Highway to Net-Zero: A Comparative Study of the Just Energy Transition Partnership in Indonesia, South Africa, and Vietnam

Indri Iswardhani*
Universitas Negeri Makassar
*Corresponding author. Email: indri.iswardhani@unm.ac.id

ABSTRACT

The Just Energy Transition Partnership (JETP) is a multilateral initiative that promotes a fair and inclusive transition to low-carbon energy systems in developing countries. This study compares the implementation of JETP in Indonesia, South Africa, and Vietnam, focusing on five key aspects: emission reduction commitments, financing structures, sectoral scope, implementation challenges, and social justice. The research employs qualitative documentation analysis, utilizing official JETP documents, reports from international organizations, and academic articles to systematically examine each country's approach. A coding framework was developed to categorize the data into key themes, allowing for a comparative analysis across countries. To ensure the validity of the findings, triangulation was employed by comparing insights from official government documents, reports from international organizations, and academic sources. While all three countries share a commitment to transitioning to low-carbon energy systems, their paths differ based on their unique political, economic, and social contexts. Indonesia aims for net-zero emissions by 2060, South Africa by 2050, and Vietnam by 2050, each with different financial strategies and sectoral focuses. The study highlights challenges such as policy coherence, financing gaps, and the need for effective governance. Social justice, including job creation, reskilling, and inclusivity of vulnerable groups, is central to the transitions in all three countries, although the focus varies. This research provides insights into the implementation dynamics of JETP and offers recommendations for improving the design and execution of such partnerships to ensure successful energy transitions.

Keywords: *JETP, emission reduction, energy transition, social justice*

INTRODUCTION

The global fight against climate change requires rapid decarbonization, with energy systems at the center of the transition. Fossil fuels, particularly coal, remain the largest contributors to greenhouse gas emissions, and their phaseout has become a prerequisite for achieving the goals of the Paris Agreement. To support this shift, the Just Energy Transition Partnership (JETP) was created as an innovative mechanism to provide climate finance, technology, and policy support to coal-dependent economies, ensuring that the transition is not only rapid but also just and equitable (Ordonez et al., 2024).

South Africa, Indonesia, and Vietnam represent three critical test cases for JETP. Each country is highly dependent on coal but differs in its energy mix, development path, and institutional capacity. South Africa, the pioneer, signed its JETP deal in 2021 with an initial pledge of USD 8.5 billion, followed by Indonesia with USD 20 billion and Vietnam with USD 15.5 billion in 2022. While these pledges mark a historic milestone in international cooperation, the path to effective implementation remains uncertain,

especially given the scale of the transition required (Xaba, 2023).

The empirical reality (*das sein*) in these countries is that coal still dominates the power sector. Indonesia's electricity in 2022 relied on coal for 61.55%, South Africa for 84.63%, and Vietnam for 38.76%. The ideal condition (*das sollen*), however, demands a significant shift toward renewables to meet climate commitments and national net zero targets. The gap between these two conditions illustrates the central problem: despite international pledges, structural fossil fuel dependence persists.

Table 1 illustrates the energy mix of the three countries in 2022. South Africa's grid is overwhelmingly coal-based, Vietnam shows greater diversification with hydro and solar, while Indonesia is heavily reliant on coal but has notable bioenergy potential. The table highlights not only different starting points but also the different challenges each JETP must address. South Africa must confront extreme coal dependence, Indonesia must reduce emissions while meeting growing demand, and Vietnam must balance renewables expansion with continued coal development.

Table 1. Share of electricity generation by source

Source of Power	South Africa (%)	Indonesia (%)	Vietnam (%)
Coal	84.63	61.55	38.76
Gas	0	17.00	10.68
Hydro	1.41	8.18	36.91
Nuclear	4.71	0	0
Other Fossil	1.57	1.83	0.27
Solar	2.91	0.13	10.14
Wind	4.54	0.11	3.09
Bioenergy & Others	0.23	11.19	0.14

Source: (Ford Foundation et al., 2023)

Beyond structural energy dependence, financing poses another central challenge. JETP pledges, while significant, represent only partial solutions. Figure 1 shows the initial JETP financial packages compared to the actual investment needs projected for 2030. In each case, pledged resources are dwarfed by the billions still required for decarbonization, including renewable deployment, grid modernization, and early coal retirement.

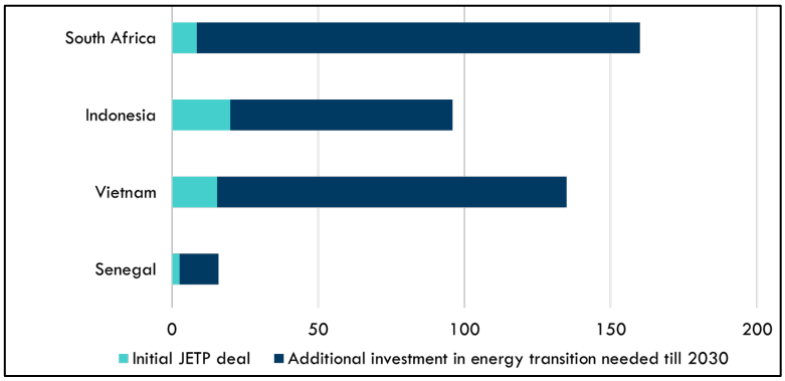

Figure 1. Comparison of initial JETP deals and additional investment needs by 2030 (USD billion)
Source: (GCAP, 2024)

This disparity reveals a fundamental tension: JETPs are presented as transformative partnerships, yet their financing scale remains inadequate for the scope of transformation needed. Without bridging this gap through domestic mobilization and private-sector investment, JETPs risk becoming symbolic rather than transformative instruments. The figure underscores why financial structures are a critical dimension of analysis.

Existing literature has recognized these challenges but often addresses them in isolation. For example, Hermawan and Prabhawati (2024) emphasize Indonesia's progress under JETP yet highlight the insufficient pace toward net zero. Ha-Duong (2023a) stresses Vietnam's need for social inclusion and adaptive policy, while Lüpke et al., (2023) identify institutional weaknesses in South Africa's JETP. Although valuable, these studies rarely integrate financial, sectoral, social, and governance perspectives into a single comparative framework.

