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Legalizing the Climate Crisis:

Systematic Deforestation in the Name of Energy Transition in Indonesia

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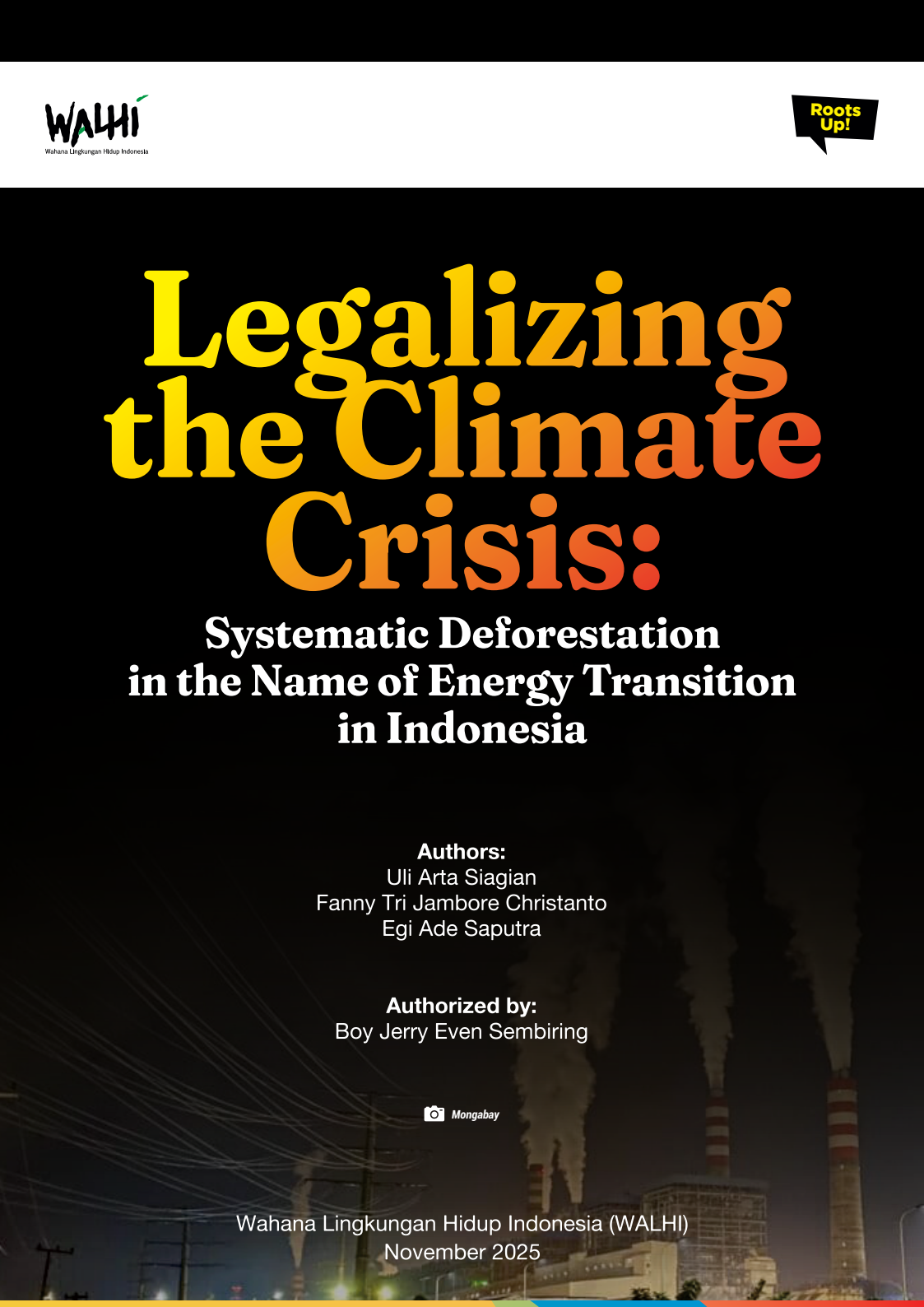

Mongabay

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LEGALIZING THE CLIMATE CRISIS:
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Table of Contents

KEY FINDINGS

Key Findings of This Report:

1. Approximately ±26.68 million hectares (25.8%) of Indonesia's forest areas are now under industrial permit regimes, consisting of:
   - PBPH (Forest Utilization Business Permit) covering an area of 21.1 million hectares,
   - WIUP (Mining Business Permit Area) covering an area of 4.7 million hectares, and
   - HGU (Right to Cultivate Permit) covering an area of 717 thousand hectares.
2. Current energy transition projects in operation are far from meeting demands for justice, democracy, and cleanliness. In fact, on the ground, these energy transition projects are contributing to increased deforestation, environmental damage, land dispossession, conflicts, violence, and intimidation.
3. The hollow commitment of the Indonesian government to the SNDC and its contradictions with national policies.
4. The analysis results show that within the extractive industrial permit areas in Indonesia, which cover around 23.64 million hectares of forested areas, there are carbon reserves of approximately 2.46 billion tons of carbon (tC). If converted, this amount is equivalent to approximately 9.03 billion tons of carbon dioxide equivalent (tCO_2e).
5. If all forested areas under these industrial permits are cleared or degraded, Indonesia could release more than 9 billion tons of CO_2e into the atmosphere, equivalent to the accumulated emissions from the national energy sector over the last 25 years.

CONTEXTUAL BACKGROUND

We are living in the most critical period in human civilization's history. The Planetary Boundaries framework shows that we have already surpassed 6 out of 9 safe limits for human life on Earth. The tangible manifestations of exceeding these planetary boundaries are the climate crisis, biodiversity loss, and pollution (the triple planetary crises).

The Intergovernmental Panel on Climate Change (IPCC) under the United Nations (UN) released its latest report on global climate conditions on Monday, March 20, 2023. In the AR6 Synthesis Report, the IPCC emphasized that the climate crisis driven by human activities is progressing at an alarming rate, worsening the intensity and frequency of extreme weather events worldwide, from more severe heatwaves and extreme rainfall to prolonged droughts and the increasing intensity of tropical cyclones.

Currently, the Earth's average temperature has risen by about 1.1°C compared to pre-industrial times and is projected to reach a rise of 2.8°C by 2100 if countries implement the commitments outlined in their Nationally Determined Contributions (NDCs). This figure is nearly twice the target of 1.5°C set by the Paris Agreement, which is considered the safe limit for global climate stability.

