



## A Just Energy Transition? Opportunities and Challenges for Post-Coal Indonesia

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### Abstract

This paper critically examines the prospects for a just energy transition in Indonesia as the country begins to shift away from coal dependency toward renewable energy sources. Indonesia, one of the world's largest coal producers, faces mounting domestic and international pressure to decarbonize its energy sector in line with global climate commitments. However, the transition raises complex questions about justice, equity, and governance—particularly for coal-dependent regions and labor forces whose livelihoods are intricately tied to the fossil fuel economy. Through a multi-scalar analysis combining policy review, expert interviews, and regional case studies in East Kalimantan and South Sumatra, this study investigates how the concept of a “just transition” is interpreted and operationalized within the Indonesian context. Findings reveal significant challenges, including policy fragmentation, weak institutional capacity, and the risk of reproducing existing socio-economic inequalities in the shift to green energy. Furthermore, large-scale renewable energy projects often mirror the extractive logic of coal, displacing communities and undermining local participation. The paper's key contribution lies in its critical engagement with the normative dimensions of energy transition. It argues that without strong frameworks for procedural justice, labor retraining, and inclusive decision-making, Indonesia's energy transition may remain unjust and uneven. By foregrounding the voices of workers, local communities, and civil society actors, the study underscores the need for a socially responsive approach to energy governance. Ultimately, it calls for a transition model that not only reduces emissions but also redistributes power and benefits equitably across Indonesian society.

*[Tulisan ini secara kritis mengkaji prospek transisi energi yang adil di Indonesia seiring negara ini mulai beralih dari ketergantungan batubara menuju sumber energi terbarukan. Indonesia, salah satu produsen batubara terbesar di dunia, menghadapi tekanan domestik dan internasional yang*



*meningkat untuk mendekarbonisasi sektor energinya sejalan dengan komitmen iklim global. Namun, transisi ini menimbulkan pertanyaan kompleks tentang keadilan, kesetaraan, dan tata kelola—khususnya untuk daerah yang bergantung pada batubara dan angkatan kerja yang mata pencahariannya terkait erat dengan ekonomi bahan bakar fosil. Melalui analisis multi-skala yang menggabungkan tinjauan kebijakan, wawancara ahli, dan studi kasus regional di Kalimantan Timur dan Sumatera Selatan, studi ini menyelidiki bagaimana konsep "transisi yang adil" diinterpretasikan dan dioperasionalkan dalam konteks Indonesia. Temuan mengungkapkan tantangan signifikan, termasuk fragmentasi kebijakan, kapasitas kelembagaan yang lemah, dan risiko mereproduksi ketidaksetaraan sosial-ekonomi yang ada dalam peralihan ke energi hijau. Lebih lanjut, proyek energi terbarukan berskala besar sering kali mencerminkan logika ekstraktif batubara, menggusur masyarakat dan melemahkan partisipasi lokal. Kontribusi utama makalah ini terletak pada keterlibatannya yang kritis dengan dimensi normatif transisi energi. Studi ini berpendapat bahwa tanpa kerangka kerja yang kuat untuk keadilan prosedural, pelatihan ulang tenaga kerja, dan pengambilan keputusan yang inklusif, transisi energi Indonesia mungkin tetap tidak adil dan tidak merata. Dengan menyoroti suara pekerja, masyarakat lokal, dan aktor masyarakat sipil, studi ini menggarisbawahi perlunya pendekatan yang responsif secara sosial terhadap tata kelola energi. Pada akhirnya, studi ini menyerukan model transisi yang tidak hanya mengurangi emisi tetapi juga mendistribusikan kekuasaan dan manfaat secara adil di seluruh masyarakat Indonesia.]*

**Keywords:** Just Energy, Energy Justice, Energy Transition, Just Transition, Justice

## Introduction

The global energy system is undergoing a structural transformation as governments seek to reduce greenhouse-gas emissions while maintaining energy security, economic growth, and social welfare. For countries whose economies have historically depended on fossil fuels, however, decarbonization is not simply a technological or environmental challenge. It is also a question of justice. The transition away from coal can create substantial benefits through reduced emissions, improved air quality, and the expansion of renewable energy, but it can simultaneously impose concentrated costs on workers, communities, firms, and regions whose economic and social structures have developed around fossil-fuel industries. Energy transition policy must therefore address not only how energy is produced but also who benefits, who bears the costs, who participates in decision-making, and whose interests are recognized (McCauley et al. 2013; Jenkins et al. 2016).

