



Assessing Indonesia's Enhanced Nationally Determined Contributions (NDC) to The Paris Agreement: Identifying The Obstacles Indonesia has in Addressing Climate Change.

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ABSTRACT

This study explores Nationally Determined Contributions (NDC) as a sort of national commitment that incorporates steps for both mitigating and adapting to climate change in order to lower carbon emissions that contribute to the phenomena of global warming. Indonesia, as a nation that has officially approved the Paris Agreement, has recently delivered its initial Nationally Determined Contribution (NDC) and Enhanced NDC (ENDC) to the United Nations Framework Convention on Climate Change (UNFCCC). These donations include both unconditional and conditional commitments. According to the evaluation undertaken by Carbon Action Tracker and environmental non-governmental groups like Greenpeace. Indonesia's Nationally Determined Contribution (NDC) is deemed insufficient in decreasing carbon emissions. Regulatory hurdles and the exploitation of coal in industry and energy generation are key elements that contribute to carbon emissions. Additionally, the Zero Net Sink from FOLU, which is viewed unambitious, and the rate of deforestation are not aligning with the established aim. The entire potential of modern renewable energy has not been fully utilized. Indonesia's NDC ambition is graded low owing to legislative barriers and development strategies that do not fit with climate goals.

Keywords: *Climate Change, Paris Agreement, Nationally Determination Contribution*

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1. INTRODUCTION

According to the estimate from the Intergovernmental Panel on Climate Change, global temperatures are anticipated to grow by 1.1-6.4°C, leading to a rise in sea levels of roughly 16.5 - 53.8 cm by the year 2100 (Nurfajrin & Satiyawira, 2021). The Appearances renders climate prediction problematic and gives rise to climate change calamities. In order to address this issue, it is vital that the international community, including the IPCC and countries worldwide, develop a consensus that the global temperature rise should not transcend 2°C. Nevertheless, the consumption of fossil fuels persists to rise in actuality, leading to an inevitable occurrence of global warming as a result of human activities aimed at achieving economic expansion (IPCC, 2007).

Climate change is a critical worldwide topic that has received growing attention due of its substantial influence on the environment and human existence (UNFCCC, 2024). The Paris Agreement, ratified during the COP21 meeting in Paris, is a key milestone in the worldwide endeavor to tackle climate change (UNDP, 2023). Countries that have ratified the Paris Agreement are obligated to fulfill the objectives of the agreement, one of which involves formulating a National Determination Contribution consisting of specific measures (Gao et al., 2019) to mitigate emissions and address the effects of climate change (Kemen LHK, 2022a).

In 2016, Indonesia initially submitted its Nationally Determined Contributions (NDC), sometimes called as the First NDC. These contributions included an aim to reduce emissions by 26 percent without any restrictions, and by 41 percent with specific conditions, by the year 2020 (Kharbach & Chfadi, 2022). In the second Nationally Determined Contribution (NDC), Indonesia has set a commitment to unconditionally cut greenhouse gas emissions by 29 percent and conditionally by 41 percent by the year 2030, according to (Bappenas, 2021).

Indonesia has considerable Nationally Determined Contribution (NDC) obligations for decreasing emissions in many areas, including forests, land use change (LULUC), and shifting from fossil energy to environmentally friendly energy sources. However, accomplishing these aims in reality is tough due to several constraints. These include conflicting regulations, decentralization which hinders the implementation of central government policies by local governments, lack of synergy and overlapping policies among related institutions and ministries, and the prioritization of poverty alleviation and economic growth over meeting NDC commitments by the Indonesian government (Mersmann, 2017; Piesse, 2018; Tacconi & Muttaqin, 2019).

Table 1: Indonesia's NDC Target Journey

Indonesia NDC	GHG emission level in 2030			GHG emission reduction target against BaU scenario in 2030			
	BaU	Uncond itional	Condition al	(MtonCO ₂ e)		%	
				Uncond itional	Condition al	Unconditio nal	Conditio nal
<i>First NDC</i>	2,8869	2,034	1.787	834	1.084	29	38
<i>Update NDC</i>	2,869	2,034	1.683	834	1.1.85	29	41
<i>Enhance NCD</i>	2.869	1.953	1.632	915	1.24	31.89	43.2

sources : Coaction Indonesia.

According to the table supplied, there are attempts to cut emissions under the Business as usual scenario. The first NDC intends to cut emissions by 834 MtonCO₂e or 29% through unconditional efforts, and by 1,084 MtonCO₂e or 38% through conditional efforts (Patunnu & Rakhmah, 2017). The NDC upgrade resulted in an increase of 1,185 MtonCO₂e, or nearly 41%, in unconditional efforts. In terms of enhanced unconditional efforts, there was an increase of 915 MtonCO₂e, or 31.89%. Additionally, there was an increase of 1.24 MtonCO₂e, or around 43.2%, in unconditional efforts.