In their latest report titled “WMO Global Annual to Decadal Climate Update 2025–2029,” the World Meteorological Organization (WMO) stated that there is a 70% chance that the global average temperature will exceed the 1.5°C threshold above pre-industrial levels within the next five years. Even more worrying, the WMO predicts an 80% likelihood that at least one year between 2025 and 2029 will be the hottest on record, surpassing the global heat record set in 2024. Moreover, the chance that any year within that period will exceed a 1.5°C increase reaches 86%. These figures represent a sharp rise compared to previous reports. In the 2023 report, the chance of a

global temperature rise exceeding 1.5°C over five years was only 32%, increasing to 47% in the 2024 report.

Amid this worsening situation, the solutions emerging from international climate meetings are increasingly distant from what should actually be done, which is to drastically stop fossil fuel emissions. The proposed solutions primarily focus on 'balancing' emissions but fail to address the economic growth model, which is at the root of the climate crisis. A growth economy always demands an increase in production and consumption. This expansion results in the large scale extraction of natural resources and, ultimately leads to large scale emissions. The false solutions that merely tinker with balancing emissions can be seen in nature based solutions like biodiversity offsets, REDD, REDD+, and carbon credits. Forest conservation is carried out without recognizing that forest ecosystems and their biodiversity have the right to exist to protect human life on Earth. These conservation efforts often still adopt outdated views where humans are seen as a threat, rather than as key participants in the implementation of conservation efforts.

The forestry and land use sectors have always been treated as tools for balancing fossil emissions released by other sectors. Indonesia's Second Nationally Determined Contribution (SNDC), for example, still relies heavily on carbon absorption from the Forest and Other Land Use (FOLU) sector as its primary mitigation strategy, rather than directly reducing emissions from energy. This obscures the responsibility of the energy sector to drastically reduce its emissions. In the context of the energy transition, it is in fact not enough to simply push ambitious targets for increasing the renewable energy mix but crucial to deconstruct the current energy transition model being implemented. Energy transition models such as Electric Vehicles, geothermal energy, co-firing biomass, and other forms of bioenergy have proven to be major drivers of large scale deforestation. For example, to support the demand for Electric Vehicles, from 2001 to 2023, a total of 193,830 hectares of natural forests were lost due to nickel mining in Indonesia (AURIGA: 2024).

The current energy transition is still heavily dependent on forests and land. As of now, 26.5 million hectares of forest are under pressure from various permits, including Mining Business Permits (IUP), Forest Utilization Business Permits (PBPH), and Right to Cultivate Permit (HGU). There are no policies that require permit holders to protect the forests within their concessions. In other words, these forests can be legally cleared, a practice the Ministry of Forestry refers to as 'legal deforestation.' Deforestation to support these energy transition projects will release enormous emissions, while simultaneously removing one of the key functions of forests as carbon sinks. Moreover, the loss of forests will also eliminate biodiversity and the livelihoods of millions of Indonesian people. This fact will undoubtedly hinder Indonesia's SNDC targets.

This report will outline the impacts of the energy transition that relies on forests and land use. It will provide an aggregate analysis of the forest cover area under industrial permits, while also examining the characteristics of the affected forest ecosystems. According to the 2024 MapBiomas Indonesia classification, Indonesia's forest cover consists of three main ecosystem types, namely Terrestrial Forest Formation, Peatland Forests, and Mangrove Forests. These three ecosystems have complementary ecological functions: terrestrial forests maintain hydrological balance and serve as habitats for most endemic flora and fauna; peatland forests store extremely high carbon stocks and play a critical role in water regulation; while mangrove forests act as natural coastal barriers and also serve as blue carbon sinks. Therefore, the pressure of permits on forests not only impacts the extent of forested areas that will be lost, but also significantly contributes to the climate crisis, while threatening the very specific ecological functions of each ecosystem.

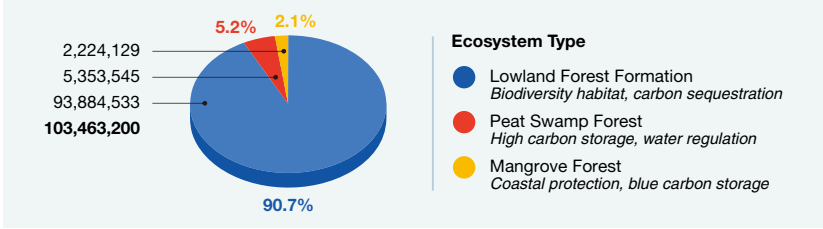
DOMINANCE OF PERMITS IN INDONESIA'S FOREST AREAS

1. Current Status of Indonesia's Forest

Indonesia's forests are among the last bastions of the world's tropical ecosystems. According to the analysis of MapBiomas Indonesia 2024, the total national forest cover reaches 103,463,200 hectares, encompassing various ecosystems from lowlands, mountains, peat swamp, to mangrove forests. This data serves as a critical foundation in understanding Indonesia's ecological condition before it is linked to the pressures from industrial permits. In general, the structure of Indonesia's national forest cover is dominated by Lowland Forest Formations (90.7%), followed by Peatland Forests (5.2%) and Mangrove Forests (2.1%). This composition highlights Indonesia's heavy ecological dependence on the integrity of its lowland and tropical peatland forests.

Currently, a total of 26.5 million hectares of forested areas in Indonesia are legally located within industrial concession zones linked to extractive industries, many of which are closely tied to energy transition projects (WALHI: 2025). The breakdown is as follows: 21.1 million hectares under Forest Utilization Business Permit (PBPH); 4.7 million hectares under Mining Business Permit Area (WIUP); and 717 thousand hectares under Right to Cultivate Permit (HGU).

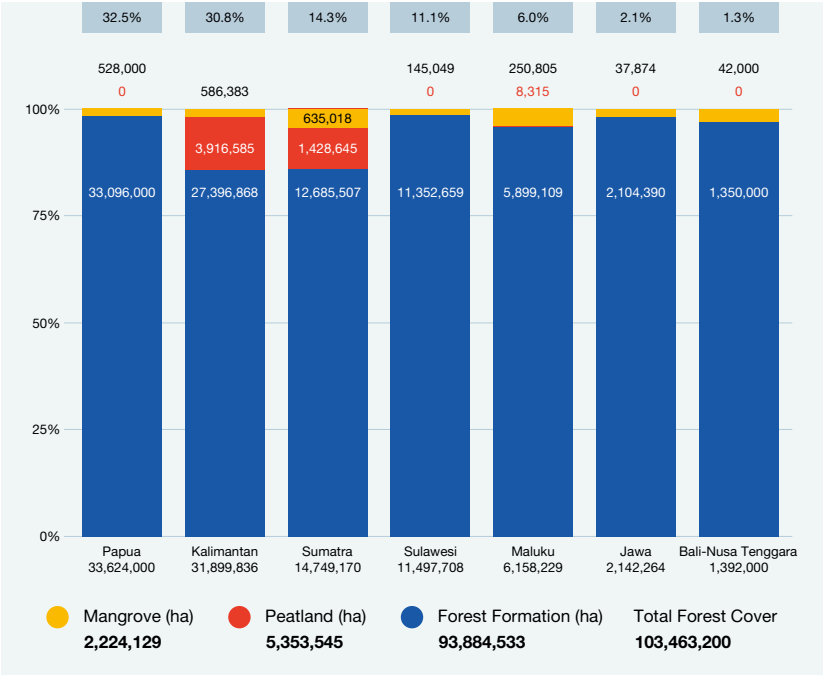
Tabel 1. Area and Proportion of Indonesia's Forest Ecosystems (2024)



