

Mapping of Just Transition supporting policies in Southeast Asia



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This research was led by Ecorys with the aim of informing the public and providing new insights to the debate on just energy transitions. They do not necessarily reflect the policy positions of Oxfam and/or Asia Network for People's Energy (ANPE). The views expressed are those of the authors and not necessarily those of Oxfam and/or ANPE.

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ABOUT ECORYS



Ecorys is a global research-based consultancy that helps clients make a positive impact on society. With its origins dating back to 1929, the company has evolved in many ways. Today, our over 600 employees are leaders in research and consulting, monitoring and evaluation, programme management and communications services. We operate across the globe with offices in Rotterdam, Brussels, the United Kingdom, several other European cities, India and Africa. Our expertise covers, inter alia, regional development; energy, environment and sustainability; economy and competitiveness; social policy; education; and governance.

Ecorys brings seven years of experience assessing just transition policy frameworks and supporting the implementation of related strategies and processes, at the European and international level. A pioneer in assessing, analyzing and implementing just transition policies in particular related to the energy sector, Ecorys has developed a **policy research approach** centered on the social implications of green transition policies and deeply rooted in the principles of dialogue and community building. Ecorys has played a leading role in all major just transition initiatives in the EU and neighboring countries, leading the management of the **Secretariats of the Initiative for Coal Regions in Transition in the EU** (since 2019), the **Initiative for Coal Regions in Transition in the Western Balkans and Ukraine** (2020-2023) and the **Just Transition Platform** (since 2021). More recently, Ecorys also expanded its portfolio to Southeast Asia, for example, by providing tailored support to ETP/UNOPS in the implementation of the **Just Coal Transition Platform Southeast Asia** from 2023-2025.

ABOUT ANPE



ASIA NETWORK FOR PEOPLE'S ENERGY

The **Asia Network for People's Energy** (ANPE) is a network that aims to convene civil society organizations (CSOs) from the Southeast Asian Region to address just energy transition (JET) gaps and challenges at the country level with perspective and purposeful actions at the region, through network-building, learning and campaigning, and resource mobilization.

The Network adheres to its three main pillars of (a) Network Building, (b) Learning and Campaigning, and (c) Resource Mobilization. These main pillars are the overarching basis of the work by the Network and specifically on the following objectives:

- Influencing ASEAN member states and other relevant regional bodies on JET.
- Changing and influencing narrative(s) on energy transition towards social, economic, and ecological justice.
- Expanding civic spaces and the role of CSOs, particularly women's and gender equality rights, children and youth, Indigenous Peoples, people with disabilities, etc., towards inclusive, sensitive, and accountable public and private processes on JET.
- Increasing capacity and knowledge of CSOs, communities, and other stakeholders on climate justice, renewable energy, and just energy transition.
- Pooling of resources to support grassroots-led campaigns and initiatives towards just energy transition.

Visit www.asianetworkforpeoplesenergy.org for more details.

ABBREVIATIONS AND ACRONYMS

ACE	ASEAN Centre for Energy
ADB	Asian Development Bank
AEDP	Alternative Energy Development Plan (Thailand)
AMDAL	Environmental and Social Impact Assessment (Indonesia)
APAEC	ASEAN Plan of Action for Energy Cooperation
APG	ASEAN Power Grid
ASEAN	Association of Southeast Asian Nations
Bappenas	Ministry of National Development Planning (Indonesia)
BOE	Barrels of Oil Equivalent
BSP	Bangko Sentral ng Pilipinas
CIF	Climate Investment Fund
CMEA	Coordinating Ministry of Economic Affairs (Indonesia)
COP	Conference of the Parties
CSOs	Civil Society Organisations
DENR	Department of Environment and Natural Resources (Philippines)
DOE	Department of Energy (Philippines)
DOLE	Department of Labour and Employment (Philippines)
EEP	Energy Efficiency Plan (Thailand)
EPIRA	Electric Power Industry Reform Act (Philippines)
EPPO	Energy Policy and Planning Office (Thailand)
ERC	Energy Regulatory Commission (Thailand)
ESG	Environmental, Social and Governance
ETM	Energy Transition Mechanism
FPIC	Free, Prior and Informed Consent
GCF	Green Climate Fund
GHG	Greenhouse Gas
GITA	Green Investment Tax Allowance (Malaysia)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GTFS	Green Technology Financing Scheme (Malaysia)
ICESCR	International Covenant on Economic, Social and Cultural Rights
IKI JET	International Climate Initiative – Just Energy Transition
ILO	International Labour Organisation
IMP	Industrial Master Plan (Malaysia)
JET	Just Energy Transition
JETP	Just Energy Transition Partnership
JET-P	Just Energy Transition Partnership (Indonesia)
JAKOA	Department of Orang Asli Development (Malaysia)
JT	Just Transition

KEN	National Energy Policy (Indonesia)
LCCF	Low Carbon Cities Framework (Malaysia)
MGTC	Malaysian Green Technology Corporation
MITI	Ministry of Investment, Trade and Industry (Malaysia)
MONRE	Ministry of Natural Resources and Environment (Thailand)
Mtoe	Million tonnes of oil equivalent
MyRER	Malaysia Renewable Energy Roadmap
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NEP	National Energy Policy (Malaysia)
NETF	National Energy Transition Facility (Malaysia)
NETR	National Energy Transition Roadmap (Malaysia)
NESDC	National Economic and Social Development Council (Thailand)
NGOs	Non-Governmental Organisations
NRES	Ministry of Natural Resources and Environmental Sustainability (Malaysia)
OECD	Organisation for Economic Co-operation and Development
OJK	Financial Services Authority (Indonesia)
ONEP	Office of Natural Resources and Environmental Policy and Planning (Thailand)
PDP	Power Development Plan
PERKESO	Social Security Organisation (Malaysia)
PLN	Perusahaan Listrik Negara (State Electricity Company, Indonesia)
PDP	Philippine Development Plan
RE	Renewable Energy
RPJMN	National Medium-Term Development Plan (Indonesia)
RPJPN	National Long-Term Development Plan (Indonesia)
RUKN	National Electricity Plan (Indonesia)
RUPTL	Electricity Supply Business Plan (Indonesia)
RUEN	National Energy Plan (Indonesia)
SEDA	Sustainable Energy Development Authority (Malaysia)
SMEs	Small and Medium-sized Enterprises
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute

EXECUTIVE SUMMARY

This study systematically maps and assesses how just transition (JT) principles are reflected in energy transition policies across four Southeast Asian countries: Indonesia, the Philippines, Thailand, and Malaysia. The research focuses on identifying how justice-related concepts—such as equity, inclusion, and environmental rehabilitation—are embedded in national policy frameworks, even when the term “just transition” is not explicitly used. The study covers a wide range of policy instruments, including more strategic plans/goals/guidelines, formal regulatory acts/laws and dedicated financing schemes, and evaluates their ambition and coherence.

As the concept of a just transition is interpreted differently across countries and policy communities, the research team adopted a six-principle (P) framework tailored to the Southeast Asian context for the purpose of this study. These principles served as the analytical lens for evaluating the presence and ambition of justice elements in government policies through the identification of related keywords and indicators:

- **P1: Transparent and inclusive transition governance mechanisms** – ensuring coordination across sectors and levels of government, with clear institutional mandates and accountability.
- **P2: Meaningful and inclusive stakeholder engagement** – involving all relevant actors, including civil society, local communities, and vulnerable groups, from planning to implementation.
- **P3: Consideration of vulnerable groups** – addressing the specific needs of low-income households, women, youth, elderly, informal workers, and Indigenous Peoples.
- **P4: Equitable workforce transition** – supporting reskilling, upskilling, and social protection for workers affected by the energy transition.
- **P5: Economic diversification** – promoting sustainable, local economic development and enterprises, and reducing dependence on fossil fuels.
- **P6: Environmental rehabilitation and land repurposing** – restoring ecosystems and repurposing land used for fossil fuel activities.

Key findings per country



Indonesia has embedded justice-related principles in many policies, but weak coordination and conflicting signals undermine implementation.

Indonesia has made notable progress in embedding just transition principles into its policy landscape, particularly in stakeholder engagement (P2) and environmental rehabilitation (P6). The country’s National Long-Term Development Plan (RPJPN 2025–2045) of 2024 and the Just Energy Transition Partnership (JETP) are key vehicles for integrating justice into energy planning. However, implementation remains fragmented due to conflicting policy signals, such as continued support for coal and mining industries, and a lack of enforcement mechanisms. While over 5,000 keyword references

were identified across 29 policies, the term “just transition” is rarely used explicitly. Governance mechanisms (P1) are often weak or absent, and support for vulnerable groups (P3) is inconsistent. Older policies tend to be more democratic and participatory, while newer ones show signs of reduced procedural justice. Stakeholder consultations are frequently symbolic, and environmental and social impact assessments are often manipulated or inaccessible to affected communities. Despite these challenges, there is momentum for reform. A National Just Energy Transition Action Plan is under development, and new initiatives are emerging to support workforce transition and economic diversification. However, without stronger coordination and clearer implementation frameworks, the risk remains that the energy transition will replicate or exacerbate existing social and environmental injustices.

The Philippines demonstrates growing ambition and institutional commitment, but subnational implementation and funding remain weak.

The Philippines has shown increasing ambition in integrating just transition principles, particularly in environmental rehabilitation (P6), workforce transition (P4), and support for vulnerable groups (P3). The country’s Just Transition Framework, launched in 2024, and the Green Jobs Act of 2016 are key milestones. Strategic planning documents such as the Philippine Development Plan 2023–2028 (2023) and the National Adaptation Plan 2023–2050 (2024) demonstrate a whole-of-government approach and strong alignment with international climate goals. However, governance mechanisms (P1) and economic diversification (P5) remain underdeveloped. While stakeholder engagement is institutionalised at the national level, subnational mechanisms are often weak or underfunded. Many policies acknowledge the vulnerability of certain groups but lack targeted support or budgetary allocations. Implementation is further hindered by limited capacity, fragmented coordination, and recent leadership changes in key government agencies. Despite these limitations, the Philippines is on a positive trajectory. The integration of justice principles into newer policies is more comprehensive, and there is growing civil society engagement. The country’s role as host of the Loss and Damage Fund Board and its leadership in regional climate initiatives suggest that just transition will continue to gain prominence in national policy discourse.



Thailand’s just transition efforts are fragmented, with limited institutional coordination and weak stakeholder engagement.

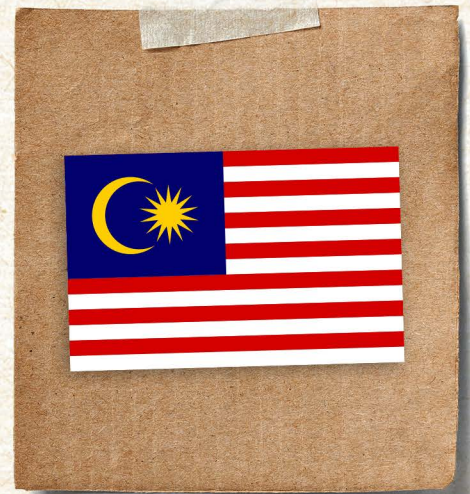
Thailand’s just transition efforts are still in their early stages. While the country has set ambitious climate targets, including carbon neutrality by 2050, there is no formal definition of just transition in national policy, nor a dedicated framework or coordinating body. The most frequently embedded principles are economic diversification (P5) and environmental rehabilitation (P6), particularly in the 13th National Economic and Social Development Plan. However, governance mechanisms (P1), stakeholder engagement (P2), and support for vulnerable groups (P3) are weak. Consultations are often procedural and lack transparency, and ministries operate in silos without clear coordination. The Energy Industry Act (2007) and the draft Power

Development Plan 2024–2037 show limited integration of justice principles, focusing instead on energy security and market-based mechanisms. There are opportunities for progress, including the Power Development Plan and the forthcoming Climate Change Act, which could provide a legal basis for integrating justice into climate

governance. However, without a dedicated just transition strategy and stronger institutional coordination, Thailand risks missing the opportunity to ensure a fair and inclusive energy transition.

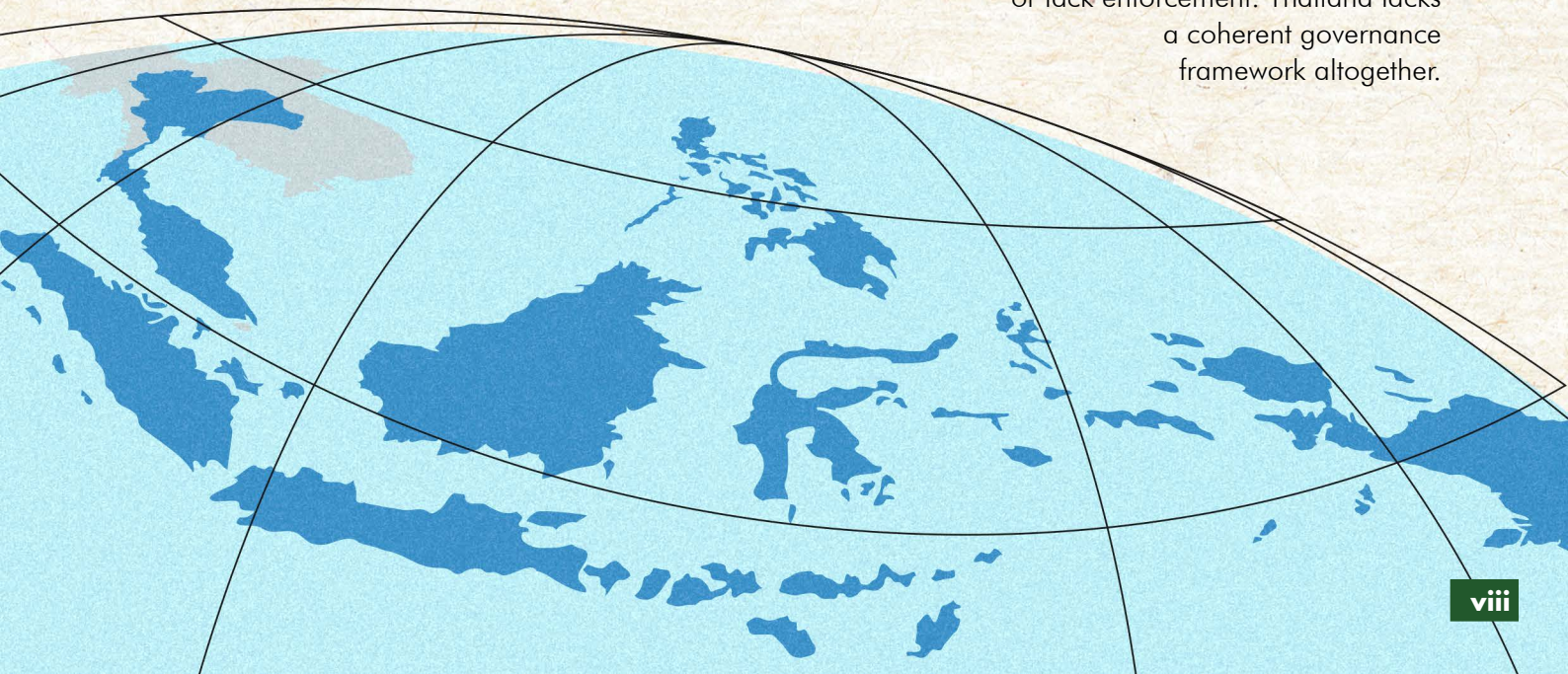
Malaysia’s policies reference workforce transition and economic diversification, but lack depth in governance, inclusion, and implementation tools.

Malaysia has made moderate progress in integrating just transition principles, with a strong focus on workforce transition (P4) and economic diversification (P5). The National Energy Transition Roadmap (NETR) of 2023 and the National Energy Policy 2022–2040 (2022) are key policy instruments that reflect the government’s commitment to a fair and equitable transition. These documents emphasise inter-ministerial coordination, public-private partnerships, and investment in green technologies. However, governance mechanisms (P1), stakeholder engagement (P2), and support for vulnerable groups (P3) are less developed. While newer policies introduce coordination structures and consultation processes, their scope and effectiveness remain limited. Implementation is uneven across regions, with stronger governance in Peninsular Malaysia and weaker enforcement in Sabah and Sarawak. Indigenous communities are particularly vulnerable to large-scale renewable energy projects that lack adequate safeguards. Malaysia’s just transition agenda remains fragmented, with limited integration of justice principles across sectors and regions. The absence of a dedicated national framework and the lack of concrete measures for workforce reskilling, social protection, and land rehabilitation highlight the need for more comprehensive and inclusive policy approaches.



Across all four countries, justice principles are increasingly referenced, but implementation remains inconsistent and often symbolic.

Across Southeast Asia, the term “just transition” is inconsistently used, but justice-related principles are increasingly mainstreamed into national policy frameworks. Indonesia and the Philippines recorded the highest number of keyword references, followed by Malaysia and Thailand. However, high keyword frequency does not always equate to high ambition or effective implementation. Stakeholder engagement (P2), environmental rehabilitation (P6), and workforce transition (P4) are the most frequently referenced principles. Governance mechanisms (P1), support for vulnerable groups (P3), and economic diversification (P5) are less consistently addressed. Institutional frameworks for coordination and stakeholder engagement exist in Indonesia, the Philippines, and Malaysia, but are often underutilised or lack enforcement. Thailand lacks a coherent governance framework altogether.