As a result, there is a research gap concerning how JETP is actually being implemented across contexts and across multiple dimensions simultaneously. Most analyses focus on one country or on financial commitments alone, leaving unanswered questions about the broader dynamics of emission reduction commitments, sectoral scope, governance challenges, and justice implications.

The novelty of this study lies in its comparative and multidimensional analysis. By bringing together Indonesia, Vietnam, and South Africa, it identifies shared themes and country-specific divergences. Importantly, it also incorporates social justice as a core dimension, responding to critiques that energy transition studies often neglect equity and distributive consequences (Nurhidayah et al., 2024).

The main argument advanced here is that while JETPs represent a historic step in mobilizing climate finance and international cooperation, their effectiveness depends on how they are carried out within each national context. Success will hinge not merely on financial pledges but on aligning commitments, sectoral reforms, governance mechanisms, and justice considerations.

Accordingly, the purpose of this article is to examine how JETP has been carried out in Indonesia, Vietnam, and South Africa, with particular attention to five dimensions: emission reduction commitments, financial structures, sectoral scope, implementation challenges, and social justice. This focus allows the study to evaluate both the promises and pitfalls of JETPs, offering insights for policymakers, donors, and stakeholders on strengthening their design and implementation.

METHODS

This study applies a qualitative documentation analysis to explore the implementation of the Just Energy Transition Partnership (JETP) in Indonesia, Vietnam, and South Africa. Document analysis is a systematic procedure for reviewing and evaluating both printed and electronic documents (Bowen, 2009). This method is valuable for qualitative research as it allows researchers to interpret data to gain meaning and empirical

knowledge. The research is designed to answer how JETP has been carried out in each country, with particular attention to five dimensions: emission reduction commitments, financial structures, sectoral scope, implementation challenges, and social justice.

The data for this study consist of official JETP documents published on each country's website, reports from international organizations, and academic articles. These documents were systematically organized and analyzed. A coding framework was developed to categorize the data into key themes and sub-themes, allowing for systematic comparison across countries and analytical dimensions. The coding tree is presented in Table 1.

Table 2. Coding Tree

Main Theme	Sub-Categories	Description
Emission Commitment	1. Net zero targets 2. Interim emission reduction goals 3. National policies and strategies	Captures each country's commitments and policy directions to reduce emissions.
Financial Structure	1. Sources of funding (domestic, international, private) 2. Financing mechanisms (loans, grants, blended finance) 3. Allocation of funds to priority sectors	Examines how the transition is financed, including actors, instruments, and distribution of funds.
Sectoral Scope	1. Energy sector (coal phase-out, renewable expansion) 2. Transport sector 3. Industrial sector 4. Social and economic dimensions	Identifies which sectors are included in JETP and the depth of sectoral coverage.
Implementation Challenges	1. Technical barriers 2. Financial constraints 3. Policy and regulatory issues 4. Institutional capacity and coordination	Analyzes barriers that hinder effective implementation of JETP.
Social Justice	1. Equity and inclusion of vulnerable groups 2. Job transition and labor impacts 3. Gender considerations 4. Community participation and access to energy	Assesses the justice dimensions of JETP, ensuring inclusivity and fair outcomes.

Source: Author's elaboration (2025)

To ensure the validity of the findings, the study employs triangulation by comparing insights from official government documents, reports from international organizations, and academic sources. This approach helps to cross-check information and reduces the risk of relying on a single perspective.

RESULT AND DISCUSSION

The results of this study present key findings from a comparative analysis of the Just Energy Transition Partnership (JETP) in Indonesia, South Africa, and Vietnam, focusing on emission reduction commitments, financial structures, sectoral scope, implementation challenges, and the crucial aspect of social justice. This analysis

provides insights into the progress each country has made, and the remaining steps needed to achieve a fair and inclusive transition to low-carbon energy systems.

Emission Reduction Commitments in Indonesia, South Africa, and Vietnam

The emission reduction commitments are central to the Just Energy Transition Partnerships (JETP) in Indonesia, South Africa, and Vietnam, as they form the foundation for each country's transition to a low-carbon economy. These commitments outline the specific goals each country has set to reduce greenhouse gas emissions and transition away from fossil fuel dependency, particularly coal, towards cleaner, renewable energy sources.

Tabel 3. Emission Reduction Commitments Comparison

Country	Title(s)	Document Category	Publisher / Source	Year	Key Points
Indonesia	JETP CIPP – Executive Summary (JETP Secretariat team, 2023)	Official Government Document	JETP Secretariat Indonesia (Government of Indonesia)	2023	Peak power-sector emissions by 2030 at ≤250–290 $MtCO_2$; net-zero power sector by 2050; ≥34% renewable share by 2030.
	An Energy Sector Roadmap to Net Zero Emissions in Indonesia (IEA, 2022)	International Organization Report	IEA	2022	Indonesia aims for net-zero emissions by 2060; key pathway includes solar PV expansion, energy efficiency improvements, and phase-out of coal-fired power plants.
	Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060 - (Hermawan & Prabhawati, 2024)	Academic article	Jurnal Energi Baru & Terbarukan	2024	Indonesia aims to achieve Net Zero Emissions (NZE) by 2060; focus on reducing fossil energy reliance; largest JETP funding of USD 20 billion to accelerate energy transition.
South Africa	Just Energy Transition Implementation Plan 2023–2027 (JET PMU, 2003); JET IP Quarterly Report Mar 2025 (JET PMU, 2025b)	Official Government Document	JET PMU	2023–2025	Conditional NDC range 420–350 $MtCO_2$-eq by 2030; net-zero around 2050; 71 $MtCO_2$ reduction trajectory maintained despite adjusted coal decommissioning schedule.
	Just Energy Transitions (JET): The good, the challenging, and the opportunities (GCAP, 2024)	International Organization Report	GCAP	2024	South Africa's transition roadmap aims for a 71% emissions reduction by 2030, with a complete phase-out of coal by the mid-century, supporting renewables and clean energy.
	Just Energy Transition Partnerships in the context of Africa-Europe relations: reflections from South Africa, Nigeria and Senegal (Hege et al., 2022) Two years into South Africa's Just Energy Transition Partnership: How real is the deal? (Vanheukelom, 2023) Whose just energy transition? A South African perspective (Xaba, 2023)	Academic article	Ukama Platform ECDPM Mapungubwe Institute for Strategic Reflection	2022 2023	South Africa's JETP supports ambitious NDCs with a USD 8.5 billion pledge; coal phase-out and renewable energy goals aligned with climate commitments. USD 8.5 billion in concessional finance for transitioning South Africa's coal-dominant energy system to renewable energy by 2050; notable funding gaps. South Africa's JETP targets equitable development, creating new jobs in the renewable sector; the JETP aims for net-zero by 2050, though significant financing gaps remain.