This challenge is particularly important in Indonesia. Coal has historically occupied a central position in the country's energy system, industrial development, export economy, and regional economies. Indonesia is also one of the world's major coal producers and exporters. The country's electricity system has remained heavily dependent on coal, while renewable energy development has progressed more slowly than the country's substantial technical potential would suggest. Research indicates that Indonesia's long-standing dependence on fossil fuels is reinforced by institutional arrangements, economic interests, subsidies, infrastructure, and regulatory structures, making the transition considerably more complex than simply replacing coal-fired power plants with renewable generation (Febriyanti, Murtadho, and Almattushyva 2023; Sumarno et al. 2023).

At the same time, Indonesia has strengthened its commitment to decarbonization. Its enhanced climate commitments and long-term net-zero objective have increased pressure to transform the electricity sector. The establishment of the Just Energy Transition Partnership (JETP) in 2022 represented a significant development in international cooperation on Indonesia's energy transition. The partnership was designed to mobilize international financing and accelerate the retirement of coal-fired power generation while expanding renewable energy. By February 2023, the Indonesian government had established a JETP secretariat tasked with coordinating the transition and preparing plans for coal-plant retirement and investment mobilization (Ministry of Energy and Mineral Resources 2023).

Yet the use of the term “just” in energy transition policy raises important questions. A transition may be environmentally successful while remaining socially unjust. The closure of coal mines and power plants can affect direct workers as well as contractors, transport workers, traders, small businesses, and local governments whose revenues depend on coal-related activities. The International Labour Organization (ILO) emphasizes that coal phase-out can produce significant employment and economic consequences in coal-dependent regions and therefore requires locally grounded policies involving workers, employers, governments, and communities (ILO 2022). In Indonesia, these concerns are especially relevant in provinces such as East Kalimantan and South Sumatra, where coal extraction and related economic activities have shaped regional development.

Moreover, replacing coal with renewable energy does not automatically guarantee justice. Renewable energy infrastructure requires land, minerals, investment, transmission networks, and new forms of governance. Large-scale renewable projects can reproduce centralized decision-making and unequal land relations when affected communities have little influence over project design or benefit distribution. Research on community renewable energy in rural Indonesia demonstrates that even projects intended to improve energy access can reproduce procedural and recognition-based injustices when planning remains top-down and local political dynamics are overlooked (Sovacool et al. 2021). Similarly, Setyawati (2022) demonstrates that both fossil-fuel and renewable-energy policies can

produce environmental and social harms when technological development is separated from questions of governance and justice.

This paper critically examines whether Indonesia's transition toward a post-coal energy system can become genuinely just. It employs an energy-justice framework centered on distributional, procedural, and recognition justice. The analysis focuses on four interconnected dimensions: the structural persistence of coal dependence; the socioeconomic consequences of coal phase-out for workers and coal-dependent regions; the possibility that renewable-energy development may reproduce extractive and centralized practices; and the institutional reforms required to create a more inclusive transition. Rather than conceptualizing justice as compensation after coal is phased out, this paper argues that justice must be embedded throughout the transition process, from policy formulation and financing to project implementation, labor-market transformation, and regional economic diversification.

