pantau gambut

Research

A Decade of Peatland Restoration in Indonesia

Political Economic Analysis of Peatland Restoration in Indonesia 2015–2024

2026

Pantau Gambut is a non-govermental organization that networks in nine provinces which focuses on research and advocacy, and campaigns for the peatland protection and sustainability in Indonesia.

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Under the logic of the environment-making state, **Indonesia's peatland restoration extends beyond mere ecological preservation** as it acts as a state apparatus to reshape the biophysical landscape in order to ensure steady political-economic accumulation.

Executive Summary

This study revisits a decade of peatland restoration implementation in Indonesia, focusing on the role of the Peatland Restoration Agency (*Badan Restorasi Gambut*/BRG), which later evolved into the Peatland and Mangrove Restoration Agency (*Badan Restorasi Gambut dan Mangrove*/BRGM). Grounded in the conceptual framework of the environment-making state, the study examines how the state governs peatland ecosystems within the broader dynamics of global climate politics and capital accumulation.

The analysis begins with the shifting paradigm surrounding peatlands. Once regarded as marginal lands, peat ecosystems became the target of large-scale monoculture plantation expansion during the mid 20th century which triggering systematic degradation through drainage and land conversion. The resulting ecological crisis, marked by large-scale forest and land fires, compelled the Indonesian government to reassess peatland governance in 2015. A structured restoration scheme was subsequently introduced and integrated into global emissions reduction agendas. However, this approach also transformed peatlands into ecological assets with economic value particularly through the emergence of carbon market mechanisms.

Key Findings

Analysis of peatland restoration outcomes between 2015 and 2024 reveals a disconnect between administrative achievements and ecological realities on the ground. Several critical points include:

1.2
million hectares of restoration targets unachieved.

Despite the restoration target being reduced from 2.6 million hectares to 1.2 million hectares, implementation still fell short of full completion by the end of BRGM's mandate.

52%
of IPG intervention areas remain vulnerable to fire.

Independent monitoring found that 70% of the observed canal blocks were damaged, while 52% of intervention sites recorded Groundwater Levels (GWLs) below the recommended threshold (40 cm), leaving peatlands vulnerable to fire.

97–99%
of burned areas have not recovered into forest.

Following the 2015–2019 fire period, only 1–3% of affected areas regenerated into forest cover. Most areas transitioned into shrubland (41%) or oil palm monoculture plantations (54%).

The study concludes that peatland restoration in Indonesia has largely functioned as a technocratic instrument to legitimize continued capital accumulation through sustainability narratives. Without substantive evaluation extending beyond administrative compliance, restoration efforts risk becoming non-functional assets with limited capacity to mitigate long-term ecological crises.

Contents

1. Background

Throughout the history of capitalist development, land has served as a key factor of production for capital accumulation. However, peatlands have long been regarded as marginal and unproductive lands (wastelands) with limited exchange value due to their biophysical characteristics. Local communities often utilized them primarily for hunting or temporary use, reflecting what some scholars describe as a culture of transit.[1] Historically, permanent settlement, production, and consumption activities on peatlands were relatively uncommon.[2]

This paradigm began to shift alongside the expansion of agrarian capitalism and the declining availability of alluvial land in the mid 20th century. The advent of peatland drainage technology gradually brought peatlands which once considered unsuitable for development, into the horizon of rubber and oil palm plantation expansion.[3] Yet, the substantial investment required to drain peat soils increased production costs considerably.[4] As a result, until the late 20th century, large areas of peatland remained relatively untouched until favorable economic conditions emerged for large scale exploitation.[5]

That momentum eventually arrived through deregulation and the rapid expansion of the oil palm sector which depended heavily on extensive peatland drainage. However, rather than generating stable agricultural landscapes, this process produced unforeseen ecological instability. Large-scale forest and land fires particularly in 2007, 2012, and 2015, occurred alongside the accelerating expansion of oil palm plantations.[6]

Transboundary haze and economic losses amounting to trillions of rupiah ultimately forced the state to acknowledge the failure of a development model premised on peatland drainage.[7] This marked a turning point in which forest and land fires could no longer be understood as isolated disasters, but rather as the consequence of systematic environmental transformation. Peatlands were no longer viewed merely as a reserve for agricultural expansion; they emerged as a focal point of the global ecological crisis, placing Indonesia at the centre of international climate politics.

The discourse on peatland protection in Indonesia within the vortex of global climate politics had in fact

1 H. Furukawa, 1994, "Coastal Wetlands of Indonesia: Environment, Subsistence and Exploitation", Kyoto: University Press.

2 K. Masuda, K. Mizuno, dan K. Sugihara, 2016, "A Socioeconomic History of the Peatland Region: From Trade to Land Development and Then to Conversation" dalam Catastrophe and Regeneration in Indonesia's Peatlands: Ecology, Economy, and Society, NUS Press in association with Kyoto University Press Japan, hlm. 148-184.

3 S. M. Martin, 2003, The UP Saga, NIAS Press: Copenhagen; J. E. Robins, 2021, Oil Palm: A Global History, The University of North Carolina Press: North Carolina.

4 G. F. Deasy, 1942, Localization of Sumatra's Oil Palm Industry, Economic Geography Vol. 18 No. 2, hlm. 153-158.

5 M. Minarchek, 2020, "Creating Environmental Subjects: Conservation as Counter-Insurgency in Aceh, Indonesia 1925-1940", Political Geography, hlm. 1-13.

6 Dianto Bachriadi, 2020, 24,2: Manifesto Penataan Ulang Penguasaan Tanah "Kawasan Hutan", ARC Books: Bandung; J. Miettinen, A. Hooijer, C. Shi, D. Tollenaar, R. Vernimmen, S. C. Liew, C. Malins, dan S. E. Page, 2012, Extent of Industrial Plantations on Southeast Asian Peatlands in 2010 with Analysis of Historical Expansion and Future Projections, GCB Bioenergy Vol. 4 No. 6, https://doi.org/10.1111/j.1757-1707.2012.01172.x, hlm. 908-918.

7 A. Utama, "BNPB: Kebakaran Hutan 2015 Seluas 32 Wilayah DKI Jakarta", CNN Indonesia, 31 Oktober 2015, diakses pada xxx, https://www.cnnindonesia.com/nasional/20151030133801-20-88437/bnpb-kebakaran-hutan-2015-seluas-32-wilayah-dki-jakarta. ; Helena Varkkey, 2015, "The Haze Problem in Southeast Asia" dalam The Haze Problem in Southeast Asia: Palm Oil and Patronage, Routledge.

President Joko Widodo unfurled a banner of support for the protection of Indonesia's forests and peatlands, following his speech at COP21 Paris. ©Greenpeace

emerged following COP14 in Poznań in 2008. This discourse was reflected in Norway's funding commitment[8] to Indonesia for reducing emissions from deforestation and forest degradation. Its culmination came at COP21 in Paris in 2015, when President Joko Widodo pledged before the international community that he would restore Indonesia's peatlands. He followed through on this commitment by establishing the Peatland Restoration Agency (*Badan Restorasi Gambut*/BRG) to accelerate the rehabilitation of approximately two million hectares of peatlands degraded by forest and land fires across seven provinces. This accelerated rehabilitation program that covered around two million hectares of peatlands in seven provinces was regarded as an ambitious initiative, given the unprecedented scale of restoration that had never before been undertaken by any other country.[9]

The establishment of BRG is often celebrated as a turning point at which the state appeared to acknowledge the destructive impacts of the previous governance regime.[10] Yet this paper questions the underlying logic of the restoration project. On the one hand, BRG emerged as a response to the ecological crisis triggered by capital expansion across peatland landscapes. At the same time, restoration was quickly incorporated into emissions reduction and low-carbon development agendas, including FOLU Net Sink 2030 and various carbon market schemes. This process marked a revaluation of peatlands: from lands once regarded as unproductive to ecological and economic assets. Through the narrative of "restoration,"

8 DIO, 2010, Letter of Intent between the Government of the Kingdom of Norway and the Government of the Republic of Indonesia dalam Norwegian Ministries Digitalisation Organisation (DIO).

9 H. Ichlas, "Between Restoration and Deforestation: The Politics of Peatland Restoration in Neoliberal Indonesia", (Tesis Master, International Institute of Social Studies, 2020), hlm. 2

10 FAO, 2016, Facts of Indonesia Peatland and Paludiculture Studies, https://www.fao.org/indonesia/news/detail/Facts-of-Indonesia-Peatland-and-Paludiculture-Practices-/en.

the state recommodified peatlands as restoration targets and carbon units in support of continued capital accumulation.

This study employs the environment-making state framework, which positions the state as a mediating membrane between capital and nature. Within this framework, the state is expected to perform three processes: mapping new areas and forms of nature appropriation, building infrastructure, and producing knowledge about nature so that its exploitation becomes scientifically legible and justifiable.[11]

In the context of peatland restoration in Indonesia, these three processes are represented through three corresponding practices.

1. **territorialization** through the designation of Peat Hydrological Units (PHUs) and the delineation of protection and cultivation functions.
2. **the construction of technical infrastructure**—such as canals and bore wells—as well as rewetting, revegetation, and revitalization interventions to reorganize the biophysical conditions of peatlands and their relationship to productive activities.
3. **the production of scientific knowledge,** including peat depth mapping and groundwater-level monitoring, through which the biophysical realities of peatlands become legible, measurable, and governable.

Numerous studies on BRG and peatland restoration in Indonesia have focused on institutional design and program effectiveness.[12] Other studies have viewed peatland restoration as a highly promising strategy for delivering effective natural climate solutions while generating positive socio-economic outcomes for local communities.[13] However, most of this literature overlooks the long historical transformation of peatlands within the development of capitalism.

Few studies examine peatland restoration as an effort by the state to reorganize the relationship between capital and nature. Even where Indonesia has been portrayed as a "**neoliberal laboratory**," with restoration unfolding simultaneously alongside extractive projects,[14] such analyses remain focused on domestic political contestation and have yet to situate peatland restoration within the broader regime of global climate governance.

To address this gap, this paper situates peatland restoration as a new phase in the history of capital accumulation in Indonesia. Rather than limiting the discussion to technical evaluation, the analysis focuses on three key questions:

1. How has the state, through BRG, reintegrated peatlands into circuits of accumulation?
2. What mechanisms were employed by BRG, and what implications did they produce?
3. How does this shape future peatland restoration efforts?

The findings are used to reconsider peatland restoration not merely as a technocratic intervention addressing ecological degradation, but as a site of renegotiation among the state, capital, and the environment amid the global climate crisis.

11 Christian Parenti, 2014, op. cit.

12 K. R. Bhomia & D. Murdiyarso, 2021, "Effective monitoring and management of peatland restoration", hlm. 270; O. J. Rieley, T. Notohardiprawiro, dan S. H. Limin, 2019, "Restoration of Tropical Peatland in Indonesia: Why, Where, and How?", Tropical Peatlands, hlm. 240-244; A. P. Widanarko, 2020, "Upaya Badan Restorasi Gambut dan Korea Forest Service dalam Merestorasi Lahan Gambut Melalui Desa Peduli Gambut di Provinsi Kalimantan Barat 2016-2020", E-Journal Ilmu Hubungan Internasional Vol. 8 No. 1, hlm. 345-359.

13 S. N Lestari dkk, 2024, "Opportunities and Risk Management of Peat Restoration in Indonesia: Lessons Learned from Peat Restoration Actors", Restoration Ecology Vol. 32 No. 1, https://doi.org/10.1111/rec.14054; N. Pangaribuan, 2019, "Restorasi Lahan Gambut untuk Mencegah Bencana Ekosistem Global" dalam Peran Matematika, Sains, &Teknologi dalam Kebencanaan, Universitas Terbuka.

14 H. Ichlas, 2020, op. Cit.

2. Methodology and Conceptual Framework

This qualitative study evaluates the performance of Indonesia's peatland restoration programme during the 2020–2023 period through descriptive and comparative analysis. Particular attention is given to the transformation of the Peatland Restoration Agency (*Badan Restorasi Gambut* / BRG) into the Peatland and Mangrove Restoration Agency (*Badan Restorasi Gambut dan Mangrove*/BRGM) under the administration of President Joko Widodo. The evaluation examines official documents related to restoration achievements, rewetting infrastructure development, and community engagement. The findings are complemented by field investigation data and scientific literature to better understand peatland governance in a global context.

This qualitative research evaluates the performance of Indonesia's peatland restoration program from 2020 to 2023 through descriptive and comparative analyses.

The analysis moves beyond viewing restoration as a neutral technocratic agenda and instead reveals it as a site of narrative and political contestation between state claims and ecological realities on the ground. To examine this dynamic, the study integrates geospatial data on BRGM restoration interventions from 2017–2022 to evaluate the effectiveness of Peatland Rewetting Infrastructure (PRI) and revegetation measures in reducing forest and land fires. The analysis focuses on peatland restoration areas in Sumatra and Kalimantan through overlay analysis with burned area data from 2019 and 2023 as both are El Niño years.

Assessing the effectiveness of these technical interventions is critical because such physical measures reflect the political role of the state in governing production landscapes. To unpack this relationship, Christian Parenti's **environment-making state** framework is employed to establish the premise that capitalism requires state intervention in the management of nature.[15]

Within the environment-making state framework, the state is not understood as a neutral organisation exercising political authority over a territory and its population. Rather, it is a territorialised form of power that materially governs and regulates the earth's surface in the interests of capital accumulation. In this context, government constitutes one component of the state apparatus responsible for managing social, economic, and political life in ways that align with the imperatives of accumulation.

