

Policy and Governance Approaches to Cooperative Mitigation of Peatland Carbon Emissions and Transboundary Haze in Southeast Asia

Assoc. Prof. Dr. Helena Muhamad Varkkey

Department of International and Strategic Studies, Faculty of Arts and Social Sciences
Universiti Malaysia



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Project Background

Significance

Tropical peatlands in Southeast Asia are vital carbon sinks, biodiversity-rich, and crucial for local livelihoods, but are degrading due to agribusiness, leading to peat fires and air pollution ("haze")

Problem Statement

Peat burning emits significant GHGs and pollutants, exacerbated by climate change and increasing droughts. However, policy and governance often treat haze and climate change separately

Research Overview

We provide an overview of Southeast Asian peatlands, assessing opportunities and challenges for greater integration of policy and governance in addressing haze, climate change and other sustainability dimensions

Geographic Scope

We focus on Indonesia and Malaysia, the Southeast Asian countries with largest peatland areas

Key Literature Review

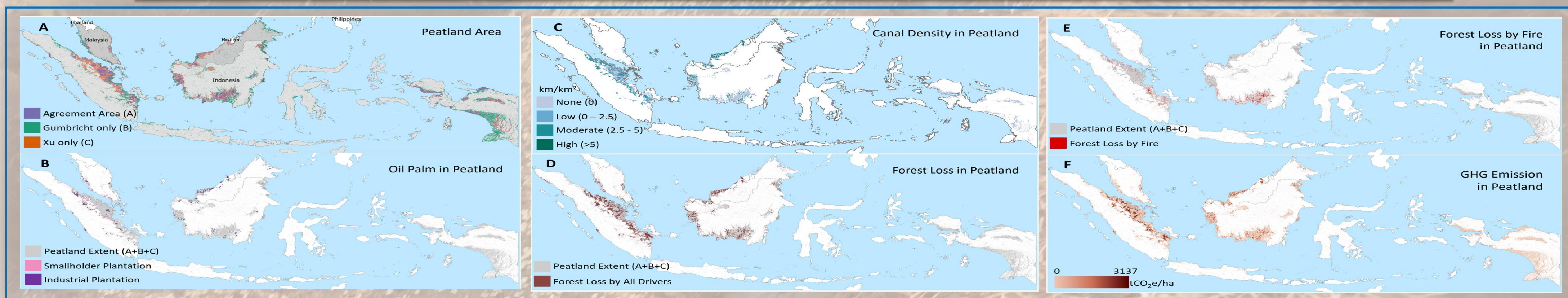
The Importance and Current Status of Peatlands

- **Ecological Significance:** Peatlands cover 3-4% of the global land surface, with tropical peatlands making up ~11% (Page, Rieley, and Banks, 2011).
- **Southeast Asia's Role:** About 56% of tropical peatlands are in Southeast Asia, primarily in Indonesia and Malaysia. Only 13% of Indonesian and 5% of Malaysian peatlands are protected.
- **Climate and Fire Dynamics:** Hotter, drier conditions increases the frequency and severity of fires. This cycle exacerbates both CO₂ emissions and haze pollution.

Economic Exploitation and Environmental Impact

- **Development Pressure:** The 1980s oil palm boom led to extensive conversion of peatlands for plantations. Today, Indonesia and Malaysia are top palm oil producers.
- **Consequences of Drainage:** Drained peatlands face subsidence at 2.2 cm/year, leading to carbon loss and hydrological disruption. Fires in these areas release CO₂ and PM_{2.5}. The 2015 fires cost Indonesia \$16.1 billion.
- **Policy Gaps:** Addressing transboundary haze and climate change together in policy is crucial for sustainable peatland management and reducing haze impacts.

Multi-panel Spatial Peatland Maps Focused on Indonesia and Malaysia



GHG Emissions from Southeast Asia's Peatlands

- Indonesian and Malaysian peatlands store an estimated 57.4 Gt C and 9.1 Gt C, respectively.
- Peatland oxidation in degraded areas emits about 668 Mt CO₂e annually in Indonesia and 90 Mt CO₂e in Malaysia.
- Fires contribute roughly 448 Mt CO₂ annually in Southeast Asia, with the 2015 fires in Indonesia releasing 548 Mt CO₂ in just two months.
- In 2019, Indonesia reported 854 Mt CO₂e from peatland decomposition and fires, while Malaysia reported 29.3 Mt CO₂ from drained organic soils. There are significant uncertainties in peatland carbon stock and emission data, especially for Malaysia.