GHG emissions inventories have been compiled using a sectoral methodology, following the techniques specified by the UNFCC and published by the Intergovernmental Panel on Climate Change. The sectors with the highest emissions contributions include Energy, Industry, Agriculture, Forestry, and Waste (Kharbach & Chfadi, 2022; Ulum et al., 2022).

According to climate transparency data, emissions are provided by several industries, with the biggest share coming from power plants, accounting for 41%. Other industries that also contribute to emissions include transportation, industry, building, personal energy, and agriculture.

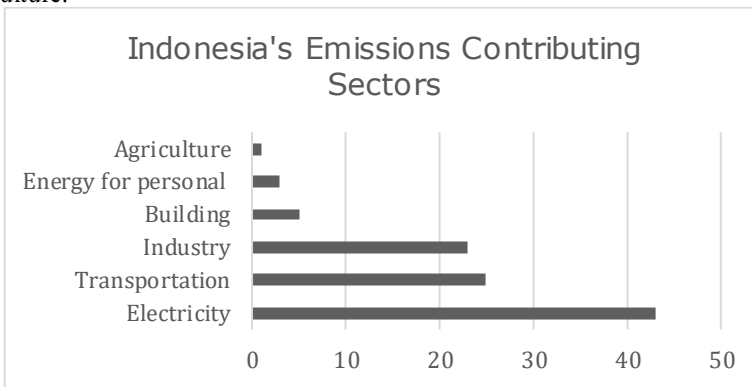


Figure 1 : Sectors in Indonesia that Contribute to Emissions

Sources: Databoks, katadata.com (2024)

Electricity remains the primary source of emissions, particularly from steam power plants. The dominance of coal energy in Indonesia's total energy mix is evident, accounting for 41% of the total, while renewable energy barely makes up 13%.

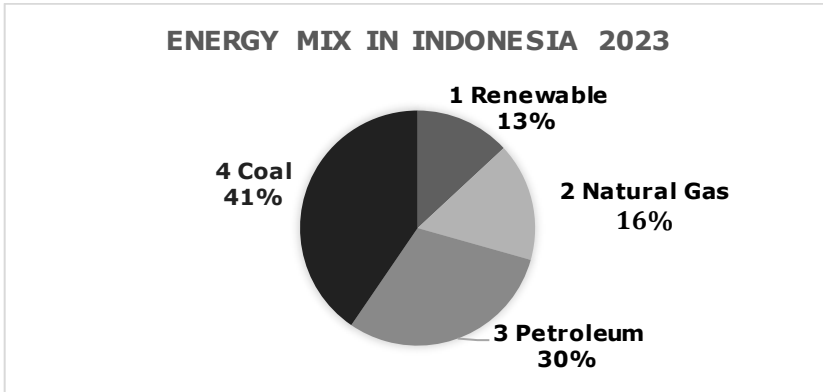


Figure 2: Displays The Energy Mix Projected for Indonesia in the year 2023.

Sources: Databoks, katadata.com (2024)

The National Long-Term Development Plan (RPJPN) seeks to align national development planning with the principles of sustainable development and fulfill Indonesia's Vision 2045, which includes the goal of escaping the middle-income trap (Nugroho, 2023). The RPJPN 2025-2045 is anticipated to facilitate economic, social, and governance transition in order to foster fair and inclusive development. The primary objective is to play a crucial role in achieving the social, economic, and governance transformation agenda, and to ensure that Indonesia becomes a robust, self-reliant, and inclusive nation by 2045 (Nugroho, 2023).

Indonesia's focus to sustainable development is apparent in its endeavors to combat the Triple Planetary Crisis, involving three interconnected global environmental crises: pollution, climate crisis, and biodiversity loss or ecological crisis (IESR, 2023a). These challenges are linked and have cumulative repercussions on global ecosystems, society, and the economy. The consequences encompass heightened environmental hazards and worldwide economic downturns, along with subsequent issues like as inadequate food supply, displacement of populations from coastal regions, escalated spread of waterborne illnesses, and various other ramifications (Nguyen et al., 2023).

This study explores the alignment between Indonesia's activities to accomplish its Nationally Determined Contributions (NDC) targets and its long-term development plan. One of the goals of this plan is to overcome the middle-income trap, which will result in a rise in energy demand for industrialization and ultimately contribute to an increase in carbon emissions. Indonesia aspires to cut its carbon emissions by 31% by its own efforts and by 40% with the help of international assistance, as specified in its NDC. Indonesia is currently grappling with a Triple Planetary Crisis, which involves climate change, food scarcity, and rising carbon emissions (Siagian et al., 2017).

2. LITERATURE REVIEW

The objective of the Paris Agreement on climate change is to ensure that the global temperature rise by the year 2100 remains below 2°C, with extra measures implemented to restrict the increase to 1.5°C. Nevertheless, the NDCs suggested by Parties to the UNFCCC are expected to result in a global temperature increase of 2.6-3.1°C (ref.1)(Tacconi, 2018).