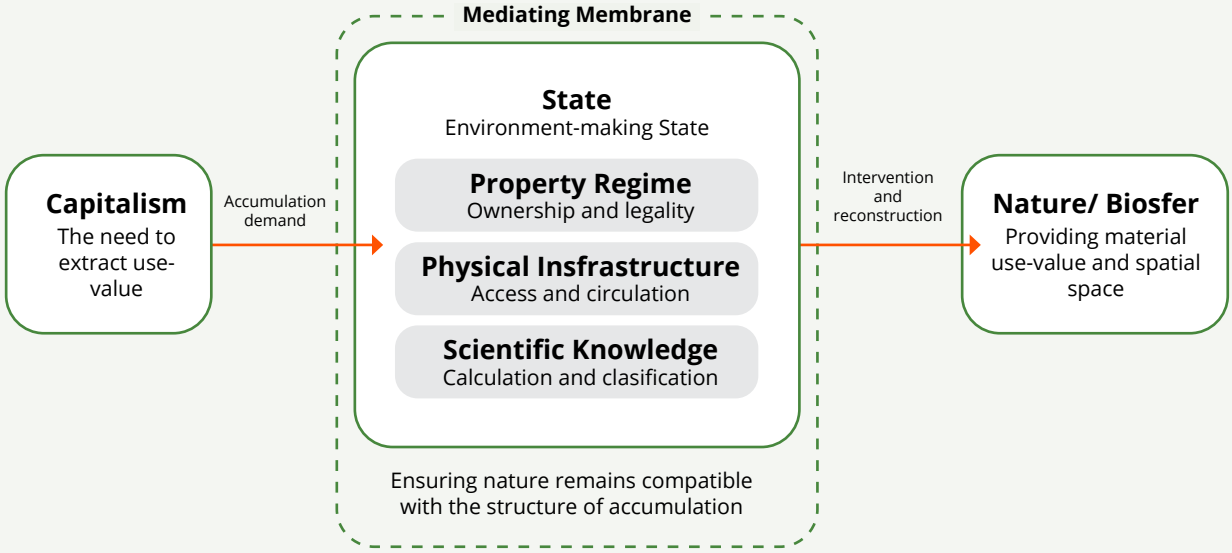
According to Parenti, the state functions as a "**mediating membrane**" through three central dynamics:

1. The capitalist state must work to maintain the conditions necessary for continued accumulation.
2. Capital accumulation depends heavily on use values provided by nature.
3. These use values are materially situated on the earth's surface (the biosphere), which the state must organise and govern.

15 Christian Parenti, 2014;2016

Parenti emphasized that the state performs this role through a series of interconnected mechanisms. The process begins with the establishment of property regimes as territorial abstractions of state power governing property rights over nature. In parallel, physical infrastructure is developed to facilitate access for capital, accelerate commodity circulation, and reconstruct ecological landscapes according to the requirements of accumulation.

Figure 1 The Environment-making State Framework



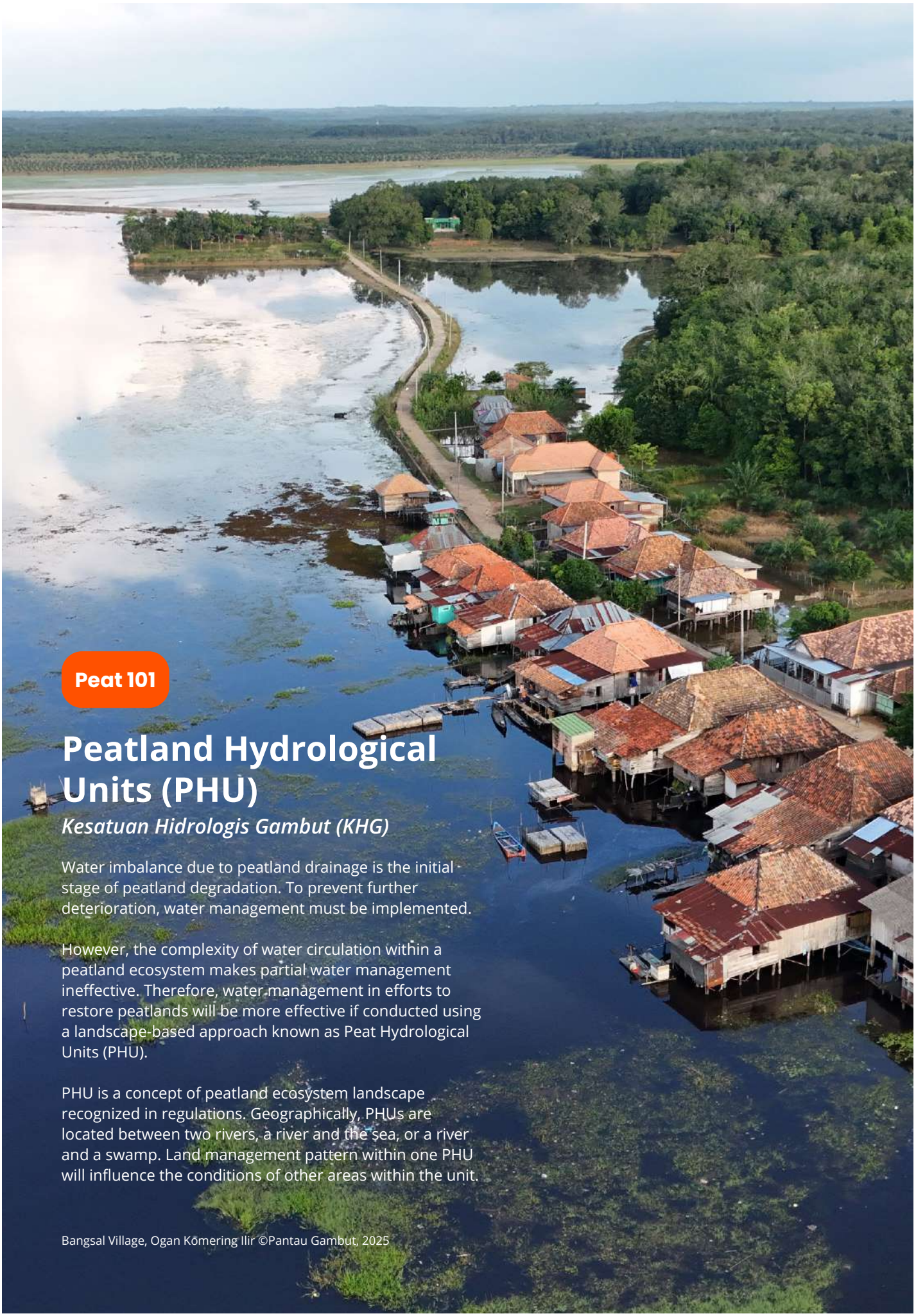
To support these processes, the state must produce scientific knowledge that renders biophysical conditions legible, classifiable, and economically calculable. This knowledge simultaneously serves as a basis for legitimising the exploitation of nature. Collectively, these processes embody what Ó Tuathail conceptualises as **geopower**: a mode of governance through which territorial space is produced and managed.[16]

In the context of the climate crisis, the ecological responsibilities of the state represent an increasingly important manifestation of its fundamental role. Ecological crisis discourse positions the state as the primary environmental steward, as reflected in the establishment of BRG. However, **following the logic of the environment-making state, peatland restoration cannot be understood solely as an ecological rescue effort**. Peatland restoration also reflects state intervention in reshaping biophysical landscapes through zoning, infrastructure development, and the designation of priority areas to ensure their continued compatibility with prevailing political-economic interests. Rather than challenging the structural drivers of ecological crisis, state intervention is often reduced to a form of risk management that preserves existing accumulation structures.

The dominance of state narratives within this risk-management framework ultimately constrains opportunities for independent analysis due to strict control over data access. As a result, this study faces several structural limitations related to environmental information governance in Indonesia, including:

1. Limited access to concession-related information;
2. Reliance on official datasets that cannot always be independently verified;
3. A tendency among government institutions to reduce the complexity of restoration to quantifiable biophysical indicators and measurable outputs.

16 G. Ò Tuathail, 1996, Critical Geopolitic, University of Minnesota Press: Minnesota



Peat 101

Peatland Hydrological Units (PHU)

Kesatuan Hidrologis Gambut (KHG)

Water imbalance due to peatland drainage is the initial stage of peatland degradation. To prevent further deterioration, water management must be implemented.

However, the complexity of water circulation within a peatland ecosystem makes partial water management ineffective. Therefore, water management in efforts to restore peatlands will be more effective if conducted using a landscape-based approach known as Peat Hydrological Units (PHU).

PHU is a concept of peatland ecosystem landscape recognized in regulations. Geographically, PHUs are located between two rivers, a river and the sea, or a river and a swamp. Land management pattern within one PHU will influence the conditions of other areas within the unit.

Bangsal Village, Ogan Komering Ilir ©Pantau Gambut, 2025

3. Discussion

3.1 History of Peatland Restoration Policy

3.1.1
Peatland Fires: A Crisis that Created Opportunity

The twilight of the 1990s was a period when Indonesia was engulfed by multiple crises. In addition to the monetary crisis that devastated the nation's economic foundations, massive fires also consumed millions of hectares of forests and peatlands. According to the National Development Planning Agency (Bappenas), 9.7 million hectares of forests and land across Kalimantan, Sumatra, Java, Sulawesi, and Irian Jaya burned during 1997-1998,[17] of which 2.1 million hectares (22%) consisted of peat swamp forests.[18]

1970–1998
Exploitation & Catastrophe Era

1970s
The onset of the Timber Boom in Kalimantan, which triggered large-scale forest degradation.

1982–1983
The first major forest fire in East Kalimantan (3.2 million hectares).

1995
The issuance of Presidential Decree No. 82/1995 on the MRP in Central Kalimantan.

1996
The issuance of Ministry of Forestry Decree No. 166/1996, which converted 1.4 million hectares of forest into Non-Forest Estate (APL) for the MRP.

The worst forest and land fires in Indonesia's history were primarily driven by forest degradation and large-scale land conversion throughout the three decades of Suharto's administration.[19] Since the 1970s, Kalimantan experienced a timber boom that significantly reduced forest cover.[20] Its consequences became evident during the 1982-1983 fires in East Kalimantan, which burned approximately 3.2 million hectares of forests and land.[21]

However, the disaster did not halt peatland exploitation under the Suharto administration, particularly through the Mega Rice Project (MRP) in Central Kalimantan. Under Presidential Decree No. 82 of 1995, approximately 1.4 million hectares of land were converted into rice fields at an estimated cost of IDR 5 trillion (USD 500 million) between 1995-1998.[22] Rather than restoring burned areas or sanctioning concession holders, the government issued Ministry of Forestry Decree No. 166 of 1996 to legalize the conversion of these forests into Other Land Uses for the MRP project.[23]

17 Charles Victor Barber dan James Schweithelm, 2000, "Trial by Fire: Forest Fires and Forestry Policy in Indonesia's Era of Crisis and Reform", World Resources Institute, hlm. 10.

18 Pantau Gambut, "Pantau Komitmen: Kebakaran Gambut", pantaugambut.id, diakses pada 20 Desember 2025, https://pantaugambut.id/pantau-komitmen/kebakaran-gambut.

19 Charles Victor Barber dan James Schweithelm, op. cit, hlm. 8-10.

20 Ibid., hlm. 6.

21 Ibid.

22 Gamma Galudra dkk, 2010, "Hot Spot of Emission and Confusion: Land Tenure Insecurity, Contested Policies and Competing Claims in the Central Kalimantan Ex-Mega Rice Project Area", World Agroforestry Centre Working Paper No. 98, hlm. 10.

23 Ibid., hlm. 10-11.

1997–1998
Massive wildfires post-MRP drainage, burning 9.7 million hectares (2.1 million hectares of which were peatlands).

Millions of hectares of peatlands that had been drained for the MRP project became vast expanses of tinder, ready to ignite when exposed to fire. Large-scale forest and land fires became inevitable when El Niño struck in 1997. Since then, Indonesia's peatland ecosystems have remained in a degraded condition, as reflected in recurring fire events during subsequent El Niño years, including 2015, 2019, and 2023.

The chronic and systematic degradation of peat ecosystems not only generated a wide range of environmental problems, but also created opportunities for new forms of intervention. Among them are restoration regulations and governance frameworks that have continuously adapted to changing political configurations and competing interests. These dynamics were further reinforced by the growing influence of international environmental financing schemes targeting forest and peatland governance in Indonesia.

2007–2014
The Entry of International Funding & REDD+

2007
The UN Climate Summit in Bali; Norway's initial climate finance commitment.

Norway's funding commitment began in 2007, when Prime Minister Jens Stoltenberg pledged up to USD 500 million annually at the UN Climate Summit in Bali to support emissions reductions from deforestation in developing countries.[24] Building on this commitment, the Norwegian government offered Indonesia up to USD 1 billion in 2010 if it could successfully reduce deforestation rates.[25]

May 2010
The signing of the Indonesia-Norway LoI worth 1 billion USD for the REDD+ scheme.

This financial commitment was a response to Indonesia's emissions profile associated with land degradation. The 1997–1998 fires and subsequent recurring fire events placed Indonesia among the world's six largest greenhouse gas emitters. This position drew the attention of Norway—a country whose wealth was built on fossil fuel extraction in the North Sea—to "assist" Indonesia in reducing emissions from deforestation and forest degradation through the signing of the Letter of Intent (LoI), ***Cooperation on Reducing Greenhouse Gas Emissions from Deforestation and Forest Degradation***, on 26 May 2010.

This climate partnership subsequently became known as REDD+ (Reducing Emissions from Deforestation and Forest Degradation). The "+" encompasses conservation, sustainable forest management, and the enhancement of forest carbon stocks. Its overarching objective is to limit the increase in global emissions to below 2°C. The REDD+ LoI focused specifically on two major sources of emissions: those originating from forests and peatlands.

The REDD+ LoI emphasized policy transformation and law enforcement. Key targets under this phase included:

24 Pilita Clark, "The Great Land Rush Indonesia: Saving the Earth", ig.ft.com, 1 Maret 2016, diakses pada 16 November 2025, https://ig.ft.com/sites/land-rush-investment/indonesia/.

25 Ibid.

1. a two-year moratorium on all new permits for peatland and natural forest conversion;
2. the development of a database of degraded areas;
3. law enforcement against illegal logging and other forestry-related crimes;
4. the resolution of land-use conflicts and compensation claims.

The partnership adopted a results-based financing mechanism consisting of three phases.[26] Under this arrangement, Norway's financial contributions were tied to Indonesia's annual reported achievements in reducing emissions from deforestation.[27] REDD+ therefore encouraged the protection and sustainable management of forest and peatland ecosystems in Indonesia.

2011
The launch of the New Licensing Moratorium in natural forests and peatlands (President SBY Era).

2013
The issuance of the IPCC Wetlands Supplement as a technical guide for greenhouse gas inventories on organic soils.

2014
The issuance of Government Regulation No. 71/2014 on the Protection and Management of Peatland Ecosystems.

2015–2019
The Institutionalization of Restoration & the Establishment of BRG

2015
The largest forest and land fires occurred, alongside the issuance of Presidential Instruction No. 8/2015 to extend the concession moratorium.

These international commitments were subsequently articulated into the national legal framework to strengthen the operational foundations of peatland restoration. As part of this regulatory development, Indonesia issued Government Regulation No. 71 of 201. As amended by Government Regulation No. 57 of 2016, concerning the Protection and Management of Peatland Ecosystems. The 2015 forest and land fire crisis further prompted the Indonesian government to establish the BRG through Presidential Regulation No. 1 of 2016.

