



# Masterplan and action plan for peatland fire prevention through multi-stakeholder collaboration and processes

## Recommendations for policy and practices

Multi-stakeholder processes in Ketapang Regency, West Kalimantan, Indonesia, have successfully fostered collaboration in establishing a masterplan to prevent peatland fires in the regency's high-fire-risk peat landscape. Some successes and lessons learnt are useful for other areas in Indonesia with similar issues and contexts:

- The masterplan is based on a thorough understanding of fire occurrences in the landscape and peat landscape's biophysical and socio-economic characteristics, which creates a data-driven and evidence-based planning document.
- The resulting planning document is promulgated into a regional regulation, i.e. Regent's Regulation (*Peraturan Bupati-Perbup*) and followed by a regency action plan (*Rencana Aksi Daerah-RAD*).
- The development of regency action plan is inclusive and collaborative in order to achieve a sense of belonging among multiple actors and stakeholders and a spirit of collective-action to share responsibilities and resources.
- As reference for implementation, the regency action plan: a) shows connectivity between agencies/actors at various levels; b) includes control processes through comprehensive monitoring and evaluation—covering activity-level (outputs) and achievements (outcomes); and c) is open for different funding sources, including state-budgets, civil society organizations, private sector, and other legitimate funds.

## 1. Peatland fires in Pawan-Kepulu-Pesaguan landscape

Two Peat Hydrological Units (PHUs) of Sungai Pawan – Sungai Kepulu (64,000 ha) and Sungai Kepulu -Sungai Pesaguan (13,000 ha) (referred to as the 'Pawan-Kepulu-Pesaguan PHUs' for the remainder of this article) are peatlands in Ketapang Regency, West Kalimantan, Indonesia, where fires occur frequently. The most recent fires occurred in mid-2023, with previous large fires occurring in 2019 and 2015, both of which were associated with the ENSO (El-Nino Southern Oscillation) phenomenon.

Peatlands in these two PHUs have long been utilised for agricultural land uses, primarily oil palm, in both large-scale concessions and smallholder gardens, while many other areas have been severely degraded. The land utilisation was preceded by the construction of canals to drain the original wetlands. As a result, drained peatlands are prone to fire. These canals were also constructed in deep peat areas (>3m), known as 'peat domes', which should be protected by law. The peat dome areas cover 27,000 ha (MoEF, 2015), corresponding to about 30% of the total PHU area. The total burnt areas affected by fires since 2015 are approximately 15,000 hectares (Ketapang Regency Government and PSDA Secretariat, 2023). There are nine villages in this landscape, five of which are dominated by peatlands. The majority of land status in this landscape is Non-forest Area (locally called *Area Penggunaan Lain- APL*) (59,000 ha),

with two large-scale oil palm plantations. The focus to address fire disasters in Ketapang, including peatland fires, have mostly been on fire suppression. With the recurrence of fires in this landscape, which has impacted not only the inhabitants of Ketapang but also those in nearby areas, the Ketapang Governments and stakeholders realised the importance of focusing on 'prevention' efforts.

This article summarises collaborative planning by stakeholders in Ketapang Regency, which resulted in a masterplan focusing on fire risk reduction. This article also presents lessons learned on the strengths, challenges, and opportunities for replication in other areas in Indonesia with similar circumstances and problems.

## 2. Multistakeholder processes to advocate holistic planning

Following the large fires in 2019, governments and stakeholders in Ketapang Regency actively sought solutions for the devastating fires in the Pawan-Kepulu-Pesaguan PHUs. The processes were facilitated by the Ketapang multistakeholder forum, officially known as the 'Joint Secretariat of the Multi-stakeholder Forum for Natural Resources Management' (*Sekber PSDA*). The regency government, civil society organizations (CSOs), the private sector, and village and community representatives from the landscape participated in these multi-stakeholder discussions.