The agreement also provides that emission reduction targets should be progressively strengthened over time (Tacconi, 2018). It is apparent that this reinforcement is required in order to accomplish the objective of limiting global warming to 2°C. This indicates that all participating countries must fulfill their earlier obligations and surpass them.

Nationally determined contributions (NDCs) are crucial components of the Paris Agreement, acting as a method for countries to publicly publish their efforts to both avoid and adapt to the effects of climate change. Although NDCs typically stress domestic efforts to reduce greenhouse gas emissions, the Paris Agreement allows governments to add adaptation measures into their NDCs, which can greatly help to global efforts to combat climate change (wri, 2021). The parties included in the Paris Agreement are obligated to follow a five-year cycle to revise their Nationally Determined Contributions (NDCs) pursuant to Article 4.9 of the agreement (UNFCCC, 2017). They are also entitled to make revisions to their NDCs at any point in time to raise their degree of ambition, as indicated in Article 4.11 of the agreement (UNFCCC, 2017). The 26th Conference of the Parties (COP26) in Glasgow has called on Parties that have not yet shared updated or amended Nationally Determined Contributions (NDCs) before COP27 to review and enhance their targets for 2030 by the end of 2022. Additionally, they are urged to build work plans centered on raising ambition and achieving these promises. The COP also mandated the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) to create a yearly NDC synthesis report (Dixit et al., 2022; wri, 2021).

Caribbean Small Island Developing States (SIDS) are implementing Nationally Determined Contributions (NDCs) to focus on their large marine presence and their support for traditional sectors of the blue economy, such as fisheries, tourism, and shipping. Additionally, they are also embracing new emergent industries, such as renewable energy and biotechnology. The growth of blue mitigation and adaptation has been constrained thanks to its reliance on international climate money. Furthermore, there is a shortfall in the strategic deployment of creative domestic blue money from both the private and public sectors, as well as a need for reform in fiscal incentives and international climate finance in order to fulfill the targets specified in the NDC (IPCC, 2007; Mohan, 2023).

It is vital to construct the Nationally Determined Contributions (NDC) by engaging all stakeholders at all levels, to ensure that climate actions match with the specified targets. Nepal's initial Nationally Determined Contribution (NDC), mostly developed by technocrats and bureaucrats without engaging important stakeholders such as political actors, sectoral governments, the private sector, and local people, resulted in the failure to achieve its intended goals. This failure can be linked to the absence of governmental backing in the form of supportive policies, initiatives, and financial allocations (Laudari et al., 2021).

Ensuring alignment between climate policy and sustainable development is vital as it permits the optimization of mutually advantageous links and minimizes difficulties like duplicating efforts or the emergence of separate institutions. Inaction towards climate change would imperil the growth of national development and the Sustainable Development Goals (SDGs), particularly in underdeveloped nations (Chan et al., 2021). Nevertheless, there are still uncertainties regarding the most effective strategies to achieving coherence in an efficient manner. At the international level, climate change and sustainable development have generally been dealt with as distinct challenges, with separate policies and research activities. Furthermore, on a national basis, multiple institutional, policy, and administrative procedures, various stakeholders, and distinct datasets have been deployed to execute these

global accords at the local level. Ministries and agencies individually and frequently in isolation pursue the two agendas without any links between them (UNDP, 2017).

3. METHODOLOGY

This paper employs a qualitative research design with a descriptive analytic approach, which offers a comprehensive examination of the phenomena and issues under investigation. Data gathering procedures involve doing literature and document studies (Nassaji, 2015).

4. DISCUSSION

4.1. Indonesia's endeavors in developing NDC measures for the Paris Agreement

In order to accomplish enduring reductions in emissions, the Paris Agreement specifies that signatories must routinely make pledges known as 'Nationally Determined Contributions' (NDCs). The NDCs need to be presented every five years pursuant to article 4(9). The agreement predicts that future promises should surpass the level of ambition of the current commitments, thus improving the total climate ambition (Falkner, 2016). It is obvious that progress on climate policy ambition is necessary based on the 160 'planned' Nationally Determined Contributions (NDCs) filed to generate political momentum for the Paris negotiations. Based on forecasts from Climate Action Tracker, these promises are inadequate to keep global temperatures from reaching 2°C; in practice, they are anticipated to result in global warming of 2.7°C or higher (Climate Action Tracker, 2024; Falkner, 2016).

The RPJMN 2020-2024 aims to transform Indonesia into a higher middle-income country by focusing on seven key areas: (a) Enhancing economic resilience for high-quality growth, (b) Addressing regional disparities through stronger regional development, (c) Enhancing the quality of human resources and competitiveness, (d) Promoting national values and citizen character, (e) Advancing infrastructure to support economic development and basic services, (f) Improving environmental conditions and resilience to natural disasters and climate change, and (g) Strengthening political stability, law enforcement, national security, defense, and public service transformation (Asia Pacific Energy Portal, 2020; *ENDC Indonesia*, n.d.).