### **Indonesia's Coal Dependence and the Structural Challenge of Transition**

Indonesia's transition away from coal begins from a difficult structural position. Coal is not merely an energy commodity; it is embedded within Indonesia's political economy. Coal contributes to electricity generation, export earnings, government revenue, industrial activity, transportation networks, and employment in producing regions. Consequently, policies designed to reduce coal consumption affect a broad network of economic interests. The resulting political resistance should therefore not be interpreted simply as a lack of climate ambition. It reflects the institutional and economic embeddedness of coal within the Indonesian development model.

The persistence of coal dependence has been documented in research examining Indonesia's energy transition. Febriyanti, Murtadho, and Almattushyva (2023) argue that Indonesia's energy transition has been constrained by competing understandings of national security and development, with energy security and economic interests frequently taking precedence over climate considerations. This helps explain the apparent contradiction between Indonesia's international climate commitments and the continued importance of coal in domestic energy policy.

The problem is reinforced by the structure of the electricity sector. Coal-fired power generation has benefited from established infrastructure, supply chains, and long-term contractual arrangements. Such institutional lock-in increases the difficulty of introducing renewable energy, even when renewable technologies become increasingly competitive. A transition therefore requires more than announcing renewable-energy targets. It requires changing the institutional structures that make coal economically and politically attractive.

Research on Indonesia's future energy pathways suggests that the country can substantially expand renewable energy, but that fossil fuels may remain important without stronger policy intervention (Siregar et al. 2023). This illustrates the difference between technological potential and political feasibility. Indonesia

possesses substantial solar, geothermal, hydro, wind, and other renewable resources, yet resource availability alone does not guarantee deployment. Financing, regulatory certainty, grid infrastructure, electricity-market arrangements, project approval procedures, and local acceptance all influence the pace of transition.

The issue can be understood through the concept of energy justice. Jenkins et al. (2016) identify three fundamental dimensions of energy justice: distribution, procedure, and recognition. Distribution concerns the allocation of benefits and burdens; procedural justice concerns participation and decision-making; recognition concerns whether different identities, needs, and social positions are adequately acknowledged. Heffron and McCauley (2017) subsequently emphasize that energy justice should also consider restorative dimensions, meaning that transition policies should address harms produced by existing energy systems rather than simply redistribute future benefits.

Applied to Indonesia, these principles reveal why a narrow coal phase-out strategy would be inadequate. A policy that closes coal-fired power plants may reduce national emissions but could simultaneously concentrate economic losses in particular regions. Conversely, a policy that protects coal-dependent employment without accelerating decarbonization would shift environmental and climate burdens onto wider society and future generations. Justice therefore requires managing both sides of the transition: the distribution of environmental benefits from decarbonization and the distribution of socioeconomic costs associated with moving away from coal.

The transition must also address the question of timing. Premature closure of coal assets can create financial losses and potentially stranded assets, while delaying retirement can lock Indonesia into high-emission infrastructure for decades. Research on Indonesia's energy transition identifies premature coal-plant retirement, stranded assets, investment requirements, and potential job and fiscal losses as important obstacles to decarbonization (Said and Sari 2023). A just transition therefore requires carefully sequenced policies capable of coordinating plant retirement, alternative investment, worker protection, regional development, and renewable deployment.

The key implication is that coal phase-out should be treated as a political-economic restructuring rather than an isolated environmental policy. Indonesia's post-coal future depends on whether the state can transform the institutions and economic relationships that currently reproduce coal dependence.

### **Workers, Coal-Dependent Regions, and the Social Costs of Coal Phase-Out**

The most immediate justice concern surrounding coal transition is employment. Coal mining and coal-fired electricity generation provide direct employment, but their regional economic effects extend considerably further. Coal-dependent economies also contain contractors, transportation providers, equipment suppliers, food vendors, small businesses, and local services that depend

indirectly on mining activity. When coal production declines, these interconnected economic activities can experience contraction.