Vietnam	JETP Viet Nam Newsletter No.3 (JETP Viet Nam, 2025b); Newsletter No.5 (JETP Viet Nam, 2025c)	Official Government Document	JETP Secretariat – Ministry of Industry & Trade (MOIT)	2025	Net-zero by 2050 reaffirmed; JETP project list refined; alignment with PDP VIII and national targets.
	JETP: Navigating Just Energy Transition Together – Shared learnings from South Africa, Indonesia, and Vietnam (Ford Foundation et al., 2023)	International Organization Report	Ford Foundation, IESR, ACF, GEAPP	2023	Vietnam plans to achieve net-zero emissions by 2050; coal phase-out strategies integrated with the renewable energy expansion in its power sector.
	Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam (Ayas et al., 2025) Vietnam's Just Energy Transition Partnership: a background report (Ha-Duong, 2023b)	Academic article	IOP Conference Series: Earth and Environmental Science CIRED/VIETSE	2025 2023	Vietnam targets NZE by 2050; focus on renewable energy, coal phase-out, and grid modernization; USD 15.5 billion JETP funding. Peaking emissions in power sector at 170 $MtCO_2e$ by 2030, renewable share to 47%, with JETP mobilizing USD 15.5 billionPower sector reforms outlined in PDP8.

Source: Compiled Data (2025)

Indonesia has committed to achieving net-zero emissions (NZE) by 2060, as noted in Hermawan & Prabhawati (2024). In the power sector, Indonesia aims for peak emissions ≤250–290 $MtCO_2$ by 2030 and for the energy sector to reach net-zero by 2050. The country also targets having 34% renewable energy by 2030. According to IEA (2022), to reach this goal, Indonesia plans to expand solar PV and improve energy efficiency, while phasing out coal-fired power plants.

South Africa has set an emissions reduction target with a range of 420–350 $MtCO_2$-eq by 2030, with a goal of net-zero emissions by around 2050. According to JET IP 2023–2027, South Africa aims to reduce emissions by 71 $MtCO_2$ by 2030, despite adjustments to the coal decommissioning schedule. GCAP (2024) highlight that South Africa's energy transition will involve a 71% emissions reduction by 2030, with a full transition to renewable energy by mid-century.

Vietnam also aims for net-zero emissions by 2050. According to Ayas et al (2025) and the JETP Viet Nam Newsletter (2025), Vietnam plans to peak emissions at 170 $MtCO_2e$ by 2030 and reach 47% renewable energy by 2030. The country's focus is on phasing out coal and expanding renewable energy. The PDP VIII outlines strategies to accelerate the decarbonization of the energy sector, including updating and modernizing the electricity grid. The main differences of emission reduction commitments in Indonesia, South Africa, and Vietnam lie in the target year for net-zero emissions and the sectoral emissions reduction goals set by each country.

Financial Structure in Indonesia, South Africa, and Vietnam

The financial structures for the Just Energy Transition Partnerships (JETP) in Indonesia, South Africa, and Vietnam are crucial components that aim to support their respective energy transitions. These structures blend public, private, and international

investments, emphasizing the role of concessional finance and multi-donor support to drive large-scale energy sector transformations.

Tabel 4. Financial Structure Comparison

Country	Title(s)	Document Category	Publisher / Source	Year	Key Points
Indonesia	JETP CIPP – Executive Summary (JETP Secretariat team, 2023)	Official Government Document	JETP Secretariat Indonesia	2023	Catalytic package of USD 20 billion (USD 10 bn IPG + USD 10 bn private/GFANZ); total investment need ~USD 97 bn to 2030; blended-finance architecture via country platform.
	An Energy Sector Roadmap to Net Zero Emissions in Indonesia (IEA, 2022)	International Organization Report	IEA	2022	Indonesia requires around USD 8 billion additional per year by 2030 for the net-zero transition, with international partnerships like IPG and GFANZ facilitating investments.
	Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060 - (Hermawan & Prabhawati, 2024)	Academic article	Jurnal Energi Baru & Terbarukan	2024	USD 20 billion in JETP funding to transition energy systems; significant financing gaps for Indonesia's renewable energy and grid expansion projects.
South Africa	Just Energy Transition Implementation Plan (JET IP) Quarterly Progess Report 30 June 2025 (JET PMU, 2025a) Joint Statement from the International Partners Group on the US Withdrawal from the Just Energy Transition Partnership in South Africa (Commonwealth & Development Office, 2025)	Official Government Document	JET PMU International Partners Group (UK FCDO)	2025	Overall pledges ≈ USD 12.8–12.9 bn after US withdrawal; total financing need ~USD 98.7 bn (2023–27); funding platform operational to mobilize grants, concessional loans, and private capital.
	Advancing Just Energy Transition Partnerships (Climateworks Centre, 2025)	International Organization Report	Climateworks Centre	2025	Funding for South Africa's JETP comes from a combination of donor support and private sector investments, with emphasis on long-term, concessional finance for renewable projects.
	International partnerships for a just energy transition: Findings from South Africa (Lüpke et al., 2023) Two years into South Africa's Just Energy Transition Partnership: How real is the deal? (Vanheukelom, 2023) Whose just energy transition? A South African perspective (Xaba, 2023)	Academic article	DIW Weekly Report ECDPM Mapungubwe Institute for Strategic Reflection	2023	USD 8.5 billion committed under South Africa's JETP, with additional contributions expected from the G7; emphasis on co-financing and private sector mobilization. Investment plan targets USD 98 billion, with catalytic contributions of USD 8.5 billion from IPG, focusing on just transition strategies for coal regions. Key financing through JETP is expected from international donors; however, South Africa faces challenges in unlocking these resources without critical regulatory reform.
Vietnam	JETP Viet Nam Newsletter No.3 (JETP Viet Nam, 2025b); Newsletter No.4 (JETP Viet Nam, 2025a)	Official Government Document	MOIT (JETP Secretariat)	2025	Concessional finance incl. EUR 67 m (AfD) for transmission and EUR 480 m for pumped hydro; ~24 JETP-aligned projects discussed; multi-donor support under IPG.