After several months of discussions and workshops, the parties carefully considered the need for a comprehensive planning document, which is based on understanding of peatland characteristics, fire occurrence, land status, and other social factors. The planning document must include key strategies that address not only fire prevention but also governance and land management aspects. The development of the 'Masterplan for Fire Prevention in Peat Hydrological Units of Sungai Pawan – Sungai Kepulu and Sungai Kepulu -Sungai Pesaguan' kicked off in September 2022, led by the Regency's Planning and Development Agency (*Bappeda*), with multi-stakeholder processes facilitated by the *Sekber PSDA*, and Tropenbos Indonesia as the expert team.

### 3. Masterplan for fire prevention in Pawan-Kepulu-Pesaguan PHUs

As stated in the masterplan document, the target outcomes for addressing peatland fires over a

ten-year period (2023-2033) are: a) reduced areas affected by fires, b) improved peat hydrological conditions with increased peat groundwater levels in the dry season, c) increased area of endemic vegetation or trees in peat swamps, d) peatland-smart/-adaptive farming systems, and e) improved governance in peatland management by governments and related stakeholders.

The conceptual framework for the masterplan follows a number of principles (Figure 1): (1) division of the landscape into six typologies based on Peat Ecosystem Functions (*Fungsi Ekosistem Gambut-FEG*) consisting of Protection Function (*Fungsi Lindung*) and Cultivation Function (*Fungsi Budidaya*) and fire records from 2015, (2) recognition of four categories of land status (Private lands, Plantation concessions, Village Forest, Production Forest), and (3) development of four main strategies.