Spatial Distribution of Forest Cover by Island

The distribution of Indonesia's forest cover reveals disparities that reflect the history of economic development and industrial pressures across regions. Papua and Kalimantan remain the largest centers of forest cover, holding 32.5% and 30.8%, respectively, of the national total. In contrast, Sumatra, Sulawesi, and Java–Bali–Nusa Tenggara have lost much of their natural forests due to the expansion of plantations and mining over the past three decades.

Tabel 2. Forest Cover Distribution by Island (2024)

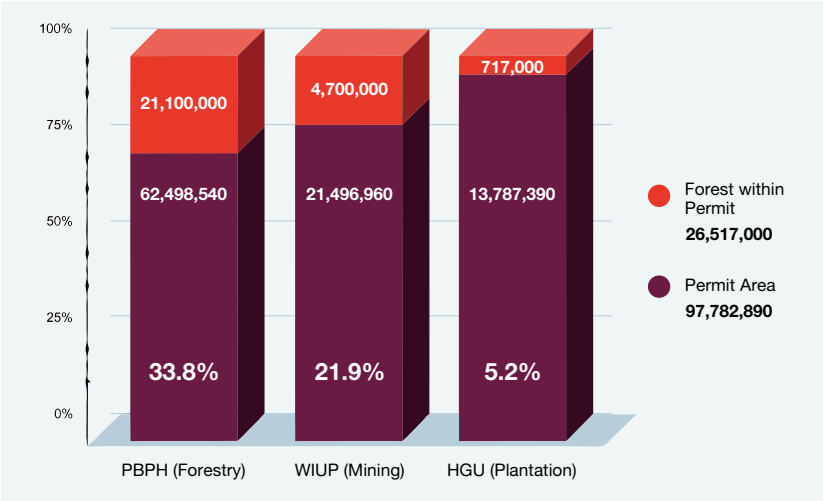


2. Natural Forests within Concessions

An overlay analysis between forest cover maps and permit data shows that approximately 26.5 million hectares (25.6%) of Indonesia's forested areas fall within active permit zones. The dominance of

permits in the forestry sector (PBPH), plantations (HGU), and mining (WIUP) demonstrates how land use is managed not based on ecosystem carrying capacity, but rather on investment logic. Papua and Kalimantan hold more than 63% of the national forest cover, making them Indonesia's ecological epicenters and largest carbon reserves.

Tabel 3. Permit Pressure on National Forest Cover (2024)

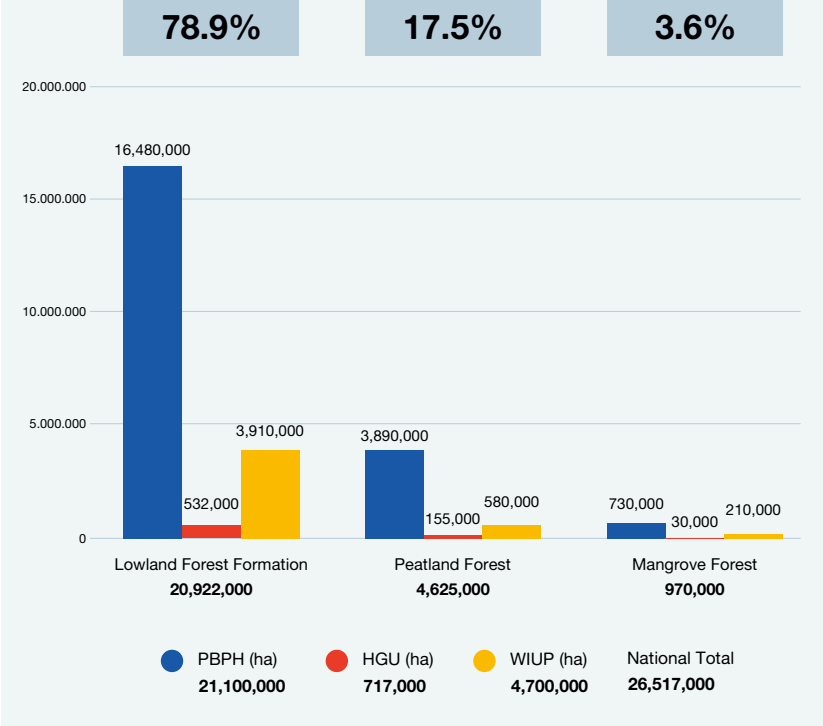


The legality of permits has now become the new face of legalized deforestation, where the removal of forest cover occurs within areas officially granted permits by the state.

Composition of Forest Ecosystems within Concession Areas

From an ecosystem perspective, the greatest permit pressure occurs on lowland forest formations, particularly in production forests in Kalimantan and Sumatra. Peatland forests and mangroves are also threatened by the expansion of oil palm plantations, mining, and coastal infrastructure. This data reveals that exploitation not only reduces forest area but also alters the complex ecological functions of these ecosystems.

Tabel 4. Composition of Forest Ecosystems within Concession Areas (2024)

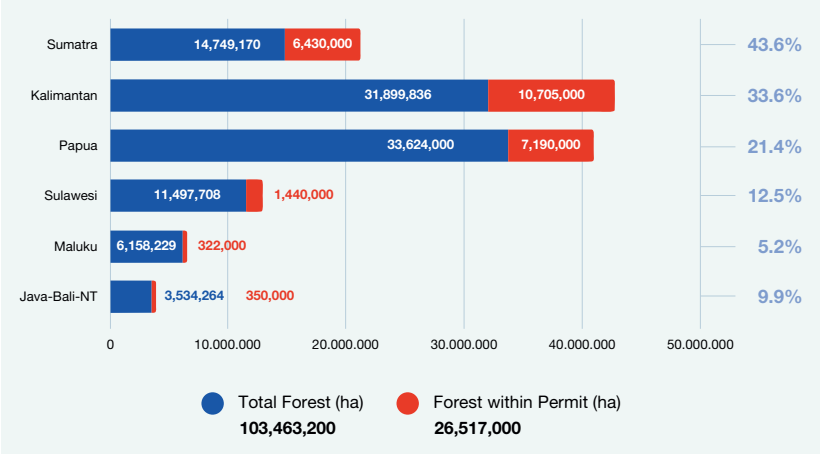


Lowland forest ecosystems are the most pressured, followed by peatland forests, which are the ecosystems most critical for long term carbon storage.