	The Missing Just in Vietnam's Just Energy Transition Partnership (JETP) (International Rivers & Vietnam Climate Defenders Coalition, 2024)	International Organization Report	International Rivers, Vietnam Climate Defenders Coalition	2024	Vietnam's JETP funding sources include a mix of multilateral financial institutions and green bonds; public-private collaboration is key to scaling renewable energy investments.
	Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam (Ayas et al., 2025) Vietnam's Just Energy Transition Partnership: a background report (Ha-Duong, 2023b)	Academic article	IOP Conference Series: Earth and Environmental ScienceCIRED/METSE	2025 2023	Vietnam's JETP financing includes USD 15.5 billion from the IPG; funding needed to upgrade grids and shift from coal to renewable energy. Public financing of USD 7.75 billion, combined with private sector engagement, will cover grid expansion and renewable energy transition in Vietnam.

Source: Compiled Data (2025)

Indonesia's financial structure is heavily reliant on blended finance, involving both public and private sector investments. JETP Secretariat team (2023) outlines a catalytic package of USD 20 billion, which includes USD 10 billion from the International Partnership Group (IPG) and USD 10 billion from private investors and GFANZ (Glasgow Financial Alliance for Net Zero). However, Indonesia's total financing needs to reach net-zero by 2030 is estimated at around USD 97 billion, requiring a combination of grants, concessional loans, and private capital mobilization. According to the IEA (2022), Indonesia will need an additional USD 8 billion per year by 2030 to meet its net-zero targets, with international partnerships like IPG and GFANZ playing a crucial role in facilitating these investments. While the JETP funding provides a solid starting point, significant financing gaps remain, particularly for Indonesia's renewable energy and grid expansion projects.

South Africa's JETP financing relies on a mix of international donor contributions and private sector investments. Following the US withdrawal from the IPG, South Africa's overall JETP pledges have reached approximately USD 12.8–12.9 billion as of 2025, with total financing needs for the period 2023–2027 estimated at USD 98.7 billion. JET PMU (2025) notes that the financing platform is operational, with an emphasis on mobilizing grants, concessional loans, and private capital. South Africa's USD 8.5 billion commitment under the JETP includes both donor support and private sector mobilization to fund renewable energy projects, particularly in coal-dependent regions. As emphasized in the report from Lüpke et al. (2023) and Xaba (2023), the success of this transition will depend on co-financing efforts and regulatory reforms to unlock additional resources. There is a focus on ensuring that transition strategies for coal regions are adequately funded to mitigate the social and economic impacts of the energy transition.

Vietnam's JETP financial structure is focused on multi-donor support and public-private collaboration. The JETP Viet Nam Newsletter (2025) reveals that Vietnam has secured EUR 67 million from the French Development Agency (AfD) for transmission upgrades and EUR 480 million for pumped hydro projects. Additionally, USD 15.5 billion in funding has been pledged by the International Partnership Group (IPG), with the total financial

needs focusing on grid upgrades and transitioning from coal to renewable energy. As Ayas et al. (2025) point out, the funding will include USD 7.75 billion in public financing, with significant contributions from the private sector to expand renewable energy infrastructure. Public-private collaboration is key to scaling the investments required for grid expansion and the renewable energy transition, as green bonds and multilateral financial institutions play a role in financing Vietnam's shift toward cleaner energy.

Each country's approach to financial structure reflects their specific energy transition goals, with a common reliance on international partnerships and innovative financing mechanisms to mobilize the large-scale investments necessary for a just and sustainable energy transition.

Sectoral Scope in Indonesia, South Africa, and Vietnam

The sectoral scope of the Just Energy Transition Partnerships (JETP) in Indonesia, South Africa, and Vietnam outlines the primary sectors targeted for transformation to reduce emissions and transition to more sustainable energy systems. Each country focuses on different but overlapping sectors, reflecting their unique energy profiles, economic structures, and environmental priorities. While all three countries emphasize the decarbonization of the energy sector, their approaches to transport, industry, and other sectors differ, highlighting the diverse strategies employed to achieve a just and equitable energy transition.

Tabel 5. Sectoral Scope Comparison

Country	Title(s)	Document Category	Publisher / Source	Year	Key Points
Indonesia	JETP CIPP – Executive Summary (JETP Secretariat team, 2023)	Official Government Document	JETP Secretariat Indonesia	2023	Transmission expansion (Sumatra, Java, Kalimantan, Sulawesi), early coal retirement, dispatchable & variable renewables, supply chains; future additions: efficiency & electrification.
	An Energy Sector Roadmap to Net Zero Emissions in Indonesia (IEA, 2022)	International Organization Report	IEA	2022	Key sectors: electricity, transport, industry. Focus on renewable energy deployment (solar, wind), electrification, and energy storage solutions.
	Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060 (Hermawan & Prabhawati, 2024)	Academic article	Jurnal Energi Baru & Terbarukan	2024	Key sectors: electricity, transport, industry. Focus on renewable energy deployment (solar, wind), electrification, and energy storage solutions.
South Africa	Just Energy Transition Implementation Plan 2023–2027 (JET PMU, 2003); JET IP Quarterly Report June 2025 (JET PMU, 2025a)	Official Government Document	JET PMU	2023–2025	Electricity transition (ACT coal retirement and new transmission), Green Hydrogen, New Energy Vehicles, Skills, Municipal capacity and place-based projects (Mpumalanga).
	Just Energy Transitions (JET): The good, the challenging, and the opportunities (GCAP, 2024)	International Organization Report	GCAP	2024	South Africa focuses on transitioning coal regions, including transitioning power plants to renewables and implementing decentralized energy systems like mini-grids.