The ILO's assessment of coal phase-out in Southeast Asia demonstrates that mine and power-plant closures can generate significant labor-market effects, including direct job losses and the disruption of indirect employment and local economic ecosystems (ILO 2022). The problem is particularly acute where alternative economic sectors are underdeveloped. A worker cannot necessarily move from coal mining into renewable energy simply because both sectors are classified as “energy.” The occupational requirements, geographic location, wages, employment conditions, and skill profiles may be substantially different.

This distinction is essential to the Indonesian context. The assumption that renewable-energy expansion will automatically absorb displaced coal workers is overly optimistic. Renewable energy can generate employment, but the number and type of jobs created may not correspond directly to those lost in coal. Construction-related renewable jobs may be temporary, while coal mining often provides more established occupational structures. Furthermore, renewable-energy facilities may be located in different provinces or rural areas from coal mines, creating spatial mismatches between labor supply and employment demand.

The transition therefore requires active labor-market policies. The ILO's 2023 assessment of Indonesia's energy sector emphasizes the importance of skills development, employment policies, social dialogue, and measures capable of mitigating negative employment impacts while creating opportunities in emerging green sectors (ILO 2023). Reskilling and upskilling programs should consequently be designed around actual labor-market requirements rather than generic training targets.

A just transition should also distinguish between different categories of workers. Permanent employees, contract workers, informal workers, and workers in coal-dependent supply chains do not possess identical levels of employment security or access to social protection. Women and younger workers may also experience the transition differently because of occupational segregation and differences in access to training. A universal policy package could therefore unintentionally privilege workers who already possess greater institutional resources.

Regional economic diversification is equally important. Coal-producing regions need alternative sources of economic activity before coal production declines substantially. Buřner, Fauzi, and Rimal (2023) argue that economic diversification beyond coal is central to a just transition in Indonesia and that diversification should ensure equitable access to new opportunities and benefits. This is particularly relevant to East Kalimantan and South Sumatra, where coal has influenced regional economic structures.

Diversification should not simply mean attracting another large extractive industry. If coal-dependent regions replace coal with nickel, bauxite, or other mineral extraction without changing the underlying development model, the



transition may reproduce dependence on resource extraction. Instead, diversification should involve sectors with stronger long-term social and ecological foundations, including sustainable agriculture, manufacturing, ecological restoration, services, education, tourism where appropriate, and distributed renewable energy.

The rehabilitation of former mining areas also presents an important opportunity. Mine closure can produce environmental liabilities that remain after economic activity ends. Land degradation, water pollution, and damaged ecosystems can reduce the capacity of communities to develop alternative livelihoods. Restoration therefore should be considered part of just-transition policy rather than a separate environmental issue. Remediation can create employment while improving the ecological basis for future regional development.

Social protection is another essential component. The World Bank has emphasized that Indonesia's transition should include social assistance and active labor-market measures to help populations affected by coal phase-down manage income shocks and acquire new skills (World Bank 2021). Such measures are particularly important because workers cannot be expected to bear the financial risks of a transition that is undertaken for a broader public and global environmental benefit.

Justice, therefore, requires a social contract around coal phase-out. Workers and communities should not be asked to sacrifice their livelihoods in the name of decarbonization without meaningful guarantees concerning employment, income, skills, social protection, and regional development. At the same time, such guarantees should be designed in ways that facilitate—not delay—the structural shift away from coal.

### **Renewable Energy Does Not Automatically Mean a Just Transition**

The expansion of renewable energy is indispensable for Indonesia's decarbonization, but renewable energy should not be treated as synonymous with justice. A transition can change the energy source while leaving underlying power relations intact. This is particularly important when renewable projects are designed through centralized institutions and implemented through large-scale investment models with limited local participation.

Research from rural Indonesia provides evidence of this problem. Sovacool et al. (2021), examining community renewable-energy initiatives in Sumba, demonstrate that projects intended to address energy poverty can reproduce inequalities when local political dynamics, marginalized groups, and community participation are insufficiently considered. Their findings challenge the assumption that community-based or renewable projects are inherently inclusive.