Distribution of Permit Pressure by Island

Each island shows distinct pressure characteristics. Sumatra experiences the highest pressure (43.6%) due to the long history of oil palm and industrial timber plantation (HTI) expansion. Kalimantan ranks second (33.6%) due to a combination of mining activities and forestry permits (PBPH), while Papua is emerging as a new frontier for extractive investments.

Tabel 5. Proportion of Forests within Concession Areas by Island (2024)



Sumatra and Kalimantan bear more than 65% of the total national permit pressure, showing a spatial imbalance in the distribution of ecological burdens.

CRITICAL NOTE ON THE SECOND NATIONALLY DETERMINED CONTRIBUTION

The fundamental critique of Indonesia's SNDC is the government's continued adherence to the economic growth paradigm as the basis for emission reductions. This is evident in the three scenarios used in the SNDC to project Indonesia's emissions, namely: CPOS or CM1 from the ENDC, LCCP_L, and LCCP_H. Using the same economic growth assumptions as outlined in the National Long Term Development Plan (RPJPN) 2025–2045, the CPOS and LCCP_L scenarios project an economic growth rate of 6.0% in 2030 and 6.7% in 2035. Meanwhile, the LCCP_H scenario assumes even higher economic growth, with 7.0% in 2030 and 8.3% in 2035, reflecting an aspiration of 8.0% growth by 2029, as outlined in the National Medium Term Development Plan (RPJMN) 2025–2029.

A growth based model economy fundamentally continues to encourage increased production, consumption, and energy use. Historically, economic growth correlates with rising emissions, particularly when: (1) The economy still relies on fossil fuels; (2) There has not been significant transformation in energy efficiency; and (3) There are no fundamental changes in consumption and production behaviors. Therefore, by maintaining a conventional growthbased economic model, achieving emission reductions is likely to remain difficult.

Another critique of the SNDC specifically concerns the energy sector and the Forestry and Other Land Use (FOLU) sector. These two sectors are the focal points for Indonesia in strengthening efforts to reduce emissions, as both sectors contribute significantly to the rise in emissions.

Critical Note on the FOLU Sector:

1. In the FOLU sector, the government targets peatland restoration, REDD/REDD+, and carbon trading as approaches to emission reduction. By 2030, the government ambitiously aims to restore 2 million hectares of peatland and rehabilitate 8.3 million hectares of degraded land. However, these restoration targets are likely to fail if they are not preceded by corrections in permitting policies. As of the latest data, WALHI records at least 248 mining permits operating across 43 small islands in Indonesia, where extensive mangrove ecosystems have already been or will be destroyed if these mines continue to operate. Another critical issue is the need for a comprehensive evaluation of permits in peatland ecosystems. Indonesia's peatland covers 24.6 million hectares across 865 Peat Hydrological Units (KHGs). However, only 16% (3.9 million hectares) of these ecosystems remain intact (2022 inventory). About 39% (5.2 million hectares) of peatland has been burdened with permits in the oil palm plantation and forestry sectors. Company operations on peatland and forest ecosystems are the main cause of annual forest and land fires. If the government does not conduct proper evaluations, FOLU targets are at risk of failure. Furthermore, the 2 million hectare peat restoration target also represents less than 1% of degraded peatland.

2. Relying on REDD and the Carbon Offset Mechanism in the FOLU sector, and the Emissions Trading System (ETS) in the energy and large industrial sectors will not effectively in reducing emissions, instead, these climate business mechanisms are nothing more than permits that will accelerate greenwashing schemes and land banking.

3. The ecosystem and community based adaptation approach, as outlined in the SNDC document, is not reflected in the government's actions over the past year. There is concern that this adaptation approach is merely a commitment on paper. This concern is reflected in the lack of recognition and protection of indigenous and local communities' rights to manage their

territories. According to WALHI's data, as of August 2025, 848,274 hectares of community management area have yet to receive an official Decree (SK) from the government. The breakdown includes 55,527 hectares awaiting technical verification (vertek), undergoing the administrative selection process, or having completed verification and awaiting the issuance of the Decree. Meanwhile, the remaining 792,747 hectares are in the stages of data consolidation, file preparation, or have been submitted or not submitted due to administrative or political reasons. To ensure that this approach is not just a hollow commitment, WALHI challenges the Ministry of Forestry to complete the recognition and legalization process for these community management area before COP 30.

4. Indonesia has begun to include Harvested Wood Products (HWP) as part of its carbon sequestration calculations, in line with the Modalities, Procedures, and Guidelines (MPGs) for transparency reporting under the UNFCCC. WALHI has raised critical concerns about this model. HWP will only serve as a tool to further promote logging businesses under the guise of climate mitigation, leading to continued neglect of the social and ecological dimensions. HWP views wood merely as a “carbon store,” overlooking the social-ecological functions of forests as homes for indigenous communities, biodiversity, and water and food systems. Another dangerous misconception is that tree cutting can be “carbon neutral,” when in fact most of the carbon is rapidly released back into the atmosphere. Many wood products (especially paper, cardboard, and packaging materials) have very short lifespans, ranging from just a few months to a year. Afterward, these products are either burned or decay in landfills, releasing carbon into the atmosphere.

In the energy sector, there are several critical points regarding Indonesia's SNDC, including:

1. Delay in the Peak of Energy Emissions: An Inefficient Strategy
   The SNDC projects that the energy sector's peak emissions will not occur until 2038, later than previously estimated. This indicates that

real efforts to reduce emissions will be delayed until the next decade, even though the energy sector is the largest contributor to national greenhouse gas emissions. Emissions from the energy sector are projected to reach 1,336 $MtCO_2e$ by 2035, a 103% increase from 2019. This delay could raise transition costs and increase dependence of offset technologies like FOLU.

2. Dependence on FOLU: Obscuring the Energy Sector's Responsibility
   The SNDC still relies on emissions absorption from the forestry and land use sector (FOLU) as a primary mitigation strategy, instead of reducing direct emissions from the energy sector. FOLU absorption is targeted at -207 $MtCO_2e$ by 2035. This strategy risks diverting attention from the urgent need for energy decarbonization and creating an illusion of progress toward the targets.