President Joko Widodo also continued the forest and peatland concession moratorium that had been initiated in 2011 under President Susilo Bambang Yudhoyono through Presidential Instruction No. 8 of 2015. These regulatory achievements were reported to Norway's Minister of Climate and Environment, Vidar Helgesen, in 2016 as evidence of Indonesia's alignment with REDD+ commitments.

This historical overview demonstrates that Indonesia's peatland governance commitments have been deeply intertwined with external dynamics, including international funding flows and the geopolitical interests of countries in the Global North. The most tangible manifestation of these commitments can be seen in peatland restoration policies that gave rise to various regulatory instruments and new institutional infrastructures, such as BRG.

3.1.2 Institutionalising Restoration: The Emergence of BRG and Its Evolution

January 2016
The establishment of the BRG through Presidential Regulation No. 1/2016, targeting 2 million hectares across 7 provinces.

One year after the 2015 forest and land fires, President Joko Widodo established the BRG through Presidential Regulation No. 1/2016 to

26 DIO, "Indonesia and Norway strengthen joint efforts to beat climate change", regjeringen.no, 1 Desember 2023, diakses pada 16 November 2025, https://www.regjeringen.no/en/whats-new/indonesia-and-norway-strengthen-joint-efforts-to-beat-climate-change2/id3016606/.

27 Ibid.

restore peatland areas and their hydrological functions. As a non-structural agency, BRG reported directly to the President and was not embedded within the hierarchical structure of any particular ministry.

Through the Regulation, BRG was tasked with coordinating and facilitating peatland restoration across seven provinces: Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan, South Kalimantan, and Papua. In carrying out this mandate, Article 3 of Presidential Regulation No. 1/2016 also assigned several functions to BRG, including:

1. coordinating and strengthening policies related to peatland restoration implementation;
2. planning, controlling, and facilitating cooperation in peatland restoration activities;
3. mapping Peatland Hydrological Units (PHU);
4. designating protection and cultivation function zones;
5. constructing peatland rewetting infrastructure and its supporting facilities;
6. restructuring the management of burned peatland areas;
7. conducting peatland restoration outreach and education;
8. supervising the construction, operation, and maintenance of restoration infrastructure within concession areas;
9. carrying out other functions assigned by the President.

2016
The revision of regulations via Government Regulation No. 57/2016, aimed at strengthening peatland protection post-BRG establishment.

BRG's mandate was established for a period of five years with a restoration target of approximately two million hectares. The agency's ad hoc institutional character was reflected in Article 30 of Presidential Regulation No. 1/2016, which stipulated that its mandate would expire on 31 December 2020. Upon the expiry of this mandate, the President issued Presidential Regulation No. 120/2020, extending BRG's tenure while expanding its mandate to include mangrove ecosystems as a new area of intervention. This expansion resulted in the agency being renamed the Peatland and Mangrove Restoration Agency (*Badan Restorasi Gambut dan Mangrove*/BRGM).

Alongside this institutional strengthening, the integration of peatland and mangrove protection was further reinforced through internationally funded initiatives. Although the 2010 REDD+ Letter of Intent (LoI) did not explicitly mention peatlands, peatland restoration and mangrove rehabilitation efforts in Indonesia can be traced through the Peatland Management and Rehabilitation (PROPEAT) project initiated by the German Government's Deutsche *Gesellschaft für Internationale Zusammenarbeit* (GIZ). Conducted from September 2018 to December 2023, the project sought to reduce emissions from peatland and wetland

2017–2018
The initiation of the PROPEAT project by GIZ, which became active in September 2018.

2020–2024
Transformation into BRGM & Mangrove Integration

ecosystems, with a particular focus on mangroves in Indonesia.[28]

To achieve its objectives, PROPEAT integrated sustainable planning into national development strategies. One of its intervention areas was in North Kalimantan.[29] The intervention was carried out between 2019 and 2021 across mangrove swamp and peat forest landscapes in four districts. The following year, Indonesia expanded its REDD+ cooperation framework by introducing peatland and mangrove clauses. This development coincided with the implementation of REDD+ Phase III in June 2020, which introduced contributions-for-verified emission reductions through a Result-Based Payment (RBP).[30]

June 2020
Transition to the third phase of REDD+ (Results-Based Payment); First payment of results-based climate funding.

Six months after the disbursement of this result-based climate finance, on 22 December 2020, BRG was formally transformed into BRGM. The addition of the mangrove mandate carried two significant implications: the agency's operational period was reduced from five years to four years, while its peatland restoration target was lowered to 1.2 million hectares. At the same time, mangrove rehabilitation was assigned a target area of 600,000 hectares, with intervention areas expanded to North Sumatra, the Riau Islands, North Kalimantan, and West Papua.[31]

December 2020
The issuance of Presidential Regulation No. 120/2020; BRG transformed into BRGM.

Furthermore, the transition from BRG to BRGM entailed significant changes in institutional authority. Among the most notable was the elimination of the agency's supervisory role over the construction, operation, and maintenance of restoration infrastructure in concession areas. This function had previously been assigned to the Deputy for Education, Socialisation, Participation, and Partnerships. Following the restructuring, the renamed deputy's role was narrowed to education and public outreach concerning peatland ecosystem benefits and the urgency of restoration.

2021
Shift in the structural mandate of BRGM.

One notable example can be seen in the removal of BRG's Deputy for Research and Development, which had previously focused on advancing research and development in peatland hydrological governance. Its functions were replaced by those of the Deputy for Community Empowerment, whose primary role is to support the economic empowerment of peatland communities through labour-intensive schemes. A detailed comparison of the organisational structures and institutional mandates of BRG and BRGM is presented in the following table.

December 2023
End of the PROPEAT (GIZ) project.

28 Ibid.

29 Muklis, "GIZ Lakukan Tiga Proyek Pelestarian Lingkungan di Kaltara," kaltara.antaranews.com, 10 Mei 2019, diakses pada 20 November 2025, https://kaltara.antaranews.com/berita/453328/giz-lakukan-tiga-proyek-pelestarian-lingkungan-di-kaltara.

30 https://mongabay.co.id/2020/05/31/ri-norwegia-akan-perkuat-aksi-iklim-dana-us56-juta-segera-cair/

31 Pasal 5 Ayat (2) Perpres No. 120/2020.

Table 1 BRG and BRGM Organizational Structure Comparison

BRG		BRGM	
Organisational Structure	**Mandate**	**Organisational Structure**	**Mandate**
Head	Leads the implementation of BRG's duties and functions	= Head	= Leads the implementation of BRGM's duties and functions
Secretariat	Provides administrative support to BRG	= Secretariat	= Provides administrative support to BRGM
Deputy of Planning and Cooperation	Responsible for restoration planning and the management of peatland restoration partnerships	≠ Deputy of Planning and Evaluation	≠ Responsible for restoration planning and evaluation, as well as accelerating mangrove rehabilitation
Deputy of Construction, Operation, and Maintenance	Responsible for the construction, operation, and maintenance of peatland rewetting infrastructure	= Deputy of Construction, Operation, and Maintenance	= Responsible for the construction, operation, and maintenance of peatland rewetting infrastructure
Deputy of Education, Socialisation, Participation, and Partnerships	Responsible for education, outreach, public participation, and community support (including supervision of restoration infrastructure construction, operation, and maintenance within concession areas)	= Deputy of Education, Socialisation, Participation, and Partnerships	≠ Responsible for education, outreach, public participation, and community support (excluding supervisory authority over restoration infrastructure construction, operation, and maintenance within concession areas)
Deputy of Research and Development	The implementation of research and development for the governance of peatland hydrological areas and the development of high conservation value forest areas on peatlands to support climate change mitigation	≠ Deputy of Community Empowerment	≠ Responsible for community empowerment, including the marketing of products produced by peatland communities and the acceleration of mangrove rehabilitation through labour-intensive approaches

= Same as the previous period ≠ Different from the previous period

December 2024
The mandate deadline for BRGM (pursuant to Presidential Regulation No. 120/2020) before its duties are transferred to the three ministries.

In the same way to Presidential Regulation No. 1 of 2016, which served as the legal basis for the establishment of BRG, Presidential Regulation No. 120 of 2020 also stipulated a fixed institutional mandate, setting BRGM's term of office at four years, ending on 31 December 2024. The regulation further provided upon the expiry of BRGM's mandate all of its duties and functions would be transferred to the Ministry of Environment, the Ministry of Forestry, and the Ministry of Marine Affairs and Fisheries in accordance with their respective authorities.

The protection and management of peatland ecosystems, which developed alongside the inflow of international environmental financing–such as Norway's REDD+ programme and Germany's

The signing of the REDD+ agreement by Vice Minister of Environment and Forestry Alue Dohong (right) and Norwegian Ambassador to Indonesia Vegard Kaale (left) in May 2020 ©KLHK

PROPEAT initiative–further reinforced Indonesia's commitment to peatland restoration as part of a broader process of environment-making.[32] This process unfolded through the creation of territorially based property regimes, the development of infrastructure, and intellectual and scientific practices that assigned economic value to biophysical realities.[33]

The succession of peatland governance policies in Indonesia has sought to convert complex biophysical realities into landscapes that can be commodified, whether through "green" initiatives or extractive monoculture plantation activities. This reflects the position of the state as an institution that mediates competing interests in pursuit of accumulation within a capitalist system of production. In doing so, the state deploys its authority to organise and produce the environmental conditions of both human and non-human nature, including forests, mangroves, and peatlands.

These various processes of environment-making ultimately serve a single purpose, the production of value.[34] Within this process the state plays an active role in capitalism's "world-ecological" project of accumulation.[35] The following section examines more closely how peatland restoration commitments—through programmes, regulations, and institutions—follow the same trajectory: creating value and new circuits of capital under the narratives of environmental conservation and nature protection.

32 Christian Parenti (2014), op.cit, hlm. 2.
33 Ibid.
34 Ibid.
35 Ibid., hlm. 9.

3.2 Environment-making State

To understand the process of environment-making within peatland ecosystems, it is necessary to examine how nature generates surplus value that is accumulated within capitalism. From a political ecology perspective, nature provides the use values that sustain processes of capital accumulation. These use values are embodied in the physical characteristics of nature, such as the durability of timber for furniture production or the vast carbon stocks contained in peatlands, which made them an important source of fuel in Northern Europe during the late 19th century.[36]

However, within capitalism, the use values provided by nature are often devalued because they are positioned as externalities or as something existing outside the sphere of production.[37] Nature is treated merely as raw material made freely available by ecological systems (the free gifts of nature).[38] This conception drives the commodification of nature, whereby nature itself becomes a commodity whose use values are subject to extraction and exploitation.

Through the commodification of nature, capitalism continuously creates zones of appropriation as arenas for the expansion of commodity relations.[39] This becomes possible through the deployment of territorial power and geographical knowledge to constitute nature as a field of capital accumulation. This is where geopower operates. From a Foucauldian perspective, this practice represents the functionalisation of geographical knowledge as an ensemble of technologies of power aimed at the governmental production and management of territorial space.[40]

Geopower is a product of statecraft and a technology of power that enables a territory—and its entire range of biophysical variables to become accessible, legally codified and legible, knowable, and ultimately utilisable.[41] In this sense, geopower represents a continuation of the state's environment-making practices.[42] Its technologies include mapping techniques, geospatial analysis, canal construction, and other scientific systems of identification and measurement.[43]

Within Indonesia's peatland governance framework, the articulation of geopower is inseparable from the logic that underpins both policy formation and implementation, whether through regulatory instruments or institutional arrangements.

This publication focuses on the analysis of the three principal policy:

1. the inventorying of peatland ecosystems as a means of consolidating a territorial regime;
2. the rewetting, revegetation, and revitalization (3R) program as a process of infrastructure production;
3. the establishment of indicators of peatland degradation and sustainability as a translation of knowledge systems through which biophysical realities become economically legible.

36 Carys Mainprize, "The Peat We Cut," Carboncentre.org, 26 Mei 2022, diakses pada 28 November 2026, https://www.carboncentre.org/post/the-peat-we-cut#:~:text=For%20many%20crofting%20communities%20in,fuel%2C%20like%20wood%20or%20coal.

37 Jason W. Moore, 2015, "Capitalism in the Web of Life", London: Verso, hlm. 44-46.

38 Ibid., hlm. 46.

39 Ibid., hlm. 45.

40 Christian Parenti, 2014, op.cit, hlm. 7.

41 Ibid., hlm. 7-8.

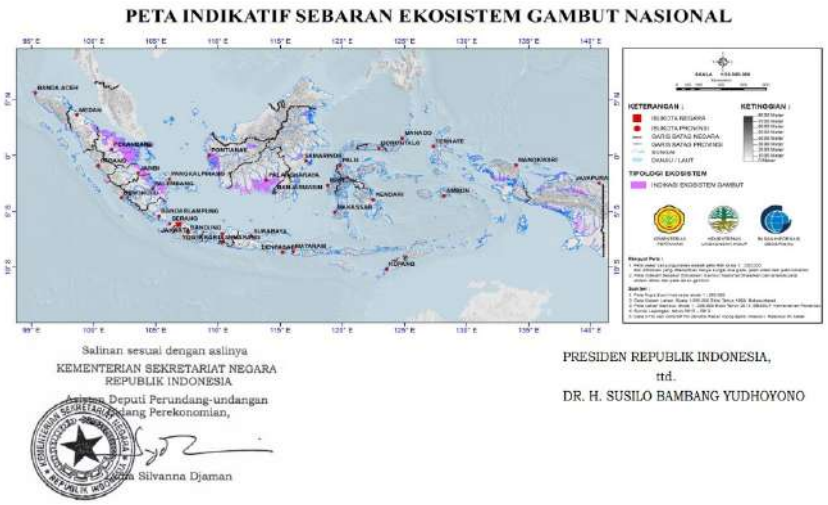
42 Ibid., hlm. 7.

43 Ibid.

3.2.1
Inventorying Peatland Ecosystems: Enshrining a Property Regime in Wetlands

Although peatlands had been classified as protected areas under Presidential Decree No. 32 of 1990 on the Management of Protected Areas, the mapping and inventorying of peatland ecosystems only began following the issuance of Government Regulation No. 71 of 2014. Article 4 of the regulation positioned inventorying and functional classification as integral components of peatland ecosystem protection and management planning. The regulation also included an indicative map of the national distribution of peatland ecosystems as a reference for conducting the inventory.

