

Indonesia's Climate Diplomacy: Criticisms and Challenges of Biomass Co-firing Under JETP

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ABSTRACT

This study analyzes Indonesia's climate diplomacy in developing biomass through coal co-firing policies as a strategy to achieve Net Zero Emissions (NZE) within the Just Energy Transition Partnership (JETP) framework. The research focus is directed at how Indonesia constructs its domestic energy transition narrative amid rising international criticism regarding the sustainability and effectiveness of biomass. Utilizing a qualitative method with a case study approach, data collection was conducted through a comprehensive literature review, analysis of government policy documents, international organization reports, and publications from global environmental institutions. Theoretically, this study applies the concepts of climate diplomacy and the just energy transition framework. The findings reveal a structural policy misalignment. Indonesia utilizes biomass co-firing as a diplomatic instrument to demonstrate its decarbonization commitment while maintaining national energy stability. However, this policy has drawn sharp global criticism for being perceived as a "false solution" that extends the lifespan of coal plants, risks driving deforestation through Energy Plantation Forest expansion, and weakens Indonesia's bargaining position, thereby stalling the disbursement of JETP grants. The novelty and research gap of this study lie in its shift from the technical-economic aspects of biomass to the political dimensions of international relations. This study fills a literature gap by mapping how the friction between domestic regulations and global green norms creates a deadlock in climate finance. The policy implications urge the Indonesian government to reconfigure its diplomatic strategy by tightening biomass sustainability standards and redirecting international funding toward pure renewable energy infrastructure.

Keywords : Climate Diplomacy; Biomass Co-firing; JETP; Net Zero Emissions; Case Study

INTRODUCTION

Global climate change has shifted the paradigm of international energy governance from fossil-based to secular decarbonization. As one of the largest greenhouse gas emitters in Southeast Asia, Indonesia is committed to achieving Net Zero Emissions by 2060 or earlier. This commitment was negotiated externally through the Just Energy Transition Partnership (JETP) scheme with an investment commitment of \$21.4 billion, coordinated by the International Partners Group (IPG) under the leadership of the United States and Japan (CIPP JETP, 2023). However, massive domestic dependence on coal as the national electricity baseload creates a complex energy trilemma between security, affordability, and environmental sustainability (Wardayanti, 2026). As a transition bridge, the Indonesian government, through PT PLN (Persero), operationalized a biomass co-firing policy at 52 coal-fired power plants (PLTU). This policy is considered a rapid mitigation option because it can reduce coal consumption without requiring the immediate shutdown of coal-fired power plants, which would be financially and politically costly. Within the JETP framework, biomass is positioned as part of Indonesia's strategy to demonstrate its commitment to decarbonizing its energy sector.

The JETP Comprehensive Investment and Policy Plan (CIPP) documents project a significant increase in the contribution of bioenergy to the national renewable energy mix by 2050 (Hasan & Swastika, 2025). Empirically, by 2024, the implementation of biomass co-firing by PLN is claimed to have produced 1.67 million MWh of green electricity by utilizing 1.62 million tons of biomass feedstock, resulting in a reduction of CO₂ emissions of approximately 1.87 million tons (PLN, 2025). Despite the government's aggressive promotion of this scheme, Indonesia's biomass policy has drawn sharp criticism from various international organizations, donor institutions, and global environmental groups. Large-scale wood-based biomass development is considered to carry the risk of secondary deforestation through the clearing of Energy Plantation Forests, land degradation, and the risk of perpetuating long-term dependence on coal infrastructure (Trend Asia, 2023). This criticism focuses on the potential for upstream ecological damage and its inconsistency with the principles of a just energy transition. Some stakeholders in the International Partners Group (IPG) argue that the use of biomass in coal-fired power plants does not fully represent a real shift towards clean energy, but rather a delaying tactic that actually extends the operational life of existing coal-fired assets (Reuters, 2025). Furthermore, the effectiveness of low-ratio biomass blends (5-10%) in significantly reducing carbon emissions has been critically recalculated using life cycle analysis by global scientists, sparking skepticism and international debate (Sterman et al., 2018).