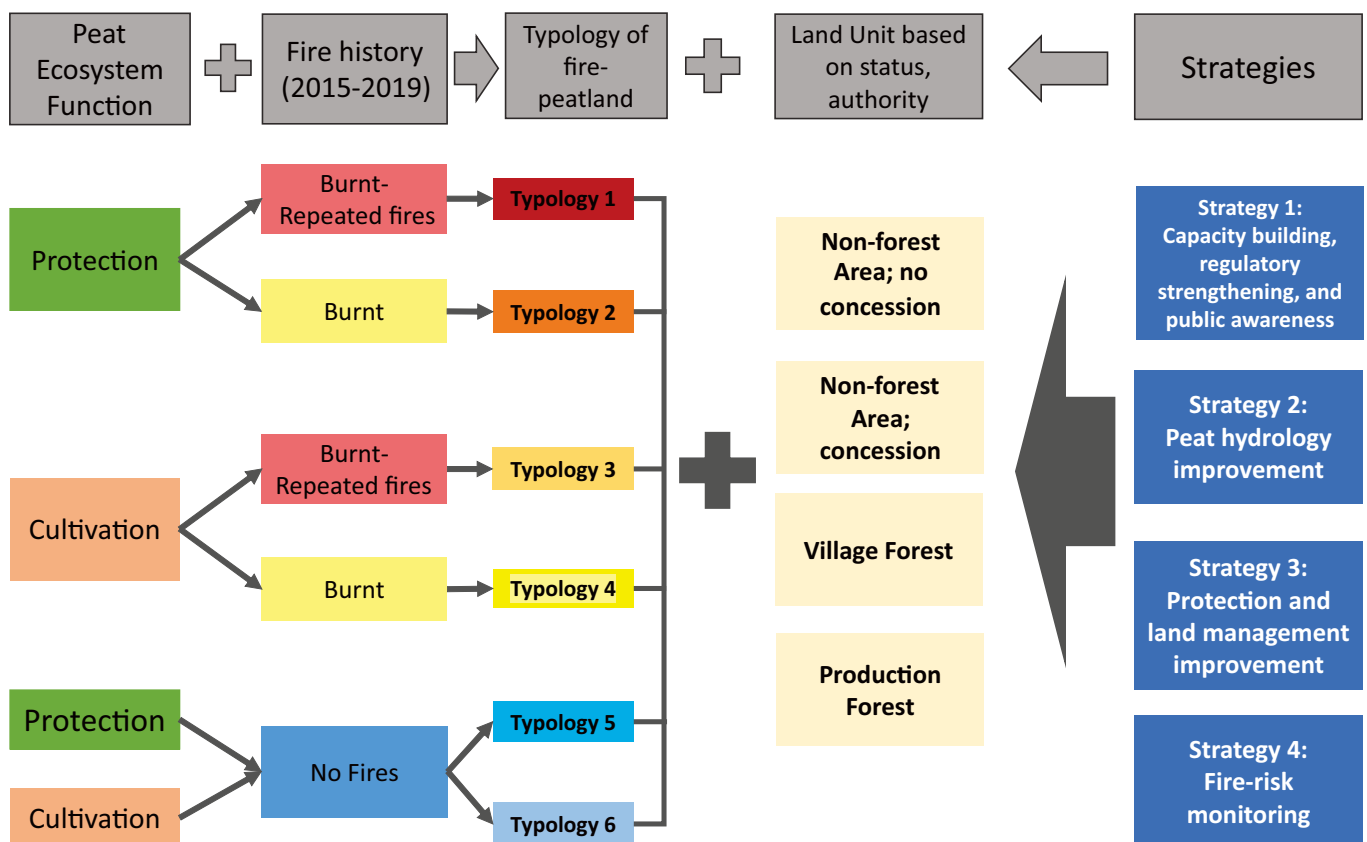


Figure 1. Conceptual framework of the masterplan

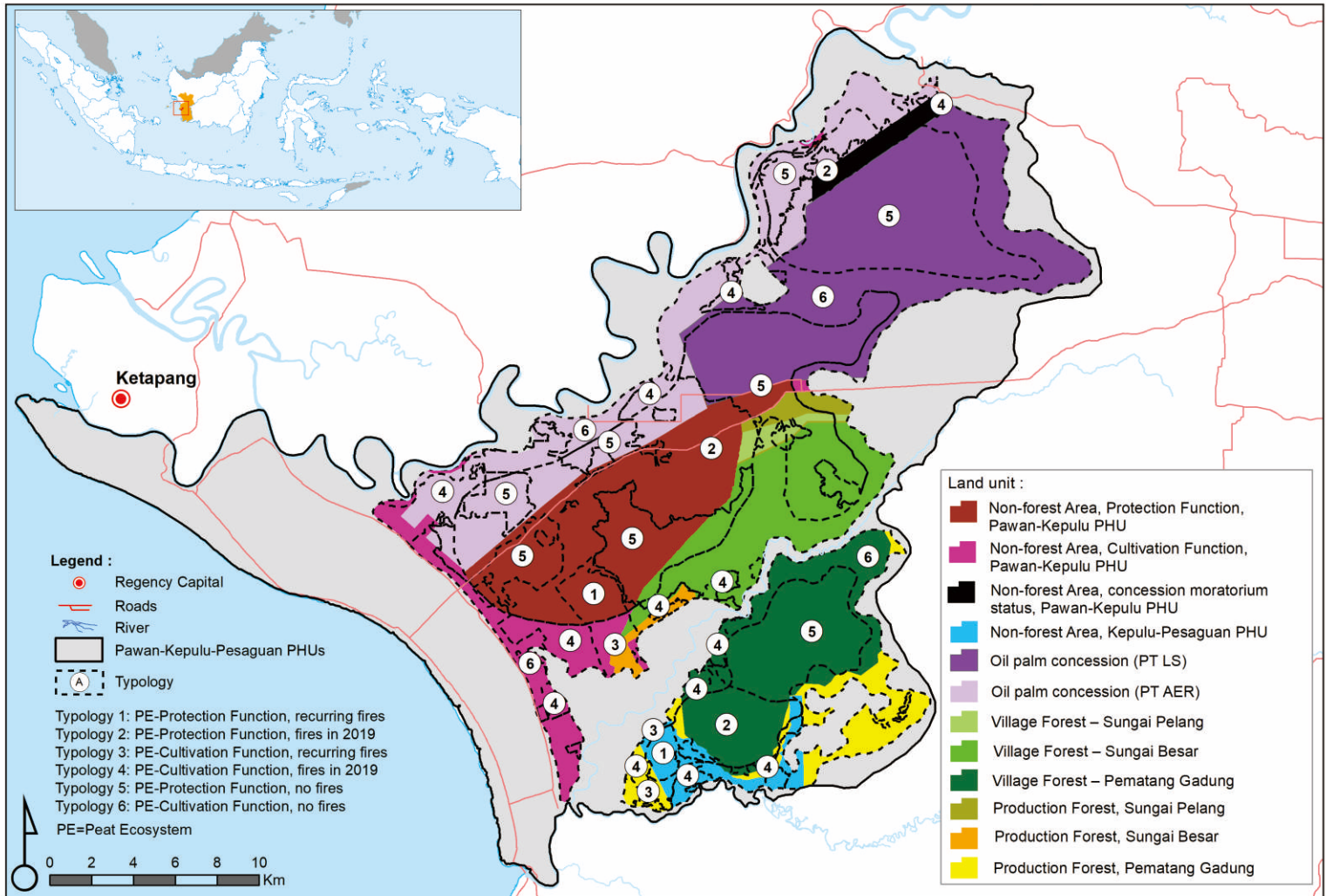


Figure 2. Pawan-Kepulu-Pesaguan PHUs divided into 12 Land Units, each consisting of variations of land typology

The landscape is eventually divided into 12 (twelve) 'Land Units' based on the main authority of the lands, with variations in land typology defined for each (Figure 2).

The four main strategies developed are:

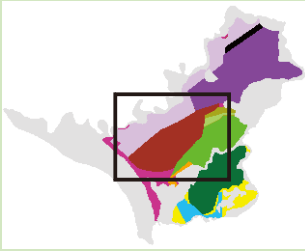
- Strategy 1: Capacity building, regulatory strengthening, and public awareness
- Strategy 2: Peat hydrology improvement through construction of canal blocks and wells and prevention of canal construction
- Strategy 3: Protection and improving land management by protecting forested areas, revegetating degraded peat areas, implementing peatland-smart/-adaptive land management for agricultural lands,

and applying Sustainable Palm Oil (KSB) principles to oil palm

- Strategy 4: Monitoring of peatland and infrastructure.