Figure 2 National Peatland Ecosystem Indicative Map



Article 8 of Government Regulation No. 71 of 2014 mandated the procedures for peatland ecosystem inventorying be further regulated through Minister of Environment and Forestry (MoEF) Regulation No. P.14 of 2017 on Procedures for the Inventory and Functional Classification of Peatland Ecosystems. This regulation became the first technical guideline for mapping peatland ecosystems and determining their functional classifications across Indonesia. In practice, Regulation No. P.14 of 2017 adopted a Peat Hydrological Unit (PHU) approach.

The PHU approach represents a spatial conception that delineates territorial boundaries according to the biophysical characteristics of peatland ecosystems rather than administrative jurisdictions. However, this spatial conception cannot be detached from the geopolitical context surrounding the issuance of Government Regulation No. 71 of 2014, which emerged partly as a response to the climate-finance politics associated with Norway's REDD+ initiative. Consequently, efforts to delineate boundaries and determine peatland ecosystem functions cannot be separated from the logic of climate-finance accumulation that underpins their existence.

The inventorying and functional classification of peatland ecosystems carry implications for both the authorities responsible for their management and the juridical rights attached to them. For instance, Article 20 of Government Regulation No. 71 of 2014 distinguishes between two categories of utilization. Protected functions may only be used for research, scientific inquiry, education, and/or environmental services. Cultivation functions, by contrast, may be utilized for all activities, including commercial operations, provided they comply with the Peatland Ecosystem Protection and Management Plan (PEPMP).

Another implication concerns the authority responsible for restoring degraded peatland ecosystems. Under Article 5 of Ministerial Regulation No. P.16 of 2017, peatland restoration outside concession areas falls under the responsibility of the minister or provincial governments. Restoration within concession areas, meanwhile, is entirely the responsibility of concession holders. The determination of these areas originates from the protected and cultivation classifications produced through peatland ecosystem inventorying, although in practice concession areas continue to exist within peatlands designated as protected functions.

Therefore, peatland ecosystem inventorying by generating juridical rights constitutes a modern abstraction through which the state consolidates its territorial authority over a given landscape. Through this process, **the state is able to control non-human nature's use values and translate them into capital for future accumulation**.[44] Ultimately, territorial authority cannot be separated from the mode of production that sustains the foundations of state power.

Where the prevailing mode of production is supported by rents derived from extractive sectors, territorial authority ultimately serves to create new circuits of capital that appropriate unpaid work performed by nature within peatland ecosystems. This dynamic is reflected in Ministerial Regulation No. P.10 of 2019 on the Determination, Designation, and Management of Peat Dome Peaks Based on PHUs.

Figure 3 Allocation of Degraded Peatland Restoration Authority

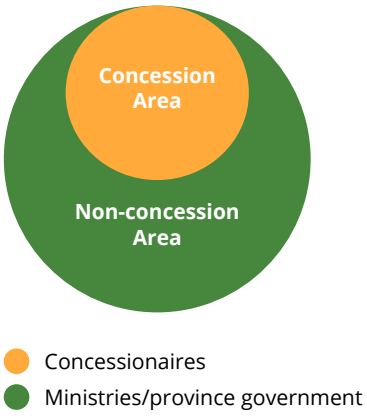
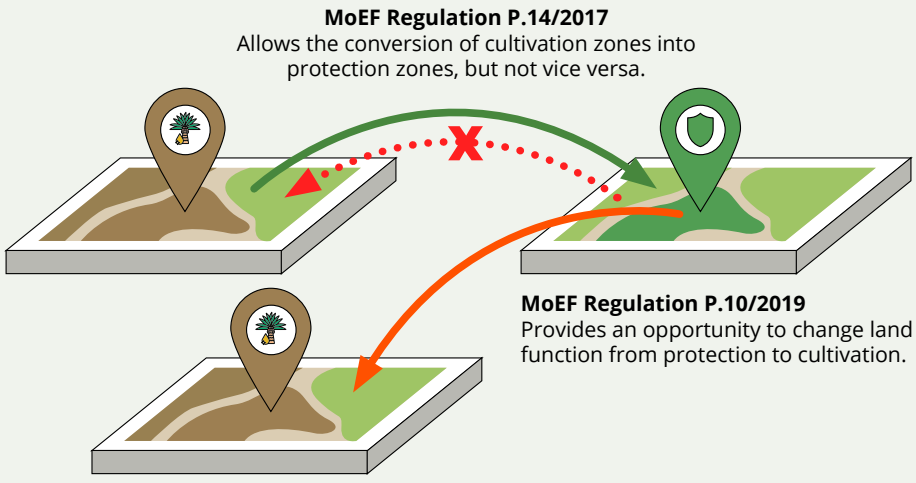


Figure 4 Comparison of MoEF Regulations on Protection and Cultivation Land-Use Changes



Although Article 16 of Regulation No. P.14 of 2017 stipulates peatlands designated for cultivation functions may be converted into protected functions—but not vice versa—Regulation No. P.10 of 2019

44 Christian Parenti, 2014, Op.cit, hlm. 7-8.

effectively opened a pathway for the conversion of protected functions into cultivation functions. Under Article 7, such changes are permitted when more than one peat dome peak exists within a single PHU and one of them has already been utilized. This loophole is further reinforced by Article 8, which allows commercial utilization outside peat dome peaks, including within peatland ecosystems designated as protected functions, until the expiration of the relevant business permits.

If peatland ecosystem mapping and inventorying are understood as mechanisms through which the state strengthens its authority in pursuit of economic gain, the persistent overlap of authority among government institutions becomes more intelligible. The classification of ecosystem functions and the regulation of access operate as instruments through which the state commodifies peatland ecosystems through "green" climate-finance schemes or for more conventional profit-seeking purposes.

Measurement of groundwater level (GWL) in a tertiary canal within a former peatland clearing area at PT Mayawana Persada, West Kalimantan ©Pantau Gambut 2024

3.2.2
3R Peatland Restoration Program

The production of infrastructure is a logical consequence of the operationalization of geopower through successive peatland governance policies. The formalization of peatlands as essential ecosystems under Government Regulation No. 71 of 2014 as amended by Government Regulation No. 57 of 2016 culminated in the emergence of various derivative regulatory instruments, institutional arrangements, and conservation and restoration infrastructures. Provisions concerning infrastructure are primarily stipulated in Article 27(3) and Article 30 of Government Regulation No. 71 of 2014.

These two articles principally regulate the mitigation of peatland degradation and the stages of restoring degraded peatland ecosystems. At the level of the Government Regulation, the mandated infrastructure includes tabat (water-control structures), firefighting equipment, and supporting infrastructure for rehabilitation and restoration. The technical specifications of this infrastructure are further regulated under Minister of Environment and Forestry Regulation No. P.16 of 2017 on Technical Guidelines for the Restoration of Peatland Ecosystem Functions. Articles 16 and 17 of the Regulation details the types of peatland rewetting infrastructure.

This infrastructure includes water-management structures (such as canal blocks and retention ponds), water storage facilities, canal backfilling, and water-pumping systems. In addition to specifying infrastructure types, the regulation also establishes a series of indicators and technical standards governing their construction. These collective infrastructures form an integral component of the peatland restoration blueprint commonly referred to as **the 3R strategy: Rewetting, Revegetation, and Revitalization.**

According to Minister of Environment and Forestry Regulation No. P.16 of 2017, Rewetting is an effort to increase the moisture content and groundwater table (GWT) of peatlands that have been dried as a result of human activities. Meanwhile, Revegetation is an effort to restore peatland cover through the planting of native species in protected function areas, or other wetland adaptive species with economic value in cultivation function areas.

No specific Government Regulation or ministerial regulation provides a technical definition of Revitalization. Nevertheless, this stage forms part of the restoration process that focuses on local economic empowerment, allowing communities to maintain their livelihoods while coexisting with peatland restoration efforts.

Although the 3R program and the technical standards for rewetting infrastructure impose strict parameters for peatland restoration, their existence cannot be detached from the political-economic imperatives of REDD+ climate finance. The 3R program and its infrastructures operate as technologies of mediation through which peatland ecosystems are reshaped to satisfy the ideal biophysical conditions demanded by an accumulation regime organized around compensated greenhouse gas emission reductions under REDD+.[45]

3.2.3
Producing Scientific Knowledge

Within the environment-making state framework, Parenti (2014) affirm that the state mediates the capital–nature metabolism by connecting nature's utility to processes of accumulation through property regimes, infrastructure, and the production of scientific knowledge. In this context, scientific knowledge functions as a prerequisite for rendering nature legible–readable, measurable, classifiable, and governable.

> **Science operates as a technology of power** that constructs technical language to make it acceptable for economic interests.

In peatland restoration, scientific knowledge operates in two ways. First, it defines what constitutes a peatland ecosystem, how its boundaries are delineated, and how protected and cultivation functions are distinguished. Second, it provides operational parameters such as groundwater table depth, subsidence rates, and fire vulnerability, while establishing biophysical parameters as the basis for decision-making. This includes determining and defining criteria for degradation and restoration. At this point, science operates as a technology of power that constructs a technical language capable of legitimizing economic interests. This is what Parenti (2014) refers to when arguing that the state creates the cognitive preconditions for territorial and economic intervention.

The need for standardization intensified as restoration efforts came to involve multiple provinces and actors. Presidential Regulation No. 1 of 2016 established the BRG to accelerate post-fire restoration and coordinate activities across ministries, subnational governments, and non-state actors. To enable comparisons across regions, the state required standardized instruments in the form of Peat Hydrological Unit (PHU) maps, protected-cultivation function classifications, and uniform performance indicators.

45 Izzudin Prawiranegara, "Ecological Change and Class Dynamics in Central Kalimantan Peatland", (Tesis Master, International Institute of Social Studies, 2023), hlm. 33.

This standardization encompasses satellite-image mapping, peat-depth surveys, hydrological reference points, and the integration of data into annual work plans. However, these processes are often carried out in a haphazard manner and are not always grounded in empirical realities. Such practices enable the state to represent peatlands as aggregated entities that can be intervened upon and linked to funding priorities or economic activities.

Unfortunately, this process simplifies a far more complex reality: **social dynamics, local practices, and ecological variations are frequently compressed into map layers and index values**. In Parenti's terms (2014, 2016), this is the process through which ecological space is rendered compatible with the governance requirements of modern capitalism.

The emphasis on hydrology, particularly groundwater table depth, is grounded in valid scientific reasoning. A study by Hooijer et al. (2010) on Southeast Asian peatlands demonstrated a strong correlation between declining groundwater tables and accelerated peat decomposition.[46] In drained peatlands, the deeper the groundwater table, the higher the rate of oxidation, which in turn triggers substantial CO_2 emissions.

This principle is consistent with the IPCC Wetlands Supplement (2013), which provides an emissions inventory framework for organic soils and rewetting options (rewetted organic soils), while also identifying correlations between CO_2 fluxes and water-level fluctuations. Through these references, restoration targets can be translated into emissions-accounting instruments (tCO_2e), while simultaneously providing technical justification for canal blocking, drainage closure, and revegetation measures.

In addition, numerous literatures confirm drainage accelerates subsidence, contributing to long-term land degradation. However, these scientific correlations do not automatically produce equitable governance outcomes, as it must be interpreted within the broader context of prevailing social structures and power relations.

A protest by South Sumatra residents in August 2024 at the Palembang District Court over a lawsuit against three companies responsible for wildfire haze. ©Rawang ↑

46 A. Hooijer dkk, 2010, "Current and future CO2 emissions from drained peatlands in Southeast Asia," European Geoscience Union Vol. 5 No. 5

In practice, the production of scientific knowledge intersects with struggles over authority. Those who install monitoring instruments, control raw data, and possess the authority to interpret groundwater table fluctuations ultimately shape narratives of compliance and non-compliance. Within concession areas, measurements may be negotiated through the selection of monitoring-well locations, the frequency of readings, or the classification of seasonal anomalies, turning numerical data into a site of political contestation.

Local communities often occupy structurally disadvantaged positions since they have been experiencing the direct consequences of peatland fires and flooding (Pantau Gambut, 2024). While, the state facilitates large-scale plantation development through concession-based access to peatlands. This institutional arrangement enables private actors to exercise disproportionate control over information and compliance verification processes. Consequently, what counts as "truth" is often established through administrative validation rather than transparent scientific assessment.

This administrative dominance illustrates that peatland restoration is both an epistemic and a material project aimed at creating a systematic framework for the commodification of nature. The process begins with the construction of technocratic categories and indicators that simplify the complexity of peatland ecosystems into stable policy objects. Such knowledge enables the state to allocate budgets, set targets, and evaluate performance quantitatively, but it also produces socio-ecological realities that are compatible with the capitalist economic logic.

This study argues that the central issue lies not in the scientific validity of these indicators, but in their function as instruments for disciplining actors on the ground. The chain of data production–from technical guidelines to field implementation–demonstrates how restoration has reinforced the state's position as a class instrument that mediates tensions between capital expansion and the biophysical limits of nature. Within political ecology, science is not a neutral arbiter, but rather a terrain of power struggles.

Minister of Health Budi Gunadi Sadikin with UNDP Indonesia and WHO representatives at the signing of the GCF-funded climate investment partnership in Jakarta ©UNDP, 2024

3.2.4
Mediating Capital and Nature

The transformation of environmental conservation into a new economic commodity can be observed through carbon market mechanisms. Within this system, the ecological functions of forests and peatlands are converted into tradable emission units through performance-based payment mechanisms. Under international frameworks such as REDD+, the success of restoration is no longer measured by the disappearance of fire hotspots, but by the economic recognition of emissions reductions (tCO_2e).

In this context, the state functions as an intermediary that transforms the ecological processes of peatlands into administrative instruments–official documents that can be validated for grants, loans, and voluntary carbon markets. This transformation positions peatland restoration as an investment portfolio. As a result, access to funding mechanisms such as the Green Climate Fund (2024) is no longer merely a matter of planting trees or constructing canal blocks, but of the state's ability to present data and verification that meet the expectations of international carbon markets.

The shift toward carbon-oriented governance has triggered a redefinition of space and land access rights. Areas that were previously treated as frontiers of production are now increasingly reframed as ecosystem service landscapes. This transformation carries implications for access authority and the utilization of land-based resources. The literature on green grabbing further confirms that environmental agendas can function as instruments for the appropriation of land and natural resources through new concession schemes or conservation projects that risk marginalizing local communities.[47]

An article on indications of systemic emission inflation to claim phantom carbon credits ©Project Multatuli

In many contexts, REDD+ functions as a territorial instrument through which states strengthen control over forests and populations by means of mapping, monitoring, and compliance mechanisms. A similar phenomenon occurs within peatland ecosystems, where Peat Hydrological Units (PHUs), functional zoning, and restoration targets become the basis for territorial regulation. Although such mediation may contribute to ecological stability, it often transfers social costs to local communities that receive the fewest benefits from the arrangement.