	Two years into South Africa's Just Energy Transition Partnership: How real is the deal? (Vanheukelom, 2023) Whose just energy transition? A South African perspective (Xaba, 2023)	Academic article	ECDPM Mapungubwe Institute for Strategic Reflection	2023	South Africa focuses on transitioning coal regions, including transitioning power plants to renewables and implementing decentralized energy systems like mini-grids. Electricity transition (ACT coal retirement and new transmission), Green Hydrogen, New Energy Vehicles, Skills, Municipal capacity and place-based projects (Mpumalanga). Focus on transitioning coal-dependent communities to renewable energy, creating new jobs in the renewable energy sector.
Vietnam	JETP Viet Nam Newsletter No.3 (JETP Viet Nam, 2025b); Newsletter No.4 (JETP Viet Nam, 2025a)	Official Government Document	MOIT (JETP Secretariat)	2025	Grid upgrades (500 kV substations), pumped hydro, hydropower expansion, offshore wind and renewable energy hubs, transmission reinforcement.
	JETP: Navigating Just Energy Transition Together – Shared learnings from South Africa, Indonesia, and Vietnam (Ford Foundation et al., 2023)	International Organization Report	Ford Foundation, IESR, ACF, GEAPP	2023	Vietnam's energy transition prioritizes renewable energy, grid modernization, and scaling up clean energy infrastructure to replace coal-fired power plants.
	Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam (Ayas et al., 2025) Vietnam's Just Energy Transition Partnership: a background report (Ha-Duong, 2023b)	Academic article	IOP Conference Series: Earth and Environmental Science CIRED/VIETSE	2025 2023	Vietnam's energy transition prioritizes renewable energy, grid modernization, and scaling up clean energy infrastructure to replace coal-fired power plants. Key sectors for Vietnam's energy transition include electricity generation, grid upgrades, and integration of renewable energy sources into the national energy mix.

Source: Compiled Data (2025)

In Indonesia, the sectoral scope focuses on key sectors like electricity, transport, and industry, as outlined in JETP CIPP (2023) and Hermawan & Prabhawati (2024). The country plans significant transmission expansion in regions such as Sumatra, Java, Kalimantan, and Sulawesi to support the integration of renewable energy. Indonesia is also targeting early coal retirement, transitioning to dispatchable and variable renewables like solar and wind, while future efforts will focus on efficiency and electrification. The IEA (2022) report adds that Indonesia's key sectors for transformation will be electricity generation, transport, and industry, with a strong emphasis on renewable energy deployment and energy storage solutions.

South Africa's JETP sectoral scope also centers around the electricity sector, with a particular focus on coal transition and the decommissioning of coal power plants, as detailed in JET IP 2023–2027 and the GCAP (2024) report. South Africa is aiming to develop green hydrogen technologies and support the new energy vehicle sector as part of its efforts to decarbonize the transport sector. Additionally, South Africa is committed to implementing decentralized energy systems like mini-grids in rural and coal-dependent regions, particularly in Mpumalanga, a province heavily reliant on coal. As noted in Vanheukelom (2023) and Xaba (2023), the emphasis is on creating new jobs in

the renewable energy sector while ensuring that the just transition supports vulnerable communities historically dependent on coal for employment and economic activity.

Vietnam's sectoral scope under its JETP includes the electricity generation sector, with a focus on grid upgrades, pumped hydro, hydropower expansion, and the development of offshore wind as outlined in the JETP Viet Nam Newsletter (2025). The country is prioritizing the modernization of its electricity grid to accommodate renewable energy sources and to replace coal-fired power plants with cleaner energy alternatives. According to Ayas et al. (2025) and Ha-Duong (2023), Vietnam's transition also includes scaling up renewable energy infrastructure and integrating it into the national energy mix. The focus is on enhancing grid resilience and ensuring that the transition to renewables is effectively integrated across different regions of the country.

In conclusion, while electricity generation is a common focus, the strategies and targeted sectors vary according to each country's unique challenges and resources. Indonesia and Vietnam prioritize grid modernization and renewable energy development, while South Africa also focuses heavily on transitioning coal-dependent communities and implementing decentralized energy systems.

Implementation Challenges in Indonesia, South Africa, and Vietnam

The implementation challenges facing Indonesia, South Africa, and Vietnam in achieving their Just Energy Transition Partnership (JETP) goals are shaped by each country's unique energy infrastructure, political economy, and governance structures. Despite their shared commitment to transitioning to renewable energy, these countries face significant hurdles in terms of policy consistency, regulatory barriers, financing gaps, and the need for institutional capacity and reform. These challenges are crucial to understanding the pace and success of their energy transitions.

Tabel 6. Implementation Challenges Comparison

Country	Title(s)	Document Category	Publisher / Source	Year	Key Points
Indonesia	JETP CIPP – Executive Summary (JETP Secretariat team, 2023)	Official Government Document	JETP Secretariat Indonesia	2023	Captive coal for nickel/smelter industries; PLN financial sustainability; regulatory and contractual bottlenecks; delivery risks for rapid RE buildout.
	Indonesia's Just Energy Transition Partnership: A way to mobilize capital for climate and development (Benoit & Prasetiyo, 2023)	International Organization Report	Zero Carbon Analytics	2023	Challenges include policy inconsistencies, coal industry dependency, grid capacity limitations, and mobilizing sufficient private sector investment.
	Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060 (Hermawan & Prabhawati, 2024)	Academic article	Jurnal Energi Baru & Terbarukan	2024	Challenges include policy inconsistencies, coal industry dependency, regulatory barriers, and financing gaps in renewable energy and infrastructure development.