In international relations studies, contemporary climate diplomacy has shifted from merely normative negotiations on environmental protection to a strategic instrument for states to secure economic and energy sovereignty at the global level (Arslan, n.d.). Through the decentralized Paris Agreement, compliance and state contributions are measured by reputational capital as indicated in Nationally Determined Contributions (Keohane & Victor, 2016). Conceptually, biomass is categorized as renewable energy based on the assumption of a closed carbon cycle, where CO₂ released during combustion is reabsorbed by new vegetation growth (IPCC, 2022).

However, this techno-political approach is scientifically challenged by the global environmental political economy literature. The fundamental obstacle to large-scale bioenergy lies in indirect emissions due to land-use changes (Searchinger, 2022). When the need for wood pellet raw materials for PLTU increases drastically, the clearing of natural forest land into Energy Plantation Forests (THE) releases soil carbon stores into the atmosphere, so that in total life cycle calculations, the intensity of wood biomass emissions can sometimes exceed that of coal in the short term (Sterman et al., 2018).

The theory of a just energy transition demands that the decarbonization agenda not sacrifice aspects of distributive justice, procedural justice, and justice for recognition of vulnerable groups (McCauley & Heffron, 2018). In the Indonesian JETP architecture, the realization of this principle faces structural challenges due to the asymmetry of interests between donors and beneficiaries. Developing countries prioritize development justice and energy security, which underlies the emergence of interim policy options such as co-firing. To understand the position of Indonesia's biomass co-firing policy in its report to the global level, this policy should not be viewed reductively as a technical sectoral domestic energy policy instrument of PT PLN or the Ministry of Energy and Mineral Resources. This policy is an active climate diplomacy instrument based on two theoretical arguments: (1) Counter-narrative of energy sovereignty, Indonesia uses biomass utilization achievement data as a bargaining instrument in multilateral forums such as the UNFCCC COP to prove that decarbonization is underway without sacrificing national economic stability. By promoting biomass, Indonesia's climate diplomacy seeks to demonstrate compliance with global emission reduction targets, while simultaneously building a political defense against international pressure demanding a sudden halt to the domestic fossil fuel industry. (2) Redefining green compliance norms, through the inclusion of bioenergy targets in the CIPP JETP document (Hasan & Swastika, 2025), Indonesia is conducting diplomatic maneuvers to soften the standard for "clean energy" dominated by Western perspectives. Indonesia argues that the energy transition in developing countries must be gradual and adaptive to existing infrastructure due to limited fiscal capacity compared to developed countries. The biomass issue is thus adopted as a foreign policy tool to negotiate the flexibility of implementing the international climate regime at the domestic level.

Table 1 Results of Literature Review and Research Position

No.	Peneliti	Fokus Kajian	Temuan Penelitian	Keterbatasan Penelitian
1.	(Sovacool et al., 2021)	<i>Just Energy Transition</i>	The energy transition must take into account aspects of justice and sustainability.	Does not discuss biomass co-firing
2.	(Ginting et al., 2025)	The challenges of biomass co-firing	The main challenges are biomass supply, costs, and technology.	Not addressing international criticism
3.	(Zakia & Sunitiyoso, 2025)	Biomass opportunities for power generation	Biomass can support emission reduction and energy mix	Does not examine aspects of diplomacy and

			international legitimacy
4.	This research	Indonesia's Climate Diplomacy in Biomass Development	Analyzing biomass as an instrument of climate diplomacy and international criticism and challenges of its implementation within the JETP framework.
			Becoming a research novelty

The novelty of this research rests on three main scientific contributions: (1) An interdisciplinary analysis of the relationship between climate diplomacy and biomass policy. It analyzes the relationship between Indonesia's climate diplomacy and biomass development policy within the JETP framework, uncovering how global environmental criticism has been institutionalized as a prerequisite for the withholding of transition funds by the IPG. (2) A critical assessment of the just transition narrative. It critically assesses the just energy transition narrative through the implementation of biomass co-firing by examining whether this policy truly reflects a fair distribution of the emissions burden or merely acts as a greenwashing strategy to extend the economic life of coal-fired power plants.

