valuable Biodiversity: Peatlands are habitat for unique fauna and flora, and are natural havens for tigers, orang-utans, sun bears, birds, fish, insects and hundreds of plants and timber tree species.

Water Regulation: Peatlands are composed of 90% water and 10% organic matter. Hence, they serve as important water catchments that regulate water supply.

Others: Provides abundant goods and services such as food, medicinal plants, etc.

Impacts From Peatland Degradation

Southeast Asia peatlands are disappearing at a rate of 2% per year and contribute significantly to:

a) **Peatland Fires:** Drainage or drought can lower the water table, making the peatlands extremely vulnerable to fires which are extremely difficult to extinguish unless the water table is brought back to the surface. Peatland fires can release up to 2000 tonnes of CO₂ per hectare, as well as loss of peat and its vegetation. It causes haze that affects millions of people.

b) **Climate change:** Major GHGs released from degrading peatlands are carbon dioxide (CO₂), methane (CH₄) and nitrogen dioxide (NO₂), which contribute to climate change.



Protection

Peatland ecosystem and its biodiversity need to be protected from unsustainable practices:



National policies and laws:

Well structured land-use policies and plans should be developed, the role of peatlands should be well defined and laws strictly enforced to prevent irresponsible acts to peatlands.



Awareness and education:

To educate communities and stakeholders on adverse effects of peatland degradation and to promote its wise use through an effective communication strategy, research, economic evaluation and information exchange.

Conservation:

Conserve all remaining peatlands from degradation.



Sustainable Use

Degraded areas should be used wisely for:

Community livelihood:

Management of peatland resources for sustainable livelihood of local communities such as rattan, palms, *Pandanus*, fish, timber, etc.



Nature tourism and management:

Low impact ecotourism activities such as canoeing, bird watching and guided walks are good ways to promote public awareness and peatland conservation.



Sustainable agriculture:

Peat soil is acidic and not recommended for agriculture. However, it can be used for shallow rooting crops such as pineapple and salak palms (*Salacca* sp.). Crops and commodity plantations that require major drainage are not recommended. To establish crops on peatlands, water management, proper planning and guidelines are required to be strictly adhered to.

Sustainable forestry:

Valuable timber species such as Ramin (*Gonystylus bancanus*), Jelutong (*Dyera polyphylla*), Kapur paya (*Dryobalanops rappa*) and several species of Meranti (*Shorea* spp.) grow naturally in peat swamp forests. Jelutong provides wood for carving and latex used in the making of chewing gum. Sustainable forestry helps to protect, develop and manage these species.

BEST MANAGEMENT PRACTICES

To ensure sustainability, an integrated management approach would ensure economic prosperity, environmental sustainability and societal well-being through sound water, soil and vegetation management.

Rehabilitation

Basic approaches for rehabilitating peatlands are:

i) **Hydrological restoration and management** is to manage the water table to prevent further decomposition, peatland subsidence, prevent vulnerability to fires and reduce CO₂ emissions.