South Africa	Just Energy Transition Implementation Plan 2023–2027 (JET PMU, 2003); JET IP Quarterly Report Mar 2025 (JET PMU, 2025b)	Official Government Document	JET PMU	2023–2025	Eskom debt and borrowing limits; delays in coal plant decommissioning and concessional disbursements; complex governance and institutional capacity constraints.
	Advancing Just Energy Transition Partnerships (Climateworks Centre, 2025)	International Organization Report	Climateworks Centre	2025	Eskom's debt burden, coal plant delays, and regulatory slowdowns in renewable energy deployment are the primary challenges in the implementation of JETP.
	Just Energy Transition Partnerships in the context of Africa-Europe relations: reflections from South Africa, Nigeria and Senegal (Hege et al., 2022) Two years into South Africa's Just Energy Transition Partnership: How real is the deal? (Vanheukelom, 2023) Whose just energy transition? A South African perspective (Xaba, 2023)	Academic article	Ukama Platform ECDPM Mapungubwe Institute for Strategic Reflection	2022 2023	Challenges in South Africa include reliance on coal, slow decommissioning processes, governance issues, and slow mobilization of donor funding. Eskom's debt burden, coal plant delays, and regulatory slowdowns in renewable energy deployment are the primary challenges in the implementation of JETP. Coal industry dependence, lack of policy coherence, and slow policy enforcement hinder progress towards a just transition.
Vietnam	JETP Viet Nam Newsletter No.4 (JETP Viet Nam, 2025a); Newsletter No.5 (JETP Viet Nam, 2025c)	Official Government Document	MOIT (JETP Secretariat)	2025	ODA and regulatory bottlenecks; financing gaps and project delays; coordination needs for ports, logistics, and grid integration.
	The Missing Just in Vietnam's Just Energy Transition Partnership (JETP) (International Rivers & Vietnam Climate Defenders Coalition, 2024)	International Organization Report	International Rivers, Vietnam Climate Defenders Coalition	2024	Barriers include lack of a formal coal phase-out plan, insufficient green finance frameworks, and slow regulatory reform needed to scale renewables.
	Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam (Ayas et al., 2025) Vietnam's Just Energy Transition Partnership: a background report (Ha-Duong, 2023b)	Academic article	IOP Conference Series: Earth and Environmental Science CIRED/VIETSE	2025 2023	Challenges include financing gaps, misalignment between donor and recipient expectations, political economy of coal, and market adaptation for renewable investments. Barriers include lack of a formal coal phase-out plan, insufficient green finance frameworks, and slow regulatory reform needed to scale renewables.

Source: Compiled Data (2025)

Indonesia faces several implementation challenges that could hinder the progress of its energy transition. As outlined by JETP Secretariat team (2023) and Hermawan & Prabhawati (2024), one of the primary issues is the country's dependence on coal, particularly in sectors like nickel and smelting, where captive coal is a significant part of the energy mix. The country also grapples with policy inconsistencies, as there are conflicting regulations that slow the transition process. Furthermore, grid capacity limitations present a substantial barrier to scaling up renewable energy, as the existing infrastructure is not sufficient to integrate a larger share of renewables. Regulatory and contractual bottlenecks also create delays, especially in securing investments and executing renewable energy projects. As Benoit & Prasetiyo (2023) highlights, mobilizing

private sector investment remains a challenge, alongside addressing the financing gaps in renewable energy and infrastructure development.

South Africa's transition is also hindered by several complex challenges. The most pressing issue, as identified in Just Energy Transition Implementation Plan JET IP Quarterly Progess Report by JET PMU (2025) and Climateworks Centre (2025), is the debt burden of Eskom, the state-owned power utility. Eskom's debt limits its ability to invest in the necessary infrastructure for renewable energy, further exacerbating delays in coal plant decommissioning and renewable energy deployment. Governance and institutional capacity constraints are another challenge, as slow regulatory approval processes and inefficient policy enforcement undermine the transition efforts. According to Xaba (2023), South Africa's reliance on coal, combined with policy incoherence and slow policy enforcement, creates significant barriers to progress. The slow mobilization of donor funding and delays in concessional disbursements also contribute to the slow pace of the transition, making it difficult to meet JETP's ambitious goals.

Vietnam, while having a clear vision for its energy transition, also faces significant implementation barriers. The country's challenges, as noted in Newsletter by JETP Viet Nam (2025) and Ha-Duong (2023), include financing gaps and regulatory bottlenecks that slow the deployment of renewable energy projects. One of the key issues is the lack of a formal coal phase-out plan, which is necessary for guiding the country's transition from coal to renewables. Furthermore, Vietnam's green finance frameworks are underdeveloped, which limits the flow of investment needed to scale up renewable energy projects. As Ayas et al. (2025) highlight, political economy issues surrounding coal and misalignment between donor and recipient expectations add another layer of complexity to the transition. The country's slow regulatory reform also hinders the scaling of renewable investments, as it takes time to align policy and regulations with the needs of the renewable energy sector.

In conclusion, while each country shares common challenges related to financing, regulatory issues, and institutional capacity, their specific contexts — from coal dependency in Indonesia and South Africa to political economy issues in Vietnam — require tailored solutions to overcome these barriers and achieve their energy transition goals.

Social Justice Aspects in Indonesia, South Africa, and Vietnam

The social justice aspect of the Just Energy Transition Partnerships (JETP) in Indonesia, South Africa, and Vietnam is fundamental to ensuring that the transition to cleaner energy is fair, inclusive, and equitable. Each country has outlined specific strategies to support vulnerable groups, protect coal-dependent workers and communities, and promote gender equity in the workforce. While their approaches vary, all three countries emphasize inclusive development, economic diversification, and opportunities for marginalized groups to participate in the renewable energy sector.