3. Lack of Ambition in the Renewable Energy Mix Target
   The SNDC has set a renewable energy mix target of 19–23% by 2030 and 36–40% by 2040, which is insufficient to align with the 1.5°C pathway. This target is lower than the Just Energy Transition Partnership (JETP) scenario, which aims for 44% by 2030. The Climate Action Tracker even shows that to meet the 1.5°C target under the Paris Agreement, Indonesia would need to generate at least 55%—and ideally up to 82%—of its energy from renewables by 2030.

4. Misalignment of the SNDC Economic Model
   The economic model in the SNDC assumes that ambitious climate actions will hinder Indonesia's economic growth. This assumption reflects the limitations of the current economic paradigm in designing a fair and sustainable transition pathway. This misalignment underscores the need for a shift in the economic paradigm to align with the principles of ecological justice and the demands of climate science.

5. Inadequacy of PLTU (Coal-fired Power Plants) Retirement Strategies

   The SNDC does not explicitly include a roadmap for the early retirement of coal-fired power plants (PLTU), even though Presidential Regulation No. 112/2022 prohibits the construction of new PLTUs for PLN (State Electricity Company) and encourages the phasing out of coal-fired power plants by 2050. Captive PLTUs (those dedicated to specific companies or industries) are still allowed, provided they reduce emissions by 35% within the next 10 years, but there is no clear monitoring mechanism in place.

Referring to the National Energy Policy (KEN) and the 2025-2034 Electricity Supply Business Plan (RUPTL), these policies are similar to Indonesia's SNDC, which still allows significant space for fossil energy development and embraces false solutions. Government Regulation No. 40 of 2025 on the National Energy Policy further legitimizes fossil energy. The KEN sets an energy mix that continues to give a dominant role to coal and gas until 2060.

- Coal: 47–50% (2030), 22–25% (2050), remains 8–10% (2060).
- Natural gas: 12.9–14.2% (2030), increases to 17.3% (2050), stays above 14% until 2060.

In addition, KEN extends the lifespan of fossil fuel power plants, strengthening the risk of carbon lock-in and weakening signals for a clean energy transition. Dependence on natural gas also poses a risk of creating stranded assets and adding new economic burdens. The electricity plan set forth in KEN also contradicts climate commitments by reinforcing fossil energy expansion through an additional 16.6 GW of coal-fired (PLTU) and gas-fired (PLTG) plants until 2034 (6.3 GW of PLTU, 10.3 GW of PLTG/PLTGU). The electricity generation target from fossil fuels is increased by 10% compared to the previous RUPTL, while the renewable energy target is reduced to 17 GW, lower than the RUPTL 2021-2030 target of 20.9 GW.

SACRIFICING FORESTS FOR ENERGY TRANSITION PROJECTS

While the demand to leave fossil fuels behind and shift to clean and just energy remains paramount, questioning and challenging current false energy transition projects has also become an essential task. A fair and sustainable energy transition should not come at the expense of forest ecosystems and people's livelihoods. There is a close interconnection between energy transition, FOLU, and climate. This interconnection, however, also presents contradictions. Energy transition projects such as biomass co-firing (wood pellets), Electric Vehicles (EVs), and bioenergy (biodiesel, biofuels, bioethanol) are still primarily focused on forest and land extraction.

Biomass Co-Firing Projects

The biomass co-firing program, which started in 2019, has continued to develop. As of May 2022, PLN (State Electricity Company) has implemented this technology in 32 coal-fired power plants (PLTU), with the target to increase this number to 35 PLTUs by the end of the year. With this pace, the goal is to implement co-firing in 52 PLTUs by 2025. To meet this national target, at least 2.3 million hectares of energy wood plantation land are required (Trend Asia: 2022). Besides meeting national targets, the demand from Japan and Korea for wood pellets from Indonesia is also high. Between 2021 and 2023, Indonesia's exports to South Korea increased from about ± 50 tons in 2021 to ± 68,025 tons in 2023. During the same period, exports to Japan rose from about ± 54 tons to ± 52,735 tons (AURIGA, et al.: 2024). Gorontalo is a province that explores a significant amount of wood pellets, with shipments of up to 10,000 tons to Japan and South Korea expected in 2025 (AURIGA, et al.: 2024).

In order to produce wood pellets, natural forests are converted into monoculture tree plantations, leading to the release of emissions from deforestation, while simultaneously eliminating the carbon absorption function of those forests. There are 740,260 hectares of natural forests still covered with vegetation, including land forests, mangroves, and peatland forests, within active Forest Plantation Permits (HTE) area.

Opportunities for forestry permit holders to develop Energy Plantations as part of the green energy transition agenda are also wide open through the multi business policy of PBPH or Forest Utilization Business Permit (Government Regulation No. 23/2021). Along with the ease of carrying out various activities under a single PBPH, companies are also provided with various incentives if they establish energy wood plantations, which are claimed to support the clean energy transition.

Another concerning fact is that the biomass co-firing model with wood pellets continues to perpetuate dependence on coal-fired power plants, as 95% of the energy mix is still based on coal, with only 5% consisting of wood pellet mix.

Electric Vehicle (EVs)

Electric vehicles (EVs) as a model for the green and clean energy transition is a great lie. This argument is based on the downstream situation, where electric vehicles do not generate local pollution. However, when looking at the entire value chain, from raw material mining to battery disposal, it is clear that EVs are not a guarantee for a clean and just transition. There are at least four main dimensions that make EVs problematic: emissions over the entire lifecycle, new forms of extractivism, battery waste and recycling issues, and land grabbing and human rights violations.

1. Emissions Throughout the Lifecycle
   Indeed, EVs do not produce direct emissions while being driven, but the production of electric vehicles, especially the batteries, is carbon intensive. Mining for nickel, cobalt, lithium, and processing heavy metals requires significant energy, often relying on electricity from fossil fuel power plants, referred to as Captive Coal-fired Power Plants (PLTU Captive). Since the implementation of

downstream policies, nickel producing provinces such as Central Sulawesi and Southeast Sulawesi have become the target of massive PLTU Captive development. According to Global Energy Monitor (2023), the total capacity of PLTU Captive on Sulawesi Island is 5,665 MW (52% of the total capacity of Captive Coal Power Plants in Indonesia), with 3,665 MW (21 units) in Central Sulawesi and 2,000 MW (14 units) in Southeast Sulawesi. In fact, around 13 units of PLTU Captive are currently under construction in Central Sulawesi. To support the operation of these power plants, increased coal extraction is inevitable. This increase in coal extraction will continue to release underground fossil emissions, as well as the emissions produced when coal is burned in the power plants. Additionally, battery manufacturing plants and vehicle component processing emit significant CO_2. As a result, cumulatively, an EV can have a higher initial carbon footprint than a gasoline powered car. Net emissions reductions only occur if the electricity used to charge the batteries comes from low carbon sources; without this, the climate benefits of EVs may be reduced or even nullified.