The implications extend beyond rural electrification. Large-scale renewable-energy projects can require significant land areas, transmission infrastructure, water resources, or mineral inputs. If local communities are excluded from decision-making, renewable infrastructure can generate conflicts similar to those associated

with conventional extractive development. The injustice is not necessarily located in the renewable technology itself but in the institutional arrangements governing land, finance, ownership, and participation.

Setyawati (2022) similarly demonstrates that Indonesia's energy system can produce environmental and social injustices across different technologies. Coal extraction creates ecological and health impacts, but renewable technologies can also generate harms if policies prioritize technological deployment without adequate environmental and social safeguards. This observation is important because it prevents a simplistic binary between “dirty coal” and “clean renewables.”

Energy justice therefore requires attention to the entire energy chain. For renewable technologies, this includes land acquisition, mineral extraction, manufacturing, construction, electricity generation, transmission, waste management, and eventual decommissioning. A renewable-energy transition that depends on intensive extraction without adequate labor and environmental protections may reduce operational emissions while shifting environmental burdens to other communities.

The issue of participation is especially important. McCauley et al. (2013) emphasize that energy justice involves not only fair outcomes but also procedural fairness. Communities must have meaningful opportunities to influence decisions affecting their environments and livelihoods. This means consultation should occur before major project decisions are finalized, information should be accessible, and affected communities should have institutional mechanisms for challenging decisions.

Recognition is equally important. Different communities have different relationships with land and energy infrastructure. Indigenous peoples, rural farmers, fishing communities, and urban residents may have different priorities and understandings of development. Policies that treat communities as homogeneous beneficiaries can therefore reproduce exclusion.

A just renewable-energy strategy should consequently prioritize decentralized and community-owned models where technically and economically appropriate. Community renewable energy can improve local energy access, create local employment, and provide communities with greater control over energy resources. However, decentralization should not be romanticized. Community projects also require technical expertise, financing, institutional support, and transparent governance. The objective should be to create genuine local agency rather than simply transferring administrative responsibilities to communities without providing resources.

The distribution of financial benefits also matters. Large-scale renewable projects can generate substantial investment and electricity while providing limited long-term economic value to host communities. A justice-oriented approach could include local employment requirements, community benefit-sharing, local ownership mechanisms, transparent compensation, and investments in public



infrastructure. Such arrangements would transform communities from passive project sites into stakeholders in the energy transition. The broader principle is that Indonesia should not replace a coal-centered energy system with a renewable-energy system that retains the same concentration of ownership and decision-making. Decarbonization should be accompanied by democratization.

### **Governance, JETP, and Building a People-Centered Transition**

The emergence of the Just Energy Transition Partnership creates an important opportunity to institutionalize justice within Indonesia's energy transition. The JETP framework brings together Indonesia and international partners with the objective of mobilizing financing for accelerated decarbonization. Indonesia established its JETP secretariat in February 2023, with responsibilities including coordination, planning, and monitoring of transition initiatives (Ministry of Energy and Mineral Resources 2023). The initiative therefore has the potential to address one of the most significant constraints on Indonesia's energy transition: the high financial and institutional costs of transforming an electricity system built around coal.

However, international climate finance does not automatically produce justice. The meaning of “just” must be defined through transparent domestic processes involving affected communities and workers. Otherwise, justice risks becoming a label attached to financial and investment arrangements rather than a substantive political objective.

One major challenge is the distribution of decision-making authority. Energy-transition financing often involves governments, development banks, international donors, private investors, state-owned enterprises, and technical experts. These actors possess substantially greater financial and institutional resources than local communities or workers. Without mechanisms to correct this asymmetry, the groups most affected by the transition may have the least influence over its design.

Indonesia's transition therefore requires multi-level governance. National institutions are essential for setting emissions targets, establishing regulations, coordinating electricity planning, and mobilizing finance. Provincial and local governments, however, need meaningful authority and resources to design regional transition strategies. Workers, trade unions, communities, civil-society organizations, and businesses should participate through institutionalized social dialogue rather than ad hoc consultations.