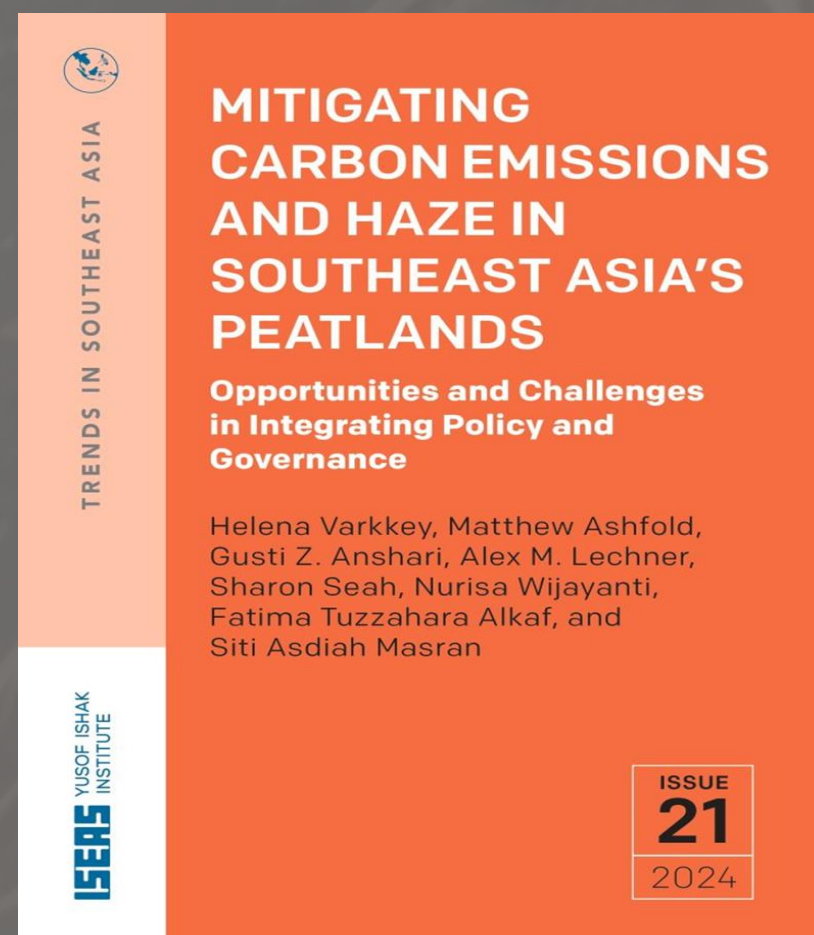
Opportunities to Integrate Climate Mitigation and Peatland Governance

- Integrating climate mitigation and peatland governance is vital for Southeast Asia, where Indonesia's peatland efforts face challenges, and Malaysia focuses on carbon neutrality.
- REDD+ and carbon credit markets are key for funding, with potential billions in earnings.
- Effective peatland management requires community involvement, and Nature-based Solutions (NbS) can reduce emissions by up to 1,382 Mt CO₂e/year, offering cost-effective solutions and additional benefits like reduced haze and improved biodiversity.

Challenges For Peatland Policy and Governance

Data Uncertainty & Integrating Policies at Multiple Scales

- Inconsistent definitions, measurement methods, and limited data hinder accurate peatland mapping and greenhouse gas estimates.
- ASEAN's coordination is restricted by sovereignty principles, leading to fragmented national plans and inconsistent data sharing.
- Divergent governance approaches and property regimes complicate unified peatland management and climate mitigation efforts.



Our Publication, 2024

Development of Peatland Policy and Governance in Southeast Asia

National Level

Malaysia:

- Early policies focused on peatland conservation and sustainable management, later shifting to fire and haze prevention with the National Action Plan for Peatlands (2011) and National Haze Action Plan (2013). Recent climate policies (NDC 2021) highlight peatlands as crucial for enhancing forestry and biodiversity adaptation.

Indonesia:

- Early policies differentiated shallow peat for cultivation and deep peat for protection, with fire and haze responses including a total fire ban (1999) and the Peatland Restoration Agency (2016). Peatland restoration was integrated into Indonesia's climate strategy at COP26 (2021) and in the Enhanced NDC to the UNFCCC (2022).

Regional and Global Level

- **ASEAN Initiatives:** ASEAN Agreement on Transboundary Haze Pollution (2002) and ASEAN Peatland Management Strategy (APMS) focus on regional cooperation.
- **Global Frameworks:** European Union Deforestation-Free Regulation (EUDR) 2023 impacts oil palm from Indonesia and Malaysia; Kunming-Montreal Global Biodiversity Framework 2022 aims to protect 30% of land and ocean areas by 2030.

Private Sector

- **RSPO:** Since 2005, the Roundtable on Sustainable Palm Oil has progressively tightened restrictions on peatland use.
- **National Certification Schemes:** Indonesian Sustainable Palm Oil (ISPO) and Malaysian Sustainable Palm Oil (MSPO) contain specific guidelines for peatland use.

Conclusion

- ❖ **Long-standing issue:** Peatland fire and haze, transboundary pollution
- ❖ **Crucial for climate action:** Especially in Indonesia and Malaysia
- ❖ **Call for action:** Further interdisciplinary research to explore opportunities and manage challenges.



Peatland & Canal Block, West Kalimantan, Aug 2024

GRANT/RGMS NUMBER: UM.0000510/HIF.IF
RESEARCH GRANT (IF070-2022)

Assoc. Prof. Dr. Matthew Ashfold | Ms. Sharon Seah | Prof. Gusti Anshari | Prof. Alex Lechner
Nottingham University Malaysia | ISEAS - Yusof Ishak Institute | Universitas Tanjungpura | Monash University Indonesia



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