Tabel 7. Social Justice Comparison

Country	Title(s)	Document Category	Publisher / Source	Year	Key Points
Indonesia	JETP CIPP – Executive Summary (JETP Secretariat team, 2023)	Official Government Document	JETP Secretariat Indonesia	2023	Just Transition framework emphasising decent jobs, protection for vulnerable groups, gender inclusion, and regional equity.
	Indonesia's Just Energy Transition Partnership: A way to mobilize capital for climate and development (Benoit & Prasetiyo, 2023)	International Organization Report	Zero Carbon Analytics	2023	Emphasis on a just transition, focusing on reskilling coal workers, economic diversification for coal regions, and gender equity in energy job creation.
	Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060 (Hermawan & Prabhawati, 2024)	Academic article	Jurnal Energi Baru & Terbarukan	2024	Social justice focus on ensuring equitable access to energy, job creation in renewable sectors, and support for coal-dependent workers and communities.
South Africa	Just Energy Transition Implementation Plan 2023–2027 (JET PMU, 2003); JET IP Quarterly Report June 2025 (JET PMU, 2025a)	Official Government Document	JET PMU	2023–2025	Distributive, restorative, and procedural justice central to JETP; reskilling for coal workers; place-based support for Mpumalanga communities; youth and women targeted for opportunities.
	Just Energy Transitions (JET): The good, the challenging, and the opportunities (GCAP, 2024)	International Organization Report	GCAP	2024	Social justice is integrated into South Africa's JETP with a focus on retraining coal workers, gender-inclusive planning, and ensuring energy access for marginalized communities.
	Just Energy Transition Partnerships in the context of Africa-Europe relations: reflections from South Africa, Nigeria and Senegal (Hege et al., 2022) Two years into South Africa's Just Energy Transition Partnership: How real is the deal? (Vanheukelom, 2023) Whose just energy transition? A South African perspective (Xaba, 2023)	Academic article	Ukama Platform ECDPM Mapungubwe Institute for Strategic Reflection	2022 2023	South Africa's JETP focuses on social justice in coal regions, ensuring job protection, skills development, and economic diversification. Focuses on social justice aspects, particularly reskilling for coal workers, gender-inclusive planning, and addressing energy access for marginalized communities. Strong focus on retraining coal workers and creating a just transition framework for marginalized regions, such as Mpumalanga.
Vietnam	JETP Viet Nam Newsletter No.3 (JETP Viet Nam, 2025b); Newsletter No.5 (JETP Viet Nam, 2025c)	Official Government Document	MOIT (JETP Secretariat)	2025	Principle of inclusivity ("leave no one behind"); vocational training and workforce development; community participation in transition planning.
	The Missing Just in Vietnam's Just Energy Transition Partnership (JETP) (International Rivers & Vietnam Climate Defenders Coalition, 2024)	International Organization Report	International Rivers, Vietnam Climate Defenders Coalition	2024	Vietnam's JETP focuses on equity, ensuring vulnerable groups are not left behind, with a focus on community engagement, local job creation, and gender-inclusive policies.

	Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam (Ayas et al., 2025) Vietnam's Just Energy Transition Partnership: a background report (Ha-Duong, 2023b)	Academic article	IOP Conference Series: Earth and Environmental Science CIRED/VIETSE	2025 2023	Emphasizes inclusion of vulnerable groups, social protection, and ensuring that coal workers and communities are not left behind in the transition. Focus on ensuring that the transition does not marginalize communities dependent on coal and promoting social equity.

Source: Compiled Data (2025)

Indonesia's approach to social justice within the JETP is rooted in its Just Transition framework, which focuses on creating decent jobs, protecting vulnerable groups, and ensuring gender inclusion in the energy transition. According to the JETP Secretariat team (2023), Indonesia emphasizes regional equity, especially in areas heavily dependent on coal. A key priority is reskilling coal workers and promoting economic diversification in coal regions to help them transition to new, renewable energy sectors. The focus is also on creating equitable access to energy and ensuring that communities in remote areas are not left behind in the transition. Benoit & Prasetiyo (2023) report highlights Indonesia's efforts to include gender equity in energy job creation, ensuring that women have access to employment opportunities in the renewable energy sector. According to Hermawan & Prabhawati (2024), social justice in Indonesia's energy transition is also about supporting coal-dependent workers and communities, providing them with the resources and opportunities needed to thrive in a green economy.

South Africa has integrated social justice into its JETP through a comprehensive focus on distributive, restorative, and procedural justice, particularly for communities and workers dependent on coal. The country's JETP prioritizes reskilling coal workers and providing place-based support to regions like Mpumalanga, where coal mining and power generation are major sources of employment. JET IP Quarterly Report (2025) and GCAP (2024) emphasize the importance of economic diversification in these regions and creating new green jobs to replace those lost in the coal sector. Moreover, youth and women are specifically targeted in South Africa's skills development initiatives, ensuring they have access to employment opportunities in renewable energy and related industries. As noted in Vanheukelom (2023) and Xaba (2023), South Africa's JETP aims to ensure that the energy transition does not exacerbate existing inequalities, but rather provides opportunities for marginalized communities, particularly in coal-dependent areas. The framework also includes gender-inclusive planning, ensuring that women benefit from the green economy transition.

Vietnam's approach to social justice in its JETP focuses heavily on the principle of inclusivity and the idea of leaving no one behind. As highlighted in the JETP Viet Nam Newsletter (2025), Vietnam is committed to ensuring that vulnerable groups, including coal-dependent workers and marginalized communities, are not left behind in the energy transition. The country's strategy emphasizes vocational training and workforce development to equip workers with the skills needed to transition into the renewable energy sector. Community participation in transition planning is another key component of Vietnam's social justice approach, with the goal of ensuring that the voices of those

affected by the transition are heard and incorporated into decision-making. According to the International Rivers & Climate Defenders Coalition (2024) and Ayas et al. (2025), Vietnam is also focused on gender-inclusive policies, ensuring that women are included in the renewable energy workforce and that they have access to the opportunities created by the transition. The country's commitment to social protection and ensuring that coal workers and communities are supported through the transition reflects its focus on social equity.

While all three countries highlight social justice as a central component of their energy transitions, each country's approach reflects its unique challenges and opportunities. Indonesia focuses on regional equity and gender inclusion, South Africa on reskilling and economic diversification, and Vietnam on inclusivity and community participation. These efforts aim to ensure that the transition to a green economy benefits all sectors of society, especially those most affected by the shift away from coal.

CONCLUSION

This study has provided a comparative analysis of the Just Energy Transition Partnerships (JETP) in Indonesia, South Africa, and Vietnam, focusing on five critical dimensions: emission reduction commitments, financial structures, sectoral scope, implementation challenges, and social justice. The analysis highlights that while all three countries share the overarching goal of transitioning to low-carbon economies, their strategies, challenges, and progress differ based on their unique political, economic, and social contexts.