The principle of social dialogue is particularly relevant to labor transition. The ILO emphasizes dialogue among governments, employers, and workers as a foundation for just-transition planning (ILO 2022). In Indonesia, this can be strengthened by incorporating trade unions and worker organizations into decisions concerning coal-plant retirement, retraining, compensation, and regional development. Workers should not be treated merely as recipients of retraining programs after policy decisions have already been made.

A second priority is policy coherence. Indonesia's energy transition has historically been characterized by tensions between climate objectives and policies

that maintain fossil-fuel dependence. Research on Indonesia's energy policy indicates that regulatory arrangements, financing structures, and institutional incentives can continue to favor fossil fuels even while renewable-energy targets are strengthened (Setyawati 2022; Febriyanti, Murtadho, and Almattushyva 2023). A just transition therefore requires coordination across energy, labor, finance, industrial, regional-development, environmental, and social-protection policies.

Third, transition finance should be subject to justice criteria. Financing should not be evaluated exclusively according to emissions reductions or investment returns. Projects should also be assessed according to employment effects, community participation, local economic benefits, environmental impacts, and distributional outcomes. Such criteria would make it possible to identify whether a project contributes to a just transition or merely produces low-carbon infrastructure.

Fourth, the state should strengthen institutional capacity at the local level. Local governments in coal-producing regions may lack the financial resources, technical expertise, or administrative capacity required to develop alternative economic strategies. National transition financing should therefore support regional planning, economic diversification, worker services, land restoration, and community development.

Finally, justice should be treated as a continuous process rather than a final outcome. Heffron and McCauley (2017) argue that energy justice has a restorative dimension because existing energy systems have already produced unequal burdens. Indonesia's transition should therefore address historical environmental damage and social inequality alongside future risks. Mine rehabilitation, pollution remediation, health programs, worker protection, and community compensation should form part of the transition itself.

A genuinely post-coal Indonesia will emerge not simply when coal generation declines but when communities and workers possess viable alternatives to the coal economy. The measure of success should therefore extend beyond megawatts of renewable capacity and tonnes of avoided carbon emissions. A just transition should also be evaluated through employment quality, regional economic resilience, energy affordability, participation, social protection, environmental restoration, and the distribution of decision-making power.

## Conclusion

Indonesia's transition away from coal represents both an environmental necessity and a profound socioeconomic transformation. Coal has provided electricity, employment, export revenues, and regional economic opportunities, but it has also generated environmental costs and locked the country into a carbon-intensive development trajectory. Phasing out coal can therefore produce substantial climate and public-health benefits, yet these benefits will not automatically be distributed fairly. Workers and coal-dependent communities may bear concentrated economic costs, while renewable-energy projects may generate

new forms of exclusion if they reproduce centralized and extractive patterns of development.

A just energy transition requires Indonesia to move beyond a narrow understanding of transition as technological substitution. Replacing coal with renewable energy is necessary but insufficient. Justice requires distributional fairness in the allocation of costs and benefits, procedural fairness through meaningful participation, and recognition of the different needs and identities of workers and affected communities. It also requires social protection, labor retraining, regional economic diversification, environmental restoration, and stronger coordination between national and subnational institutions. The JETP provides an important opportunity to mobilize the resources required for this transformation, but its success should ultimately be judged by whether it redistributes opportunities and decision-making power rather than merely mobilizing capital for decarbonization.

The central challenge for post-coal Indonesia is therefore not whether the country can become greener, but whether it can become greener without reproducing the inequalities of the fossil-fuel economy. A genuinely just transition would transform the political economy of energy by linking decarbonization with decent work, democratic participation, regional resilience, affordable energy, and environmental restoration. Such an approach would allow Indonesia to pursue climate objectives while ensuring that the social costs of transition are neither concentrated among coal workers and local communities nor transferred to future generations.

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