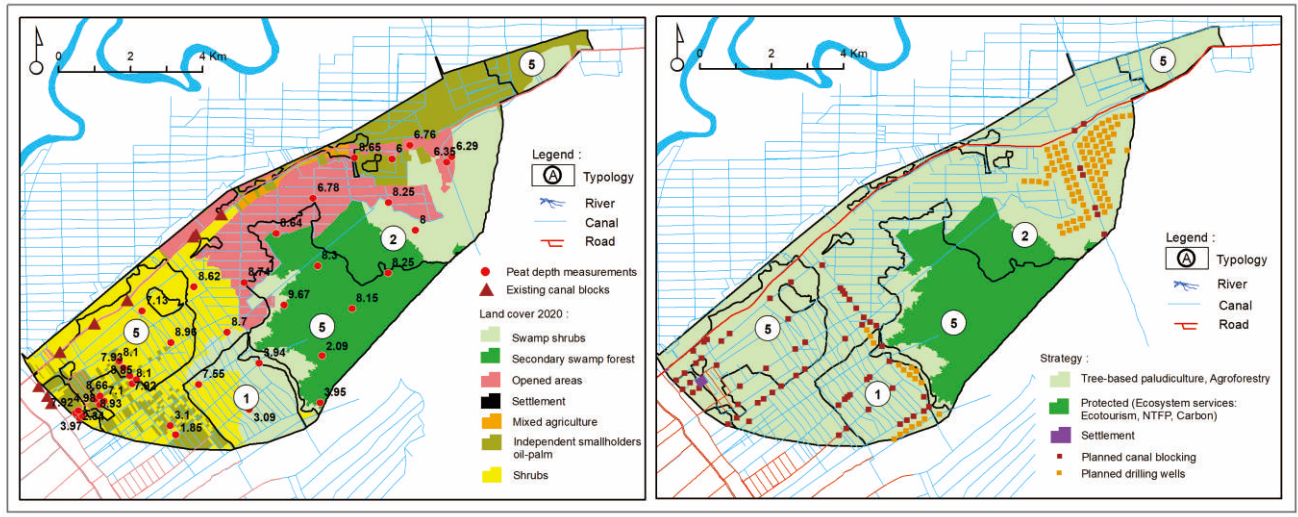
These four strategies must be implemented in each Land Unit, taking into account the variations of typology within. Relevant actors and stakeholders were identified for each Land Unit, allowing each to decide on their contribution and potential collaboration. Box 1 depicts guidance for implementing the four strategies using the example of one Land Unit: 'Non-forest Area with Peat Ecosystem-Protection Functions' under the main authority of the Ketapang Regency Government.

## Box 1: Example of guidance for implementing strategies in one Land Unit



### Land Unit: 'Non-forest Area' status, with Peat Ecosystem-Protection Function (PE-PF) in Pawan-Kepulu PHU

Administrative area	Villages of Sungai Pelang and Sungai Besar	
Area	7.407 ha	
Typology	- Typology 1 (PE-PF, repeated fires)	603 ha
	- Typology 2 (PE-PF, non-repeated fires)	4.153 ha
	- Typology 5 (PE-PF, no fires)	2.650 ha
Peat depth	- Based on national map: dominant: 300 - <500 cm, minor: 500 - <700 cm - Based on ground survey: 1.85-9.67 m (samples: 38 points, see map)	
Road network	There is an inter-district road and village roads	



#### Strategy 1: Capacity building, regulatory strengthening, and public awareness

- Forested areas to be regulated as Protection Zone.
- For Typology 1 and 2: Sign boards on prohibition of burning – incl. stating the official regulations and sanctions; prohibition of canal construction
- For Typology 5: Sign boards on prohibition of canal construction; awareness raising on no-burning and humid-peat land management

#### Actors and stakeholders involved

- Relevant regency offices, village governments, collaboration with multi-stakeholder forums and NGOs

#### Strategy 2: Peat hydrology improvement

Existing infrastructure	Strategy 2
- Dense drainage canals in most areas	- Canal block construction (67 points, see map)
- Some forested areas are without canals	- Prevention and prohibition signs for canal construction
- There are 10 canal blocks along the main roads	
No wells	Construction of wells (104 points, see map)

#### Actors and stakeholders involved

- Peatland and Mangrove Restoration Agency, Public Work, Regional Water Management Agency
- Village governments, collaboration with NGOs and communities

#### Strategy 3: Protection and improvement of land management

Existing landcover	Strategy 3
- Secondary peat swamp forest	- Protect remaining forest, establish official protection status
	- Utilisation limited for ecosystem services incl. ecotourism, NTFP, carbon market
- Cleared lands, shrubs, and shrubs in swamp	- Tree-based paludiculture or agroforestry - suitable for PE-PF with groundwater level (GWL) < 40 cm
- Community's agricultural lands	

#### Actors and stakeholders involved

- Forestry and Environment Offices (at regency and provincial levels)
- Agriculture and Plantation Offices, Transmigration Offices (at regency and provincial levels)