2. A New Extractivism

   If throughout its business lifecycle electric vehicles (EVs) generate massive emissions, then EVs cannot genuinely be considered clean energy; instead, they represent a new form of extractivism. The high demand for battery raw materials has triggered the expansion of new coal mining operations and other critical minerals. For the purpose of meeting EV ambitions, 733 thousand hectares of forest within 1 million hectares of nickel mining concessions, both conventional and Battery Material Product (BMP) areas must be sacrificed.

   The 2025 One Map data from the Ministry of Energy and Mineral Resources records 337 nickel mining permits covering 822,430.16 hectares, spread across eight provinces in eastern Indonesia, particularly Central Sulawesi, Southeast Sulawesi, and North Maluku. Spatial overlays with MapBiomas Indonesia 2024 show that 585,461.59 hectares (71%) of these nickel concession areas

still have forest cover. Most of this is Terrestrial Forest (99.6%), with the remainder consisting of Mangroves (0.3%) and Peatland Forests (0.1%).

Apart from conventional nickel mining, the 2025 One Map of the Ministry of Energy and Mineral Resources records 60 permits for Battery Material Product (BMP) nickel companies, covering a total area of 182,317.96 hectares, spread across four main provinces, namely Central Sulawesi, Southeast Sulawesi, South Sulawesi, and North Maluku. Spatial analysis with MapBiomas Indonesia 2024 further shows that 147,601.74 hectares (81%) of the total area granted by permits still have forest cover, with Terrestrial Forest Formation making up 99.99% of the total forested area. Claims that downstream processing of BMP nickel is part of the green transition require re-evaluation, as the industry still relies on primary extraction in tropical forested and coastal areas. The development of smelters and processing facilities along the coasts of Sulawesi and Maluku could potentially convert mangroves, pollute waterways, and increase carbon emissions due to the use of fossil energy in the production process. Therefore, Indonesia's electric battery industry is still based on extraction, not ecological transformation.

Dependence on Coal

According to the 2025 One Map of the Ministry of Energy and Mineral Resources, there are 959 coal mining permits covering a total area of 4,103,481.48 hectares, spread across 16 provinces. The largest concentration of permit is found in East Kalimantan (1.33 million ha), Central Kalimantan (1.1 million ha), and South Kalimantan (425 thousand ha). Spatial analysis with MapBiomas Indonesia 2024 shows that, of the total area granted by permits, 1,539,514.65 hectares (38%) still have forest cover. This cover composition is dominated by Terrestrial Forest Formation (98%), followed by Mangrove Forest (1%) and Peatland Forest (1%).

These data confirm that coal mining continues to occur largely in tropical forest areas, rather than in open lands. This illustrates the

ongoing deforestation and ecological degradation taking place under legally issued permits. In Kalimantan, overlapping coal concessions and forest zones pose serious threats to hydrological functions, biodiversity, and increase the risks of ecological disasters, such as flooding and landslides, in downstream communities.

3. Battery Waste and Recycling Challenges
   Vehicle batteries have a limited lifespan. Post-use management of batteries remains undeveloped: efficient, safe, and economically viable recycling systems are not yet widespread. Battery waste, which contains heavy metals and hazardous electrolytes, risks contaminating soil and water if improperly handled. Moreover, the economic value of recoverable materials is often lower than the cost of collection and processing, causing waste streams to end up in dangerous disposal sites when recycling policies and infrastructure remain weak.

4. Land Grabbing and Human Rights Violations
   The rapid expansion of the nickel industry has fueled a new wave of social conflicts and ecological crises across multiple regions. WALHI reports that in Morowali Regency, Central Sulawesi, there are at least 65 nickel mining permits (IUP) already in production, covering 155,051 hectares. In one village alone of Lalampu alone, there are 17 active mining permits. WALHI identifies massive upstream ecosystem destruction and recurring floods in the area as consequences of intensive mining.

   Similar conditions are happening on Wawonii Island, Konawe Islands, Southeast Sulawesi. WALHI documents ongoing agrarian conflicts due to permits issued without proper meaningful consultation or consent from local communities. This is despite the Constitutional Court's explicit ruling that mining activities in coastal and small island areas are “severely hazardous” due to their severe ecological impacts. Furthermore, the social impacts of the nickel industry also include human rights violations. WALHI South Sulawesi documented cases of land eviction from local

communities due to nickel exploration activities in Loeha, Mahalona, and Rante Angin villages, Luwu Timur, carried out by PT Vale Indonesia without the consent of the landowners. Additionally, the community's main access road was diverted to become an exclusive route for the company.[1]

In Bahodopi Regency, Central Sulawesi, WALHI Central Sulawesi reported severe river pollution in Bahodopi and Labota villages, with hexavalent chromium reaching 0.075 mg/L. The environmental degradation directly affects public health; local health authorities recorded 55,527 cases of acute respiratory infections in 2023.[2] Nationally, WALHI has also reported at least 29 mining and palm oil companies referred to the Attorney General's Office, with potential state losses reaching IDR 200 trillion due to environmental destruction and illegal activities.

These realities show that a mineral based energy transition like nickel does not automatically deliver ecological justice. Instead of mitigating the climate crisis, ongoing resource extraction deepens inequality between industrial zones and raw material regions. Indigenous peoples and local communities remain primary victims, while economic benefits flow mainly to large corporations and industrialized nations. Thus, a truly just energy transition is not just about replacing technology, it requires changing the extractive economic and political structures that have long ignored the rights of communities, environmental preservation, and the sustainability of future life.

The facts above uncover that the expansion of nickel mining, driven by the global demand for raw materials for electric vehicle batteries, is not

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1 Wahyu Chandra, "Dituding WALHI Sulsel Serobot Lahan Warga dan Langgar HAM, Ini Jawaban Vale," *Mongabay,* May 20, 2023, https://mongabay.co.id/2023/05/20/dituding-walhi-sulsel-serobot-lahan-warga-dan-langgar-ham-vale-jawab-begini/

2 "WALHI Sulteng Melalui Research Consortium On Indonesia Nickel Mining (INM) Desak Investor Industri Nikel Di Indonesia Bertanggung Jawab Atas Pelanggaran HAM Dan Pencemaran Lingkungan," *Walhi Sulteng,* September 22, 2025, https://walhisulteng.org/walhi-sulteng-melalui-konsorsium-indonesia-nickel-mining-inm-desak-investor-industri-nikel-di-indonesia-bertanggung-jawab-atas-pelanggaran-ham-dan-pencemaran-lingkungan/

aligned with the principles of an ecologically just energy transition. Instead of providing welfare and protection, the mining expansion is eroding the tropical forests of Sulawesi and Maluku, and threatening the living spaces of indigenous and local communities. Regions such as Morowali, North Konawe, and East Halmahera have now become concrete examples of how new energy projects are, in fact, reproducing the old model of natural resource exploitation.