Implementation challenges are common across all countries.

These include overlapping mandates, limited subnational capacity, weak monitoring systems, and symbolic stakeholder consultations. Without stronger coordination, clearer mandates, and practical tools for implementation, the gap between policy ambition and real-world outcomes will persist.

In conclusion, Southeast Asia's energy transition is gaining momentum, but justice must be embedded more deeply and implemented more effectively.

While progress has been made in embedding justice principles into policy, significant gaps remain in ambition, coordination, and implementation. Governance inconsistencies, limited subnational capacity, and symbolic stakeholder engagement persist. A more coordinated, inclusive, and regionally tailored approach is essential to ensure that the energy transition is not only green but also fair and equitable. Civil society and policymakers must work together to close the gap between policy and practice and are recommended to take forward the following actions:

- 1. Strengthen governance and coordination mechanisms:** Empower principal JT institutions and clarify roles across government levels in all countries and establish a dedicated governance mechanism in Thailand.
- 2. Institutionalise credible stakeholder engagement:** Develop transparent, inclusive, and authoritative engagement processes and ensure participation of civil society, Indigenous Peoples, and vulnerable groups.
- 3. Mainstream just transition into sectoral policies:** Develop national JT strategies or action plans to consolidate fragmented efforts and integrate justice principles into energy, land-use, and industrial policies.
- 4. Design evidence-based workforce transition measures:** Conduct labour force assessments and develop job transition roadmaps and, based on that, implement reskilling and vocational guidance programmes in fossil fuel-dependent regions.
- 5. Develop tailored subnational economic diversification strategies:** Support SMEs, green entrepreneurship, and local innovation in affected regions.
- 6. Address implementation gaps through capacity building:** Empower subnational governments to design and implement targeted JT measures.
- 7. Improve monitoring, evaluation, and justice metrics:** Establish indicators and systems to track JT progress and adjust policies accordingly.
- 8. Ensure justice in both phase-out and phase-in energy policies:** Apply JT principles to both fossil fuel retirement and renewable energy expansion



INTRODUCTION AND OVERVIEW

Southeast Asian countries are at different stages of development, but almost all of their economies have more than doubled in size since 2000. With this economic growth, the region's energy demand has increased, which has been mostly met through fossil fuels, leading to an increase in greenhouse gas emissions¹. At the same time, governments across Southeast Asia have set out long-term plans for a more sustainable future, with most countries having already announced net-zero emissions and carbon neutrality targets. To achieve these, system-level transformations across the industrial, transport, agricultural and, in particular, the energy sector need to take place over the next two decades, while enabling sustainable development and meeting the energy needs of growing populations.

The decarbonisation efforts will have significant impacts on the economy and society at large, and therefore, people-centred approaches should be integrated into policymaking to ensure the transition is fair and inclusive. Decarbonisation without consideration of justice principles risks undermining the ability to meet the goals of the Paris Agreement. In that regard, policymakers increasingly recognise the importance of simultaneously addressing economic, social and environmental injustices in tandem with the decarbonisation goals. Nevertheless, gaps remain in terms of how these principles are integrated into national-level policies and, as a result, how benefits and costs of transition are distributed among different groups in the society. The buy-in of key stakeholders is necessary to ensure fairness and long-term results.

To better understand the current state of play in the policy landscape in support of a just transition across Southeast Asia countries, this study includes a systematic mapping of government policies² across Indonesia, the Philippines, Thailand and Malaysia and an assessment of how different justice principles have so far been mainstreamed into policies about the energy transition.

For further details on the research objectives, methodology, and scope, please refer to Annex I.

Structure of the study

Following this introduction, the following subsection provides the just transition definition utilised for this study. It presents the principles of just transition used to analyse selected policies and frames the key terms that guided the quantitative research. The core of the study is presented in the **Results and Discussion** section, which is divided into country-specific subsections for Indonesia, the Philippines, Thailand, and Malaysia. Each country subsection includes an introduction to the national concept of just transition and a detailed analysis of the just transition elements identified across national policies. The analysis also examines the level of ambition of selected policies regarding just transition principles. The **Results and Discussion** section also provides a cross-country comparison to identify key trends and commonalities across the Southeast Asia region. Finally, the **Conclusions and Recommendations** section summarises the key findings and offers actionable suggestions for policymakers.

¹ IEA, 2022. Southeast Asia Energy Outlook 2022. Available at: <https://www.iea.org/reports/southeast-asia-energy-outlook-2022/key-findings>

² Within this study, we make no differentiation between various levels of authority, influence and enforcement of more strategic plans/goals/guidelines and legally binding regulatory acts/laws and dedicated financing schemes. All of these government-led actions are summarised as 'policies' or 'policy instruments' throughout this study.

Definitions and principles of Just Transition

There is no single, universally accepted definition of just transition. Although the 2016 Guidelines of the International Labour Organisation³ offered the first widely considered definitional reference, today, interpretations of its meaning and framing vary between countries, policy circles, campaigns, and social movements, ranging from local to global contexts. Some emphasise the creation of equitable, local, green jobs as a key definitional element of the shift toward a climate-resilient economy. Others interpret a just transition as an integral part of a broader systemic change initiated to address carbon-intensive economic models that exacerbate inequalities and to promote a reparative approach through climate action.

In alignment with definitions applied in previous policy and research and in recognition of the scope of this study, which is focused on the transition of the energy sector, with consideration of the broader value chain affected by the phase-out process of fossil fuels most relevant in the Southeast Asia energy context (i.e., coal, oil, gas) and the phase-in of renewable energies (i.e., wind and solar at utility scale and the critical raw materials crucial for their manufacturing), the just transition definition utilised in the research is focused on the following six principles. Their meaning within the Southeast Asia context is outlined below. These principles do not act in isolation but have a relational dimension and can manifest themselves in differing combinations in different policy and practice contexts.



Principle 1: Transparent and inclusive transition governance mechanism

A transparent, inclusive, and accountable governance mechanism is essential to achieving climate goals. It must coordinate across sectors (horizontal) and government levels (vertical), while fostering collaboration among institutions and stakeholders. Effective governance also requires adequate government capacity, coherent policies, and robust monitoring and evaluation systems with clear funding.



Principle 2: Meaningful and inclusive stakeholder engagement process

Inclusive and transparent stakeholder engagement is central to a just transition. Mechanisms such as consultations, discussions, events, capacity buildings, and joint actions should involve all relevant actors from planning to implementation. Public participation must be supported by clear communication and institutionalised consultation channels. Stakeholders should include local authorities, unions, academia, businesses, industry, local communities, and CSOs with special attention to vulnerable groups (see Principle 3).

³ ILO, 2016. Guidelines for a just transition towards environmentally sustainable economies and societies for all. Available at: <https://www.ilo.org/publications/guidelines-just-transition-towards-environmentally-sustainable-economies>



Principle 3: Consideration of vulnerable groups

A just transition must address the needs of vulnerable groups (low-income households, women, youth, elderly, informal workers, Indigenous Peoples) by raising awareness, ensuring their inclusion, providing targeted support programs, and protection schemes. It also involves screening social, cultural, civil, and political rights that may be affected during the transition.



Principle 4: Equitable workforce transition

Ensuring a fair workforce transition involves creating alternative employment and well-involved opportunities with at least comparable income. This includes reskilling and upskilling, especially for low-skilled and informal workers, and providing social safeguards for those unable to re-enter the labour market. Education and training systems must anticipate labour market shifts and align with green economy needs.



Principle 5: Economic diversification

Just transitions depend on enabling sustainable, locally based businesses in low-carbon sectors while creating good quality jobs. Economic diversification should attract investment, support SMEs and startups, and create quality local jobs aligned with international standards. It also requires new public revenue sources to replace fossil fuel dependence and policies tailored to regional economic strengths.



Principle 6: Environmental rehabilitation and land repurposing

Rehabilitating land used for fossil fuel activities is key to just transitions. Repurposing these sites for new businesses, jobs, and community uses, and reinstating habitats supports environmental restoration and societal benefit. This aligns with the polluter-pays principle and environmental law, improving biodiversity, ecosystem services, and natural capital.

These six principles have guided this research and informed the quantitative analysis of up to 30 key policies per country using key terms (see Annex IV) as well as the qualitative assessment of 10 policies per country along the Policy Assessment Framework (see Annex VI).

RESULTS AND DISCUSSION

Mapping Just Transition across policies in Southeast Asia

In this section, we present our country-specific findings regarding the integration of just transition elements across policies in our selected countries of Southeast Asia. For each country, we provide an introduction to the application of the just transition concept and present the key just transition elements identified across national policies. We also look at the level of ambition of ten selected policies per country regarding just transition principles, followed by key trends concerning the mainstreaming of justice into policies.

Just Transition policies in Indonesia⁴



Indonesia's energy consumption is rising, with coal still dominating electricity generation. Yet, the country has committed to peak emissions by 2030 and reach net-zero by 2060 through a mix of renewables, nuclear, and carbon capture technologies. Despite several just transition initiatives already underway, fragmented coordination and conflicting policy signals impede efforts to ensure an equitable transition, particularly for vulnerable groups. Indonesia's energy consumption has significantly increased, with coal being the primary energy source for power generation, accounting for 54.6% of all electricity generated. Despite being the world's biggest coal exporter and one of the biggest coal producers globally, the country aims to cut national emissions by 31.9% unconditionally and 43.2% conditionally by 2030, as outlined in its updated Nationally Determined Contribution (NDC). Indonesia has planned for its greenhouse gas emissions to peak by 2030 and to achieve net-zero emissions by 2060 or earlier. The National Electricity General Plan (RUKN 2024-2060) and the Road Map for the Electricity Sector Energy Transition project that by 2060, Indonesia's power sector will achieve net-zero emissions by leveraging not only renewable energy, but also new energy sources such as nuclear power, as well as carbon capture and storage technologies. Under this scenario, a limited share of coal-fired power generation may still be utilised, provided it is equipped with carbon capture and storage components.

⁴ Further details about the energy transition landscape, JT concept and transition challenges can be found in the Indonesia country profile in Annex V.

Achieving these ambitious targets comes with challenges, particularly ensuring that this step change in energy supply is accompanied by justice. In Indonesia, just transition is mostly understood as an approach to address the negative impacts of the energy transition on society and the environment. The former Ministry of Maritime and Investment Affairs anticipated that a just transition would mitigate the adverse side effects of the growth of the clean energy sector and the low-carbon economy. Even though the energy transition has only begun, several key just transition initiatives are already underway, such as the Climate Investment Fund's "Accelerating Coal Transition" project, the Energy Transition Mechanism (ETP) and the Just Energy Transition Partnership (JETP). These initiatives aim to accelerate the transition from coal to renewable energy and promote a fair coal phase-out. In addition, several ministries have created their own (just) coal transition-related projects, with the Coordinating Ministry of Economic Affairs now considered to lead the just transition efforts. However, the lack of significant government incentives and conflicting policy signals that still support the coal and mining industry (e.g. Domestic Market Obligation, nickel licenses and coal gasification agenda) hinder the progress of the energy transition. Additionally, the transition poses notable risks to marginalised and vulnerable communities, including women, Indigenous People, and informal workers.

Just Transition elements identified across selected policies in Indonesia

Our analysis of a total of 29 Indonesian policy instruments⁵ shows that although the term "just transition" is not widely used, many justice-related principles are already embedded in both higher-level laws/regulations and softer, lower-tier policy documents and financing schemes. Over 5,000 references to relevant keywords have been identified, suggesting a solid foundation for building a just and inclusive energy transition. The recent National Long-Term Development Plan 2025–2045 stands out, containing nearly one-third of the 54 relevant keywords, indicating that it may become the primary vehicle for integrating just transition principles into national development planning.

The most commonly embedded just transition principle across policies is P2: Meaningful and inclusive stakeholder engagement process, followed by references to P6: Environmental rehabilitation and land repurposing. As shown in Figure 1, the terms such as "civil society", "consultation," and "social dialogue" (P2) are referenced in most documents, reflecting a broad legal mandate to conduct public consultations with directly and indirectly impacted communities with relevant laws/permit processes⁶. Environmental rehabilitation and land repurposing (P6) are other major themes, particularly in forestry, renewable energy, and land management policies. Similarly, P4: Equitable workforce transition appears frequently, with key terms such as "education", "training", and even "informal workers" found in several sectoral policies.

Principles P5: Economic diversification and P3: Consideration of vulnerable groups are less consistently addressed in the policies under review. Explicit references to P1: Transparent and inclusive transition governance mechanism remain absent from most policies. References to "indigenous communities" and "women" appear in specific Free, Prior and Informed Consent (FPIC) laws but are largely absent in energy-specific regulations that were included in this analysis. Finally, while there is some language around governance and institutional capacity (P1), very few policies offer concrete mechanisms to oversee or enforce a just transition, highlighting a gap in implementation frameworks.

⁵ Including key laws and regulations across development planning (2024 Long-Term Development Plan (RPJPN)), the energy and power sector (Presidential Regulation on Renewable Energy from 112 from 2022, Energy Law from 2007; and the Mining Law from 2009), climate and environment (Environmental Protection Law from 2009), land management (Forestry Law 41/1999, Land Acquisition Law 2/2012), and labour and social protection (Workforce Law 13/2003), as well as industrial policy and green investment (Just Energy Transition Partnership agreed in 2023).

⁶ Has become mandatory through Law 32/2009 on Environmental Protection. Aspects of capacity building have not been analysed in this regard.

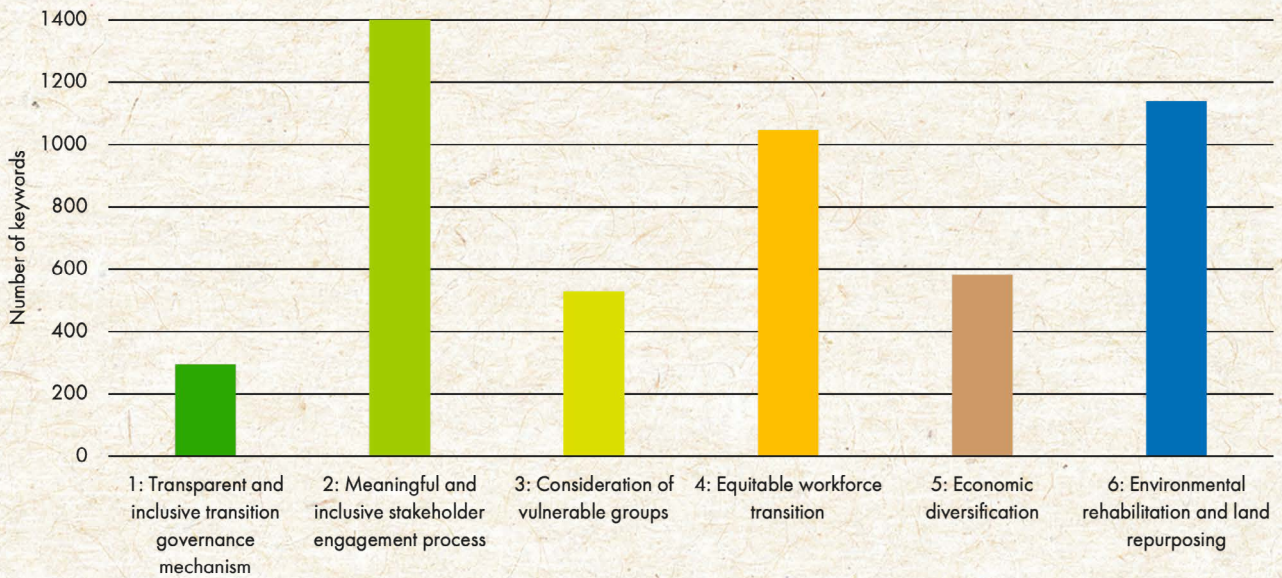


Figure 1: Frequency of just transition-related keywords in selected policies of Indonesia (N=29)⁷

Looking at the temporal evolution of these policies, most just transition-related principles predate 2015 and are found in legacy laws on labour, environment, and decentralisation or have been approved in the last four years. As shown in Figure 2, a peak occurred in 2009 with the approval of the Law 32/2009 on Environmental Protection and Management, though it is not specific to the remediation of mining land. Between 2015 and 2020, there was limited new policy activity regarding just transition themes in the policies analysed. Another shift occurred after 2022, as documents like the JETP and updated Ministry of Energy and Mineral Resources regulations began to more explicitly connect justice principles with the energy transition, culminating in the approval of the aforementioned National Long-Term Development Plan in 2024. This recent wave of policies is starting to bridge the gap between abstract justice concepts (included in policies of pre-2015) and concrete transition measures (gaining importance since 2021), but progress remains uneven.