Capital–nature mediation is clearly visible in the self-restoration model implemented within concession areas. Companies continue producing commodities but are required to comply with peatland protection standards through hydrological management and restorative measures. By complying with prescribed Groundwater Table thresholds, companies can incorporate restoration into routine operational practices–canal blocking, monitoring wells, and fire patrols–without altering their underlying business model.

Several policy documents and studies indicate that these obligations are also framed as a justification for the "sustainability" of production, enabling licensing processes and operational activities to continue. Within the environment-making state framework, the state assumes a dual role as both regulator and provider of legitimacy for compliance claims, particularly through monitoring and reporting mechanisms. This process stabilizes the conditions of accumulation: production can continue, while restoration becomes an operational cost that reinforces corporate legitimacy.

47 J. Fairhead dkk, 2012, "Green Grabbing: a new appropriation of nature?", The Journal of Peasant Studies Vol. 39 No. 2, hlm. 237-261.

However, compliance data from the field reveal a significant gap between administrative claims and biophysical realities. Although the cumulative number of companies meeting restoration requirements increased from 280 (2015-2019) to 332 in 2023, inconsistencies in performance suggest that compliance is shaped more by bureaucratic dynamics than by substantive changes in production practices. This is evident from the fact that in 2023 only 150 (50%) of 300 assessed companies were categorized as "Blue (Compliant)," while the remainder were dominated by the "Red" category, particularly plantation companies that failed to report or whose assessments were suspended.

Findings from Pantau Gambut (2024) indicate inconsistencies between restoration efforts and field conditions. These are reflected in the continued dominance of shrublands and dryland plantations, as well as active canal networks within protected-function areas. Groundwater Table measurements of 80 cm at PT Mayawana Persada (West Kalimantan) and 140 cm at PT Bumi Mekar Hijau (South Sumatra) demonstrate substantial departures from prevailing regulatory and environmental standards. Consequently, self-restoration mechanisms within concession areas tend to function as instruments for legitimizing production, while the risks of degradation and peatland fires become socio-ecological burdens borne by communities surrounding concession areas.

A contradiction emerges as peatland restoration becomes integrated with carbon market mechanisms and results-based payment schemes.

Beyond financial value, peatland restoration also generates symbolic value through labels such as "compliant," "sustainable," and "science-based," which function as reputational capital within global supply chains. Drawing on government regulations, companies package technical compliance through certification schemes and best-practice guidelines to provide consumers and investors with assurances regarding their environmental responsibility.

An internal contradiction emerges when peatland restoration is integrated into carbon market mechanisms and results-based payment schemes. Within this framework, decarbonization risks becoming an instrument for maintaining existing economic structures without introducing fundamental change.

Rather than fundamentally addressing ecological degradation, decarbonization is increasingly mobilized as a new strategy of accumulation or "accumulation by decarbonization."[48] As a consequence, emissions generated in industrial centres continue unabated, while carbon reduction claims produced in peripheral regions through market apparatuses, standardization procedures, and auditing systems often remain opaque and difficult to verify.

As Lohmann (2006) argues, carbon trading risks transforming class conflicts and demands for agrarian justice into technocratic issues that appear technical and apolitical.[49] Within REDD+, the discourse of "benefit sharing" frequently serves as a euphemism that obscures processes through which local communities are separated from their means of production. Across peatland landscapes, corporate compliance tends to function as a form of formal validation that conceals the continued reproduction of

48 Bumpus dan Liverman, 2008, " "Accumulation by Decarbonization and the Governance of Carbon Offsets", Taylor & Francis Journal, hlm. 127-155.

49 Lohmann, L. 2006, "Carbon trading: a critical conversation on climate change, privatisation and power", The Dag Hammarskjöld Foundation, hlm. 190-198 .

exploitative production relations and monopolistic control over nature. Consequently, state mediation must be subjected to critical scrutiny in order to identify the distribution of value, the allocation of socio-ecological costs, and the actors excluded.

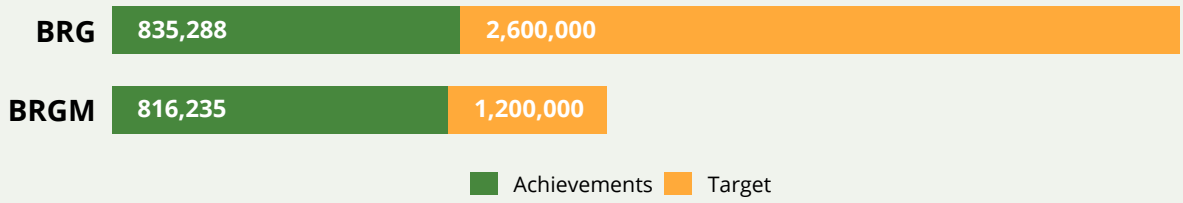
3.3 Indonesia's Peatland Restoration Claim

The statutory mandate of the BRGM, as stipulated in Letter No. 175/M/D-1/HK.03.00/04/2025 issued by the Ministry of State Secretariat, has officially ended, and its core responsibilities have been transferred to three ministries: the Ministry of Forestry, the Ministry of Environment, and the Ministry of Marine Affairs and Fisheries.

Figure 5 The Transition of Core Duties Following the Expiration of BRGM's Mandate

BRGM reported that it had restored 1.6 million hectares of non-concession peatlands through the construction of 22,349 units of Peatland Restoration Infrastructure (*Infrastruktur Restorasi Gambut*/PGI), including artesian wells, canal blocks, and backfilled canals, as well as the establishment of 1,185 Peatland Care Villages (*Desa Peduli Gambut*/DPG) across seven priority provinces.[50] Although these quantitative figures are frequently presented as indicators of the success of Indonesia's national peatland restoration program, the same achievements also reveal a disconnect between administrative targets, physical implementation, and ecological outcomes on the ground.

Figure 6 Comparison of BRG and BRGM Targets and Achievements (Hectares)

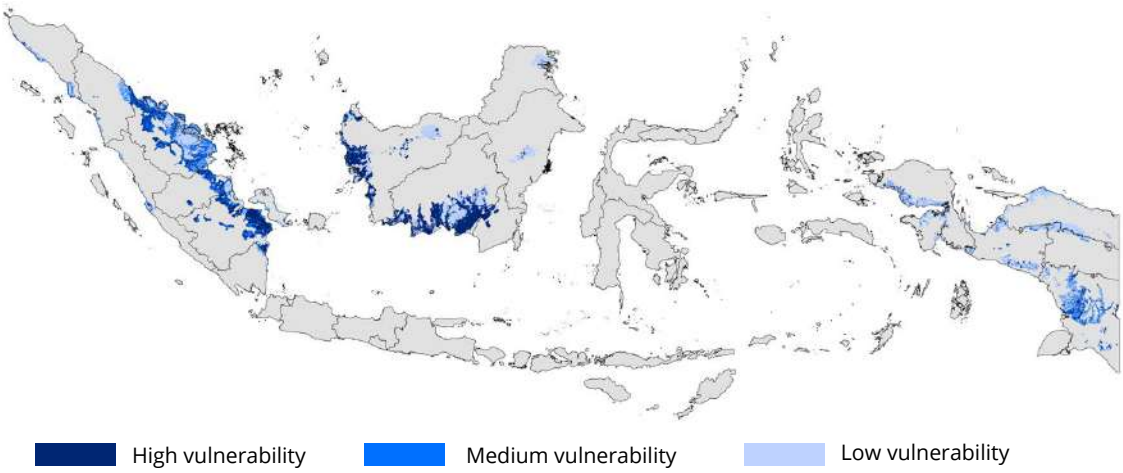


At the beginning of its establishment, the former BRG set a target of restoring 2.6 million hectares of peatlands across seven priority provinces characterized by severe peat degradation and extensive histories of forest and land fires. However, this target was revised during the agency's transition into

50 Zintan, dkk, "BRGM Restorasi 1,6 Juta Hektare Gambut dan 84.396 Hektare Mangrove" diakses November 2025. Sumber: https://lestari.kompas.com/read/2025/03/21/095556186/brgm-restorasi-16-juta-hektare-gambut-dan-84396-hektare-mangrove.

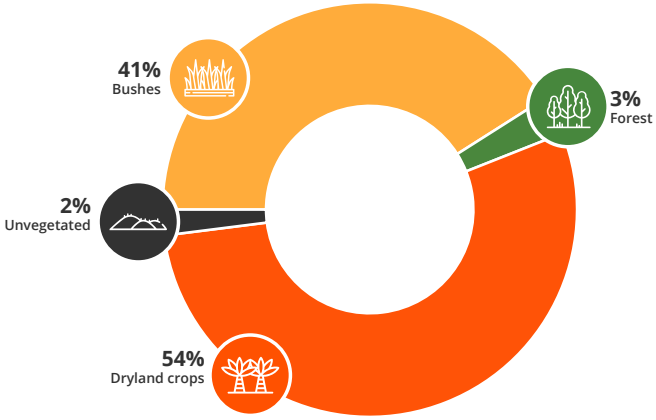
BRGM for the 2020–2024 period. Despite the reduction of the target to 1.2 million hectares, the revised objective was still not achieved. Recorded restoration outcomes reached only 835,288 hectares during the first period and 816,235 hectares by the end of the agency's mandate.

Figure 7 Map of Flood Vulnerability Distribution within Indonesia's KHG



Peatland degradation has continued, as evidenced by ongoing loss of tree cover, hydrological damage, and recurring forest and land fires. Analysis by Pantau Gambut indicates that approximately 16 million hectares of peatlands remain at risk of burning during the dry season,[51] while another 5 million hectares are vulnerable to flooding during the rainy season.[52] These findings suggest that restoration interventions have not yet delivered significant impacts in recovering the fundamental ecological functions of peatland ecosystems.

Figure 8 Proportion of Land Cover in Burned and Deforested Peatland Areas



Throughout the 2015-2024 period, Pantau Gambut identified approximately 3 million hectares of peatlands that burned, with significant escalation during El Niño years.[53] The area affected by fires within Peat Hydrological Units (PHU) consistently exceeded 500,000 hectares, reaching 1.3 million hectares in 2015, 735,000 hectares in 2019, and 525,000 hectares in 2023. Although the burned area declined by approximately 40% in 2019 compared with 2015, large-scale fires reoccurred during the 2023 El Niño period. This pattern indicates that peatland restoration efforts have not yet been effective in mitigating recurring fire cycles, leaving peatlands as a major contributor to national carbon emissions.

51 Almi dkk. 2023."Waspada Karhutla di pelupuk mata: Kajian kerentanan kebakaran hutan & lahan di kesatuan Hidrologis Gambut (KHG), Jakarta: Pantau Gambut hal 12-13

52 Juma dkk. 2025. "Tenggelamnya Lahan Basah : Kajian Kerentanan Banjir di Kesatuan Hidrologis Gambut (KHG), Jakarta: Pantau Gambut hlm. 7-8

53 Juma, dkk. 2025. Dari Konsesi Ke Konsekuensi : Studi Sebab-akibat Kerentanan Banjir di Kesatuan Hidrologis Gambut (KHG). Jakarta: Pantau Gambut, hlm. 10-11

Pantau Gambut also found significant post-fire land-use changes. In non-concession peatland areas that burned between 2015 and 2019, only around 3% of the land reverted to forest cover. The remainder either became abandoned shrubland (41%) or was converted into monoculture plantations, primarily oil palm (54%). A similar pattern was observed in concession areas, where only 1% of burned land returned to forest. These findings suggest that post-fire shrubland areas may be maintained or prepared to facilitate future plantation expansion.[54]

This practice is inconsistent with prevailing legal provisions. Article 21 of Government Regulation No. 57 of 2016 in conjunction with Government Regulation No. 71 of 2014 prohibits extractive plantation activities within peat ecosystems designated as protected areas. Furthermore, Article 14 of Minister of Environment and Forestry Regulation No. P.16 of 2017 mandates that all burned peatland areas must be revegetated using peat-adaptive and peat-friendly plant species. The conversion of these lands into oil palm and acacia plantations reflects ongoing challenges in regulatory enforcement and the lack of optimal and consistent oversight.

At the same time, although the BRGM has regularly published figures on restoration coverage, the effectiveness of such reporting has not been accompanied by more transparent indicators of success. Substantive indicators such as vegetation survival rates, groundwater level stability, reductions in fire frequency, and biodiversity recovery are essential for assessing actual ecological impacts. The absence of these indicators has contributed to a growing discourse that peatland restoration efforts place greater emphasis on administrative compliance and target achievement than on substantive and sustainable ecosystem recovery.

Monitoring results from Pantau Gambut indicate that the development of IPG has tended to prioritize the achievement of annual area-based targets over long-term maintenance and sustainability. Such an implementation approach risks reducing the efficiency of public expenditure and increasing the likelihood of restoration failure in the future.

3.3.1 (IPG) and Its Implementation

The restoration of peatland ecosystem functions has been normatively regulated through the Minister of Environment and Forestry Regulation No. 16 of 2017 concerning Technical Guidelines for the Restoration of Peatland Ecosystem Functions, as well as the Directorate General of Environmental Pollution and Damage Control Regulation (Perdirjen PPKL) No. P.3 of 2018 concerning Guidelines for the Construction of Peat Rewetting Infrastructure. These regulations mandate the rewetting of peatlands through the development of water-management infrastructure, such as canal blocks, bore wells, and backfilled canals. The primary objective is to maintain peat moisture levels while reducing the rates of oxidation and land subsidence.

From a conceptual perspective, IPG is a key component of peatland restoration efforts. Effective rewetting contributes to the recovery of peatland hydrological functions, the preservation of endemic species habitats, and the mitigation of peat fire risks. Pursuant to Perdirjen PPKL No. P.3 of 2018, IPG implementation is predominantly achieved through the construction of canal blocks, bore wells, and canal backfilling systems. These interventions play a crucial role in maintaining groundwater table (GWT)

54 Almi dkk. 2024. “Gelisah di Lahan Basah: Korporasi, Pemerintah dan Semua Komitmen kosong restorasi gambutnya”, Jakarta: Pantau Gambut hal 12-18

within the prescribed threshold of no more than 40 cm below the peat surface.

From a socio-economic perspective, IPG is intended not only to support ecological restoration but also to maintain land productivity in ways that are adaptive to peatland ecosystems and conducive to community livelihoods. Nevertheless, the prevailing regulatory framework and policy discourse often diverge from on-the-ground realities.