Sugarcane Plantation Project for Bioetanol

The Indonesian government plans to increase the ethanol blend in gasoline to 10 percent (E10) over the next three years as part of its national energy diversification strategy. This policy is expected to encourage the development of the domestic bioethanol industry and reduce dependence on fossil fuels. However, there is no guarantee that bioethanol will be produced through practices that do not contribute to deforestation or cause social conflicts, particularly with indigenous communities in raw material producing regions.

The implementation of the E10 mandate will indirectly increase the demand for land to grow ethanol crops such as sugarcane and cassava. This expansion has the potential to put new pressures on forest areas and the living spaces of indigenous communities if it is not accompanied by adequate social and ecological protection regulations. In this context, land governance becomes crucial to ensure that the increase in bioethanol production aligns with the principles of sustainable development.

One of the regions that is now the focus of the government in its self sufficiency project for sugar and bioethanol is Merauke Regency in South Papua Province. The policy to open up 2 million hectares of forest for food and energy projects in Merauke has, in fact, resulted in land dispossession, deforestation, environmental damage, violence, and the criminalization of indigenous communities.

Currently, the Indonesian central government is processing the release of 486,939 hectares of forest land in South Papua for other purposes as part of the acceleration of the Merauke National Food, Energy, and Water Storage Area Development in South Papua Province. According

to an analysis conducted by WALHI, there are 265,208 hectares of natural forest in the forest area that will be released.

There has been no consideration for environmental sustainability or the safety of indigenous Papuan communities in this process. The government, through the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency (ATR/BPN), even stated that the forest area to be released is state owned and that no people live there. However, according to WALHI's data, there are 24 villages within that forest area, including the ancestral lands of the Papuan Native People (OAP). These villages are namely: Bibikem, Yulili, Wogekel, Wanam, Woboyu, Dodalim, Dokib, Wamal, Yowid, Welbuti, Sanggase, Alatep, Alaku, Dufmira, Iwol, Makalin, Es Wambi, Maghai Wambi, Onggari, Domande, Kaipursei, Zanegi, and Kaliki.

WALHI Papua has documented the activities of PT Murni Nusantara Mandiri, which is clearing land for sugarcane plantations and bioethanol production, accompanied by military personnel, activities that not only infringe on the rights of indigenous communities but also contribute to the destruction of forests, swamps, and rivers, with their impact expanding throughout Merauke Regency, South Papua. Even more concerning, Mr. Vincen Kwipalo, one of the customary right holders from the Jagebob District, has been reported to the Merauke Police for attempting to defend his ancestral land. This criminalization of customary right holder illustrates how economic and military powers are working together to suppress the voices of indigenous communities resisting the environmental destruction caused by the project.[3] This fact once again highlights how energy transition projects are, in fact, one of the biggest drivers of deforestation, conflict, land dispossession, and human rights violations.

[3] "Ancaman Perampasan Hak dan Penghancuran Hutan Adat di Merauke," *Walhi Papua,* November 3, 2025,https://walhipapua.org/2025/11/03/ancaman-perampasan-hak-dan-penghancuran-hutan-adat-di-merauke/

EMISSION RELEASE PROJECTIONS FROM ENERGY TRANSITION PROJECTS

Behind the sprawling industrial permits scattered across various islands in Indonesia lies another story, one that is rarely told: millions of hectares of forest that still hold vast amounts of carbon stocks, serving as the last line of defense against the accelerating climate crisis.

In order to gain a deeper understanding of this picture, WALHI has attempted to calculate the carbon reserves still stored within areas designated for extractive industries, forestry, plantations, and mining, using the official calculation approach of the Ministry of Environment and Forestry.

We use the 2022 forest cover data from the Ministry of Environment and Forestry, as this data has national validity and represents the current state of Indonesia's forest landscape. The calculations were made for three main types of forest cover that represent Indonesia's major ecosystems, including dryland forests, swamp forests, and mangrove forests, each with its own characteristics and carbon sequestration capacities.

This approach is not merely about calculating figures, but about reassessing the carbon footprint that remains within areas that are now legally controlled by industrial permits.

Approach and Calculation

The methodology applied here refers to the "Emissions and Carbon Sequestration Monitoring Book for the Forestry and Peatland Sector" (Ministry of Environment and Forestry: 2015). This document establishes the carbon stock values above the ground (Above Ground Biomass) for each forest ecosystem class in Indonesia. These values are used to calculate the total carbon content per hectare based on the

actual forest cover data from the Ministry of Environment and Forestry of the Republic of Indonesia in 2022.

The average carbon stock values used in this analysis include:

Ecosystem Type	Carbon Stock Value (tC/ha)	Source
Primary Dryland Forest	133,99	Ministry of Environment and Forestry (2015)
Secondary Dryland Forest	98,84	Ministry of Environment and Forestry (2015)
Primary Mangrove Forest	188,30	Ministry of Environment and Forestry (2015)
Secondary Mangrove Forest	94,38	Ministry of Environment and Forestry (2015)
Primary Swamp Forest	96,33	Ministry of Environment and Forestry (2015)
Secondary Swamp Forest	79,67	Ministry of Environment and Forestry (2015)

Results: Carbon Stocks "Locked" Under Concessions

The analysis results show that within the areas covered by extractive industry concessions in Indonesia, which encompass approximately 23.64 million hectares of forested land, there is a carbon stock of about ±2.46 billion tons of carbon (tC). When converted, this figure is equivalent to ±9.03 billion tons of carbon dioxide equivalent (tCO_2e).

Those figures are not merely a result of calculations, but reflections of the immense ecological responsibility inherent in the permit granting system. Each hectare of forest under concession not only holds economic value but also stores life sustaining energy in the form of carbon that helps maintain the stability of the Earth's climate.