Indonesia has made great progress in the land use sector to minimize emissions by placing a prohibition on new licenses and increasing the management of primary natural forests and peatlands. This involves measures to decrease deforestation and forest degradation, restore ecosystem functions, and promote sustainable forest management. These initiatives involve the practice of social forestry, which is carried out with the involvement of various stakeholders such as local governments, the private sector, small and medium enterprises, civil society organizations, local communities, customary communities (known as Masyarakat Hukum Adat in Indonesia), and women. Their participation is vital at both the planning and implementation phases. The deployment of landscape and ecosystem-scale management systems, with a focus on sub-national jurisdictions, is considered vital for maximizing and sustaining the advantages of these initiatives (Kemen LHK, 2016).

Indonesia's NDC is guided by the following fundamental principles:

- 1) Indonesia adopts an integrated landscape-scale approach that encompasses land regions, coastal areas, and coastal and marine ecosystems to address the multi-sectoral nature of climate change adaptation and mitigation initiatives (Bappenas, 2021).
- 2) Indonesia plans to utilize a range of traditional knowledge and innovative strategies from the government, private sector, and communities to address climate change. This approach acknowledges the positive advancements made by various stakeholders in combating climate change.
- 3) Indonesia acknowledges the importance of integrating climate change considerations into its development planning and budgeting procedures. To achieve this, the country considers essential climate change indicators while creating its development program targets (Bappenas, 2021).
- 4) Indonesia aims to enhance climate resilience by improving natural resource management to meet the growing young population's food, water, and energy needs. This will be achieved by protecting and restoring key terrestrial resources, coastal, and marine ecosystems (Asia Pacific Energy Portal, 2020; UNFCCC, 2022).

4.2 Climate Mitigation and Adaptation

The inaugural Forest Reference Emission Level (FREL) for REDD+ was presented to the UNFCCC Secretariat in December 2015. It covered deforestation, forest degradation, and peat decomposition (Asia Pacific Energy Portal, 2020). The FREL, or Forest Reference Emission Level, was set at a rate of 0.568 GtCO₂-eq per year, based on the period from 1990 to 2012. It was compared to the actual emissions from 2013 to 2020 for benchmarking reasons. The presented data serve as reference points for analyzing the performance of REDD+ during the implementation phase to 2020, as stipulated by the UNFCCC in 2022. The second Forest Reference Emission Level (FREL) was presented in January 2022 with considerable modifications to various features, such as the reference period, scope of operations, carbon pool, emission components, and uncertainty calculation method. The second nationally determined contribution (NDC) is now being examined by the United Nations Framework Convention on Climate Change (Arifah et al., 2022; Kemen LHK, 2022b).

The FOLU Net Sink 2030 target, which aims to reduce CO₂ emissions by 140 MtCO₂, will be accomplished by implementing the following policy measures: mitigating deforestation and forest degradation, enhancing the carbon sequestration capability of natural forests, increasing carbon sequestration in land systems, minimizing emissions from fires and peatland decomposition, and enforcing relevant laws (UNFCCC, 2022). Indonesia has developed a diversified energy policy in the energy sector. Indonesia has highlighted the establishment of sustainable energy sources as a vital national policy. These initiatives, when implemented simultaneously, will ultimately take Indonesia towards decarbonization, as specified by the UNFCCC in 2022.

Government Regulation No. 79/2014, which applies to the National Energy Policy, defines the goal of modifying the primary energy supply mix between 2025 and 2050. The intended distribution is as follows:

- 1) The aim for the share of new and renewable energy should be a minimum of 23%

by 2025 and a minimum of 31% by 2050.

- 2) The amount of oil shall not exceed 25% by 2025 and 20% by 2050.
- 3) The minimum requirement for coal will be 30% by 2025 and 25% by 2050.
- 4) The percentage of gas is anticipated to increase to a minimum of 22% by 2025 and a minimum of 24% by 2050, (Arifah et al., 2022; Kemen LHK, 2022b)

Indonesia prioritizes three areas of resilience in order to fulfill its adaptation goals: economic resilience, social and livelihood resilience, and environmental and landscape resilience. The NDC Adaptation Roadmap includes thorough descriptions of the three areas of resilience, which are strategically prioritized into numerous sectors including food, water, energy, health, and ecosystems (Kemen LHK, 2020). The achievement of the NDC is best judged based on the decrease in potential national GDP losses arising from climate change, the decrease in vulnerability, and the strengthening of adaptation and resilience capacities. In order to address this issue effectively, it is crucial to enhance the facilitating factors, which encompass: policy measures for adapting to climate change and reducing the risk of disasters; incorporating these measures into development plans and financial mechanisms; enhancing understanding of vulnerability and risk through climate literacy; adopting landscape-based strategies like spatial planning and **investment**; bolstering local expertise in implementing best practices; enhancing knowledge management systems, including reporting, monitoring, and evaluation; promoting stakeholder participation; and utilizing adaptive technologies (UNFCCC, 2022).