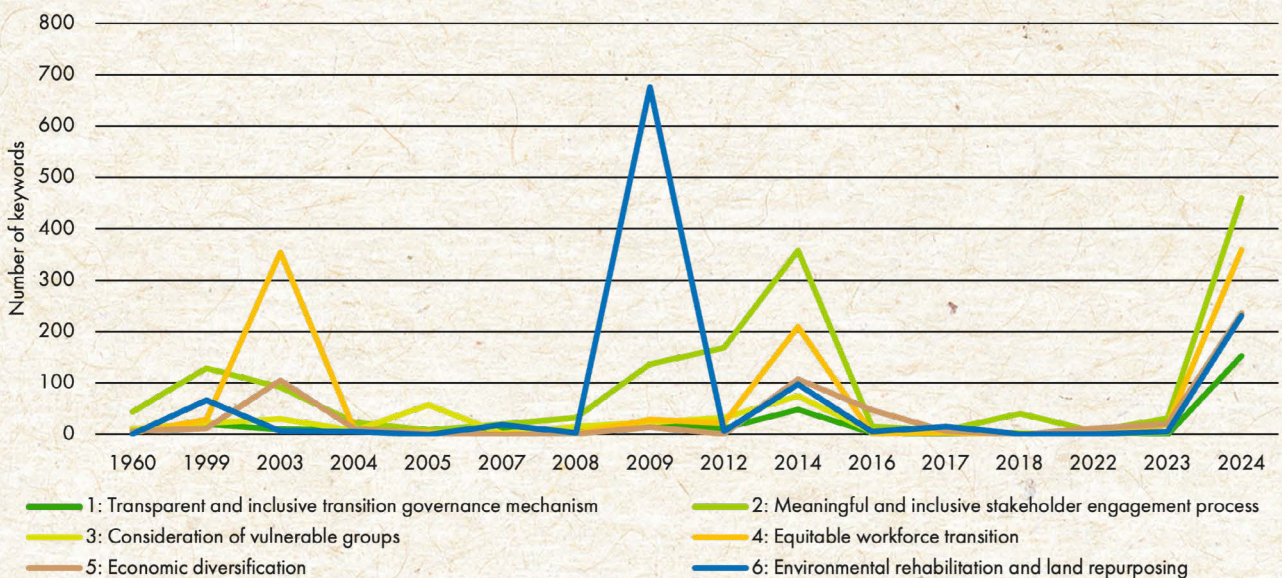


Figure 2: Frequency of just transition-related concepts in Indonesia in selected policies across years⁸

⁷ It is to be noted that the analysis only included a word count of key terms without specifically analysing the context in which it was mentioned. Some terms such as "restoration" and "justice" have been used and counted in this research, even though the application of the word may have little to do with JT.

⁸ n.b. some years are not visible in the graph as there have been no relevant policies published in these years

Just Transition ambitions identified in selected policies in Indonesia

Our in depth-analysis of 10 policies (see Annex II) showed that principles P1: Transparent and inclusive transition governance mechanism and P2: Meaningful and inclusive stakeholder engagement process are the two most ambitious principles in Indonesia's policies relating to energy transition. These two principles require coordination and stakeholder engagement, which are common components of the policy and regulatory environment in Indonesia. Most policies in Indonesia comply with P1 because coordination and the appointment of a coordinating body are basic requirements for the implementation of policy and regulation. This body can be an existing institution or a new institution that is specifically established to implement the policy and regulation and assigned to coordinate with other relevant ministries (horizontally) and subnational governments (vertically). P1 particularly focuses on coordination among governments' stakeholders and is a key component for governments to accelerate business development or investments in energy transition, including providing land for energy infrastructure and critical mineral mining. Similarly, principle P2 is notably present in Indonesian policies and regulations since stakeholder identification, clarification of respective roles and public consultation are common practices in Indonesian policymaking. The majority of policies and regulations analysed clearly identify relevant stakeholders and their roles within the policy implementation process. These are usually classified as stakeholders who will implement and/or be affected by the issuance of the policy/regulation, while stakeholders involved in policy development are typically not mentioned. Although P2 is present in the majority of policies and regulations assessed, the effectiveness of the inclusion is actually reduced through recent partial revisions.

Objectives within principles P4: Equitable workforce transition and P5: Economic diversification are among the two least ambitious in the reviewed policies, due to a strong focus on physical/infrastructural implications of the energy transition. P4 requires policies to incorporate strategies to address gaps related to the workforce during the energy transition, while P5 prescribes policies to include the strategy for encouraging the diversification of the economy in the regions where extractive projects are located. So far, the social considerations related to workers and economic diversification have not obtained particular attention in the energy transition-related policies and regulations analysed. Most policies and regulations analysed do reference specific up/reskilling or diversification strategies, but place the focus on the physical/infrastructural aspects of energy transition. For instance, the Law of Environmental Protection and Management, which especially regulates Environmental and Social Impacts Assessments, places more weight on environmental and infrastructural impacts than on social ones. Another example is the Road Map for electricity transition, which should have accommodated issues relating to workforce and economic transition, but only concentrates on the timeline and strategy for transitioning from fossil to renewable electricity generation. P4 and P5 are also absent in policies related to environmental protection and management, even though workforce and economic diversification aspects should be a key safeguard for infrastructure and mining project proposals. Understandably, certain policies (e.g., public information transparency) can exclude P4 and P5 because they are too thematic for certain policy topics, but they should not be absent from policies that manage development planning, which, in turn, will likely affect the lives of workers and other social groups, even if indirectly.

The Road Map for electricity transition also ignores principles P3: Considerations of vulnerable groups and P6: Environmental rehabilitation and repurposing, demonstrating that this key policy area does not comprehensively address all possible adverse impacts of the energy transition's physical/infrastructural development. In other policies (e.g., national development plan and workforce-related policy), vulnerable groups such as people suffering from social inequality (P3) are more comprehensively addressed and identified, but only a few policies analysed clarified the measures to address the special needs of these groups. Moreover, there are other specific laws to safeguard vulnerable groups in the implementation of energy projects that were included in this analysis. P6 is mentioned and effectively clarified in some policies/regulations, because environmental considerations have been relatively mainstreamed over the longer term in Indonesia's development policies compared to social considerations.

Our analysis shows that older policies and regulations are generally more democratic, indicating that procedural justice considerations are reduced in the design of newer policies and regulations. The 10 policies assessed in this assignment were issued from 2003 to 2025. Notably, the older regulations issued before 2014 require broader public participation in their implementation. This is understandable because, in this period, Indonesia was experiencing a critical reform of political institutions (after the fall of President Suharto in 1998), when national government authority began to decentralise. Democratic principles and approaches were then mainstreamed in various development policies and regulations, and local governments were empowered through the issuance of Law No. 23/2014 on Subnational Government. However, some studies suggested that this past decentralisation had caused unprecedented destruction in natural resource governance.⁹ With a new spirit to mitigate the negative outcomes of decentralisation, some policies and regulations, namely the Law of Job Creation of 2020¹⁰ and 2023¹¹ were partially revised, particularly through the issuance of the Omnibus Law. However, many observers believe that these revisions of key laws were predominantly driven by business interests and led to more non-democratic policy-making going forward. For instance, the Law of Job Creation revised the Law of Environmental Protection and Management to only require the participation of communities that are directly impacted by the projects in the Environmental and Social Impacts Assessment procedure. This revision overlooks the issue of the asymmetrical capacity of local communities, which often require facilitation from other advocacy stakeholders, such as NGOs and universities, to convey their aspirations effectively.

For a deep dive into selected policies, see Annex II.

Just transition in practice: policy implementation

Discussion with key stakeholders in Indonesia indicates that the inclusion of just transition principles in national policies does not guarantee effective implementation on the ground. The legal hierarchy of laws and contradictions between them and national strategic programmes with ambitious just transition targets (e.g., National Long-Term Development Plan/National Medium-Term Development Plan) cause governance inconsistencies and blur the picture of where Indonesia is heading in its energy transition. For example, Presidential Regulation 112/2022 on Renewable Energy Development cannot override the higher-tier Mining and Forestry Acts. Research has shown that measures pertaining to P1 and meaningful and P2 are ambitious in Indonesian policy and regulatory texts. However, there is no assurance of these requirements being effectively implemented and fully enforced on the ground.¹² Interministerial coordination has been challenging in the past, particularly with recent changes in government and just transition remains to be mainstreamed across all institutions. Public consultations during policy development and implementation are considered more of a tick-box exercise, rather than a mechanism for genuine stakeholder involvement. In the case of Environmental and Social Impact Assessments for energy projects, which mandate the affected community's approval, it is common for companies or project promoters to manipulate the process by only involving some small groups to represent the whole community.¹³ Furthermore, the final Environmental and Social Impact Assessment documents are usually inaccessible to the community, leading to hindered public scrutiny in the process. In other cases, certain public information, such as a company's business permit clarifying the land size and locations, has not always been made available because it is considered private data, even though this data is crucial to support public monitoring of a project's development or a company's operation.¹⁴ In addition, the strict incorporation of all just transition principles into regulations may increase investment requirements, which is generally not favoured by business stakeholders.

⁹ Talitha, T., Firman, T. and Hudalah, D., 2020. Welcoming two decades of decentralization in Indonesia: a regional development perspective. *Territory, Politics, Governance*, 8(5), pp.690-708.

¹⁰ Law No. 11/2020 on Job Creation.

¹¹ Law No. 6/2023 on the Stipulation of Government Regulation in Lieu of Law No. 2/2022 on Job Creation into Law.

¹² Daniel, D. and Hapsari, P., 2019. Informational asymmetry in public participation on environmental monitoring in Indonesian regulation: A preliminary discourse. *CSID Journal of Infrastructure Development*, 2(1), pp.4-19.

¹³ Berenschot, W., Dhiaulhaq, A., Hospes, O. and Pranajaya, D., 2024. Corporate contentious politics: Palm oil companies and land conflicts in Indonesia. *Political Geography*, 114, p.103166.

¹⁴ Siddiquee, N.A., 2023. Right to Information Law and Open Government: The Indonesian Experience. *Open Government and Freedom of Information: Policy and Practise in Asia and the Middle East*, pp.185-203.

Key trends and the future of just transition in Indonesia

With key policies and regulations inconsistent and focused on the physical energy transition in the form of energy infrastructure development, the importance of social and environmental considerations of the energy transition remains overlooked. Therefore, physical energy transition may occur according to the planned timeline and strategies, while neglecting already vulnerable groups and potentially leading to further deterioration of the environment. Given the highly centralised approach (at national level) and an absence of a radical transformation of the political economy, including policy reforms that put a just transition at the centre of both policy preparation and implementation, it is anticipated that the social and environmental outcomes of the physical energy transition will result in a state similar to or potentially worse than the past experiences when the fossil energy economy generated injustices within society.

Nevertheless, hope still exists that upcoming international and domestic policy action can address identified gaps. There are talks about a National Just Energy Transition Action Plan that, under the leadership of the Ministry of Energy and Mineral Resources, will serve as a comprehensive framework for agencies and governance levels (through regional development plans). In addition, an upcoming National Workforce Roadmap will soon channel investments into high-skills RE-related jobs (e.g., in the solar PV industry in the Eastern provinces of Indonesia) and new guideline for economic diversification and transformation under the JET-P programme are expected to set a new standard for renewable energy developers investing into Indonesia's electricity sector. An emerging financing tool by PLN and RUMAH PATEN is also set to crowd in investments across just transition principles. Other development partners, such as GIZ, World Resource Institute, and the Institute for Essential Services Reform, are working on developing just transition indicators that are expected to be used to monitor Indonesia's just energy transition progress. Finally, numerous CSOs and research institutions are working on research and policy advocacy to push for a better just transition policy ecosystem.

Just Transition policies in the Philippines¹⁵



The Philippines' energy mix is heavily reliant on non-renewable sources, with coal and oil accounting for 30% and 32% of the total energy supply in 2022, respectively, with renewable energy representing about 16%. Despite significant growth in energy demand, it aims to reduce its greenhouse gas emissions

¹⁵ Further details about the energy transition landscape, JT concept and transition challenges can be found in the Philippines country profile in Annex V.

by 75% from a business-as-usual scenario by 2030, as stated in its NDC. Despite this ambition, the just transition concept is relatively new, though gaining traction. In late 2024, the government initiated the development of the country's first Just Transition Framework. However, policy alignment across government remains a challenge.

The Philippine Energy Plan 2023-2050 projects an increase in total national energy supply to 140 million tons of oil equivalent (Mtoe) by 2050, with renewable energy sources expected to account for 50% of the installed generation capacity by 2040, respectively. The share of coal is anticipated to decline significantly from 60% in 2022 to 14% by 2050. In response, the country's Just Transition Framework aims to promote socio-economic development, environmental protection, skills development, energy security, and sustainable transport. Several other key just transition initiatives are already underway, such as the National Green Jobs Human Resource Development Plan 2020-2030, which aims to protect workers' rights and prepare them for new opportunities in the green economy. The Philippines also signed up for the Energy Transition Mechanism of the Asian Development Bank in 2021, focusing on decommissioning or repurposing coal power assets. Several ministries (Department of Labour and Employment, Department of Environment and Natural Resources and the Department of Energy) have created their own just transition-related projects without clear governance mechanisms. Local government units have so far played a limited role in just transition initiatives, as the central government and CSOs primarily drive just transition efforts.

Just Transition elements identified across selected policies in the Philippines

Our analysis of a total of 24 Philippine policy instruments¹⁶ shows that the explicit term “just transition” only appears in the most recent policy documents (from 2020 onward). However, many other justice-related terms have been embedded in the policy landscape for more than a decade. Across the 24 policies, over 5,000 keyword references to just transition-related principles were identified. The frequency of relevant keywords is significantly higher in policies issued since 2022, which contain nearly three times more references than those from the preceding years. This indicates a clear acceleration in the integration of just transition principles, even if the terminology remains inconsistent. Strategic planning documents, rather than legislation, account for the bulk of these references, hinting at a possible gap between ambition and implementation.

The most commonly embedded just transition Principle across policies in the Philippines is P6: Environmental rehabilitation and land repurposing, followed by P4: Equitable workforce transition, as shown in Figure 3. Terms like “environment” and “biodiversity” were found in 23 out of 24 policies, reflecting long-standing environmental management priorities in a country where land mass is extremely scarce and land use conflicts are common. Workforce transition, particularly in connection with “education” and “training”, largely driven by the Green Jobs Act and associated plans, was also a notable principle. P3: Consideration of vulnerable groups also appears prominently, with frequent mentions of “indigenous communities” and “human rights”, but not consistently extended to other vulnerable groups like informal workers. This may be due to the high share of Indigenous People recorded in the Philippines.¹⁷

¹⁶ including major laws (Electric Power Industry Reform Act 2001, Renewable Energy Act 2008), national plans (Philippine Development Plan 2023–2028, Philippine Energy Plan 2020–2040), climate frameworks (National Climate Change Action Plan), and labour (Green Jobs Act 2016) and finance-related mechanisms (Just Transition Program and Framework 2024, Just Transition Financing Facility, ADB Energy Transition Mechanism).

¹⁷ 10-20% of the population according to International Work Group for Indigenous Affairs. See here: <https://iwgia.org/en/philippines.html>

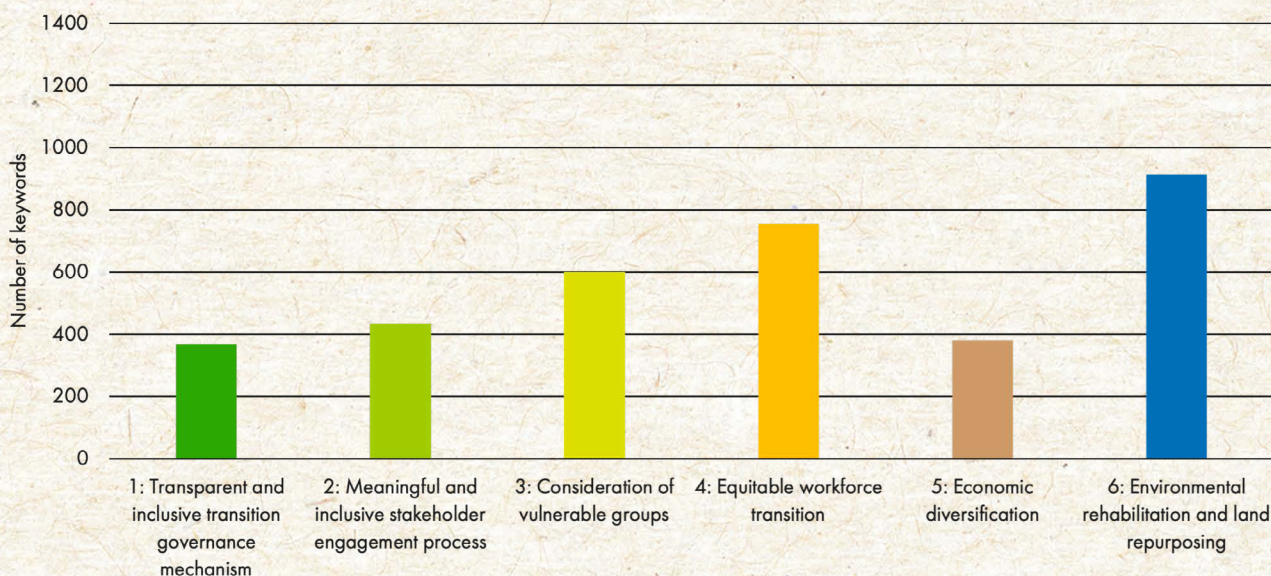


Figure 3: Frequency of just transition-related keywords in selected policies of the Philippines (N=24)¹⁸

Other principles, such as P5: Economic diversification and P2: Meaningful and inclusive stakeholder engagement process, are, by comparison, moderately addressed across the analysed policies. References to “SMEs” and “economic diversification” are common in recent finance and development policies, while some references to “partnerships” and “industry associations” are found across 19 policies.