This research makes a significant contribution to the literature on international relations, clarifying theoretical understanding of how developing countries utilize domestic energy governance instruments as a defensive strategy to counter the hegemony of environmental norms imposed by a consortium of developed countries through unilateral financing instruments such as the JETP. Practically, this study provides an empirically evidence-based analysis of the impact of the inconsistency of the co-firing policy on the credibility and bargaining position of Indonesia's foreign diplomacy. The results of this study can be a scientific reference for policy makers at the Ministry of Foreign Affairs, the Ministry of Energy and Mineral Resources, and the Fiscal Policy Agency (BKF) in reconfiguring international climate funding negotiation strategies to avoid commitment deadlocks in the future. This study aims to answer three research questions: 1) How does Indonesia's climate diplomacy shape biomass development through co-firing policies in coal-fired power plants?, (2) What are the international criticisms and challenges related to the implementation of this policy within the JETP framework?, (3) To what extent can biomass co-firing be considered a strategy to achieve a just energy transition?

RESEARCH METHODOLOGY AND THEORETICAL FRAMEWORK

This study employs a qualitative method with a descriptive-analytical approach. This approach is used to understand the dynamics of Indonesia's climate diplomacy and international criticism of the biomass co-firing policy. The study utilizes secondary data sources. Secondary data were collected from government policy documents, PLN reports, JETP documents, and national and international journal articles published between 2020 and 2025. Data were gathered through library research, document analysis, and reviews of scholarly literature.

This research applies the Just Transition Theory, which is one of the prominent approaches in environmental, energy, and global governance studies that has gained increasing attention following the emergence of the global decarbonization agenda after the 2015 Paris Agreement. The theory emerged as a critique of energy transition paradigms that focus solely on carbon emission reductions without adequately considering the social, economic, and political

impacts generated by the transition process. It emphasizes that the transition toward a low-carbon economy must be conducted in a fair, inclusive, and sustainable manner for all segments of society (Heffron & McCauley, 2018). From the perspective of Just Transition Theory, energy policies cannot be separated from questions concerning who benefits from and who bears the costs of the energy transition process. Therefore, the theory seeks to address a common dilemma in climate change policy: how to achieve emission reduction targets without creating new forms of injustice for communities, workers, and developing countries (Sovacool et al., 2020).

DISCUSSION

1. Indonesia's Climate Diplomacy in Biomass Development

Indonesia utilizes climate diplomacy as an instrument to gain international legitimacy while also securing financial support for its energy transition efforts. In international forums such as the G20 and the Conference of the Parties (COP), Indonesia has reaffirmed its commitment to achieving Net Zero Emissions (NZE) through the development of renewable energy sources, including biomass. The co-firing policy has been promoted as a gradual transition strategy that can maintain national energy stability without disrupting economic growth. The government argues that this technology represents a more realistic approach compared to the abrupt phase-out of coal-fired power plants.



Figure 1. Growth in the Implementation of Coal–Biomass Co-Firing at Indonesian Coal-Fired Power Plants

Biomass has been promoted by Indonesia as a renewable energy source that can support the national energy transition agenda without compromising energy security. The government considers biomass advantageous because its feedstock is abundantly available domestically, including agricultural residues, forestry waste, and energy crops. In international forums, Indonesia has emphasized that the utilization of biomass through co-firing can serve as a “middle path” between the demands for emission reductions and the need to maintain coal-based power generation. The government argues that the abrupt retirement of coal-fired power plants could potentially trigger an energy crisis and impose significant economic pressures, particularly because coal still accounts for more than 60% of the national electricity generation mix (IEA, 2023).