Damaged BRGM canal blocks found at (left) the Rupat Island KHG and (right) the Rokan River–Siak Kecil River KHG, Riau Province. ©Pantau Gambut 2024

According to BRGM annual reports, a total of 22,511 IPG units were constructed across seven priority peatland restoration provinces between 2016 and 2023. These comprised 14,059 bore wells, 8,199 canal blocks, and 333 canal backfilling systems. Most of this infrastructure was developed during the period of the BRG regency. In contrast, infrastructure development declined markedly during the BRGM period, with only 190 bore wells, 1,491 canal blocks, and 9 canal backfilling systems constructed. This decline coincided with a strategic shift in BRGM's funding allocation from infrastructure development toward the maintenance and management of previously established IPG facilities.

Table 2 IPG Achievements

Year	Target (unit)	Realisations (unit)	Achievement (%)
2016–2020	-	20,821	-
2018	8,240	8,160	99.0
2021	700	895	127.9
2022	700	451	64.4
2023	700	344	49.1

From an administrative standpoint, BRGM reports that IPG maintenance activities during this period surpassed the target of 10,000 units. Nevertheless, this reported achievement reveals a notable disconnect when contrasted with field conditions, as peatland and forest fires continue to recur in the same regions. More importantly, fire incidents have also occurred in areas where IPG interventions had previously been implemented. These circumstances raise a fundamental question concerning the functional effectiveness of peat rewetting infrastructure:

> **How can restoration effectiveness be considered successful if fires continue to recur in the same intervention areas?**

Findings from Pantau Gambut in Central Kalimantan and South Sumatra indicate that several areas where Canal Blocking Structures (CBS) had been installed still experienced fires in 2023. Field monitoring conducted by Pantau Gambut in 2023 on 77 canal blocks listed on BRGM's PRIMS WebGIS platform found that 70% of the structures were in damaged condition.[55] Most had been constructed using wood and bamboo materials, which deteriorate rapidly and had become overgrown with vegetation. The absence of routine maintenance suggests that these infrastructures have been poorly maintained. As a result, 52% of the observed canal blocks recorded groundwater table (GWT) exceeding 40 cm, indicating that the peatland remained dry and susceptible to fire despite having undergone restoration.[56]

BRGM tube well pipe blocked by sediment in the Rokan River PHU, Riau Province. ©Pantau Gambut, 2024 ↑

Pantau Gambut also found that at least six drilled wells in Riau were clogged, despite appearing visually functional and in usable condition. In addition, their design and placement often failed to adequately consider operational accessibility.[57] This limitation became evident when the wells were difficult to locate, making it challenging for firefighting personnel to mobilize heavy pumping equipment through overgrown and difficult-to-navigate vegetation corridors during fire incidents.

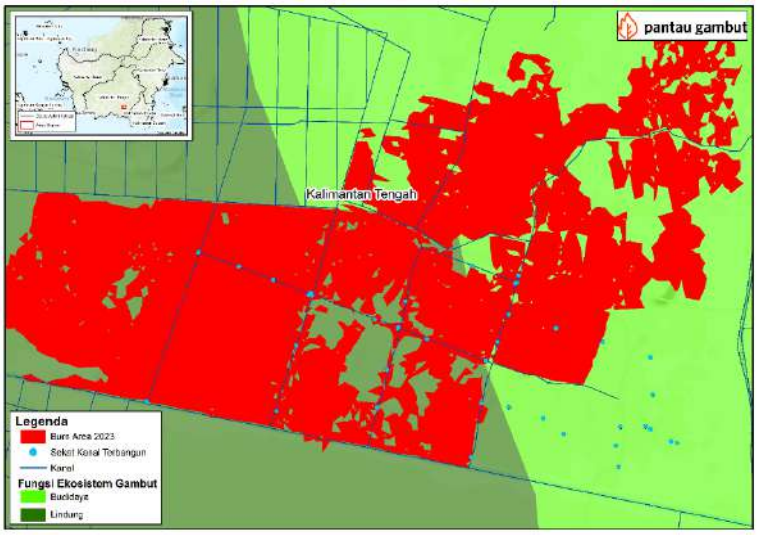
Overall, these findings reinforce the hypothesis that the development of IPG has been driven more by the achievement of physical targets and performance reporting requirements than by ecological effectiveness and functional sustainability. The continuation of this approach risks turning such infrastructure into non-functional assets that are ineffective in preventing forest and land fires. Therefore, a shift toward function-based governance is needed, supported by measurable indicators of success, such as stable GWT, reduced fire frequency, and strengthened participation of local communities.

55 Almi dkk. 2024. "Gelisah di Lahan Basah: Korporasi, Pemerintah dan Semua Komitmen kosong restorasi gambutnya", Jakarta: Pantau Gambut hal 22-23

56 Ibid.

57 Almi dkk. 2024. "Gelisah di Lahan Basah: Korporasi, Pemerintah dan Semua Komitmen kosong restorasi gambutnya", Jakarta: Pantau Gambut hal 22-23

Figure 9 Map of Burned PRI Intervention Areas in Central Kalimantan



3.3.2
Revegetated Areas Affected by Recurrent Fires

Revegetation is a key component of peatland restoration aimed at restoring natural vegetation cover, which functions to maintain peat moisture, enhance biodiversity, and reduce vulnerability to fires.[58] Within the national policy framework, revegetation is positioned as a strategic instrument for fulfilling Indonesia's commitments to climate change mitigation and the reduction of greenhouse gas emissions.

Table 3 Revegetation Area Achievements

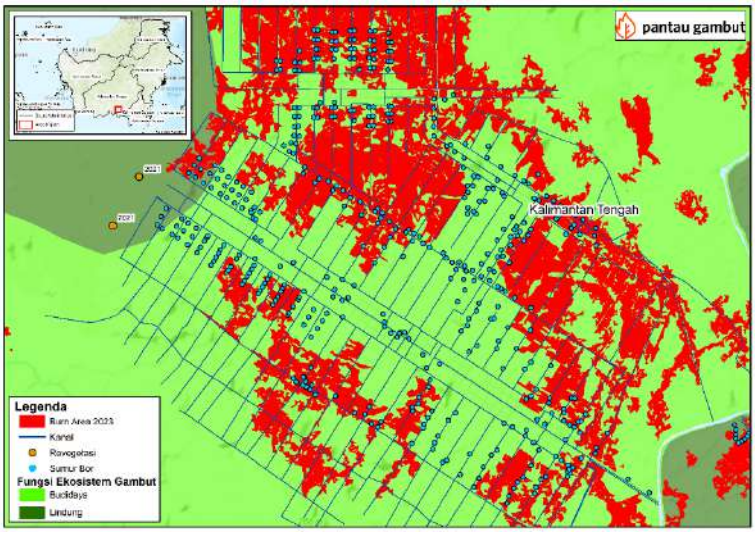
Year	Target (Ha)	Realisation (Ha)	Achievement (%)
2016–2020	-	-	-
2018	787	787	100
2021	500	735	147
2022	500	390	78
2023	700	70	10

However, field realities reveal persistent challenges, as revegetation areas remain vulnerable to fires. BRGM data for the 2021-2023 period indicate a gap between planning and implementation. Of the total target of 1,700 hectares, only 1,195 hectares (70.3%) were successfully realized. Beyond the shortfall in achieving the quantitative target, the program has also yet to demonstrate a significant ecological impact in reducing the frequency of forest and land fires.

Pantau Gambut's analysis shows that several revegetation demonstration plots were affected by fires again in 2019 and 2023, reflecting the long-term vulnerability of these interventions. Planning constraints and limited post-planting maintenance have resulted in many areas previously affected by major fires in 2015 and 2019 not being revegetated optimally. Consequently, these areas have become dominated by shrub vegetation that dries out easily, thereby increasing the risk of recurrent fires.

58 Azwar Maas, dkk . 2020. "Restorasi Gambut Indonesia", Jakarta : BRG 2020

Figure 10 Map of Burned Revegetation Demonstration Plots and PRI Areas in Central Kalimantan



Central Kalimantan serves as a clear example that physical interventions alone are insufficient to ensure the long-term success of peatland restoration. Revegetation areas established in 2022 experienced fires again in 2023, despite having received peatland infrastructure interventions (IPG). This phenomenon illustrates that the construction of IPG and the planting of vegetation are less effective without sustainable water management and regular monitoring. Restoration infrastructure that is not supported by routine maintenance is at risk of experiencing a significant decline in its ecological functionality.

Information gathered from local communities during 2023–2024 indicates that financial support for BRGM-assisted programs, such as the Peat Care Village Program (*Desa Peduli Gambut*/DPG), has been discontinued. This situation has led to the cessation of maintenance activities for both revegetation sites and IPG, resulting in weakened monitoring functions and a significant deterioration in the condition of restoration infrastructure. **Under these circumstances, the role of local communities has diminished, giving rise to the perception that restoration programs constitute an economic burden that constrains their livelihoods.**

This situation reflects the limitations of a peatland restoration strategy that is overly project-oriented and lacks a clear sustainability framework. Restoration has been treated as an administrative target rather than as an ecological and social process that requires long-term commitment and active community involvement. If revegetation continues to be implemented without adequate fire-risk planning, long-term maintenance, and guaranteed financial support for local communities, the program may ultimately exacerbate the vulnerability of peatland landscapes rather than enhance their resilience.

3.3.3
Review of Monitoring and Law Enforcement in Peatland Restoration within Concession Areas

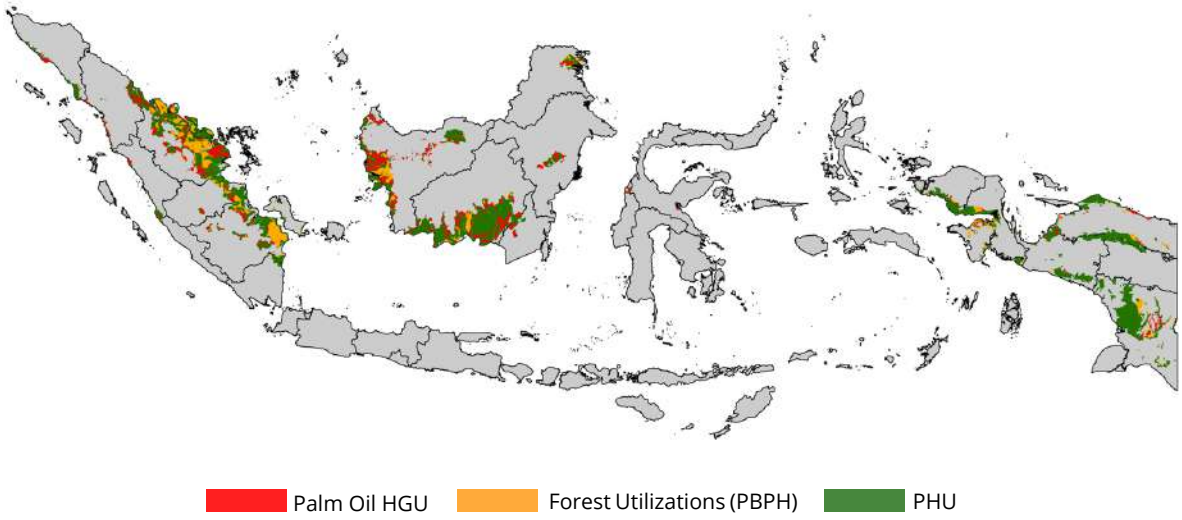
A total of 8.3 million hectares of Peat Hydrological Unit (PHU) areas are covered by concession licenses, with the largest concentrations located on the islands of Sumatra and Kalimantan.[59] The extensive expansion of oil palm and acacia plantations has driven large-scale drainage of peatlands.[60] Across all

59 Juma, dkk. 2025. Dari Konsesi Ke Konsekuensi : Study Sebab-akibat Kerentanan Banjir di Kesatuan Hidrologis Gambut (KHG). Jakarta: Pantau Gambut hal 10-11

60 Ibid.

PHU areas, a total of 281,253.51 km of canals has been recorded. This length is equivalent to traveling approximately 120 round trips along the Trans-Java Toll Road from Merak to Banyuwangi.

Figure 11 Distribution Map of Oil Palm Plantation (HGU) and Forest Utilization Concessions (PBPH) within PHU



The extensive scale of these concessions has driven widespread peatland drying through canalization, resulting in land subsidence and a diminished capacity to retain water, thereby increasing the risk of forest and land fires. Pantau Gambut identified 936 concession areas that are indicated to have contributed to ecological degradation within these PHU.

Several major corporate groups, including Sinar Mas, Best Agro, Tanoto, and APRIL, have repeatedly been associated with forest and land fire incidents since 2015. Over the past decade, the total burned area within these concession zones is estimated to have reached 2 million hectares, with some locations experiencing recurrent fires almost every year. This situation highlights a significant gap between the obligation to restore ecosystems following fire events and the actual restoration measures implemented by these companies.

Land clearing for plantation purposes within a deforested conservation zone at PT Bintang Harapan Palma Sentosa, South Sumatra Province. ©Pantau Gambut, 2024

In accordance with Presidential Regulation No. 1 of 2016, the BRG was initially mandated to supervise ecosystem restoration efforts within concession areas. During the 2016–2020 period, BRG, in collaboration with the Ministry of Environment and Forestry, monitored the compliance of industrial

timber plantation (HTI) and plantation companies through technical verification of corporate work plans and field evaluations. This oversight aimed to ensure that restoration measures, such as rewetting and revegetation, were genuinely implemented. However, following the issuance of Presidential Regulation No. 120 of 2020, supervisory authority over concession areas was transferred entirely to the Ministry of Environment and Forestry.

The transfer of supervisory responsibilities has resulted in varying levels of compliance across concession sectors. the Ministry of Environment and Forestry's annual reports indicate that several HTI/PBPH concession holders have demonstrated commitment by constructing canal blocks and implementing intensive revegetation programs.[61] In contrast, compliance within the oil palm plantation sector remains limited, particularly in areas characterized by complex social and economic conditions. Law enforcement efforts by the Ministry of Environment and Forestry also continue to face significant challenges, especially due to limited human resources available for comprehensive field monitoring and oversight.

Data on corporate participation in peatland ecosystem restoration under the supervision of the Ministry of Environment and Forestry (2020-2024) indicate that the increasing number of participating companies does not necessarily reflect improvements in policy effectiveness or the quality of oversight. Although the cumulative number of companies meeting compliance requirements increased from 280 companies during the 2015-2019 period to 332 companies in 2023, this trend appears to reflect stronger administrative compliance rather than substantive achievements in peatland restoration.

The state plays a dual role as both a regulator and a legitimizer of compliance claims.