The findings imply that P1: Transparent and inclusive transition governance mechanism remains the least developed area, with few policies offering clear mechanisms for enforcement or oversight. Moreover, it can be implied that there is insufficient attention given to the decentralisation and localisation of inclusive governance and the cross-cutting nature of governance regarding policy and practice.

Looking at the evolution of policy content over time, a new wave of policies emerged after 2021, including the Philippine Development Plan 2023–2028, which explains the record-high number of just transition references in 2023, particularly referring to the workforce transition component, and the introduction of the Just Transition Framework in 2024 (Figure 4). Earlier sources (pre-2010) show some references to just transition-relevant terms, particularly in environmental and labour legislation. Subsequently, there was a peak in the number of references from 2010 to 2016, driven mainly by the approval in 2012 of the National Climate Change Action Plan 2011-2028. Between 2015 and 2020, the Green Jobs Act and climate policy updates began incorporating more just transition-relevant language.

¹⁸ It is to be noted that the analysis only included a word count of key terms without specifically analysing the context in which it was mentioned. Some terms such as “restoration” and “justice” have been used and counted in this research, even though the application of the word may have little to do with JT.

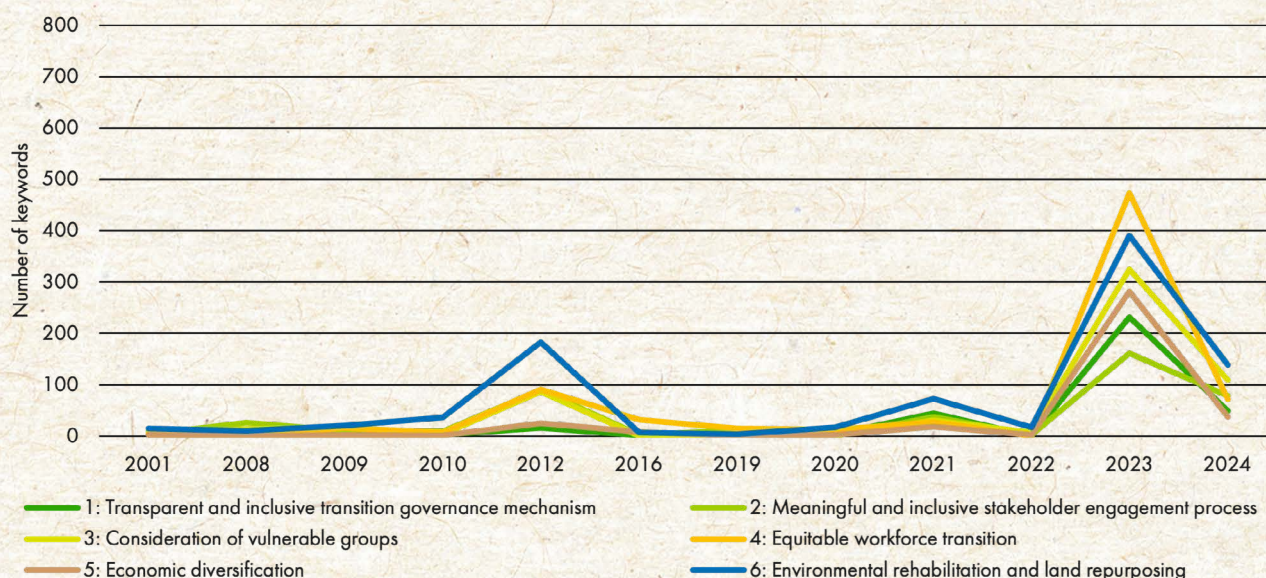


Figure 4: Frequency of just transition-related concepts in the Philippines in selected policies across years¹⁹

Just Transition ambitions identified in selected policies in the Philippines

Our in depth-analysis of 10 policies (see Annex II) shows that the principles in which ambitions were highest were **P1: Transparent and inclusive governance mechanism, P2: Stakeholder engagement and P3: Consideration of vulnerable groups**. Most policies provide formal and clear institutional frameworks, although only a few include concrete mechanisms for transparency, accountability, or feedback. For instance, seven out of the ten policies analysed clearly defined target stakeholders and their roles in the implementation of the policy. For example, the Philippine Development Plan 2023-2028's provisions on energy transition outlined clear institutional responsibilities and inter-agency coordination. However, the indicator on communication strategy was also rarely addressed by these policies. A few mentioned environmental rehabilitation and protection, particularly in the NDC Implementation Plan and the Philippine National Adaptation Plan, which included strategies for biodiversity resilience and ecosystem restoration.

The principles where ambitions seem to be lowest are those focused on P5: Economic diversification.

The policies analysed provide limited provisions to support micro, small, and medium enterprises in the transition. Moreover, very few policies provide explicit funding strategies, such as the People's Survival Fund, while some only reference financial flows without making specific commitments from the government. Analysis of human rights (P3) was rarely addressed, with most policies failing to reference human rights frameworks in their text or implementation strategies. For instance, the Renewable Energy Act of 2008 provided for mechanisms to develop the renewable energy industry but did not include safeguards that address the protection of human rights of communities affected by displacement or land use change.

The level of ambition on P4: Equitable workforce transition is moderate, with most policies recognising the potential impact of the transition on the workforce and the need for job creation (although consideration of the qualitative dimension of such employment creation was partial).

For example, the Green Jobs Act of 2016 provides comprehensive provisions for the identification of skills gaps through the green jobs database, the roles government agencies and educational institutions will

¹⁹ n.b. some years are not visible in the graph as there have been no relevant policies published in these years

play in skills development, and the promotion of decent job creation. The Green Jobs Act was also mentioned in subsequent climate policies and plans, which demonstrates its strategic alignment with the government's agenda. The analysed policies tend to be most ambitious in terms of the principles relating to transparent and inclusive governance and stakeholder engagement. Most policies scored highly against the related indicators (except for older policies), particularly regarding the policy coherence indicator, which implies a "whole-of-government" approach with increasing levels of collaboration between national and local government agencies.

In alignment with the above finding that just transition principles have become more prominent in the past few years, newer policies tend to demonstrate higher just transition ambitions than their antecedents and stronger linkages across sectors and institutions (P1). Older ones tend to lack inclusivity, participatory mechanisms, and coherence with other sectors or broader development plans. For example, the NDC 2021 Implementation Plan have gender and inclusion provisions, while older laws such as the Electric Power Industry Reform Act tend to focus on a single sector and lack this integration. In addition, newer policies tend to do better at considering vulnerable groups, setting up inter-agency and cross-sectoral institutional frameworks, and aligning with international, national, and local climate and energy transition agendas. For instance, the National Adaptation Plan identified vulnerable groups (e.g., women, Indigenous Peoples, youth, elderly, persons with disabilities) and explicitly links climate adaptation to structural inequalities. It adopted a rights-based approach by incorporating labour rights protection in adaptation programs for farmers and fisherfolk. Furthermore, the National Steering Committee, which governs the implementation of the National Adaptation Plan, is composed of diverse actors demonstrating the plan's multi-stakeholder and participatory approach.

For a deep dive into selected policies, see Annex II.

Just transition in practice: policy implementation

While many policies and plans mention just transition principles, implementation on the ground is mixed. Stakeholder engagement mechanisms may be institutionalised on paper, particularly at the national level, but subnational mechanisms are often underdeveloped or underfunded, which limits the genuine inclusivity of these mechanisms. Many of the policies analysed recognise the vulnerability of certain groups who are likely to be impacted by the large-scale phasing in of renewables. However, such provisions lack targeted support and budgetary allocations to address their concerns, thereby raising doubts about effective implementation.

In addition, other major challenges for the implementation of just transition principles in the Philippines are varied. These include: the lack of a high-level body to lead on mainstreaming and coordinating just transition principles, leading to a deficit of co-ordination across government bodies and between levels of government; the limited capacity of national and subnational government entities to deliver against just transition principles (e.g., the low utilisation rate of the People's Survival Fund among local governments demonstrates the lack of capacity on the ground); recent changes in leadership in national government agencies working on energy and environment (which may derail the institutional adoption of the just transition Framework and Roadmap); and inadequate monitoring and evaluation systems to track adherence to just transition principles.

Key trends and the future of just transition in the Philippines

Analysing the country's current climate and energy transition-related policies reveals a clear trend toward mainstreaming justice principles across sectoral and development policies. Terms such as participation, gender, and workforce transition have become increasingly common, particularly in the most recent policies and plans. This demonstrates a positive trajectory towards the integration of justice principles in the development and governance of climate goals and energy transition targets.

As public awareness and support toward the energy transition grows and pressure from civil society to embed justice principles increases, a just energy transition in the country is likely to gain more traction and expand further beyond the power sector. The Philippine government's active role as host country of the Board of the Loss and Damage Fund and the launch of the country's first National Just Transition Framework and Roadmap at COP 29 in 2024 are likely to have a positive effect on climate financing, mainstreaming of justice principles, and harmonising energy transition policies and plans in the country.

Lastly, a Senate bill proposing the institutionalisation of a clean and just energy transition framework was filed in the outgoing Congress²⁰, demonstrating a degree of interest from the legislative branch. While these positive developments bode well for just transition in the country, the current political and economic environment at international and national levels may still sideline just transition aspirations and initiatives.

Just Transition policies in Thailand²¹



Thailand's energy mix remains dominated by fossil fuels, with oil accounting for 41% of the total energy supply, followed by natural gas at 27%. Renewables contribute just under 20%, mainly in the form of biofuels and waste. Thailand is committed to reducing its greenhouse gas emissions and

²⁰ Senate of the Philippines, 2022. Senate Bill No. 157: An Act Providing for a National Energy Policy and Framework for a Clean and Just Energy Transition in the Country, and Appropriating Funds Therefor. Senate Bills and Resolutions, 19th Congress. Available at: <https://legacy.senate.gov.ph/lisdata/37865343061.pdf>

²¹ Further details about the energy transition landscape, JT concept and transition challenges can be found in the Thailand country profile in Annex V.

transitioning to a low-carbon economy to reach carbon neutrality in 2050. Despite coal representing only 11% of its total energy supply, Thailand has not signed any coal exit pledge. Just transition efforts remain fragmented, with no formal definition or coordination across the government.

Thailand aims to reduce its greenhouse gas emissions by 30-40% by 2030 compared to the business-as-usual scenario, as outlined in its updated NDC. The country has set a long-term goal of carbon neutrality by 2050 and net-zero greenhouse gas emissions by 2065. Such goals are ambitious given that Thailand's primary commercial energy consumption in 2023 was estimated at 2 million barrels of oil equivalent (BOE) per day, increasing by 0.8% from 2022. The country's energy mix remains dependent on fossil fuels, with energy consumption mainly focused in the areas of transportation (accounting for 40% of final energy consumption), followed by industrial production (37%), housing and residences (12%), and business and commercial activities (8%). Despite its ambitious transition targets, the concept of just transition in Thailand is relatively new and has not been officially defined or adopted in national policies. However, since 2018, wider debates and discussions among international actors, academics, and CSOs have led to a better understanding and awareness of just transition among relevant Thai stakeholders. Key domestic just transition-related initiatives include the Electricity Development Fund, the Solar Roof Program and Net Metering initiatives supporting citizens and businesses in generating carbon-free electricity. In addition, international projects like the Innovation Regions for a Just Energy Transition (IKI JET) and the ASEAN Power Grid (APG) under the EU Global Gateway play a crucial role in supporting just transition in Thailand.

Despite these efforts, policy alignment remains a challenge, with several ministries creating their own just transition-related projects without clear governance mechanisms. The Ministry of Energy, the Ministry of Industry and Board of Investment are key government actors involved in energy planning and executing projects, while the National Energy Policy Committee and the Energy Regulatory Commission play crucial roles as the government coordination mechanisms.

Just Transition elements identified across selected policies in Thailand

Our analysis of 30 Thai policy instruments²² shows that while the term “just transition” is not explicitly used in any of the documents reviewed, several justice-related principles are embedded throughout the country's policy landscape. In total, over 1,500 keyword references to just transition-related concepts were identified. The evidence shows growing attention to environmental sustainability, inclusive economic planning, and workforce readiness, even though these issues are not yet framed explicitly under a just transition narrative. Recent regulations of the Energy Regulatory Commission and the 2023 National Adaptation Plan are particularly rich in relevant terminology, indicating stronger integration of just transition elements in newer instruments.

The most frequently embedded just transition principles in Thai policy are P6: Environmental rehabilitation and land repurposing, which accounts for roughly a third of all references, and P4: Equitable workforce transition. Terms like “land regeneration”, “environment”, and “biodiversity” are particularly common in energy and environmental planning documents. P5: Economic diversification also features prominently, with strong references to “SMEs”, “social enterprises”, and startups. P4: Equitable workforce transition ranks third, driven by several references to “employment”, “education”, and “training”, although mainly in labour laws (Figure 5).

²² including national development and energy plans (e.g., the 13th National Economic and Social Development Plan 2023–2027, Power Development Plan 2018–2037), climate and environmental frameworks (e.g., Climate Change Master Plan 2015–2050, National Adaptation Plan 2023), energy-sector regulations (e.g., Energy Industry Act 2007 and various ERC announcements and regulations from 2012–2025), and labour and social protection laws (e.g., Labour Protection Act 1998, Skill Development Act 2002).

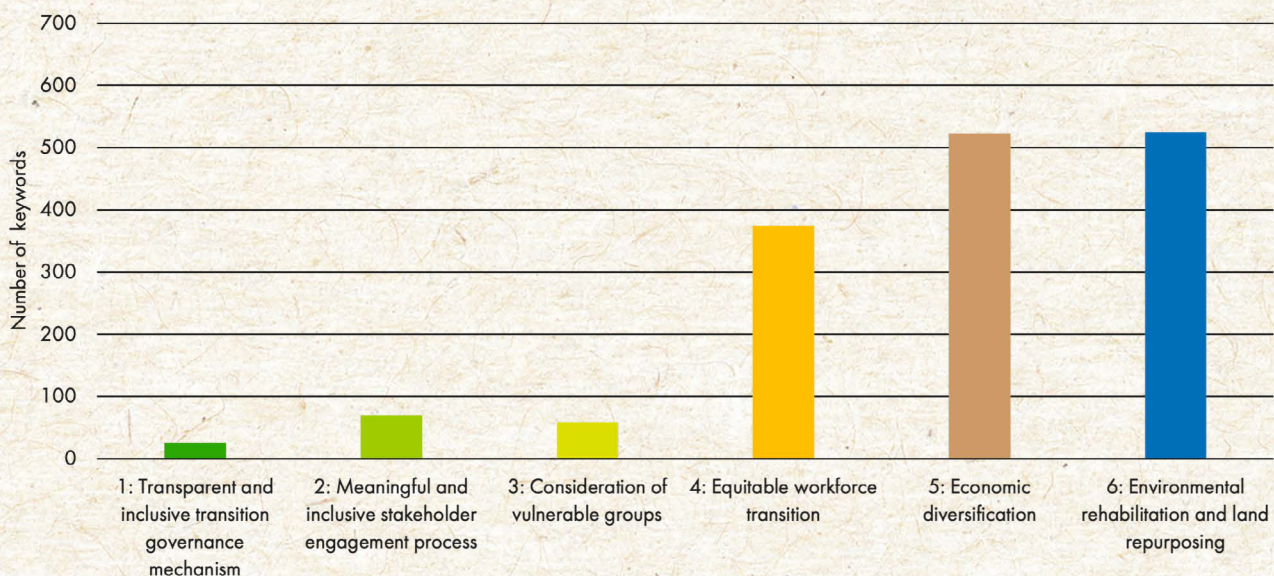


Figure 5: Frequency of just transition-related keywords in selected policies of Thailand (N=30)²³

By contrast, principles such as P1: Transparent and inclusive transition governance mechanism and P2: Meaningful and inclusive stakeholder engagement process are the least embedded across the 30 analysed documents. Newer laws and policies, like some orders of the Energy Regulatory Commission, begin to reference participatory mechanisms, due to a new requirement by the 2017 Constitution of Thailand, in particular Section 77. However, there is still limited clarity around implementation and enforcement. P3: Consideration of vulnerable groups also remains underdeveloped, although its presence has grown significantly in post-2015 policies.

While no clear trend has emerged from the analysis in terms of frequency of just transition-related terminology across time, there is a substantial shift in focus on the various just transition principles, from economic diversification to environmental restoration post-2022 (Figure 6). Older instruments, particularly labour and industrial development laws from the 1990s and early 2000s, focus primarily on economic restructuring. Policies adopted after 2015 are more likely to address aspects of environmental restoration and social inclusion. The latest peak in references to economic diversification and environmental protection in 2022 is explained by the 13th National Economic and Social Development Plan 2023-2027, which defines the long-term vision of Thailand for green growth and includes a substantial social component that particularly considers youth, women and marginalised communities.

²³ It is to be noted that the analysis only included a word count of key terms without specifically analysing the context in which it was mentioned. Some terms such as “restoration” and “justice” have been used and counted in this research, even though the application of the word may have little to do with JT.