Table 2. Percentage of Energy Sources

Energy Source	Percentage
Coal	61%
Natural Gas	19%
Renewable Energy	14%
Oil	6%

Source : International Energy Agency (IEA), 2024

The data indicate that Indonesia's dependence on coal remains very high. Therefore, the government views co-firing as a more realistic transition solution compared to the rapid phase-out of coal-fired power plants. Furthermore, biomass development is closely linked to Indonesia's green economic diplomacy strategy. The government seeks to demonstrate that Indonesia is not merely an object of global climate pressure but also an actor capable of offering energy transition solutions based on domestic resources. Indonesia has played an important role in global climate diplomacy, particularly since assuming the Presidency of the G20 in 2022. During its presidency, Indonesia positioned energy transition as one of the key agenda items under the theme "Recover Together, Recover Stronger." The government emphasized the importance of international cooperation in supporting clean energy financing for developing countries. At COP26 in Glasgow and COP27 in Egypt, Indonesia reaffirmed its commitment to reducing emissions from the energy sector through the increased utilization of renewable energy sources, including biomass. This commitment was further strengthened through the signing of the Just Energy Transition Partnership (JETP) with developed countries, which provided an initial funding commitment of USD 20 billion.

Through climate diplomacy, Indonesia seeks to secure international support for a gradual energy transition process. In this context, biomass has become an important component of the narrative that Indonesia is undertaking an energy transformation in accordance with its national capacities and circumstances. According to Simanjuntak (2023), Indonesia's energy diplomacy within the JETP framework reflects a strategy of "dual-track diplomacy," whereby the government seeks to safeguard domestic interests while simultaneously meeting international expectations regarding decarbonization. This approach is evident in the government's efforts to promote biomass co-firing as a transitional energy solution, despite its continued reliance on coal-fired power plant infrastructure. The biomass co-firing program began to be widely implemented by PLN in 2021. The government has targeted dozens of coal-fired power plants to utilize biomass as a partial substitute for coal, generally at blending ratios of 5–10 percent. By 2024, PLN reported that co-firing had been implemented at 47 coal-fired power plants, with biomass consumption reaching 1.62 million tons and generating approximately 1.67 million MWh of green energy (PT PLN, 2025).

Table 3. Implementation of Biomass Co-Firing in Indonesian Coal-Fired Power Plants

Year	Number of Coal-Fired Power Plants (CFPPs)	Biomass Consumption	Emission Reduction
2021	13	189 Ribu Ton	230 Ribu Ton CO ₂
2022	26	450 Ribu Ton	540 Ribu Ton CO ₂
2023	43	1.02 Juta Ton	1,1 Juta Ton CO ₂
2024	47	1,62 Juta Ton	1,87 Juta Ton CO ₂

Source: PLN (2025)

The data demonstrate a significant increase in the implementation of biomass co-firing in Indonesia. The government has used these achievements as evidence of its strong commitment to decarbonizing the energy sector. The steady growth in the number of participating coal-fired power plants, biomass consumption, and emission reductions is presented as an indication that Indonesia is making tangible progress toward achieving its energy transition and climate objectives. Through these accomplishments, the government seeks to strengthen its position in international climate forums and to demonstrate that biomass co-firing can serve as a practical pathway for reducing emissions while maintaining energy security and economic stability.



Figure 2. Geographic Distribution of Biomass Co-Firing Implementation Across Indonesia