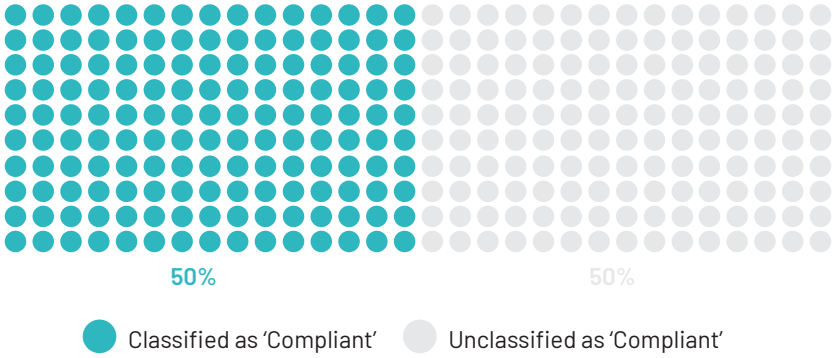
The inconsistency in target setting reflects a misalignment within the planning system and a tendency to adjust performance reporting in order to project a positive public image. In 2020, the strategic target of the Directorate General of Pollution and Environmental Damage Control (PPKL) was revised downward from 300 to 150 companies, making the achievement of 294 companies appear to substantially exceed the target from an administrative perspective.

A similar situation occurred in 2021 and 2022. Although the Strategic Plan target was increased to 400 companies, actual implementation on the ground stagnated and even declined, reaching only 316 companies in 2022.

The increase in the area under restoration, particularly in 2020 and 2023, suggests a concentration of implementation efforts among a relatively small number of the same companies, rather than the result of a broader and more evenly distributed expansion of compliance. This dependence indicates that the Ministry of Environment and Forestry 's supervisory system has not yet been able to scale compliance systematically or create sufficient structural incentives for other companies to fulfil their restoration obligations.

61 KLHK, 2023, "Laporan Kinerja Dirjen PPKL Tahun 2023, Jakarta: PPKL KLHK, hlm. 115

Figure 12 Comparison of Companies Meeting MoEF Compliance Criteria (2020–2024)



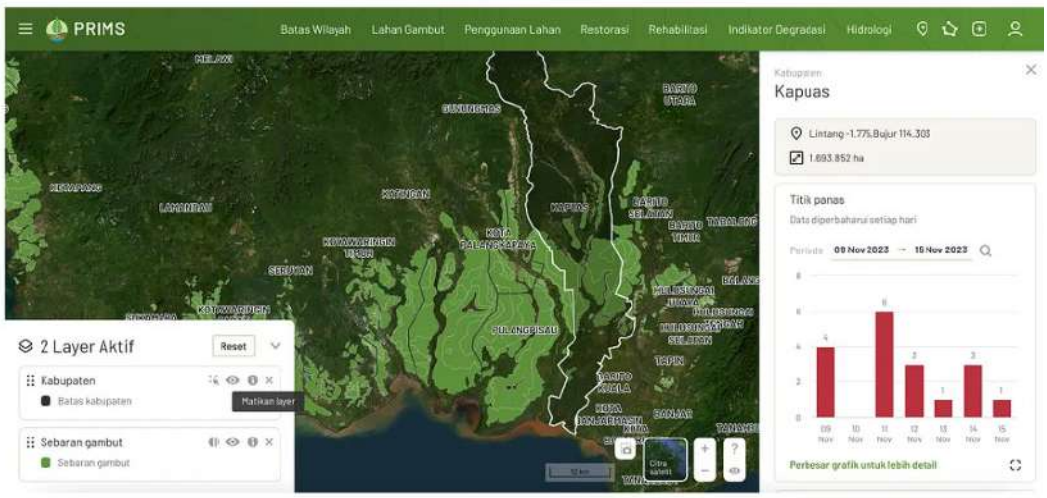
As long as the prevailing approach remains focused on administrative formalities rather than substantive performance and outcomes on the ground, peatland restoration efforts are likely to remain stagnant and fall short of achieving meaningful ecological recovery.

3.3.4
Where Do Peatland Monitoring Products Go After the Dissolution of BRGM?

The dissolution of BRGM raises important questions regarding the sustainability of the knowledge products and peatland monitoring infrastructure developed over the past decade. Technology-based systems such as PRIMS (Peatland Restoration Information and Mangrove Rehabilitation System) and SIPALAGA (Peatland Water Monitoring System) constitute public knowledge infrastructures designed to support forest and land fire prevention efforts.

Following the transfer of authority from BRGM to three ministries, several of these platforms are no longer publicly accessible. This discontinuity in access should not be viewed merely as a technical issue; rather, it reflects the political dimensions of knowledge infrastructures developed within the framework of restoration. Such infrastructures are often shaped by the modes of knowledge production favored by particular government regimes at specific points in time. Consequently, this discontinuity raises concerns regarding public participation and transparency in the management and dissemination of information related to peatland ecosystems.

Gambar 13 PRIMS BRGM



The fate of 153 groundwater table monitoring units (*alat pemantauan tinggi muka air tanah*/AP-TMAT) deployed across priority provinces remains uncertain. Administratively, these assets have been transferred to the Ministry of Environment. However, as of early 2026, systems such as PRIMS and SIPALAGA have yet to resume full operation. Moreover, no public evaluation or reporting has been issued regarding the functionality of these critical monitoring instruments, which play a vital role in assessing peatland saturation levels and predicting fire risk.

3.4 Wetlands in the Letter of the Law

The end of 2024 was marked by uncertainty regarding the future of peatland restoration in Indonesia. In addition to the expiration of BRGM's mandate under Presidential Regulation No. 120 of 2020, Law No. 61 of 2024 officially restructured the Ministry of Environment and Forestry into two separate institutions: the Ministry of Environment and the Ministry of Forestry. Referring to Article 2 of Presidential Regulation No. 140 of 2024, the Ministry of Forestry now operates as an independent institution, separate from the Ministry of Environment, which is integrated with the Environmental Control Agency. However, the regulation does not explicitly stipulate which of these two newly established ministries holds authority over peatland ecosystem governance.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Ketua Umum Prabowo Subianto saat Apel Kader Partai Gerindra di Indonesia Arena, Jakarta, Sabtu 31 Agustus 2024 malam. ANTARA/Wahda Mariscon/aa.

An article on Prabowo Subianto's IDR 1,000 trillion revenue target from carbon credits upon his inauguration as the President of Indonesia. ©Tempo

The uncertainty surrounding institutional authority in forest and environmental governance has become a critical issue, particularly as President Prabowo has set a target of generating Rp1,000 trillion (approximately USD 65 billion) in revenue from carbon credits by 2028.[62] To achieve this goal, the government plans to establish a dedicated agency responsible for managing green funds and overseeing carbon trading projects.[63]

Clarity regarding authority over the peatland sector only emerged in mid-August 2025 with the issuance of Minister of Environment/Environmental Control Agency Regulation (PermenLH/BPLH) No. 8 of 2025 concerning the Organization and Work Procedures of the Peatland and Mangrove Ecosystem Management Agency. This regulation provides the legal basis for the establishment of the Peatland and Mangrove Ecosystem Management Agency, which officially assumes the authority previously held by the BRGM.

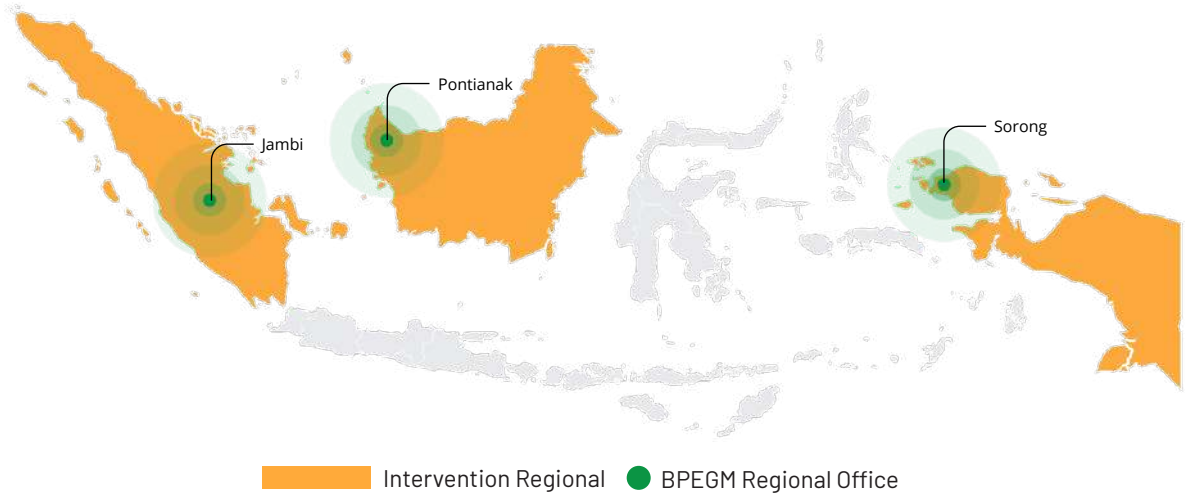
Under Article 3 of the regulation, the Peatland and Mangrove Ecosystem Management Agency (BPEGM) is accountable to the Deputy for Environmental Governance and Sustainable Natural Resources (TLSDAB). As part of the institutional structure of the Environmental Control Agency (BPLH), as stipulated in Article 5 of Presidential Regulation No. 183 of 2024, authority and responsibility for peatland governance now

62 "Prabowo Targetkan Rp1.000 Triliun dari Perdagangan Karbon, Pengamat: Terlalu Ambisius", Tempo.co, 15 September 2024, diakses pada 20 Desember 2025, https://www.tempo.co/arsip/prabowo-targetkan-rp1-000-triliun-dari-perdagangan-karbon-pengamat-terlalu-ambisius-9557

63 Ibid.

fall entirely under the Ministry of Environment/Environmental Control Agency (KLH/BPLH). Although the nomenclature has changed, the Ministry of Environment may operationally utilize the organizational units and resources of the BPLH, in accordance with Article 26 of Presidential Regulation No. 182 of 2024.

Figure 14 BPEGM Intervention Area Distribution in Three Regions



Unlike the BRGM, which operated across seven priority provinces, the BPEGM functions through three regional offices located in Jambi (Sumatra), Pontianak (Kalimantan), and Sorong (Papua). Each office is responsible for monitoring and evaluating peatland ecosystem governance within its respective jurisdiction. **In other words, only a single center oversees the peatland ecosystems of an entire major island.** However, the strategic rationale behind selecting these three locations as operational bases—beyond considerations related to the distribution of Peat Hydrological Units (PHU)—requires further elaboration.

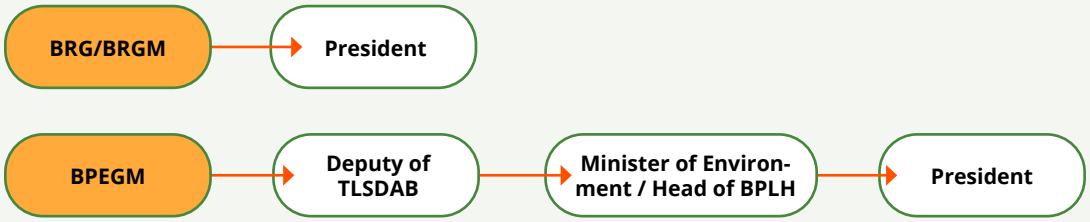
Carbon trading risks converting class conflicts and demands for agrarian justice into technical, apolitical technocratic issues.

The establishment of the three BPEGM regional offices suggests an expansion of the geographical scope of National Strategic Projects (NSP) aimed at achieving food and energy self-sufficiency.[64] In contrast to the BRGM's mandate, which did not include Papua, Ministerial Regulation of the Ministry of Environment/BPLH No. 8 of 2025 designates Sorong as an operational hub. This move follows the designation of the Food Production Center Area (*Kawasan Sentra Produksi Pangan*/KSPP) in South Papua as one of the National Strategic Projects in February 2025 under the 2025–2029 National Medium-Term Development Plan (RPJMN).

As a Technical Implementation Unit (UPT), the BPEGM focuses on the technical aspects of peatland and mangrove ecosystem protection and management. A significant difference from the BRGM lies in its coordination structure: whereas the BRGM reported directly to the President, the BPEGM is accountable to the Deputy for Environmental Governance and Sustainable Natural Resources (TLSDAB) within the BPLH/KLH.

64 Abdullah Fikri Ashri, "Mempercepat Langkah Swasembada Pangan", Kompas.id, 23 September 2025, diakses pada 20 Desember 2025, https://www.kompas.id/artikel/mempercepat-langkah-swasembada-pangan; lihat juga Inpres No. 14/2025 tentang Percepatan Pembangunan Kawasan Swasembada Pangan dan Energi.

Figure 15 Comparison of Accountability Flows between BRG/BRGM and BPEGM



The placement of the BPEGM under the BPLH/KLH clarifies the political direction of peatland ecosystem governance within the carbon trading framework promoted by President Prabowo Subianto. This integration is further reflected in the institutional structure of the BPLH as outlined in Presidential Regulation No. 183 of 2024, which includes the Deputy for Climate Change Control and Carbon Economic Value Governance (PPITKNEK). This deputyship is responsible for formulating and implementing technical policies, as well as establishing standards for carbon economic instruments and broader environmental economic mechanisms.

An article on the presentation of carbon economic value implementation priorities by the Deputy for PPITKNEK. ©Berita Bernas

These developments suggest that the PPITKNEK Deputyship functions as a dedicated institutional body for carbon trading initiatives. The incorporation of peatland ecosystems into the same governance regime as carbon trading represents an articulation of the state's role as a techno-managerial apparatus, integrating peatland ecosystems into new circuits of capital accumulation.[65]

Within the current policy trajectory, the protection and management of peatland ecosystems are being directed toward integration into the capital circuits of carbon trading. The resulting regulatory framework represents a consolidation of the interests of multiple stakeholders into a set of norms whose boundaries are defined by the state, acting as the primary authority endowed with coercive power and geographical power (geopower).

Peatland ecosystem governance in Indonesia exhibits a recurring pattern: efforts to protect peatlands are consistently accompanied by the creation of new circuits of accumulation,

65 Christian Parenti, 2014, Op.cit, hlm. 6.

particularly through climate finance mechanisms and green economy frameworks. Such interventions rarely—if ever—address the underlying causes of degradation, which are systemic and structural in nature.

The biophysical degradation of peatland ecosystems is rooted in unequal access to agrarian resources. This condition is driven by the limited availability of land for settlement and subsistence livelihoods as a result of the large-scale expansion of corporate monoculture concessions, as well as the state's unilateral designation of forest areas, often undertaken without sufficient consideration of local socio-economic dynamics. Furthermore, the conversion of forests and peatlands for large-scale development projects frequently raises concerns regarding the equitable distribution of benefits, as these projects are commonly justified in the name of the "public interest" or deemed "strategic at the national level."