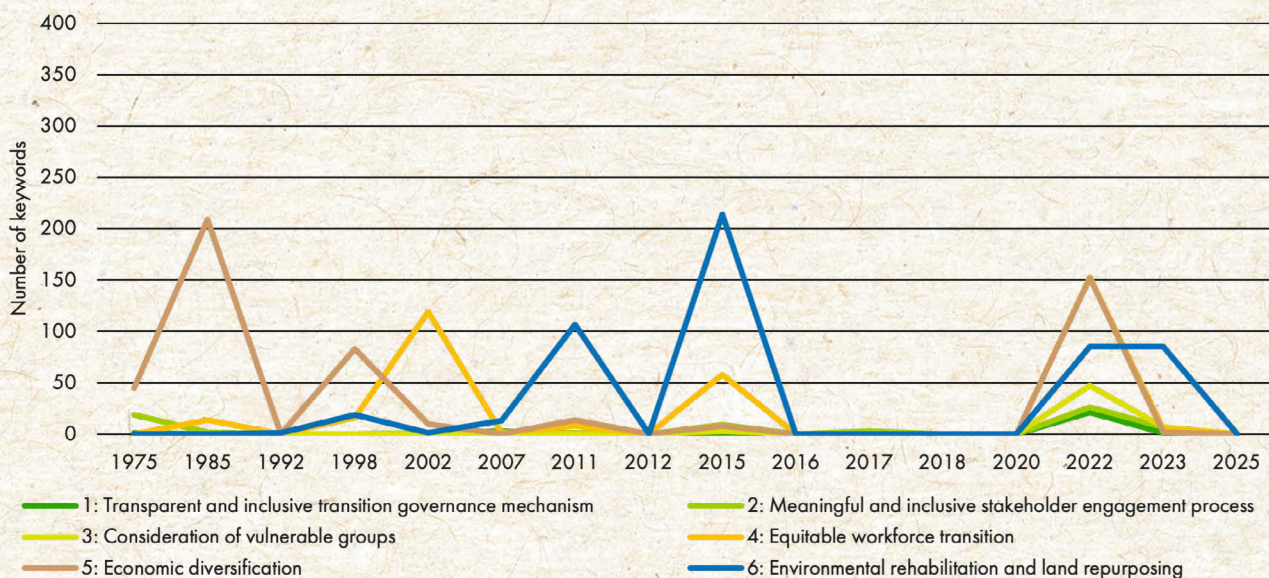


Figure 6: Frequency of just transition-related concepts in Thailand in selected policies across years²⁴

Just Transition ambitions identified in selected policies in Thailand

Our in depth-analysis of 10 policies (see Annex III) showed Thailand’s just transition goals, especially within the energy sector, are generally seen as less ambitious compared to both global and regional peers. The country has not yet adopted a comprehensive national just transition framework, nor does it have a standalone strategy and action plan. There is also a lack of a coordinated governmental mechanism to oversee, implement, and promote just transition initiatives. Instead, justice-related concepts appear in a fragmented manner across various Thai policies and legal frameworks.

Yet, Thailand is taking incremental steps towards setting and adopting just transition goals, with P5: Economic diversification being the most evident principle in its 13th National Economic and Social Development Plan for 2023–2027. The Thai government has acknowledged the need for a sustainable and inclusive transition towards a low-carbon economy, particularly through the country’s strengths, potentials and opportunities for economic diversification and green growth. References to ‘inclusivity’ and ‘sustainability’ in the National Economic and Social Development Plan are predominantly framed around economic growth and market-based mechanisms, giving greater weight to aspects of competitiveness, energy security, and private sector participation as ways to enable sustainable business opportunities in low-carbon industries. While other core just transition principles, such as P3, P4 and P6, are addressed through key strategies in the National Economic and Social Development Plan, the level of ambition remains moderate, and the plan lacks an effective governmental mechanism to deliver tangible results.

P2: Meaningful and inclusive stakeholder engagement process is directly addressed by the Thai Constitution (2017) in Section 77, by stating that “prior to the enactment of every law, the State should conduct consultation with stakeholders, analyse any impacts that may occur from the law thoroughly and systematically, and should also disclose the results of the consultation and analysis to the public, and take them into consideration at every stage of the legislative process” (for legislation enacted after 2017).

²⁴ n.b. some years are not visible in the graph as there have been no relevant policies published in these years.

Thailand's fragmented approach, without a dedicated national policy or legal framework for a just transition, has not led to a Transparent and inclusive transition governance mechanism (Principle 1) that can effectively support the goals of a just transition. Responsible government agencies (Ministry of Energy, Ministry of Natural Resources and Environment, Ministry of Justice, and Ministry of Labour) are, therefore, likely to work in silos with their own ad-hoc and mostly short-term initiatives.

For a deep dive into selected policies, see Annex II.

Just transition in practice: policy implementation

Although the Thai Constitution requires the state to conduct a public hearing and stakeholder consultation process prior to the enactment of every law, which may occur in many forms, such as organising a public hearing, holding an online hearing, or creating a questionnaire, there is no assurance that this process is being implemented effectively and transparently in a manner that involves the wider public. Stakeholder consultations are considered more of a tick-box exercise, rather than a mechanism for genuine stakeholder involvement. There have been a number of critics and demands that the public hearing and consultation process should be more transparent, meaningful and less regulated, the government agency must comprehensively analyse the potential impacts of the law, including economic, social, environmental, and other relevant impacts on people, the results of the hearing and impact analysis must be made publicly available in a clear and understandable manner, and the information obtained from the hearing and impact analysis should be taken into consideration in revising or drafting the laws.

Our research leads to the conclusion that while Thailand has stated many just transition principles in their key legal and policy frameworks, there remains a significant implementation gap. This gap is driven by weak enforcement mechanisms, limited transparency, and merely symbolic stakeholder consultations, which collectively undermine the potential for a truly just and inclusive energy transition. As mentioned above, Thailand's Energy Industry Act B.E. 2550 (2007) has shown signs of unjust policy implementation. In fact, like many other legislations, implementation of the Act on the ground has demonstrated a lack of good governance associated with its implementation.

It is worth noting that the current draft of the Power Development Plan 2024 (for 2024-2037) continues to emphasise gas-fired power generation. Thailand's energy regulators, i.e., the Energy Regulatory Commission and National Energy Policy Council, show a preference for gas. Some critics stressed the role and influence of energy tycoons as "the most powerful force" that shapes the country's energy plan and influence on regulatory frameworks in favour of gas. In this context, it is possible that Thailand's gas dependency may slow down the uptake of renewable energy even though the Power Development Plan 2024 targets an increased renewable energy share of 51% by 2037. The final Power Development Plan 2024, set to be delivered in 2026, may shed light on this development, reflecting commitments made in Thailand's NDC ahead of COP30 in 2025.

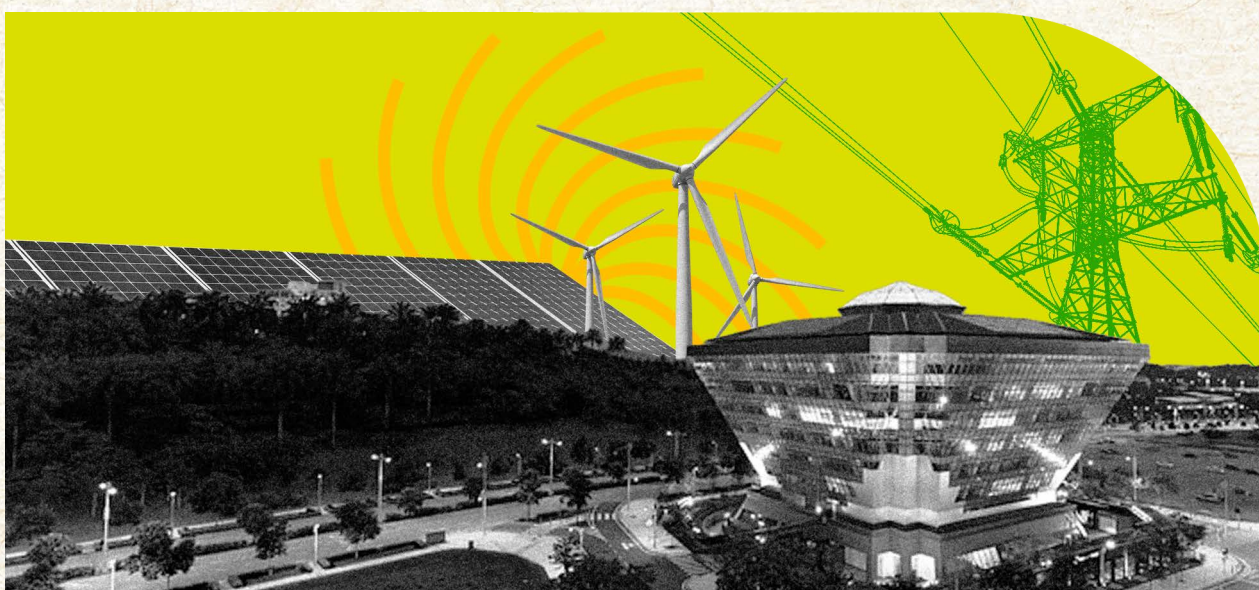
Key trends and the future of just transition in Thailand

Thailand is currently in the process of developing a more effective and comprehensive framework for climate governance. In 2023, the government established a Department of Climate Change and the Environment within the Ministry of Natural Resources and Environment to coordinate national efforts to tackle climate-related issues. A central component of this effort is the forthcoming "Climate Change Act", expected to be adopted by mid-2026 after a long period of postponement. This legislation is designed to integrate carbon pricing instruments, such as emissions trading and carbon taxes; establish compulsory mitigation measures across sectors; provide legal incentives for low-carbon

investments; and strengthen national capacity to achieve a carbon-neutral and net-zero emissions economy. If implemented effectively and with better coordinated efforts among all agencies, this Act could become a cornerstone for mainstreaming just transition principles into Thai policy.

Next to these policy measures, government efforts to link and integrate justice, equity, labour rights, and people-centred approaches into the decarbonisation process are also required. Thailand needs to establish a just transition policy or legal framework that involves responsible ministries and agencies, continue its gradual phase-down of coal and lignite, improve its social protection schemes, retraining and reskilling programs, and equitable transition planning for workers in the transition, especially vulnerable groups, including informal workers.

Just Transition policies in Malaysia²⁵



Malaysia still relies heavily on fossil fuels (i.e., imported coal and gas) for its electricity but has recently committed to retire all existing coal-fired power plants by 2044 and to reach net-zero by 2050. Fairness and equity play a role in the key policy documents supporting this energy transition, and several just transition initiatives for green tech and green job investments are already underway. Malaysia relies heavily on coal for electricity. In 2021, 47% of total generation was sourced from coal, while 34% was provided by gas, 15.9% by renewable energy and the remainder by natural gas and biofuels. The country imports over 90% of its coal, mainly from Indonesia and Australia, making it vulnerable to global price fluctuations and supply disruptions. In addition, the petrochemical sector is extremely relevant in sustaining regional economies in Terengganu and Sarawak, with substantial workforce engagement, upstream and downstream energy and industrial activities.

Malaysia has recently launched the National Energy Policy 2022-2040, which emphasises the government's aspirations to become a net-zero carbon nation by 2050, involving the retirement of existing coal-fired power plants and the prohibition of new ones, and renewable energy contributing 70% of installed capacity. The concept of just transition is not explicitly defined in Malaysia, even though the National Energy Transition Roadmap 2023 and the National Energy Policy emphasise a

²⁵ Further details about the energy transition landscape, JT concept and transition challenges can be found in the Malaysia country profile in Annex V.

fair and equitable energy transition. These policies incorporate principles of fairness by promoting workforce upskilling, social equity, and affordability to mitigate the negative impacts on affected sectors. Moreover, they highlight the need for collaboration between the public and private sectors to ensure Malaysia remains competitive in the green economy while addressing environmental and social governance standards. Key just transition initiatives like the Malaysia Energy Literacy Program, Green Technology Financing Scheme, Energy Transition Financing scheme and public-private partnerships for workforce upskilling already provide support for green tech and green job investments. International donors, such as the UEM group-ITRAMAS collaboration and Masdar's RE, also play a crucial role in supporting Malaysia's emergent energy transition.

Just Transition elements identified across selected policies in Malaysia

Our analysis of 27 Malaysian policy instruments²⁶, shows that while the term “just transition” itself is rarely used, many of its core principles have gradually been integrated into the country's policy framework over the past decade. Across the 27 policies, more than 3,500 keyword references related to just transition principles were identified, particularly in the two key policies guiding the energy transition, the National Energy Transition Roadmap and the National Energy Policy. The frequency of relevant terms is significantly higher in policies issued since 2015, reflecting a clear shift in priorities following Malaysia's international climate commitments under the Paris Agreement and the adoption of the Sustainable Development Goals. Unlike earlier legislation, which often focused narrowly on regulatory compliance or infrastructure development, more recent documents, particularly the National Energy Transition Roadmap 2023 and the National Energy Policy 2022–2040, demonstrate a more integrated approach, embedding multiple just transition-related principles into national energy and climate planning. This suggests growing recognition of the need to manage the socio-economic impacts of the energy transition.

The just energy transition in Malaysia is primarily driven by objectives pertaining to workforce transition and economic diversification. Figure 7 shows that the most frequently embedded principles relate to P4: Equitable workforce transition, with strong emphasis on “education”, “training”, and “employment”, appearing in 20 out of 27 policies. This aligns with Malaysia's long-standing focus on human capital development and its emerging green economy agenda. P5: Economic diversification and P6: Environmental rehabilitation and land repurposing follow in the ranking, although the latter is present mostly in climate- or environment-specific policies rather than core energy policies. The term “SMEs” is widespread, especially in investment-related documents.

Other principles related to governance, stakeholder engagement and vulnerable groups are much less prominent in Malaysian policies, despite some references in recent key policies, like the National Energy Transition Roadmap. P2: Meaningful stakeholder engagement is moderately well represented, particularly in newer planning frameworks that promote industry transformation and multi-stakeholder collaboration. P1: Transparent and inclusive transition governance mechanism is the least developed of the six just transition principles across Malaysia's policy landscape. While a few recent documents, such as the National Energy Transition Roadmap 2023, include references to “cross-sectorial” or “transparency”, these remain relatively sparse. Also less developed is principle P3: Consideration of vulnerable groups, although references to “Indigenous Peoples”, “youth”, or “women” appear in over half the documents. More consideration to specific indigenous groups (i.e., the Orang Asli) is given

²⁶ Including energy governance and market regulation (e.g., Electricity Supply Act 2023, Renewable Energy Act 2011), strategic energy planning (e.g., National Energy Policy 2022–2040, Malaysia Renewable Energy Roadmap 2021, National Energy Transition Roadmap 2023), climate and environmental action (e.g., Climate Change Action Plan 2.0, Malaysia's Nationally Determined Contributions), social protection and labour (e.g., Skills Development Fund Act 2004, Employment Insurance System Act 2017), as well as investment and industrial policy (e.g., Green Investment Tax Allowance, Industrial Master Plan 2030).

by policies of the Federal Department of Orang Asli Development (JAKOA), which were, however, not included in the scope of this analysis.

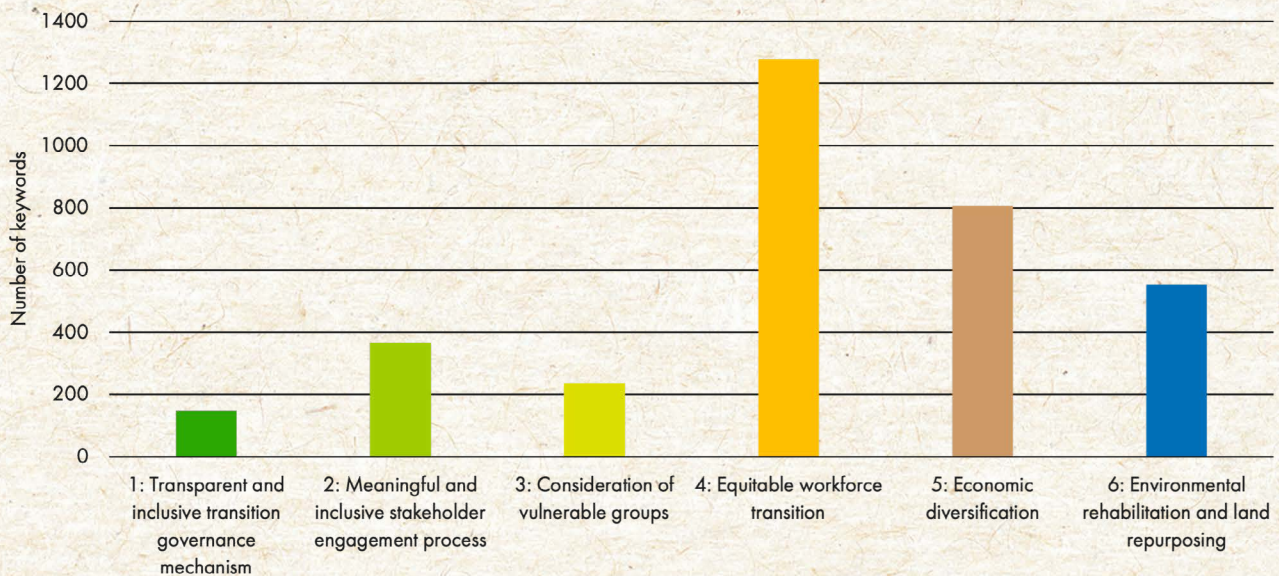


Figure 7: Frequency of just transition-related keywords in selected policies of Malaysia (N=27)²⁷

Older policies (pre-2015) make only limited mention of just transition-relevant concepts. Since then, there has been a notable increase in references across nearly all just transition principles, with recent documents bundling several principles together, suggesting a maturing policy mix. As shown in Figure 8, foundational energy laws from the early 2000s remain largely silent on justice and equity considerations, creating potential blind spots that may need to be addressed to ensure a fully inclusive transition. Thereafter, peaks in references to workforce transition (P4) and economic diversification (P5) are most significant in 2016/2017 with the publication of the Eleventh Malaysia Plan and Green Technology Master Plan.