In the context of international diplomacy, these achievements are frequently presented by the Indonesian government as evidence of the success of its national energy transition efforts. Indonesia emphasizes that a gradual approach is more realistic for developing countries than the rapid and complete phase-out of coal-fired power plants. The concept of a just energy transition serves as a key foundation of Indonesia's climate diplomacy. The government argues that the energy transition should not create social or economic inequalities (Salsabila & Sabandi, 2025). Consequently, Indonesia rejects decarbonization approaches that are perceived as overly aggressive and potentially disruptive to national development. In various official statements, the government has emphasized that millions of Indonesians continue to depend on the coal sector, both as a source of employment and as a major contributor to regional revenues. Therefore, biomass co-firing is positioned as a more "just" transition strategy because it does not immediately eliminate economic activities associated with the fossil fuel energy sector. According to IESR (2022), Indonesia employs the concept of transition justice as a diplomatic argument to gain greater flexibility in implementing its climate targets (Jati, 2022). In other words, Indonesia seeks to avoid international pressure that demands the rapid retirement of coal-fired power plants. Nevertheless, this approach has generated considerable international debate. Several countries and environmental organizations argue that the use of biomass in coal-fired power plants perpetuates dependence on coal and may slow the transformation toward genuinely clean energy sources such as solar and wind power.

2. International Criticism of Indonesia's Biomass Co-Firing Policy

Indonesia's biomass co-firing policy, implemented as part of its energy transition strategy toward achieving the Net Zero Emissions (NZE) target by 2060, has become an important instrument of the country's climate diplomacy. The government promotes this policy as a pragmatic solution that enables carbon emission reductions without requiring the immediate retirement of coal-fired power plants (CFPPs). In various international forums, including the G20, the Conference of the Parties (COP), and the Just Energy Transition Partnership (JETP), Indonesia presents biomass as a transitional energy source capable of bridging the need for decarbonization with the imperative of maintaining national energy security. Nevertheless, behind this narrative, the biomass co-firing policy has attracted significant criticism from various international actors.

The first and most prominent criticism is the allegation that biomass co-firing constitutes a form of greenwashing in the energy transition process. The concept of greenwashing refers to the practice of creating an environmentally friendly image without implementing substantial changes to activities that continue to generate negative environmental impacts. In Indonesia's case, numerous international environmental organizations argue that the use of biomass in coal-fired power plants does not eliminate dependence on coal, as coal remains the primary fuel used in electricity generation. From the perspective of climate diplomacy, accusations of greenwashing arise because the Indonesian government actively promotes co-firing as evidence of progress toward its NZE target and as a symbol of the success of its national energy transition strategy. These criticisms intensified after Indonesia secured international financial support through the JETP framework, which was specifically designed to accelerate the reduction of coal dependence. Several observers have argued that utilizing energy transition funds to support infrastructure that continues to rely on coal-fired power plants may obscure the fundamental objective of decarbonization (Suharsono & Putra, 2024).

The second criticism concerns the assumption that biomass is a carbon-neutral energy source. The Indonesian government argues that carbon dioxide released during biomass combustion can be reabsorbed by plants through photosynthesis, thereby preventing any net increase in atmospheric carbon concentrations. However, several international studies have demonstrated that this assumption does not always hold true in practice. Searchinger argues that biomass combustion directly emits carbon dioxide and, in certain circumstances, may generate even higher emissions than coal when measured on the basis of energy output. Furthermore, plant regeneration requires a relatively long period to reabsorb the carbon that has been released. As a result, a carbon debt emerges, creating a time lag during which biomass continues to contribute to global warming in the short to medium term.

The report of the Intergovernmental Panel on Climate Change (IPCC) also emphasizes that the climate benefits of biomass depend heavily on feedstock sources, land-use governance, and the sustainability of supply chains (IPCC, 2022). Biomass derived from agricultural residues or forestry waste may have a lower environmental impact. However, if increasing biomass demand leads to new land clearing or deforestation, the total emissions generated may exceed the benefits gained from partially replacing coal. In the Indonesian context, this criticism is particularly relevant because the national biomass development targets require an extremely large volume of feedstock. Several studies estimate that biomass demand to support PLN's entire co-firing program could exceed 10 million tons per year by the end of the decade (Trend Asia, 2023). Such projections raise important questions regarding the sustainability of biomass supply and the sources of feedstock that will be utilized. International criticism of the biomass co-firing policy reflects broader differences in perspective between developed and developing countries regarding the energy transition. Developed countries generally advocate for a rapid phase-out of fossil fuels because they possess greater technological, financial, and infrastructural capacities to support such a transition. In contrast, Indonesia faces more complex challenges, as it must balance decarbonization targets with economic development needs, energy security considerations, and social welfare objectives. Within this context, Indonesia employs the concept of a just transition as a central pillar of its climate diplomacy. The government argues that energy transition policies must take domestic conditions into account and should not undermine economic growth or public access to energy. Consequently, biomass co-firing is viewed as a more realistic transitional solution than the abrupt closure of coal-fired power plants.