The detailed results of the analysis based on ecosystem classes are presented in the following table:

Forest Ecosystem Class (Ministry of Environment and Forestry 2022)	Area under Concession (ha)	Total Carbon (tC)	CO_2 Equivalent (tCO_2e)
Primary Dryland Forest	6.478.789,55	852.890.636	3.130.116.633
Secondary Dryland Forest	14.677.906,60	1.386.992.116	5.090.227.068
Primary Mangrove Forest	107.856,96	20.257.005	74.341.203
Secondary Mangrove Forest	160.163,33	15.027.058	55.649.317
Primary Swamp Forest	514.334,23	49.524.748	181.752.841
Secondary Swamp Forest	1.702.955,14	136.821.667	502.047.043
National Total	**23.642.005,79**	**2.461.513.230**	**9.034.134.105**

These findings highlight that deforestation is not just about the loss of vegetation cover, but also the loss of global carbon storage capacity. Areas that are legally under industrial concessions have now become a "gray area", where, on one hand, they are recognized by law, but on the other, they contain carbon stocks that are vital to maintaining the Earth's climate balance.

If all the forested areas under indurstrial concessions were to be cleared or degraded, Indonesia could potentially release more than 9 billion tons of CO_2e into the atmosphere, equivalent to the cumulative emissions from the national energy sector over the past 25 years.

In conclusion, land use politics and permit governance have become a new dimension in Indonesia's climate politics. Decisions to extend, revoke, or delay permits are now no longer just about investment, but about the future of the global climate.

RECOMMENDATIONS

Based on the results of this study, WALHI recommends several points to protect forest rights and the rights of the people in order to achieve climate targets:

Changing the Development Paradigm

Growth based economy with an 8% target cannot run simultaneously with climate targets in the SNDC. It is because the logical consequence of a growth economy is an increase in production and consumption, which will directly impact natural resource exploitation.

Evaluating Energy Transition Projects

Conceptually, there is a need to deconstruct the current energy transition model. Energy must be positioned as a right, not a commodity. The energy transition must ensure the principles of justice, democracy, protection of people's rights and the environment, and sovereignty. Thus, the first step should be to evaluate problematic fake energy transition projects, identify potential energy sources that can be developed by communities, and strengthen and protect community driven energy models.

Reforming the Permit Governance

Implementing policy corrections. Repealing laws and their derivatives that legitimize deforestation, environmental degradation, land and livelihood appropriation, and human rights violations. Enacting bills that support the people and the environment, such as the Indigenous Peoples Bill and the Climate Justice Bill. Developing new laws that strengthen the protection of forest ecosystems and the people, such as the Public Participation Act and a permanent moratorium on the issuance of new permits.

Establishing permanent protection zones for all deep peatland ecosystems and primary mangroves. Integrating MapBiomas Indonesia data into the Ministry of Forestry's monitoring system to ensure evidence based spatial policies. Prioritizing restoration funding for concession areas with critical ecosystem functions.

Enforcing the law against corporations that violate legal regulations in their operations. Legal enforcement can be carried out through a comprehensive evaluation of permits, imposing administrative and criminal sanctions on corporations that commit violations and crimes.

Recognizing People's Rights to Their Living Spaces and Resolving Conflict

Accelerating the recognition of people's rights to forests and their living spaces through various schemes: indigenous territories/customary forests, and agrarian reform. Involving communities in monitoring permits and ecosystem restoration through community based programs. Protecting the people's economy based on ecosystem landscapes as an antithesis to the extractive economy.

List of 12 PBPH Companies with Energy Plantation Activities (HTE)

Tutupan Hutan pada Perusahaan Biomassa						
NO	Perusahaan	Jenis Izin	Luas (ha)	Hutan Alam		
				Formasi Hutan Daratan	Mangrove	Hutan Gambut
1	PT Aceh Nusa Indrapura	PBPH	97,769.00	53,166.15	-	-
2	PT Bangkanesia	PBPH	51,269.00	126,884.89	187.93	-
3	PT Banyan Tumbuh Lestari	HGU	15,493.00	6,266.84	-	-
4	PT Bara Indoco	-	26,472.00	-	-	-
5	PT Belantara Pusaka	PBPH	15,642.00	7,606.51	-	-
6	PT Bhantara Alam Lestari	PBPH	7,100.00	1,349.72	-	3,541.24
7	PT Bio Energi Indoco	-	9,632.00	-	-	-
8	PT Ciptamas Bumi Subur	PBPH	7,545.00	22.46	855.87	1.76
9	PT Daya Tani Kalbar	PBPH	44,990.00	1,131.40	387.21	28,961.60
10	PT Dharma Hutani Makmur	PBPH	41,095.00	5,970.52	-	1,051.09
11	PT E-Grendo	PBPH	14,613.00	8,615.64	-	121.41
12	PT Gambaru Selaras Alam	PBPH	20,369.00	9,421.33	-	745.81
13	PT Gema Nusantara Jaya	PBPH	27,999.00	22,248.27	-	-
14	PT Hijau Artha Nusa	PBPH	32,189.00	23,505.74	-	-
15	PT Hutan Ketapang IDN (D.H Kertas Basukir)	PBPH	97,964.00	7,557.27	-	11,070.23
16	PT Hutan Mahligai	PBPH	11,358.00	4,107.74	-	-
17	PT Inhutani II sub unit Senakin	PBPH	30,300.00	19,833.28	-	-
18	PT Inhutani II Tanah Grogot	PBPH	15,306.00	2,788.10	41.28	-
19	PT Inhutani III Nangapinah	PBPH	124,608.00	16,594.24	-	4,662.17
20	PT Inhutani III Pelaihari	HGU	28,572.00	11,847.66	-	-
21	PT Inti Global Laksana	HGU	11,971.00	10,586.17	-	-
22	PT Nitiyasa Idola	PBPH	98,797.00	42823.81	-	1199.120639

23	PT Istana Kawi Kencana	PBPH	14,116.00	1,290.69	1,001.63	193.68
24	PT Jhonlin Agro Mandiri	PBPH	17,482.00	16,060.26	-	-
25	PT Kalteng Green Resources	PBPH	29,431.00	4,261.52	-	19,641.50
26	PT Kirana Cakrawala	PBPH	22,680.00	7,409.17	-	-
27	PT Korintiga Hutani	PBPH	94,376.00	5,435.37	-	22.14
28	PT Malinau Hijau Lestari	Wood Pellet Biomassa	19,045.00	-	-	-
29	PT Muara Sungai Landak	PBPH	11,847.00	44.83	-	8,260.90
30	PT Oceanis Timber Product	PBPH	16,001.00	62,317.62	-	-
31	PT Sadhana Arifnusa	PBPH	3,813.00	930.30	-	-
32	PT Selaras Inti Semesta	PBPH	166,745.00	81,047.26	264.26	-
33	PT Usaha Tani Lestari (NTT)	PBPH	41,448.00	2,198.21	-	-
34	PT Wanamulia Sukses Sejati unit 1&2	PBPH	112,561.00	94,726.58	-	-
Grand Total			**1,380,598.00**	**658,049.57**	**2,738.17**	**79,472.65**