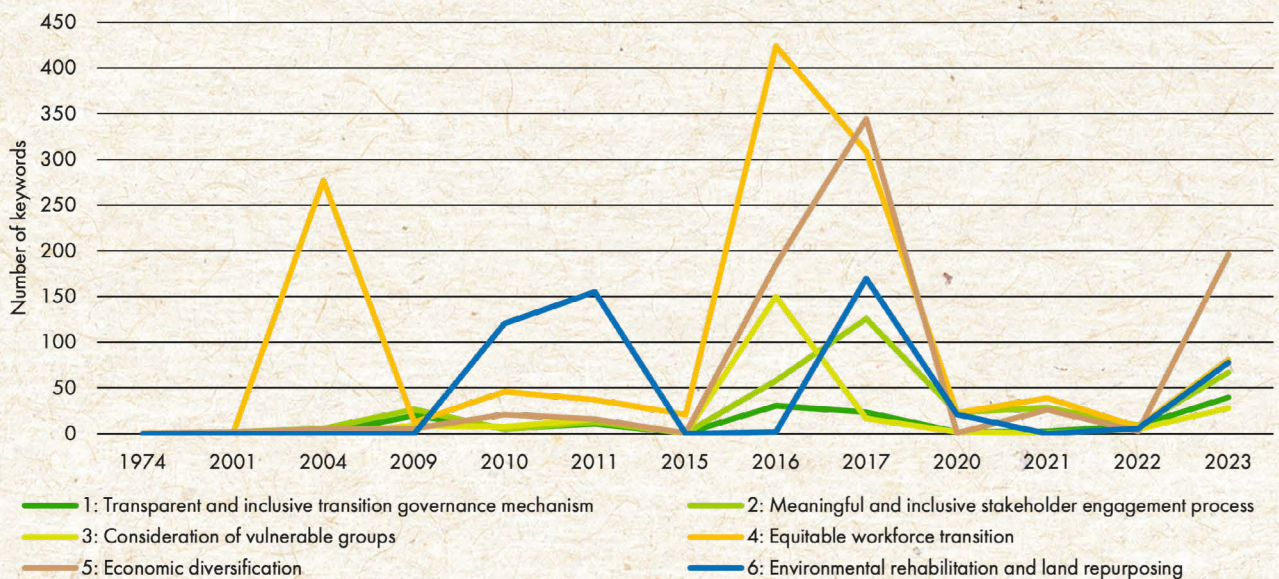


Figure 8: Frequency of just transition-related concepts in Malaysia in selected policies across years²⁸

²⁷ It is to be noted that the analysis only included a word count of key terms without specifically analysing the context in which it was mentioned. Some terms such as “restoration” and “justice” have been used and counted in this research, even though the application of the word may have little to do with JT.

²⁸ n.b. some years are not visible in the graph as there have been no relevant policies published in these years.

Just Transition ambitions identified in selected policies in Malaysia

While P1: Transparent and inclusive transition governance mechanism and P2: Meaningful and inclusive stakeholder engagement process are not the most frequently cited principles, they are, comparatively, the best articulated principles in Malaysian policy. Newer policies such as the National Energy Transition Roadmap and National Energy Policy introduce cross-ministerial coordination structures, including the proposed National Energy Council chaired by the Prime Minister and inter-agency working groups, with explicit mandates for federal-state cooperation. For example, the National Energy Plan proposes establishing a centralised governance structure to oversee the energy transition and specifies coordination with state-level authorities. However, the scope of these mechanisms remains somewhat vague, and their effectiveness is contingent on state institutional capacity. The interplay between national ambitions and regional realities further complicates implementation. While land-use planning is a national competence, its weak execution at the regional level, along with overlapping federal-state mandates and parallel ministerial programs, creates major bottlenecks. Policy overlaps and duplication, especially in frameworks such as the Green Technology Master Plan from now-defunct ministries, undermine coherence and continuity, especially during leadership changes. Divergence between Peninsular Malaysia and states like further exacerbates regional disparities. P2 is addressed in documents such as the Malaysia Renewable Energy Roadmap (2021) and the National Policy on Climate Change (2009), which mention engagement through town halls, inter-ministerial dialogues, and feedback processes. Yet, the depth of this engagement is often seen as uneven.

Vulnerable and marginalised populations are inconsistently identified and not systematically integrated into planning or decision-making, in particular for new renewable energy investments. P3, therefore, shows low ambition across the board of the analysed policies. Although the National Energy Plan and NDC Roadmap reference vulnerable populations, they fall short of providing mechanisms for income replacement, temporary cash transfers, unemployment insurance, or targeted retraining programs. Indicators such as the presence of concrete social protection schemes, earmarked budgets, and other measures to protect vulnerable groups score particularly low across the policy landscape, indicating a major gap in the protection of impacted communities, particularly with new large-scale renewable energy investments in the states Sabah and Sarawak (e.g., hydropower plant interfering with the Orang Asli community).

Although keywords relating to P4: Equitable workforce transition and P5: Economic diversification are found frequently across the policies, they show limited ambition when assessed in greater depth due to a lack of concrete measures. While the National Energy Transition Roadmap briefly refers to the importance of skilling and reskilling, most policies lack concrete measures such as labour force assessments, sector-specific job creation plans, or transition roadmaps for workers affected by the fossil fuel phase-out. For instance, no policies detail how workers from Malaysia's coal-fired power plants or oil and gas sectors will be supported in transitioning to clean energy jobs. Workforce transition and economic diversification aspects are either mentioned briefly or not addressed in a structured manner, especially in older policies such as the Green Technology Master Plan (2017) and the Renewable Energy Act (2011). Policies like the National Energy Plan recognise the need for broader economic transformation, but there is a lack of regional strategies targeting areas highly dependent on fossil fuel production (e.g., Terengganu, Sarawak). There are no policy instruments tied to small business development, local entrepreneurship, or Technical and Vocational Education and Training programmes for workers and communities in these areas. Finally, a serious gap in just transition financing mechanisms has been identified, with almost no reference to climate/energy transition investment schemes.

Finally, P6: Environmental rehabilitation and repurposing shows moderate ambition, applied inconsistently across the analysed policies. While some policies broadly advocate for environmental protection and sustainable resource management, they lack concrete provisions for the rehabilitation of decommissioned fossil fuel infrastructure or ecosystem restoration related to energy transition projects. For example, the Green Technology Master Plan (2017) promotes low-carbon and resource-efficient development but does not specify guidelines or funding mechanisms for rehabilitating former coal-fired power plant sites or repurposing degraded land for renewable energy projects. Similarly, the Electricity Supply Act (Amendment 2023) addresses grid reliability and modernisation but omits any mention of environmental recovery responsibilities upon facility closure. These gaps contrast with more ambitious international practices that integrate decommissioning plans, land remediation, and community-based reuse strategies into energy transition policies, highlighting a fragmented and ad hoc approach within Malaysia's current policy framework.

For a deep dive into selected policies, see Annex II.

Just transition in practice: policy implementation

Implementation of Just Transition principles in Malaysia is uneven and highly context-specific, with Peninsular Malaysia showing stronger governance and civil society engagement, while Sabah and Sarawak face weaker enforcement and ad hoc consultations. Indigenous communities, especially the Orang Asli, are disproportionately affected by large-scale energy projects lacking safeguards and compensation. A cohesive national framework, empowered coordination, and practical tools are urgently needed to overcome fragmented land-use regulations and siloed ministry programmes.

Implementation of just transition principles across Malaysia remains fragmented and highly context-dependent. While Peninsular states like Selangor and Penang benefit from stronger local councils, clearer permitting processes, and more structured civil society engagement, Sabah and Sarawak experience weaker policy enforcement and often rely on ad hoc consultation processes. Indigenous communities, including the Orang Asli, are especially vulnerable, as large-scale hydro and industrial energy projects in these regions frequently pose serious social and environmental risks without robust safeguards or adequate compensation mechanisms. Though robust on paper, stakeholder engagement across Malaysia remains largely closed and ministry-led, limiting broader civil society and community participation. The upcoming Climate Change Act represents a notable exception as one of the first attempts at open public consultation, yet this remains an outlier rather than the norm.

Fragmented land-use regulations and cumbersome permitting/approval processes continue to delay projects and hinder consistent implementation of just transition principles. Experts consulted in this study indicated that overlapping federal–state land mandates, parallel ministry programmes working in silos, and slow approval processes are more significant barriers than missing policy principles on paper. The need for a cohesive national framework like the Malaysian Energy Transition Act currently under preparation, clear region-specific mandates, statutory empowerment of the National Energy Council as a central coordinator, and practical implementation tools, like existing corporate accountability mechanisms (i.e., Bursa Malaysia's mandatory environmental, social and corporate governance reporting requirements) are considered more urgent than additional high-level declarations alone.

Key trends and the future of just transition in Malaysia

A considerable gap remains regarding the just transition ambitions included in policies and the concrete measures making an impact on the ground. While government-led policy remains arguably opportunistic and focused on energy security, local and private sector-driven efforts have started to emerge. The analysis suggests that Malaysia's just transition approach is gradually evolving, with recent policies demonstrating moderate but uneven integration of justice dimensions. The National Energy Plan and National Energy Transition Roadmap highlight improved inter-agency coordination and environmental safeguards. However, consideration of vulnerable groups remains underdeveloped, despite being acknowledged in multiple policy documents. This inconsistency between ambitious and concrete measures in the area of workforce transition is evident in the National Energy Transition Roadmap, which outlines job creation potential in green industries but lacks clear implementation mechanisms for retraining or income security. Moreover, the just transition agenda remains fragmented, with economic diversification and local development concerns addressed sporadically across frameworks, but lacking targeted strategies for regions dependent on fossil fuel-related industries. Though there are encouraging signs of increased stakeholder engagement, such as early input from civil society organisations and academic institutions in shaping newer policies like the Climate Change Act, Malaysia has yet to develop a dedicated national just transition framework that systematically integrates justice considerations across all policy areas and regions. In the meantime, grassroots electrification projects in rural regions like Sabah have been cited as measures for "justice on the ground". There, NGOs and regulator ECOS are co-financing site-specific solar or run-of-river mini-grids showcasing a successful "bottom-up just transition approach. Meanwhile, companies like PETRONAS and Tami are fostering private sector-led just transition efforts through dedicated frameworks²⁹ and environmental, social and corporate governance measures.

²⁹ PETRONAS Global. Fostering a just transition. Available at <https://www.petronas.com/sustainability/fostering-a-just-transition>

Cross-country comparison

Across Indonesia, the Philippines, Thailand, and Malaysia, the term “just transition” is inconsistently used, yet justice-related principles are increasingly mainstreamed into national policy frameworks, including formal regulatory acts/laws, more strategic plans/goals/guidelines and dedicated financing schemes. Indonesia and the Philippines each recorded over 5,000 keyword references to just transition-related concepts, while Malaysia had over 3,500 and Thailand over 1,500.

As Figure 9 illustrates, the focus on the six respective just transition principles varies across the four countries. In Indonesia, the most frequently embedded principles relate to stakeholder engagement (P2) and environmental rehabilitation and land repurposing (P6). Transparent governance mechanisms (P1), which are considered a fundamental enabler of a just transition, and vulnerable groups (P3) are less consistently addressed. In the Philippines, P6 leads again, followed by references to workforce transition (P4) and vulnerable groups (P3). Economic diversification (P5) as well as P1 remain the least developed in the Philippines. Whilst the just transition debate in Thailand favours consideration of economic diversification (P5) along with environmental rehabilitation and repurposing (P6), references to P1, P2, and P3 are scarce, despite constitutional mandates for stakeholder consultations. These are also less prominent in the Malaysian policy landscape, where the most frequently referenced principle in Malaysia is P4: Equitable workforce transition, aligning with the country’s focus on human capital development, followed by P5 and P6.

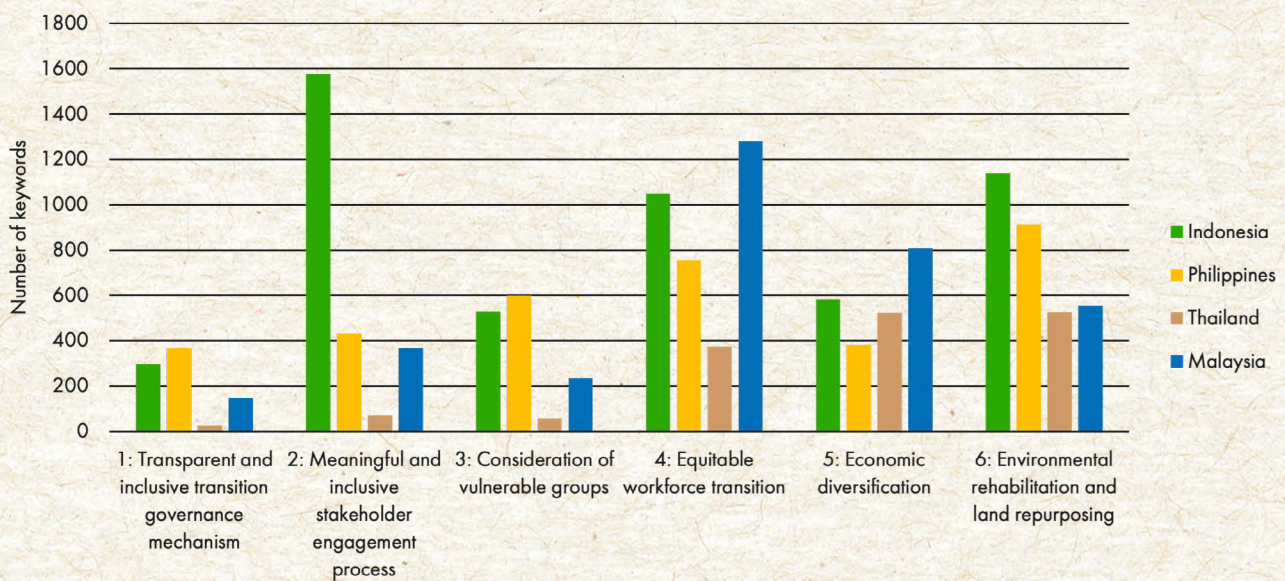


Figure 9: Frequency of just transition-related keywords in selected policies of Indonesia, Philippines, Thailand and Malaysia

Longitudinally, the emergence and usage of the principles in public policy notably vary across the four countries. Indonesia’s policy landscape shows a dual peak in just transition-related terminology, first in 2009 and again post-2022, indicating a shift from legacy laws to more targeted energy transition policies. The Philippines saw limited just transition references in earlier decades, apart from 2012-2016 when key policies like the National Climate Change Action Plan and the Green Jobs Act were enacted. More recently (since 2021), there has been a surge in just transition references, particularly in strategic planning documents. Thailand’s just transition-related terminology is more evenly distributed, with a notable shift post-2015 toward environmental and social inclusion. Malaysia’s just transition references increased significantly after 2015 (particularly through to 2020), reflecting a maturing policy mix aligned with international climate commitments.

On paper, Indonesia, Malaysia, and the Philippines demonstrate strong commitments to governance (P1) and stakeholder engagement (P2), even though literal references to these principles are less frequent than others. In these three countries, institutional frameworks are typically formalised, with clear designation of coordinating bodies and mechanisms for both horizontal (inter-ministerial) and vertical (national–subnational) coordination. Stakeholder identification, role clarification, and public consultation are also standard features of policy making. However, mechanisms for transparency, accountability, and feedback remain underdeveloped, particularly in the Philippines and Malaysia, limiting the effectiveness of these governance structures. In contrast, Thailand lacks a coherent governance framework for a just transition. Justice-related concepts display themselves in a fragmented, uncoordinated manner across ministries and policies, with no central mechanism to oversee or drive just transition efforts. When it comes to vulnerable groups (P3), Indonesia and the Philippines stand out for more comprehensive identification of affected populations, such as women, Indigenous Peoples, and informal workers, though only a few policies specify concrete support measures. In Malaysia and Thailand, references to vulnerable groups are more sporadic and rarely accompanied by actionable provisions, leaving significant gaps in social protection and inclusion.