3. Analysis of Indonesia's Energy Diplomacy within the JETP Framework

Indonesia's climate diplomacy has undergone a significant transformation in recent years as global pressure on developing countries to accelerate the transition toward a low-carbon economy has intensified. Indonesia's commitment to achieving Net Zero Emissions (NZE) by 2060 or earlier has become one of the central pillars of its foreign policy in the fields of environment and energy. In this context, the Indonesian government seeks not only to fulfill its international commitments under the Paris Agreement and the Enhanced Nationally Determined Contribution (E-NDC), but also to safeguard national interests related to energy security, economic growth, and social development. One of the key instruments employed in this strategy is the development of biomass through the co-firing policy in coal-fired power plants (CFPPs).

To understand Indonesia's position in promoting this policy, Just Transition Theory provides a relevant analytical framework. This theory is based on the assumption that energy transitions should not only aim to reduce carbon emissions but must also address issues of social, economic, and environmental justice (Heffron & McCauley, 2018). From this perspective, the

success of an energy transition is measured not solely by the achievement of decarbonization targets but also by a country's ability to ensure that the transformation process does not create new inequalities or disadvantage particular groups within society. Consequently, Just Transition Theory serves as an important conceptual foundation for explaining how Indonesia seeks to build legitimacy for its biomass co-firing policy amid growing international criticism. In various international forums, including the Conference of the Parties (COP), the G20, the ASEAN Energy Ministers Meeting, and the Just Energy Transition Partnership (JETP), Indonesia has consistently emphasized that energy transition policies must take into account the circumstances and needs of developing countries. The government argues that each country possesses unique economic, social, and energy characteristics; therefore, pathways toward decarbonization cannot be standardized. Developed countries, which have benefited from fossil-fuel-based industrialization for more than a century, are considered to bear greater responsibility for providing financial and technological support to developing nations in order to facilitate a fair energy transition (UNFCCC, 2023).

Within this framework, the concept of a just transition is employed as a diplomatic narrative to underscore Indonesia's need for a gradual and realistic transition pathway. The government maintains that the abrupt retirement of coal-fired power plants could generate serious economic consequences, including electricity supply disruptions, job losses, and increased energy costs for society. As a result, biomass co-firing is promoted as a transitional solution that enables carbon emission reductions without jeopardizing national economic stability. According to Newell and Mulvaney (2013), one of the defining characteristics of Just Transition Theory is the balance between environmental objectives and economic development needs (Newell & Mulvaney, 2013). This perspective aligns closely with Indonesia's argument that energy security constitutes an integral component of climate policy. In numerous official statements, the government has emphasized that the energy transition must ensure affordable and sustainable access to energy for all citizens. Accordingly, Indonesia's climate diplomacy seeks not only to gain international recognition for its decarbonization commitments but also to foster global understanding of the complex challenges faced by developing countries.