4.3 Obstacles to attaining Indonesia's Nationally Determined Contributions (NDC) goals

During the 2022-2023 era, the Indonesian government has advanced in its attempts to address climate change by enacting various measures. One of these initiatives is the encouragement of renewable energy development, as specified in Presidential Regulation (Perpres) No. 112/2022, which aims to accelerate the spread of renewable energy sources for power generation. Furthermore, the government's 2030 net zero and FOLU net sink targets are praiseworthy commitments that require strong measures to be effectively implemented (IESR, 2024).

The emissions in 2022 have climbed by roughly 200 million tons of carbon dioxide equivalent, with a large amount owing to the increased utilization of coal. It is estimated that emissions from captive power plants, which are power plants operated by utility businesses other than PLN, will contribute to a rise in emissions of roughly 100 million tons by the year 2030. Indonesia's existing climate strategy targets to reduce the country's emissions to a range of 1,487-1,628 MtCO₂e (excluding the forest and land sector) by the year 2030 (Albasyah, 2024; IESR, 2022). According to Climate Action Tracker, Indonesia should enhance its conditional Nationally Determined Contribution (NDC) ambition to 75% and its unconditional target to 62% based on the Business-As-Usual (BAU) scenario. Furthermore, CAT judged Indonesia's policies and operations as unsatisfactory in relation to their equitable contribution (Qiu et al., 2024). The rating of "insufficient" shows that Indonesia's climate policies and activities un 2030 need significant enhancement not order to match with the 1.5°C temperature target (Geiges et al., 2020).

Indonesia's emissions are anticipated to climb by almost 20% by 2022. This growth is

mostly due to the operation of off-grid coal-fired power facilities that are being utilized to power smelters for the developing local nickel sector. Despite this, the nickel industry is projected to play a part in Indonesia's shift to green energy. Before the adoption of the JETP process, the government had little understanding regarding the true size of the coal fleet and pipeline network. This problem was brought up by the JETP Technical Working Group while creating the Comprehensive Investment and Policy Plan (CIPP), resulting in changed JETP aims. (Carbon Credit, 2023; Climate Action Tracker, 2024; IESR, 2022a)

Indonesia's climate policy does not effectively guide the country towards utilizing its vast renewable energy potential for development purposes (IESR, 2024b). The Ministry of Energy and Mineral Resources, JETP secretariat, IEA, and IESR have included solar power as a significant component of their long-term electricity plan called the draft national electricity plan RUKN. This plan aligns with the Net Zero Roadmap produced by the IEA and the Deep Decarbonization goals set by IESR. The objective of the plan is to harness Indonesia's projected solar capacity of 2.9-7.7 GW (JETP Secretariat, 2023).

However, these sources will only contribute to less than 1% of the total electricity generation by the year 2022. In order to meet its immediate and long-term goals, Indonesia must promptly tackle obstacles hindering the progress of solar and wind projects. This includes enhancing price laws, streamlining procurement procedures, and revamping local content criteria.

The rate of growth in renewable power generation was 12% in 2022. However, it is anticipated that Indonesia will not achieve its renewable energy goal of 23% by 2025, as renewables would only make up 13.6% of grid capacity in 2022. In 2022, coal generation had an 8% increase and made up 67% of the on-grid electricity mix (IESR, 2023b; JETP Secretariat, 2023).

The Minister of Energy and Mineral Resources Regulation 16/2022 requires coal-fired power plants to adopt energy efficiency measures. However, the regulation ensures that any potential cost increases resulting from these measures will not happen due to the price cap of USD 70 per ton imposed through the Domestic Market Obligation (DMO) and Independent Power Producer (IPP) contracts. As a result of the change in policy towards the state-owned utility firm PLN, there is no motivation for owners of coal-fired power plants to adopt energy efficiency measures (IESR, 2022; UNFCCC, 2022).

In Presidential Regulation 112/2022, the Government of Indonesia has defined a goal date of 2050 for the progressive removal of coal-fired power stations. This law also placed a temporary ban on the construction of new coal power plants, with a few exceptions and additional restrictions, and required the preparation of a plan to gradually abolish the use of coal. Coal plants that are not included in the 2021-2030 RUPTL are only approved for industrial users that wish to generate value from natural resources. However, there is a requirement that emissions must be cut by 35% within 10 years and totally eliminated by 2050 (IESR, 2022a; UNFCCC, 2022).