The findings confirm that each country's emission reduction goals are ambitious, with Indonesia targeting net-zero emissions by 2060, South Africa by 2050, and Vietnam by 2050. However, their paths diverge in terms of financial structures and sectoral focus. Indonesia relies heavily on blended finance models, while South Africa faces challenges in securing domestic and international funding. Vietnam, with its focus on grid modernization and renewable energy expansion, uses a mix of public and private sector investments.

Implementation challenges are common across all three countries, with barriers in policy coherence, regulatory frameworks, and financing gaps hindering progress. Social justice considerations, particularly the inclusion of vulnerable groups, have been central to each country's transition plans, though the specific focus areas, such as gender inclusion and workforce reskilling, differ.

The analytical framework used in this study effectively illuminated the comparative aspects of JETP implementation but also revealed gaps in understanding the long-term impacts of these transitions, particularly in terms of social equity and the scalability of financial mechanisms. Future research should explore the longitudinal impacts of these partnerships, especially on the ground-level outcomes for vulnerable communities and examine the effectiveness of innovative financial models in overcoming existing barriers to the energy transition.

REFERENCES

Ayas, C., Vo, N., Khuat, B., Hu, D., Giwangkara, J., Dolan, M., & Nguyen, T. (2025). Building blocks for a successful just energy transition: A stocktake analysis of Indonesia and Vietnam. *IOP Conference Series: Earth and Environmental Science*, *1511*(1), 012010. https://doi.org/10.1088/1755-1315/1511/1/012010

Benoit, P., & Prasetiyo, A. (2023). *Indonesia's Just Energy Transition Partnership: A way to mobilize capital for climate and development*. Zero Carbon Analytics.

Bowen, G. (2009). (PDF) Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, *9*(27–40). https://doi.org/10.3316/QRJ0902027

Climateworks Centre. (2025). *Advancing Just Energy Transition Partnerships: Stocktake analysis for Vietnam and Indonesia*. Climateworks Centre. https://www.climateworkscentre.org/resource/progress-on-just-energy-transitions-in-vietnam-and-indonesia/

Commonwealth & Development Office. (2025). *Joint Statement from the International Partners Group on the US Withdrawal from the Just Energy Transition Partnership in South Africa*.

Ford Foundation, IESR, & ACF. (2023). *Navigating the Just Energy Transition Together: Shared learnings from South Africa, Indonesia, and Vietnam*.

GCAP. (2024). *Just Energy Transitions (JET): The good, the challenging, and the opportunities*. Global Climate Action Partnership.

Ha-Duong, M. (2023a). *Implementing a Just Energy Transition*. Fourteenth Vietnam Economist Annual Meeting (VEAM 2023). https://enpc.hal.science/hal-04162361

Ha-Duong, M. (2023b). *Vietnam's Just Energy Transition Partnership: A background report*. https://enpc.hal.science/hal-04094268

Hege, E., Okereke, C., Treyer, S., Sokona, Y., Kingiri, A., Keijzer, N., & Denton, F. (2022). Just Energy Transition Partnerships in the context of Africa-Europe relations: Reflections from South Africa, Nigeria and Senegal. *Ukáma*.

Hermawan, L. T., & Prabhawati, A. (2024). Implementasi Just Energy Transition Partnership Indonesia menuju Net Zero Emissions tahun 2060. *Jurnal Energi Baru dan Terbarukan*, *5*(3), 28–38. https://doi.org/10.14710/jebt.2024.24161

IEA. (2022). *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. OECD. https://doi.org/10.1787/4a9e9439-en

International Rivers, & Vietnam Climate Defenders Coalition. (2024). *The Missing Just in Vietnam's Just Energy Transition Partnership (JETP)*. International Rivers & Vietnam Climate Defenders Coalition.

JET PMU. (2003). *Just Energy Transition Implementation Plan 2023–2027*. JET Project Management Unit (JET PMU).

JET PMU. (2025a). *Just Energy Transition Implementation Plan (JET IP) Quarterly Progess Report 30 June 2025*. JET Project Management Unit (JET PMU).

JET PMU. (2025b). *Just Energy Transition Implementation Plan (JET IP) Quarterly Progess Report 31 March 2025*. JET Project Management Unit (JET PMU).

JETP Secretariat team. (2023). *JETP Indonesia Comprehensive Investment and Policy Plan (CIPP)*. JETP Indonesia.

JETP Viet Nam. (2025a). Ministry of Industry and Trade works with the Special Adviser to the UN Secretary-General on Climate Action and Just Transition. *JETP Viet Nam Newsletter*.

JETP Viet Nam. (2025b). The UK is ready to support Viet Nam with funding for the implementation of JETP. *JETP Viet Nam Newsletter*.

JETP Viet Nam. (2025c). Viet Nam promotes the Just Energy Transition Projects, advancing implementation of JETP Political Declaration. *JETP Viet Nam Newsletter*.

Lüpke, H. V., Aebischer, C., & Bolanos, M. (2023). International Partnerships for a Just Energy Transition: Findings from South Africa. *DIW Weekly Report*, *13*, S. 4349. https://doi.org/10.18723/DIW_DWR:2023-5-1

Nurhidayah, L., Alam, S., Utomo, N. A., & Suntoro, A. (2024). *Indonesia's Just Energy Transition: The Societal Implications of Policy and Legislation on Renewable Energy*. https://doi.org/10.1163/18786561-bja10047

Ordonez, J. A., Vandyck, T., Keramidas, K., Garaffa, R., & Weitzel, M. (2024). Just Energy Transition Partnerships and the future of coal. *Nature Climate Change*, *14*(10), 1026–1029. https://doi.org/10.1038/s41558-024-02086-z

Vanheukelom, J. (2023). Two years into South Africa's Just Energy Transition Partnership: How real is the deal? *Ecdpm*.

Xaba, N. (2023). Whose just energy transition? A South African perspective. *Wiley*. https://doi.org/10.1002/wene.478