The degradation of peatlands in Indonesia can be traced to the cumulative legacy of Forest Concession Rights (HPH) permits issued during the New Order era, the government's ambition to convert millions of hectares of peatlands into national food estates and energy plantation forests, and policies that effectively granted amnesty to palm oil corporations. A partial reading of these underlying drivers fails to engage with the essence of the problem and remains confined to technocratic solutions and governance infrastructure alone.

Without addressing these fundamental structural issues, peatland protection and management policies risk becoming little more than empty box-ticking exercises designed to demonstrate project achievements and facilitate value appropriation by rent-seekers and actors from the Global North that dominate carbon markets. Rather than ensuring genuine conservation, initiatives framed as peatland protection and preservation may ultimately marginalize both people and nature.

→
Kebakaran hutan dan lahan di Kawasan Rawa Tripa, Aceh ©Apel Green Aceh, 2026

4. Conclusion

Peatland restoration in Indonesia is not merely a technical intervention aimed at rehabilitating ecological degradation. Rather, it reflects the active role of the state in reconfiguring the relationship between nature, capital, and governance through specialized policy frameworks. In this context, restoration functions both as a knowledge-based instrument responding to the global climate crisis and as a site for the consolidation of power over natural resources.

The transformation of previously neglected or degraded peatlands into strategically significant spaces within climate politics is the product of a historical process shaped by agrarian capital expansion and the ecological crises that accompanied it. Recurrent forest and land fires from the late 1990s through 2015 compelled the state to acknowledge the shortcomings of development models based on peatland drainage and conversion. However, rather than fundamentally shifting the prevailing development paradigm, this recognition of crisis facilitated the reconfiguration of peatlands as ecological assets that can be measured, managed, and mobilized within the broader agendas of emissions reduction and low-carbon development.

Through the lens of the environment-making state, the state acts as a mediator that actively shapes the environment to align with the requirements of capital accumulation. Peatland restoration is therefore implemented through three interrelated mechanisms: territorialization, infrastructure development, and the production of scientific knowledge. These mechanisms function not only as instruments of environmental protection but also as prerequisites for integrating peatlands into the global climate political-economic regime.

The transformation of BRG into BRGM represents a new process of peatland territorialization through the adoption of the Peat Hydrological Unit (PHU) approach, functional zoning, and the reorganization of authority among state actors. This process renders peatlands more legible from administrative

and legal perspectives while simultaneously opening new avenues for access and economic utilization. Consequently, restoration extends beyond the rehabilitation of biophysical conditions; it also reinforces property regimes and the state's territorial control over peatland ecosystems.

The restoration framework based on the 3R approach: rewetting, revegetation, and revitalization functions to reorganize the biophysical conditions of peatlands in accordance with performance indicators established by the state and climate-finance regimes such as REDD+ and PROPEAT. The construction of rewetting infrastructure seeks to maintain peatlands in a condition that can be quantified in terms of emissions reductions or fire prevention outcomes. As a result, restoration tends to operate as a form of ecological risk management aimed at maintaining the stability of productive landscapes, rather than as a transformative intervention that addresses the structural causes of degradation.

The production of scientific knowledge–including peat-depth mapping, groundwater-level monitoring, and the establishment of degradation indicators–constitutes a foundational element of restoration initiatives. This knowledge is not politically neutral; rather, it functions as a technology of power that simplifies the socio-ecological complexities of peatlands, making them compatible with policy frameworks and carbon markets. By transforming peatlands into standardized and measurable objects, the state creates the cognitive conditions necessary for the commodification of nature under the banners of "restoration" and "sustainability."

Peatland restoration in Indonesia thus represents both a continuation and a renewal of the historical processes of capital accumulation on peatland landscapes. Rather than severing the exploitative relationship between capital and nature, restoration reconfigures that relationship to align with the imperatives of the global climate crisis. Within this framework, restoration projects should be understood not merely as ecological solutions, but as political arenas in which the state renegotiates the legitimacy of development, environmental responsibility, and opportunities for accumulation in the shadow of climate change.

←

Abandoned land converted into a Food Estate extensification area in Palingkau Asri Village, Kapuas Murung District, Kapuas Regency, Central Kalimantan. ©Pantau Gambut, 2024

Appendix

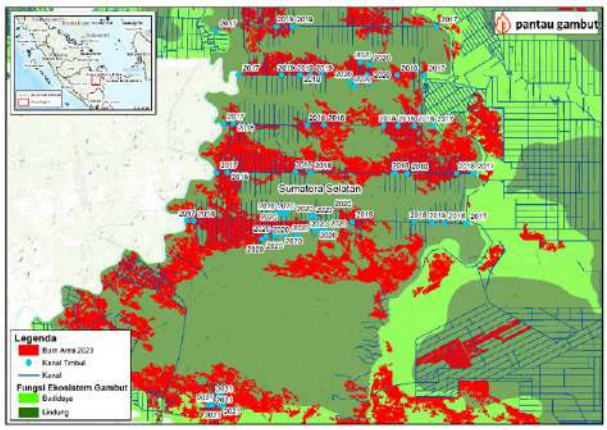
Appendix 1 Constructed PRIs

Year	Drilled Well	Canal Block	Canal Backfilling
2016–2020	13,869	6,628	324
2018	4,801	3,326	33
2021	110	776	9
2022	80	371	-
2023	-	344	-

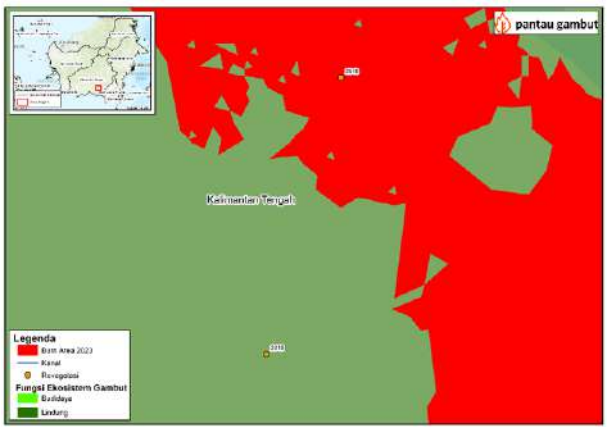
Appendix 2 Maintained and Repaired PRIs

Year	Drilled Well		Canal Block		Canal Backfilling	
	Maintained	Repaired	Maintained	Repaired	Maintained	Repaired
2016–2020	-	-	-	-	-	-
2018	-	-	-	-	-	-
2021	4,032	568	8,059	339	-	-
2022	6,627	486	2,183	111	32	-
2023	2,218	226	7,758	125	-	-

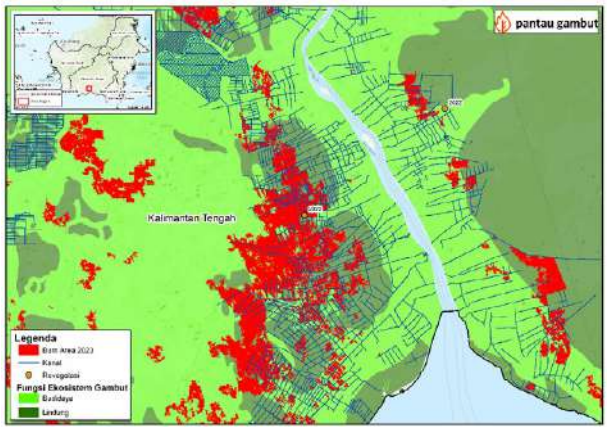
Appendix 3 Burned PRI Intervention Areas (Canal Blocks) in South Sumatra



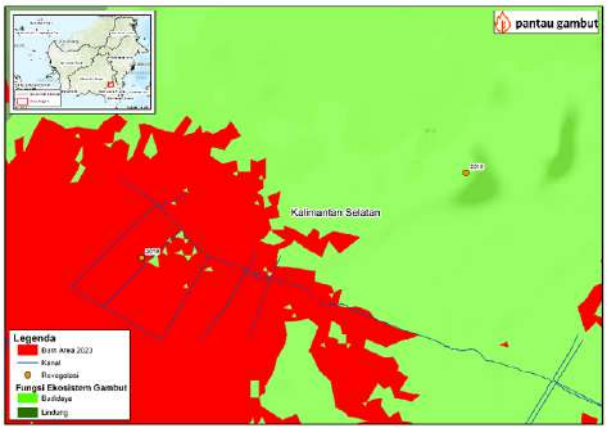
Appendix 4 Burned Revegetation Intervention Areas in Central Kalimantan



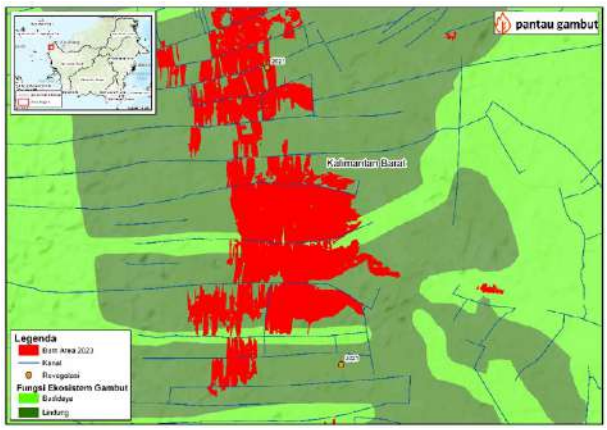
Appendix 5 Burned Revegetation Intervention Areas in Central Kalimantan



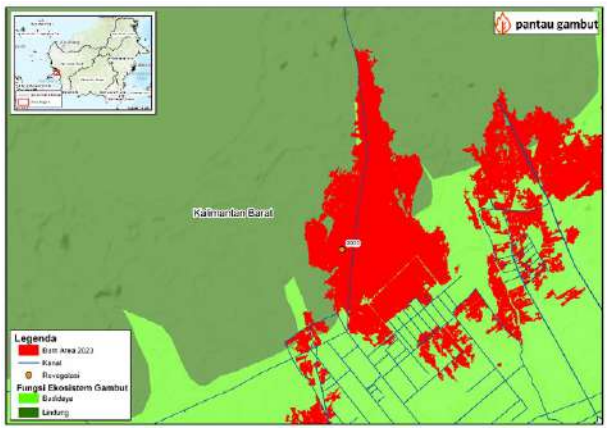
Appendix 6 Burned Revegetation Intervention Areas in South Kalimantan



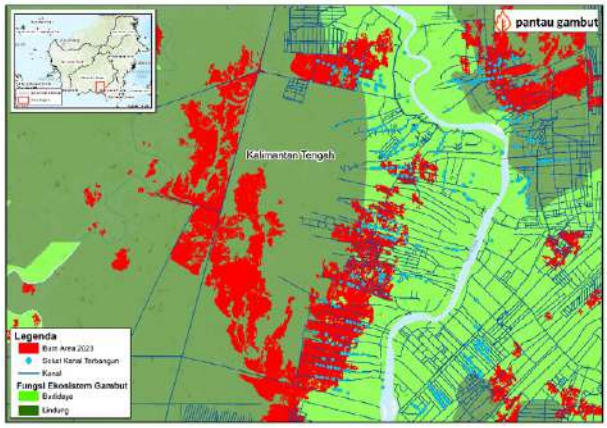
Appendix 7 Burned Revegetation Intervention Areas in West Kalimantan



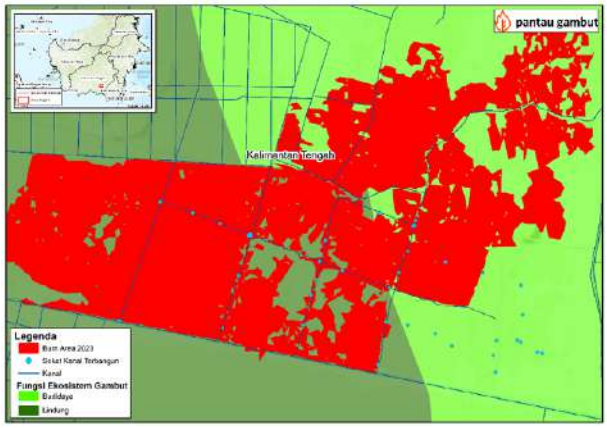
Appendix 8 Burned Revegetation Intervention Areas in West Kalimantan



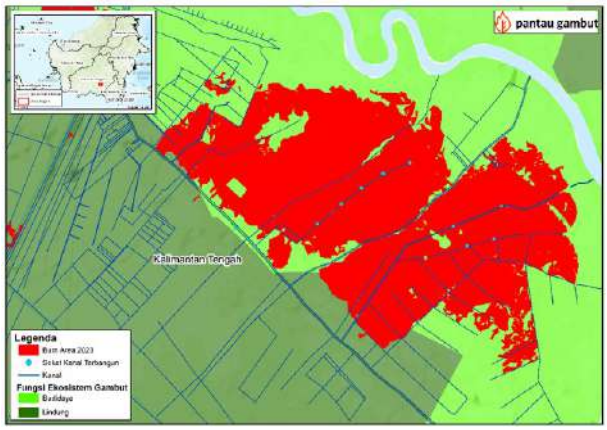
Appendix 9 Burned PRI Intervention Areas (Canal Blocking) in Central Kalimantan



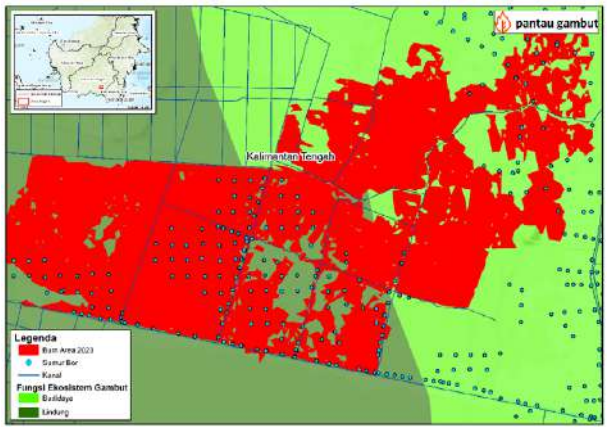
Appendix 10 Burned PRI Intervention Areas (Canal Blocking) in Central Kalimantan



Appendix 11 Burned PRI Intervention Areas (Canal Blocking) in Central Kalimantan



Appendix 12 Burned PRI Intervention Areas (Canal Blocking) in Central Kalimantan



pantau gambut