In late 2021, Indonesia's tax code incorporated a carbon tax (President of the Republic of Indonesia, 2021). The implementation of the carbon tax, which was previously postponed multiple times, is currently scheduled for 2025. It will commence at about USD 2 per metric ton of CO₂ and will apply to approximately 86% of coal-fired power plants (Climate Action Tracker, 2024; IESR, 2022a). The government intends to incrementally raise the tax and extend its scope to encompass additional sectors (Climate Action Tracker, 2024; IESR, 2022a).

The Land Use, Land-Use Change, and Forestry (LULUCF) sector makes a significant

contribution to greenhouse gas emissions, amounting to approximately 1 gigaton of carbon dioxide equivalent every year. Since 2016, there has been a decrease in tree cover loss. However, the main cause of deforestation is still the production of commodities, which accounts for over 90% of the total tree cover loss by 2022, (Climate Action Tracker, 2024; Global Forest Watch, 2022).

The Permanent Forest Moratorium strictly forbids the issuing of future concessions on primary forests and peatlands. This policy spans 41% of Indonesia's forests and peatlands and is an important measure in the fight to minimize deforestation in Indonesia. The effectiveness of the moratorium is hampered by the omission of land in concessions and secondary forests, as well as weak law enforcement (Climate Action Tracker, 2024; Greenpeace, 2019).

Commodity-driven deforestation is the leading driver of deforestation, accounting for more than 94% in 2022 (Climate Action Tracker, 2024; Global Forest Watch, 2022). Fire is exploited as a cost-effective and easy approach to eliminate vegetation for the goal of building profitable plantations like palm oil, and it constitutes a large contributor to Land Use, Land-Use Change, and Forestry (LULUCF) emissions in Indonesia. The rise of commodity sectors like palm oil is fueled by international demand and encouraged by domestic development and energy policies (Dwisatrio et al., 2021). The issue of deforestation for the purpose of creating oil palm plantations is a serious and pressing concern in Indonesia, particularly in relation to the development of biofuels. This issue is further compounded by continuing debates over the potential rise of biodiesel blending standards above the present level of 35%.

Since its implementation in 2011, a permanent moratorium on primary forests and peatlands has been a crucial policy in mitigating deforestation. The moratorium is extended biennially and was made permanent in 2019 by means of Presidential Instruction 5/2019. Indonesia's moratorium applies to 41% of its forests and peatlands, but the remaining 59% is not included due to secondary forests (47%) and area under concessions (12%) (Climate Action Tracker, 2024; Greenpeace, 2019; Union Concern Scientist, 2015; wri, 2021).

5. CONCLUSION AND RECOMMENDATION

Indonesia, as a nation that has officially approved the Paris Agreement, is obligated to adhere to the requirements outlined in its national endeavors to mitigate global warming, as stated in its Nationally Determined Contributions (NDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC). Indonesia's Nationally Determined Contributions (NDC) encompass goals for climate action, focusing on both mitigation and adaptation strategies. These include implementing climate policies aimed at reducing global warming to a level below 2°C. By implementing political strategies such as energy policy, forest destruction moratoriums for industrial purposes, and carbon markets, we may effectively address environmental concerns.

Furthermore, Indonesia is eagerly anticipating climate financial assistance to support emission reduction strategies as part of the energy transformation partnership. Nevertheless, there are still impediments, and the nations providing financial aid have not yet recognized Indonesia's determination to decrease carbon emissions by implementing new sustainable energy sources. There are still significant challenges in the advancement of solar and wind energy, despite their considerable promise. The Ministry of Environment and Forestry should be motivated by the "very inadequate" grade given by Carbon Action Tracker, as it

is a leading authority in the development of the Nationally Determined Contributions (NDC). Reassess policies that facilitate the achievement of NDC targets by engaging all sectors, including public, corporate, and community participation, as well as domestic and international climate finance.