Policy gaps are most pronounced in the areas of economic diversification (P5) and workforce transition (P4). In Indonesia, policies tend to emphasise environmental and infrastructural aspects of the energy transition, with limited attention to supporting local economies or businesses in coal-dependent regions. Similarly, Malaysian policies frequently reference P5, but often superficially, without concrete sub-national strategies or implementation tools for fossil fuel-dependent states. In both countries, P4 is also widely cited but lacks depth: there are few labour force assessments, job transition roadmaps, or sector-specific reskilling plans. The Philippines performs slightly better on workforce transition, particularly through the Green Jobs Act, which provides a structured approach to skills development and job creation. Conversely, Thailand shows relatively stronger articulation of P5, with policies addressing economic diversification and green growth more comprehensively than its regional peers, though this is not matched by similar ambition in workforce transition or social safeguards.

Despite growing references and policy ambitions recorded on paper, the on-the-ground implementation of just transition principles across Southeast Asia remains uneven and fraught with structural challenges. In Indonesia, while governance and stakeholder engagement are well-articulated in policy texts, implementation is hindered by legal hierarchies, overlapping mandates, and inconsistent interministerial coordination. Public consultations are often reduced to procedural formalities, and Environmental and Social Impact Assessments are frequently manipulated or inaccessible to affected communities, undermining transparency and accountability. In the Philippines, institutional mechanisms for stakeholder engagement exist on paper, but subnational implementation is weak due to limited capacity and funding. Vulnerable groups are acknowledged in policy but rarely supported with targeted measures or budget allocations. Thailand faces a significant implementation gap: although its constitution mandates public consultation, these processes are often superficial, lacking transparency and genuine inclusivity. Ministries operate in silos, and enforcement mechanisms are weak, resulting in fragmented and ineffective implementation of just transition efforts. In Malaysia, implementation is highly context-specific; stronger in Peninsular states with more active civil society engagement, but weaker in Sabah and Sarawak, where Indigenous communities face disproportionate risks from large-scale energy projects. Fragmented land-use regulations, siloed ministry programmes, and slow permitting processes further obstruct consistent implementation. Across all four countries, the absence of cohesive national frameworks, empowered coordination bodies, and practical tools for monitoring and enforcement continues to limit the real-world implementation and impact of just transition policies.

CONCLUSIONS AND RECOMMENDATIONS

This research revealed that while Southeast Asian countries, in this case Indonesia, the Philippines, Thailand, and Malaysia, have made evident progress in embedding justice-related principles into energy transition policies, significant gaps remain in ambition, coordination, and implementation. The term “just transition” is inconsistently used, but principles such as stakeholder engagement (P2), environmental rehabilitation (P6), and workforce transition (P4) are increasingly referenced in national frameworks. Simultaneously, references to governance mechanisms (P1), support for vulnerable groups (P3), and economic diversification (P5) are often still lacking or partial. On the one hand, high just transition-keyword frequency does not always equate to high ambition: many policies remain aspirational without specific enforcement mechanisms or underdeveloped concrete implementation strategies, particularly in the areas of workforce transition and economic diversification. On the other hand, while there are few explicit references to specific governance mechanisms, most countries (Indonesia, the Philippines and Malaysia) have institutional frameworks and coordinating bodies and instruments for stakeholder engagement that could represent a solid basis for an inclusive, integrated just energy transition.

Reality shows, however, that just transition ambitions do not align with or follow through to observed experiences of implementation on the ground. Challenges such as fragmented governance, limited subnational capacity, and weak and selective stakeholder engagement persist across all four countries. Though a comprehensive assessment of implementation could not be conducted as part of this study, there is an obvious deficit between intent and delivery. To address this deficiency, energy transition governance remains a critical area for improvement, particularly for ensuring coherence, transparency, and accountability, and creating a dynamic relationship between policy and practice. Across all four countries, a more coordinated, inclusive, and regionally tailored approach is essential to ensure that the energy transition is not only green but also fair, equitable and context-specific.

Building on these findings, we provide the following policy recommendations:



1. Strengthen governance and coordination mechanisms:

Even though governance mechanisms appear strong on paper, Indonesia, Malaysia and the Philippines should enhance inter-ministerial and multi-level coordination by empowering the principal just transition institutions (i.e., Coordinating Ministry of Economic Affairs in Indonesia, National Energy Council in Malaysia, and the four ministries leading development of the National Just Transition Framework in the Philippines) and clarifying roles across national and subnational levels to avoid policy overlap and expedite implementation. In Thailand, a governance mechanism should be developed to facilitate and optimise coherence and coordination among relevant government agencies and just transition

workstreams, e.g., the Ministry of Energy, the Ministry of Natural Resources and Environment, the Ministry of Justice, and the Ministry of Labour.



2. Institutionalise credible stakeholder engagement:

The four countries should avoid superficial consultations and develop transparent, inclusive and authoritative stakeholder engagement mechanisms and processes, particularly at the subnational level, to ensure meaningful participation of civil society, Indigenous Peoples, and other vulnerable and affected groups and communities. Such engagement will enhance the credibility and utility of policy and enhance its targeting and implementation, thereby strengthening the link between policy and practice.



3. Mainstream just transition into (sectoral) policies:

Research has shown that most sectoral policies do not consider or integrate broader justice principles but rather focus on one sector specifically (i.e. renewable energy, minerals, coal mining, land-use, job creation, industry). Possibilities for mainstreaming of other just transition elements in these sectoral policies are limited, which is why the development of broader development frameworks has already begun, like in the Philippines (which is already working on a National Just Transition Framework) and Indonesia (which already has a JET-P and another Just Energy Transition Action Plan in the making). In Thailand and Malaysia, no dedicated just transition policy is underway yet, hampering the process of mainstreaming justice aspects into sectoral policies. The creation of dedicated national just transition strategies or action plans is, therefore, suggested in order to consolidate ongoing but currently fragmented efforts and provide a coherent roadmap for implementation across various sectors.



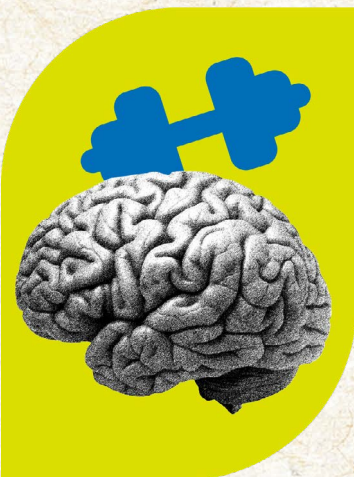
4. Design of evidence-based workforce transition measures:

Given the general lack of specific measures around labour transition, each country should map affected workforce characteristics and trends through detailed labour force assessments and, subsequently, develop job transition roadmaps for fossil fuel phase-down and phase-out scenarios. These need to be followed up with concrete and dedicated measures such as reskilling and upskilling programmes for affected workers and related vocational counselling, advice and guidance in fossil fuel-dependent regions. Here, the Philippines can build on the Green Jobs Act by expanding and expediting its implementation. In this regard, in Indonesia, Bappenas, in collaboration with GIZ, is also preparing a National Workforce Roadmap, which has been presented to stakeholders (although its future institutional status and implementation remain undecided).



5. Develop tailored sub-national economic diversification strategies:

The research has evidenced a deficit of economic diversification strategies and plans at the national and, particularly, at the regional levels (for fossil fuel-dependent regions specifically). Such strategies should be tailored to the specific assets and strengths, socio-economic structures and capacities and social agency of affected regions and include support measures and financing for transformative projects, SMEs, green entrepreneurship, and local innovation.



6. Address implementation gaps through regional and local capacity building and decentralisation:

Though the reasons for the disconnect between policy making and implementation on the ground have not been significantly investigated, there is reason enough to call for capacity building of government entities at the national and sub-national levels. Regional and local governments are often more connected to and closer to affected communities and could, therefore, design and implement more targeted and tailored transition measures than institutions based in the capitals. However, to fulfil this role, sub-national government actors must be empowered to undertake this task and develop the capacity to undertake it.



7. Improve monitoring, evaluation, and justice metrics:

A key means of holding institutions to account regarding policy efficacy and implementation, and to adjust policy and practice accordingly, is the operation of effective monitoring frameworks with relevant indicators for tracking just transition in affected geographies and groups. Indonesia has been advancing on this front, with Bappenas having commissioned such work through GIZ and the World Resources Institute. It is recommended that the provision of monitoring and evaluation systems to track just transition in the three other countries be further reviewed and action taken to address shortcomings.



8. Consider just transition elements in policies facilitating both the phasing-out and phasing-in of energy technologies:

With the implementation of large-scale renewable energy projects accelerating across the four countries, equal attention must be given to the adoption of just transition principles in the phasing-out of carbon-based energy sources and the introduction of low-carbon alternatives. National and sub-national policies must respond to these two dynamic aspects of the transition process in a coherent and relational manner and ensure that affected communities and groups are consulted and that context-specific measures are in place to mitigate the negative impacts of transition and optimise the opportunities.

Annex I: Research purpose and methodology

Objectives

The objective of this study is to map government policies, including more strategic plans/goals/guidelines, formal regulatory acts/laws and dedicated financing schemes, that support a just energy transition in selected Southeast Asia countries (Indonesia, the Philippines, Thailand and Malaysia). How these countries choose to articulate and integrate ideas of justice into domestic energy policy is likely to differ, and they may not always adopt the 'just transition' label. Therefore, the study provides an overview of how approaches towards a just, fair, equitable and inclusive transition are included, even where the precise term 'just transition' may not be used. In addition, the study assesses the level of ambition of mapped policies in supporting just transition processes, identifies trends, gaps in the policy landscape and undertakes a comparison of the four countries. Based on this analysis, conclusions on the policies' contribution to just transition are drawn, and recommendations to address remaining policy gaps are provided.

Methodology, Framework, Approaches and Analysis

This study builds on a mixed-method research approach, including various data collection and analytical methods designed for this assignment. Initially, extensive desk research was conducted to inform the definition and principles of just transition, to provide contextual information on the current state of just energy transition in the four countries and to gather existing policies related to just transition in the energy sector across the four selected Southeast Asia countries. The desk research was complemented by consultations to gain deeper insights into the national contexts and validate the findings. In terms of analysis, the study employed a structured approach to identify just transition elements in selected policies and assess their contribution to just transition principles. This involved the application of an AI software to identify a total of 54 keywords related to just transition (spread across the six principles, see Annex IV) in up to 30 policies per country. Moreover, the approach included the development and application of a 'Policy Assessment Framework' with indicators for each of the six foundational principles of just transition used in this research (see Annex VI). To validate the results, virtual workshops were organised in each country, inviting government, international organisations, private sector/industry, academia/research and civil society to review and discuss the findings. These workshops also provided an opportunity to gather feedback on the efficacy of policy implementation and identify any gaps or areas for improvement.

Scope and Limitations

It is to be noted that the study does not provide a comprehensive picture of the policy landscape in the four countries but only a partial snapshot. Conclusions are limited to the up to 30 policies considered most relevant for the energy transition in each country, without considering justice elements included in policies beyond these. The study team is aware that some findings could be open to debate, but is, nevertheless, confident that the main conclusions and recommendations remain a reasoned assessment of the situation. Further research would be required to provide a comprehensive overview of all just transition-related policies in the four countries and other nations of Southeast Asia, particularly regarding their actual implementation at the national and sub-national levels. Consideration of implementation was not a principal goal of this research; therefore, the study cannot make any substantive assessment of variance between policy ambition and delivery.

Ethical Considerations

This research was guided by the principles of voluntary participation, informed consent, anonymity and confidentiality.

Annex II: Deep dives into selected policies

Indonesia

Deep dive 1: Law No. 59/2024 on the National Long-Term Development Plan (RPJPN) 2025-2045 and Presidential Regulation No. 12/2025 on National Medium-Term Development Plan (RPJMN) 2024-2029

The RPJPN and RPJMN are the two most ambitious policy documents because they cover all six just transition principles. These two policy documents are interrelated because they elaborate on the planning for national development over a certain period and a variety of development sectors, including the energy sector and the future energy transition agenda. Both policies literally mention just energy transition, concerns over inclusivity and transparency in development, discussions on green jobs, and objectives towards economic diversification. The “just energy transition” is included as one of the game changers for Indonesia’s transformation in the RPJPN. Since these policy documents are set to be a general reference for national development, they do not detail the implementation measures, such as the timeline and the coordination body. Nevertheless, since they provide a framework for sustainable development, it is worth acknowledging that they comprehensively address all six principles of just transition.

Deep dive 2: Presidential Regulation No. 112/2022 on the Acceleration of Renewable Energy Development for the Provision of Electricity and Regulation of the Minister of Energy and Mineral Resources No. 10/2025 on the Road Map for the Electricity Sector Energy Transition

These policies are among the most recent and important for the energy sector, but have not effectively considered just transition principles. These policies reflect high-level political commitments toward energy transition since they present a relatively clear governance structure for implementation and a timeline of energy transition in the electricity subsector. However, they have not fully incorporated all principles of just transition, rather only included the plans for the physical / infrastructure transition of the electricity subsector. They do not recognise and discuss the significance and inclusion of vulnerable groups, or consider green jobs and aspects of economic diversification within the energy transition plans. Since the electricity sector is one of the key subsectors that is expected to experience a great transformation, the absence of strategies to mitigate its negative impacts on the environment and society reflects that justice has not yet been mainstreamed into key energy policy in Indonesia.

Deep dive 1: Philippine National Adaptation Plan (NAP)

The NAP 2023-2050 is worth highlighting because it scored “High” in 20 of the 22 indicators, demonstrating cross-cutting ambition across all just transition principles and making it the most ambitious policy among those analysed. Its deliberate alignment with international frameworks such as the Paris Agreement and national development strategies (such as the Philippine Development Plan 2023-2028) ensures that programmes, resources, and directions are coherent. Additionally, the plan is both long-term and cross-sectoral in scope. The policy emphasises inclusivity and multi-level governance structures with clearly defined roles for local governments, vulnerable groups, and civil society organisations. It also outlined a monitoring and evaluation framework with specific sectoral outcomes and measurable indicators. The NAP was also strong in stakeholder engagement, having a clearly defined communications plan. It also mentions structural inequalities and prioritises vulnerable groups in adaptation. Moreover, the NAP mentioned training gaps and strategies geared toward the education sector as part of the country’s workforce reskilling. Lastly, the NAP provided clear financing strategies and provisions for biodiversity protection and resilience. The NAPs’ comprehensive coverage of justice principles positions it as a benchmark for other climate and energy transition policies in the country. Although it must be pointed out that the level of the NAP’s ambition and development is partly donor-led, which may limit ownership among local stakeholders and sustained implementation.

Deep dive 2: Renewable Energy Act of 2008

The Renewable Energy Act is a relatively old yet ambitious policy for its time. The law covers all six just transition principles, but the level of ambition varies across them. The law created multi-stakeholder governance structures, funding strategies, and transparent, market-based mechanisms to boost the phase-in of renewable energy in the country. As a pre-just transition era policy, it focused more on economic incentives and governance structures. However, the law falls short in terms of social and environmental safeguards, scoring low in the principles related to workforce reskilling (P4), consideration of vulnerable groups (P3), and stakeholder engagement (P2). The policy has struggled to realise its full potential as the share of renewable energy in total electricity generation has declined since its enactment. Resistance against large-scale renewable energy projects has also grown, driven by concerns over land use conversion, insufficient consultation, and loss of livelihood. Moreover, some local governments lack comprehensive environmental codes, which should serve as a safeguard against the negative social and environmental impacts of large-scale renewable energy projects. While these shortfalls stem from a confluence of factors beyond the policy’s sphere of influence, it serves as a cautionary tale for other policies that governance structures and economic incentives are not enough to drive the energy transition. It also highlights the need for strong social safeguards and participatory planning.

Deep dive 1: Thailand's Energy Industry Act B.E. 2550 (2007)

Thailand's Energy Industry Act B.E. 2550 (2007), specifically Section 7, Articles 4–8, provides legal provisions which align with just transition principles such as “promoting fair and transparent services of energy networks,” “ensuring fairness to both licensees and energy consumers”, “protecting the rights and liberties of energy consumers, local communities, and the general public in terms of participation and accessibility,” and “promoting the use of renewable energy with minimal environmental impact”. These principles suggest a commitment to fair, inclusive, transparent, and sustainable energy governance. However, our research suggests that the implementation of this Act does not align with the legislative intent of the policy (see below).

Deep dive 2: Power Development Plan (2018-2037) (PDP 2018 rev 1) and Draft Thailand's Power Development Plan 2024-2037 (PDP 2024)

The current Power Development Plan B.E. 2561–2580 (2018-2037) (PDP 2018 rev 1) is the national electricity roadmap ensuring security, affordability, and sustainability of energy supply. One of the key principles is to support the grassroots economy by emphasising the need for energy security at a provincial level. It also supports the “Energy for All” policy framework for the purchase of electricity from local power plants during 2020-2024 and has specific initiatives that support small-scale renewable developers and rural communities to participate in the energy market called “Community Power Plants (CPP)”. While the plan focuses on market-driven and economic diversification opportunities, it falls short of integrating other key concepts of justice into domestic energy policies.

As for the policy trajectory, the draft Power Development Plan (PDP 2024) 2024–2037, proposed in 2024, targets an increased renewable energy share of 51% by 2037 (from 37% by 2037 with the current plan), which can be seen as a strong commitment to accelerate energy transition. However, our research observed that in this new plan, the just transition core principles (P1-P6) have not been fully reflected as the Thai government ambitions to drive just transition ambitions and actions in the energy sector.