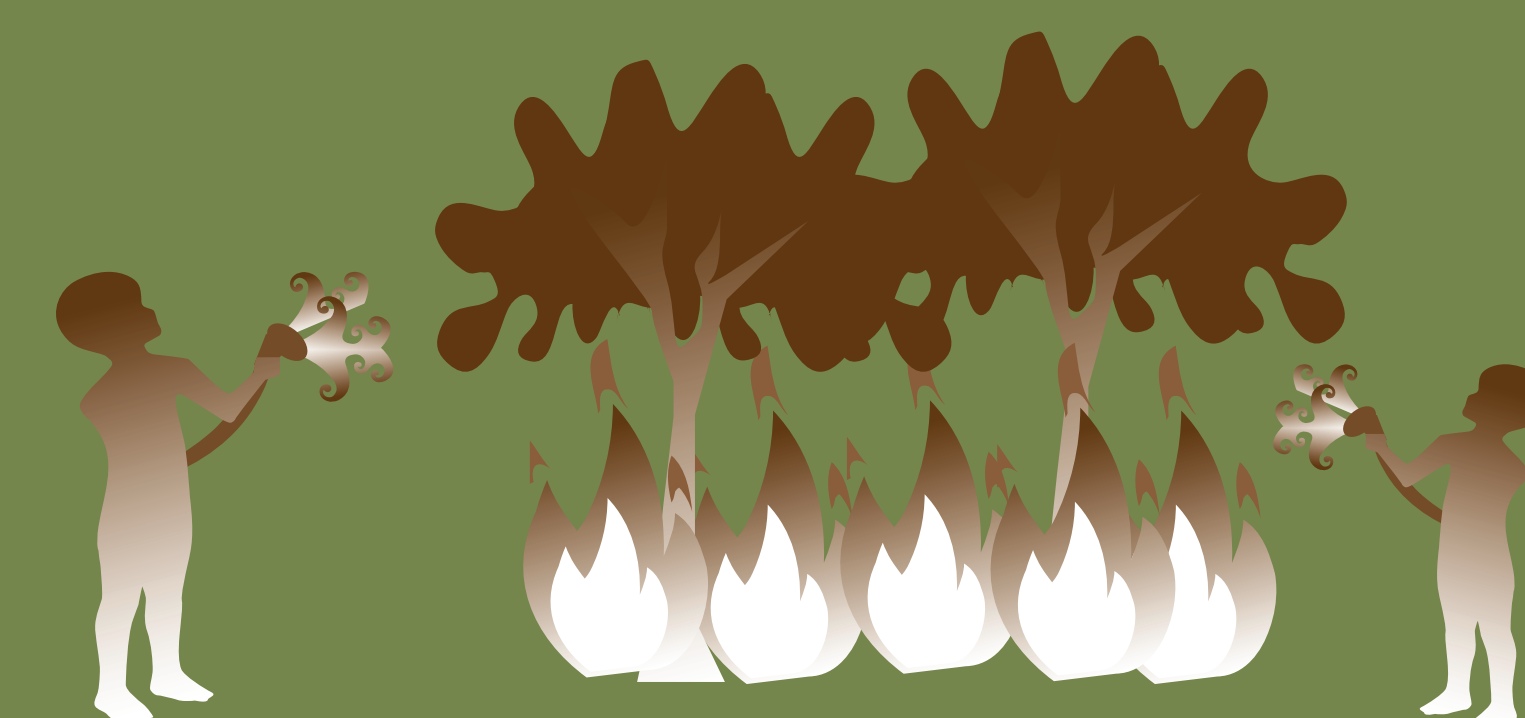
Canal Blocking

Blocking of drainage canals would help restore peat hydrology and maintain the water level. Many methods are available to block canals. The 'tabat', a traditional Dayak method using timber and sand bags has been proven to be practical and cost-effective. The blocked canals can also collect organic matter and becomes part of the natural landscape. Using this traditional method, local communities can rehabilitate the peatlands effectively and blocked canal sections can be used to rear fish and provide water during dry seasons.



ii) Re-vegetation

Fast growing species can be planted to re-vegetate degraded peatlands and encourage natural regeneration. Extensive replanting may be necessary in severely degraded areas. Indigenous species are preferred, for example Mahang (*Macaranga pruinosa*), Jelutong (*Dyera polyphylla*) and Meranti (*Shorea* spp.).



Interventions

Fire Prevention and Control

Fire prevention is a crucial part in preventing peatland degradation. Fires can be prevented through water management, enhanced vigilance and fire control measures. Fire prevention activities include blocking abandoned drainage canals, re-vegetation of degraded sites, fire awareness campaigns with local communities, and establishing local community fire brigades.

Fire Danger Rating System (FDRS) is a system that calculates the danger of a fire starting up based on information such as moisture, rainfall, temperature and etc. This helps to alert fire managers and communities of possible fires in specific areas and be prepared.



Incentive

Incentive based conservation approaches such as REDD+ and zero burning initiatives help in reducing emissions, storing carbon and investing in low-carbon sustainable development.

One example of incentive approaches is the "Buying Living Tree System" in Central Kalimantan where communities are rewarded for the number of living trees maintained on their lands. This helps to protect peatland forests and promote sustainable peatland management.