From the Indonesian government's perspective, biomass co-firing represents a practical implementation of just transition principles. This technology enables the blending of biomass with coal in existing power plants without requiring the construction of costly new infrastructure. Through this approach, Indonesia can gradually reduce emissions from the electricity sector while maintaining the generation capacity necessary to support national economic growth. Data from PLN indicate that by 2024, co-firing had been implemented at dozens of coal-fired power plants, with biomass consumption exceeding 1.6 million tons annually and resulting in carbon emission reductions of approximately 1.87 million tons of CO₂ (PT PLN, 2025). The government presents these achievements as evidence that energy transition can be pursued through approaches that are adaptive to domestic conditions. Furthermore, biomass development is positioned as a strategy for local economic empowerment. The government argues that biomass demand can be met through the utilization of agricultural residues, forestry waste, and the cultivation of energy crops involving rural communities. Consequently, the policy is expected not only to contribute to emission reductions but also to create new economic opportunities for local populations. Within the framework of Just Transition Theory, this approach can be understood as an effort to fulfill the principle of distributive justice, namely the equitable distribution of economic benefits arising from the energy transition across broader segments of society (Heffron & McCauley, 2018). Indonesia seeks to demonstrate that the energy transition need not constitute an economic burden but can instead serve as an instrument of inclusive development.

Indonesia's commitment to energy transition gained additional momentum through the establishment of the Just Energy Transition Partnership (JETP) in 2022. Through this mechanism, Indonesia secured an international financing commitment of USD 20 billion to support the transformation of its energy sector. Conceptually, JETP represents a global implementation of Just Transition principles because it combines decarbonization objectives with support for economic development and social welfare. Despite Indonesia's claim that biomass co-firing constitutes part of a just energy transition, international criticism reveals differing interpretations of the meaning of just transition. These differences reflect what international relations scholars describe as norm contestation, namely disputes over the definition and implementation of global norms. For the Indonesian government, transition justice is defined as the ability to balance emission reduction targets with national development needs. Consequently, the use of biomass as a transitional fuel is considered legitimate because it enables emission reductions without causing significant economic disruption. In contrast, many international environmental organizations argue that the policy does not fully adhere to the principles of Just Transition Theory. According to Greenpeace Southeast Asia (2024), biomass co-firing continues to sustain dependence on coal and may prolong the operational lifespan of coal-fired power plants (Greenpeace Southeast Asia, 2024). From this perspective, a truly just energy transition should focus on the gradual phase-out of fossil fuels and the acceleration of investments in genuinely clean renewable energy sources such as solar and wind power. This divergence of interpretation demonstrates that the concept of just transition is neither singular nor universally agreed upon. Rather, it serves as a site of negotiation among actors with differing interests. Indonesia employs the concept to justify a gradual transition strategy, while environmental organizations invoke it to criticize policies perceived as maintaining dependence on fossil fuels. From the perspective of Just Transition Theory, this dilemma reflects one of the central challenges faced by developing countries in implementing energy transitions. Indonesia seeks to integrate environmental objectives with development priorities through its biomass co-firing policy. However, the success of this strategy ultimately depends on the government's ability to address concerns regarding environmental sustainability, the effectiveness of emission reductions, and compliance with the principles of transition justice. Therefore, Indonesia's climate diplomacy in the development of biomass extends beyond efforts to achieve NZE targets; it also represents an ongoing negotiation over the meaning of justice in the global energy transition. Through the biomass co-firing policy, Indonesia seeks to build legitimacy around the argument that a just energy transition must take into account the socio-economic realities of developing countries. Nevertheless, international criticism indicates that this legitimacy remains contested within the broader arena of global climate governance.

CONCLUSION

This study demonstrates that the biomass co-firing policy has become an important component of Indonesia's climate diplomacy in achieving its Net Zero Emissions (NZE) target and securing international legitimacy within the framework of the Just Energy Transition Partnership (JETP). The Indonesian government views this policy as a pragmatic transition strategy that enables emission reductions without compromising national energy stability. Nevertheless, the implementation of biomass co-firing has attracted international criticism, as it is perceived to prolong coal dependency, potentially contribute to deforestation, and fall short of fully adhering to the principles of a just energy transition. Consequently, Indonesia faces significant challenges in balancing national interests, energy security, and global pressures for decarbonization. This study highlights that the success of Indonesia's climate diplomacy depends not only on its ability to reduce emissions but also on the consistency of its domestic energy policies with the broader principles of global sustainability.

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