REFERENCES

- Albasyah. (2024, January 30). Peringkat Kebijakan dan Aksi Iklim Indonesia Turun di 2023. *Top Business.Com*. <https://www.topbusiness.id/87471/peringkat-kebijakan-dan-aksi-iklim-indonesia-turun-di-2023.html>
- Arifah, Salman, D., Yassi, A., & Demmallino, E. B. (2022). Livelihood vulnerability of smallholder farmers to climate change: A comparative analysis based on irrigation access in South Sulawesi, Indonesia. *Regional Sustainability*, 3(3), 244–253. <https://doi.org/10.1016/j.regsus.2022.10.002>
- Asia Pacific Energy Portal. (2020). *Indonesia: Policy and Program*. <https://asiapacificenergy.org/apef/index.html#country-profile/lang/en/geo/IDN>
- Bappenas. (2021, September). *Indonesia's Updated NDC for a Climate Resilient Future*. <http://greengrowth.bappenas.go.id/en/indonesias-updated-ndc-for-a-climate-resilient-future/>
- Carbon Credit. (2023, July). Indonesia's Coal Emissions at Record High, Up 33% in 2022. *Carboncredit.Com*. <https://carboncredits.com/indonesia-coal-emissions-at-record-high-up-33-in-2022/>
- Chan, S., Iacobuta, G., & Hägele, R. (2021). Maximising Goal Coherence in Sustainable and Climate-Resilient Development? Polycentricity and Coordination in Governance. In S. Chaturvedi, H. Janus, S. Klingebiel, X. Li, A. D. Mello E Souza, E. Sidiropoulos, & D. Wehrmann (Eds.), *The Palgrave Handbook of Development Cooperation for Achieving the 2030 Agenda* (pp. 25–50). Springer International Publishing. https://doi.org/10.1007/978-3-030-57938-8_2
- Climate Action Tracker. (2024). *CAT Indonesia Profile*. Climate Action Tracker. <https://climateactiontracker.org/countries/indonesia/>
- Dixit, A., O'Connor, R., Kim, M., Dyck, M., & Ferrarin, G. (2022). State of the Nationally Determined Contributions: Enhancing Adaptation Ambition. *World Resources Institute*. <https://doi.org/10.46830/wriwp.21.00099>
- Dwisatrio, B., Said, Z., Permatasari, A. P., Maharani, C., Moeliono, M., Wijaya, A., Lestari, A. A., Yuwono, J., & Pham, T. T. (2021). *The context of REDD+ in Indonesia: Drivers, agents and institutions [Update edition]*. Center for International Forestry Research (CIFOR). <https://doi.org/10.17528/cifor/007952>
- ENDC Indonesia*. (n.d.).
- Falkner, R. (2016). The Paris Agreement and the new logic of international climate politics. *International Affairs*, 92(5), 1107–1125. <https://doi.org/10.1111/1468-2346.12708>
- Gao, G., Chen, M., Wang, J., Yang, K., Xian, Y., Shi, X., & Wang, K. (2019). Sufficient or insufficient: Assessment of the intended nationally determined contributions (INDCs) of the world's major greenhouse gas emitters. *Frontiers of Engineering Management*, 6(1), 19–37. <https://doi.org/10.1007/s42524-019-0007-6>
- Geiges, A., Nauels, A., Parra, P. Y., Andrijevic, M., Hare, W., Pflleiderer, P., Schaeffer, M., & Schluessner, C.-F. (2020). Incremental improvements of 2030 targets

- insufficient to achieve the Paris Agreement goals. *European Geosciences Union*, 11(3). <https://doi.org/10.5194/esd-11-697-2020>
- Global Forest Watch. (2022). *Indonesia*.
- Greenpeace. (2019). *One million hectares burned inside Forest Moratorium area, Greenpeace analysis shows, Press release*. <https://www.greenpeace.org/southeastasia/press/2834/one-million-hectares-of-forest-burned-inside-forests-moratorium-area-greenpeace-analysis-show/>
- IESR. (2022). *Indonesia Energy Transition Outlook (IETO) 2022*. Indonesia Energy Transition Outlook (IETO) 2022.
- IESR. (2023a, Desember). *Exchanging Insights on Local Solar Manufacturer in Indonesia and Viet Nam*. <https://iesr.or.id/en/tag/indonesia-en/page/2>
- IESR. (2023b, September). *Policy Reform and Concessional Finance Needed to Achieve JETP Targets. Institute Essential Sources Reform*. <https://iesr.or.id/en/tag/comprehensive-investment-and-policy-plan-cipp-en>
- IESR. (2024). *The Decline of Indonesia's Climate Policy and Action Rating in 2023*. Intute for Essential Service Reform. <https://iesr.or.id/en/tag/nationally-determined-contribution-ndc>
- IESR. (2022a). *Financing Indonesia's coal phase-out*. <https://iesr.or.id/en/pustaka/financing-indonesias-coal-phase-out>.
- IPCC. (2007). *Climate Change 2007—Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of Climate Change*. UNFCCC.
- JETP Secretariat. (2023). *Rencana Investasi JETP diluncurkan, pemerintah Indonesia berharap implementasi dapat dilakukan segera*. <https://id.jetp-id.org/berita/rencana-investasi-jetp-diluncurkan-pemerintah-indonesia-berharap-implementasi-dapat-dilakukan-segera>
- Kemen LHK. (2016, April 1). *Presiden Siapkan Moratorium Lahan Kelapa Sawit dan Lahan Tambang* [Report]. <https://ppid.menlhk.go.id/berita/berita-tapak/2891/presiden-siapkan-moratorium-lahan-kelapa-sawit-dan-lahan-tambang>
- Kemen LHK. (2020). *Roadmap Nationally Determined Contribution (NDC) Adaptasi Perubahan Iklim*.
- Kemen LHK. (2022a). *Enhanced NDC: Komitmen Indonesia Untuk Makin Berkontribusi Dalam Menjaga Suhu Global*.
- Kemen LHK. (2022b). *Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050 (Indonesia LTS-LCCR 2050)*.
- Kharbach, M., & Chfadi, T. (2022). Economic growth and challenges in achieving NDC targets: A Moroccan perspective. *Energy Reports*, 8, 7010–7015. <https://doi.org/10.1016/j.egy.2022.05.121>
- Laudari, H. K., Aryal, K., Bhusal, S., & Maraseni, T. (2021). What lessons do the first Nationally Determined Contribution (NDC) formulation process and implementation outcome provide to the enhanced/updated NDC? A reality check from Nepal. *Science of The Total Environment*, 759, 143509. <https://doi.org/10.1016/j.scitotenv.2020.143509>
- Mersmann, F. (2017). *Implementation of Nationally Determined Contributions—Indonesia country report*. https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2017-10-26_climate-change_24-2017_country-report-indonesia.pdf
- Mohan, P. S. (2023). *Implementing nationally determined contributions under the Paris*