#### Strategy 4: Monitoring of peatland and infrastructure

- Typology 1 & 2: Construction of canal water-level meter and GWL monitoring pipes;
- The constructions are optional for Typology 5.
- Frequency of monitoring patrols in dry months: 'high' for Typology 1 & 2; 'moderate to low' for Typology 5

#### Actors and stakeholders involved

- Relevant regency offices, village governments, collaboration with multi-stakeholder forums and NGOs

## 4. Regulation formulation and action plan development

The masterplan was officially announced and disseminated to all stakeholders on March 9, 2023, by the Deputy Regent of Ketapang. It was later granted legal recognition as Regent's Regulation (Ketapang Regent's Regulation No. 48 of 2023), which was enacted on July 20, 2023. The Regulation's scope reflects the masterplan's principles, which include (a) land typology, (b) fire prevention strategies, (c) cooperation in prevention efforts, and (d) regency action plans.

As mandated by the Regent's Regulation, the formulation of Regency Action Plan (*Rencana Aksi Daerah - RAD*) is required as a follow-up of the masterplan. Coordinated by *Bappeda* and in consultation with relevant stakeholders, a Masterplan Action Plan (RAD Masterplan) was developed jointly and iteratively for all Land Units in the landscape. This action-plan matrix covers not only newly proposed strategies or actions in the process, but also strategies and activities for peatland fire prevention, restoration, and protection already in plan by relevant actors and stakeholders. The Masterplan Action Plan was officially launched in October 2023. Despite the

voluntary nature of the action plan, the indicated activities were internalized by relevant government offices into government program development with government's budgeting processes, including for village-level budgeting. Since non-governmental actors, such as CSOs/NGOs and the private sector, also participated in the development of the action plan, this allowed them to contribute and/or support through their programs.

## 5. Lessons learnt and future potentials

### *Strengths and benefits*

The masterplan for fire prevention in peatlands in Ketapang Regency was developed through multi-stakeholder initiatives and processes, resulting in a comprehensive and locally-aspired planning document. Furthermore, it was based on a thorough understanding of the landscape's biophysical and social characteristics, and it also emphasises on enhancing governance rather than simply preventing fire. The succeeding inclusive and collaborative processes for action planning foster a sense of belonging as well as a strong sense of collective action from the stakeholders by sharing roles, responsibilities,





and resources. With a high level of details, the Masterplan Action Plan supports inclusivity and connectedness among actors, both in primary and supporting roles, incorporates of monitoring and evaluation processes – at output and outcome levels, and allows multiple funding sources, such as the government's funds, CSOs/NGOs funds, corporate social responsibility (CSR), and others.

### **Challenges**

Multi-stakeholder processes require contributions from CSOs, including operational funds for organising meetings and formation of expert team, given the fact that these are external endeavours that are not part of the government's formal planning processes. CSO involvement may still be required to facilitate monitoring and evaluation of the implementation of all actors.

The involvement of actors who do not have decision-making authorities at the site/district level can be a barrier to achieving commitments in multi-stakeholder processes; for example, the involvement of oil palm companies whose

representatives lack the necessary capacity and authority. This has been a major obstacle in assuring the inclusion and participation of private companies.

### **Potential/implications for policy and practice**

The multi-stakeholder process for masterplan and Action Plan in one of the PHUs in Ketapang Regency, exemplifies 'good practice' that might be replicated in other places with similar contexts and issues. This is particularly useful when there is an urgent need to address fires, including peatland fires, in a quick but thorough manner. For Indonesia's jurisdictional system, this strategy is suitable for a PHU context under the Regency authority (*Pemerintah Kabupaten*) as the second sub-national level. The legalisation of the masterplan into government regulations is critical for compliance and commitments from many actors and stakeholders. The model process in Ketapang Regency is expected to address the urgent need for fire prevention in high-fire risk peatlands while also improving governance and long-term peatland management.

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Photo on the cover page: Burnt peatland area in Sungai Besar Village, Pawan-Kepulu PHU (Photo: Tropenbos Indonesia)

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