- Agreement: An assessment of ocean-based climate action in Caribbean Small Island Developing States. *Marine Policy*, 155, 105787. <https://doi.org/10.1016/j.marpol.2023.105787>
- Nguyen, T. T., Grote, U., Neubacher, F., Rahut, D. B., Do, M. H., & Paudel, G. P. (2023). Security risks from climate change and environmental degradation: Implications for sustainable land use transformation in the Global South. *Current Opinion in Environmental Sustainability*, 63, 101322. <https://doi.org/10.1016/j.cosust.2023.101322>
- Nugroho, Y. (2023, July). *Development Sustainability*. https://cipg.or.id/en/blog_article/development-sustainability/
- Nurfajrin, Z. D., & Satiya wira, B. (2021). Abatement cost for selectivity negative emissions technology in power plant Indonesia with aim/end-use model. *IOP Conference Series: Earth and Environmental Science*, 894(1), 012011. <https://doi.org/10.1088/1755-1315/894/1/012011>
- Patunru, Arianto. A., & Rakhmah, T. F. (2017). *INDC and Low-Carbon Technology Deployment Scenarios: Indonesia*. Springer Singapore.
- Piesse, M. (2018). *Indonesian Climate Change Policies: Striking a Balance between Poverty Alleviation and Emissions Reduction*. <https://apo.org.au/sites/default/files/resource-files/2018-09/apo-nid193336.pdf>
- Siagian, U., Yuwono, B., Fujimori, S., & Masui, T. (2017). Low-Carbon Energy Development in Indonesia in Alignment with Intended Nationally Determined Contribution (INDC) by 2030. *Energies*, 10(1), 52. <https://doi.org/10.3390/en10010052>
- Tacconi, L. (2018). Indonesia's NDC bodes ill for the Paris Agreement. *Nature Climate Change*, 8(10), 842–842. <https://doi.org/10.1038/s41558-018-0277-8>
- Tacconi, L., & Muttaqin, M. Z. (2019). Reducing emissions from land use change in Indonesia: An overview. *Forest Policy and Economics*, 108, 101979. <https://doi.org/10.1016/j.forpol.2019.101979>
- Ulum, A. N., Yunus, M., & Irwansyah, I. (2022). PERAN DAN LANGKAH MITIGASI PERUBAHAN IKLIM DI INDONESIA. *Jurnal Restorative Justice*, 6(2), 125–139. <https://doi.org/10.35724/jrj.v6i2.4664>
- UNDP. (2017). *People, Planet and Prosperity: UNDP Indonesia Illustrated Results Report 2014-2016*. <https://www.undp.org/indonesia/publications/result-report-2017>
- UNDP. (2023, May 31). *What are NDCs and how do they drive climate action?* https://climatepromise.undp.org/news-and-stories/NDCs-nationally-determined-contributions-climate-change-what-you-need-to-know?_gl=1*_uigl*_ga*MTIyNjQ0NzYwNC4xNzEyNTI5MTI4*_ga_3W7LPK0WP1*MTcxMjUyOTEyOC4xLjEuMTcxMjUyOTIzNi4xOS4wLjA
- UNFCC. (2017). *The Paris Agreement*. <https://unfccc.int/process-and-meetings/the-paris-agreement>
- UNFCC. (2024). *Introduction to Climate Action*. UNFCCC. <https://unfccc.int/climate-action/introduction-climate-action>
- UNFCCC. (2022). *ENDC Indonesia*. <https://unfccc.int/gcse?q=Indonesia>
- Union Concern Scientist. (2015). *Land-Sector Emission Reduction Targets of Brazil, Indonesia, and India Fall Short of Democratic Republic of the Congo's*. <https://www.ucsusa.org/about/news/land-sector-emission-reduction-targets-brazil-indonesia-and-india-fall-short-democratic>

wri. (2021). *State of the Nationally Determined Contributions: Enhancing Adaptation Ambition*. world resources institute.
https://publications.wri.org/_r_wp_enhancing-adaptation-ambition

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