In sum, our analysis suggested that both the current PDP (2018) and the new PDP (2024) plans still fall short of enabling a fair and inclusive energy transition as they lack crucial governance, social and environmental dimensions of a just energy transition. There is no specific dimension of social equity and social protection, labour and employment, including retraining, upskilling, or job transition programmes for workers and support of SMEs.

The final PDP 2024, set to be delivered in 2026, may shed light on this development, reflecting commitments made in Thailand's NDC ahead of COP 2025.

Deep dive 1: National Energy Transition Roadmap (NETR, 2023)

Among the policies analysed, the NETR stands out as the most forward-looking in integrating just transition principles, though key implementation gaps remain. It charts Malaysia's path to net-zero emissions by 2050 through six Energy Transition Levers (ETLs), including renewable energy expansion, energy efficiency, and green mobility. These levers align with broader sustainability goals such as decarbonisation, energy system resilience, and green industrial growth. The roadmap demonstrates strong alignment with P1 by emphasising inter-ministerial governance, led by the Ministry of Economy with support from agencies like the Energy Commission and SEDA. It also promotes public-private partnerships and investment in green technologies and grid upgrades (P5). However, while it projects over 300,000 new jobs in renewables and efficiency, it lacks detailed planning for workforce transition, such as labour market assessments, sector-specific job roadmaps, or reskilling strategies for fossil fuel-dependent regions like Johor and Sarawak (P4). The NETR makes broad references to community support and local development, but lacks specific identification of vulnerable groups such as indigenous communities, low-income households, and informal workers (P3). It also omits mechanisms for social protection, such as unemployment aid, relocation assistance, or livelihood restoration, highlighting a major gap in addressing social justice and equity. The roadmap shows limited operationalisation of livelihood transitions for communities dependent on extractive sectors. While it does not include just transition indicators like metrics on reskilling or community consultation, its structured timelines, investment priorities, and the National Energy Transition Facility (NETF) could serve as a foundation for integrating such measures in future revisions. However, public visibility remains low, with limited civil society engagement and top-down governance lacking clarity on coordination with state and local authorities. As a result, despite its forward-looking elements, the NETR currently falls short of being a comprehensive just transition framework and requires stronger institutional, participatory, and equity-based mechanisms.

Deep dive 2: National Energy Policy (NEP, 2022)

The National Energy Plan presents one of the most comprehensive frameworks among the analysed policies, with strong alignment to P1, P2, and P6. It adopts a whole-of-government approach, proposing a National Energy Council to coordinate policy across federal and state agencies, reflecting high ambition under P1. With regard to P2, it promotes stakeholder engagement through structured consultations via the government, though visibility beyond energy-sector stakeholders and industry remains limited. Civil society engagement and public communication are weak. While social inclusivity is stated as a core principle, the National Energy Plan lacks disaggregated frameworks or accountability mechanisms to ensure the participation of vulnerable groups such as indigenous communities, women, and informal workers. The National Energy Plan shows moderate ambition under P6 by referencing sustainability goals like energy-water-land nexus management, circular economy, and reducing energy infrastructure footprints. However, it lacks concrete measures for rehabilitating decommissioned fossil fuel sites or repurposing them for community or ecological use. While it supports solar and biomass, it omits guidance on converting abandoned coal plants. P3, P4, and P5 are rated low in ambition due to the absence of clear mechanisms. There are no reskilling plans for fossil fuel workers (P4), nor diversification strategies or job transition pathways for carbon-intensive sectors and vulnerable regions (P5), limiting inclusive transition outcomes. In summary, the National Energy Plan offers strong systems-level framing and institutional coordination, but falls short on social justice, livelihood transitions, and regional equity. To become a more inclusive transition framework, it must enhance implementation tools, broaden stakeholder engagement, and adopt outcome-driven measures to support vulnerable groups.

Annex III: List of policies assessed per country

Assessed in depth (qualitatively – ambitions)

Assessed at a higher level (quantitatively)

Indonesia (N=29):

Policy*	Policy type	Publishing institution	Year
Law No. 59/2024 on the National Long-Term Development Plan (RPJPN) 2025-2045, including Presidential Regulation No. 12/2025 on National Medium-Term Development Plan (RPJMN) 2024-2029	Cross-sectoral development planning	Parliament	2024
Law No. 30/ 2007 on Energy, including Government Regulation No. 79/2014 on National Energy Policy (KEN), Draft of revised KEN, and Presidential Regulation No. 22/2017 on the National Grand Energy Plan (RUEN)	Energy sector law/ legislation	Parliament	2007-2024
Law No. 4/2009 on Mineral and Coal Mining, including Regulation of the Minister of Energy and Mineral Resources No. 25/2018 on Mineral and Coal Mining Business, and revisions through Law No. 3/2020 on Amendments to Law Number 4 of 2009 concerning Mineral and Coal Mining, Law No. 11/2020 on Job Creation, Law No. 6/2023 on the Stipulation of Government Regulation in Lieu of Law No. 2/2022 on Job Creation into Law, and Law No. 2/2025 on the Fourth Amendment to Law No. 4/2009 on Mineral and Coal Mining	Energy sector law/ legislation	Parliament	2009-2025
Ministry of Energy and Mineral Resources Decree No. 314/2024 on National Electricity Plan (RUKN) 2025-2060, including Ministry of Energy and Mineral Resources Decree No. 188/ 2021 on National Electricity Supply Business Plan (RUPTL) 2021-2030.	Energy sector law/ legislation	Ministry of Energy and Mineral Resources	2024
Government Regulation No. 46/2017 on Environmental Economic Instruments, including Presidential Regulation No. 98/ 2021 on Carbon Economic Value, Regulation of the Minister of Energy and Mineral Resources No. 16/2022 on Procedures for the Implementation of the Carbon Economic Value of the Electricity Generation Subsector, Ministry of Environment and Forestry Regulation No. 7/ 2023 on Procedures for Carbon Trading in the Forestry Sector.	Budget, spending bill, tax measure or finance agenda	President	2017
Law No. 14/2008 on Transparency of Public Information, including Government Regulation (PP) Number 61 of 2010 concerning the Implementation of Law Number 14 of 2008 concerning Public Information Disclosure.	Cross-sectoral development planning	Parliament	2008
Law No. 2/2012 on Land Acquisition for Development in the Public Interest, including Minister of Energy and Mineral Resources Regulation No. 33/2016 on Technical Settlement of Land, Buildings, and/or Plants Controlled by the Community in Forest Areas in the Context of Accelerating the Development of Electricity Infrastructure, Government Regulation No. 19/2021 on Implementation of Land Acquisition for Development in the Public Interest, Government Regulation No. 39/2023 on Implementation of Land Acquisition for Development in the Public Interest (First revision), partly revised by Law No. 11/2020 on Job Creation, Law No. 6/2023 on the Stipulation of Government Regulation in Lieu of Law No. 2/2022 on Job Creation into Law.	Cross-sectoral development planning	Parliament	2012

Law No. 13/2003 on Workforce, including Minister of Manpower Regulation No. 5/2018 on Occupational Health, Safety and Environment, Government Regulation No. 4/2017 on the Work Procedures and Organizational Structure of the Tripartite Cooperation Institution (Second Revision), partly revised by Law No. 11/2020 on Job Creation, Law No. 6/2023 on the Stipulation of Government Regulation in Lieu of Law No. 2/2022 on Job Creation into Law.	Social/employment sector law/legislation	Parliament	2003
Law No. 32/2009 on Environmental Protection and Management, including Governmental Regulation No. 22/ 2021 regarding Environmental Protection and Management (Amdal), partially revised by Law No. 11/2020 on Job Creation, Law No. 6/2023 on the Stipulation of Government Regulation in Lieu of Law No. 2/2022 on Job Creation into Law.	Cross-sectoral development planning	Parliament	2009
Presidential Regulation No. 112/2022 on the Acceleration of Renewable Energy Development for the Provision of Electricity, including Regulation of the Minister of Energy and Mineral Resources No. 10/2025 on the Road Map for the Electricity Sector Energy Transition, Minister of Finance Regulation No. 5/2025 on Procedures for Granting and Implementing Government Guarantees and Risk Bearing in the Framework of Accelerating the Development of Renewable Energy for the Provision of Electricity, Regulation of the Minister of Finance No. 103/2023 on Provision of Fiscal Support Through Funding and Financing Framework in the Framework of Accelerating the Energy Transition in the Electricity Sector.	Energy sector law/ legislation	President	2022
Law No. 25/2004 on National Development Planning System	Cross-sectoral development planning	Parliament	2004
Law No. 30/2009 on Electricity	Energy sector law/ legislation	Parliament	2009
JETP CIPP 2023	International development financing/ programme	JETP	2023
Law No. 23/2014 on Regional Government	Cross-sectoral development planning	Parliament	2014
Law No. 16/2016 on the ratification of the Paris Agreement	Climate action plan/ framework policy	Parliament	2016
Financial Services Authority Regulation No. 51/2017 on the Implementation of Sustainable Finance	Budget, spending bill, tax measure or finance agenda	OJK	2017
Law No. 11/2005 on the Ratification of ICESCR	Social/employment sector law/legislation	Parlement	2005
Law No. 7/2012 on Handling of Social Conflict	Social/employment sector law/legislation	Parliament	2012
Presidential Regulation No. 62/2018 on Handling of Social Impacts	Social/employment sector law/legislation	President	2018
Law No. 5/1960 on Basic Regulations on Agrarian Principles	Cross-sectoral development planning	Parliament	1960
Law No. 41/1999 on Forestry	Cross-sectoral development planning	Parliament	1999
Law No. 40/2004 on the National Social Security System	Social/employment sector law/legislation	Parliament	2004

Presidential Regulation No. 79/2023 on Battery-Based Electric Vehicles	Energy sector law/legislation	President	2023
Regulation of the Ministry of Energy and Mineral Resources No. 11/2024 on Use of Domestic Products for Electricity Infrastructure	Energy sector law/legislation	Ministry of Energy and Mineral Resources	2024
Ministry of Energy and Mineral Resources Regulation No. 38/2016 on Electrification	Energy sector law/legislation	Ministry of Energy and Mineral Resources	2016
Law No. 3/2014 on Industry	Cross-sectoral development planning	Parliament	2014
Government Regulation No. 33/2023 on Energy Conservation	Energy sector law/legislation	President	2023
Ministry of Energy and Mineral Resources Regulation No. 2/2024 on Rooftop Solar Power Plants	Energy sector law/legislation	Ministry of Energy and Mineral Resources	2024
CMEA Decree No. 141/2025 on Energy Transition Task Force	Energy sector law/legislation Cross-sectoral development planning	CMEA	2025

*Since a policy in Indonesia comprises more than one law/regulation, the in-depth assessment was done by grouping laws/regulations that fall under a similar topic of policy.

Philippines (N=24):

Policy *	Policy type	Publishing institution	Year
Philippine Energy Plan 2023–2050	Plans/laws required under the Paris Agreement	Department of Energy	2022
Renewable Energy Act	Energy sector law/legislation	Department of Energy	2008
Climate Change Act	Climate action plan/framework policy	Climate Change Commission	2009
Green Jobs Act	Social/employment sector law/legislation	Department of Labour and Employment	2016
People's Survival Fund	Budget, spending bill, tax measure or finance mechanism	Department of Finance	2012
NDC 2021 Implementation Plan	Plans/laws required under the Paris Agreement	Climate Change Commission	2023
EPIRA (Electric Power Industry Reform Act)	Energy sector law/legislation	Department of Energy	2001
National Adaptation Plan (NAP)	Climate action plan/framework policy	Climate Change Commission	2024
BSP Sustainable Finance Framework	Budget, spending bill, tax measure or finance mechanism	Bangko Sentral ng Pilipinas	2020
PDP 2023–2028 (Philippine Development Plan)	Broad-based development plan	National Economic and Development Authority	2023
Green Energy Option Program	Energy sector law/legislation	Department of Energy	2008
Net Metering Program	Energy sector law/legislation	Department of Energy	2008
Moratorium on New Coal Power Plants	Energy sector law/legislation	Department of Energy	2020
Renewable Portfolio Standards	Energy sector law/legislation	Department of Energy	2008
Energy Efficiency & Conservation Act			
Energy sector law/legislation	Department of Energy	2019	
National Green Jobs Human Resource Development Plan 2020-2030	Social/employment sector law/legislation	Department of Labour and Employment	2020

Just Transition Program and creation of the Just Transition Framework	Cross-sectoral development planning (incl. spatial, economic, industrial policy)	Department of Environment and Natural Resources	2024 (draft)
Energy Transition Mechanism	International development financing/ programme	Asian Development Bank	2021
Climate Investment Fund - Accelerating Coal Transition	International development financing/ programme	World Bank	2024
Just Transition Financing Facility and Just Transition Support	International development financing/ programme	Asian Development Bank	2023
Development of carbon markets and the carbon credit system	Budget, spending bill, tax measure or finance agenda	Department of Finance, Department of Environment and Natural Resources	2022
National Framework Strategy on Climate Change 2010-2022	Plans/Laws required under the Paris Agreement	Climate Change Commission	2010
National Climate Change Action Plan 2011-2028	Plans/Laws required under the Paris Agreement	Climate Change Commission	2012
National Climate Risk Management Framework of 2019	Plans/Laws required under the Paris Agreement	Climate Change Commission	on-going

Thailand (N=30):

Policy *	Policy type	Publishing institution	Year
Sections 77, 71, 4 and 26-63 of the Constitution of the Kingdom of Thailand, B.E. 2560 (2017), focusing on stakeholder consultation and public access to laws and information	Cross-sectoral development planning	His Majesty King Maha Vajiralongkorn Bodindrade-bayavarangku	2017
13th National Economic and Social Development Plan 2023-2027 (NESDC)	Cross-sectoral development planning	Office of the National Economic and Social Development Council, Office of the Prime Minister	2022
Energy Industry Act B.E. 2550 (2007)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2007
Climate Change Master Plan B.E. 2558–2593 (2015-2050)	Climate action plan/framework policy	Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MONRE)	2015
Thailand National Adaptation Plan 2023 (NAP)	Plans/laws required under the Paris Agreement	Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MONRE)	2023
Alternative Energy Development Plan B.E. 2561-2580 (2018-2037) (AEDP 2028)	Energy sector law/legislation	Department of Alternative Energy Development and Efficiency, Ministry of Energy	2018, approved by the Cabinet in 2020
Energy Efficiency Plan B.E. 2561–2580 (2018-2037) (EEP 2018)	Energy sector law/legislation	Department of Alternative Energy Development and Efficiency, Ministry of Energy	2018, approved by the Cabinet in 2020

Power Development Plan B.E. 2561 –2580 (2018-2037) (PDP 2018 rev 1)	Energy sector law/legislation	Energy Policy and Planning Office (EPPO), Ministry of Energy	2022
DRAFT new Power Development Plan 2024 and Gas Plan 2024	Energy sector law/legislation	Energy Policy and Planning Office (EPPO), Ministry of Energy	Upcoming
Labour Protection Act, BE 2541 (1998) (LPA) (as amended by the Labour Protection Act (No. 2) (No. 3) B.E. 2541 and (No. 4) B.E. 2553	Social/employment sector law/legislation	Ministry of Labour	1998 (amended in 2010)
National Energy Committee Act, B.E. 2535 (1992) (4th updated)	Energy sector law/legislation	Energy Policy and Planning Office (EPPO), Ministry of Energy	1992
Regulation of the Energy Regulatory Commission on the Electricity Development Fund for the Development or Restoration of Localities Affected by the Operation of Power Plants (No. 2) B.E. 2563 (2020)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2020 (Effective on 1 October 2020)
Energy Regulatory Commission Regulations on the Criteria and Methods for Allocating Money from the Electricity Development Fund to Promote the Use of Renewable Energy and Technologies Used in Electricity Business Operations that Have Less Impact on the Environment, B.E. 2559 (2016)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2016
Energy Regulatory Commission Regulations on the Criteria and Methods for Allocating Money from the Electricity Development Fund to Promote Knowledge, Awareness and Participation in Electricity in Society and the Public (No. 2) B.E. 2561 (2018)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2018
Announcement of the Energy Regulatory Commission on the Remittance and Disbursement of Electricity Development Fund for Electricity Distribution Licensees for Compensation and Subsidy of Electricity Distribution Licensees Who Provide Services to Underprivileged Electricity Users (No. 2) B.E. 2561 (2018)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2018
Announcement of the Energy Regulatory Commission on the criteria and methods for allocating funds from the Electricity Development Fund for the development or rehabilitation of localities affected by the operation of power plants (No. 2) B.E. 2565 (2022)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2022
Announcement of the Energy Regulatory Commission on the recruitment of the Community Development Committee in the area surrounding the power plant and the Community Development Committee in the area surrounding the sub-district power plant, B.E. 2563 (2020)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2020
Announcement of the Energy Regulatory Commission on the criteria for spending money to help people affected by disasters in emergency cases for the Electricity Development Fund in the announced area, B.E. 2560 (2017)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2017
Announcement of the Energy Regulatory Commission on the recruitment of community development committees in areas surrounding power plants B.E. 2555 (2012) in cases where the number of sub-districts in the announced area is greater than the number of civil society representatives.	Energy sector law/legislation	Office of the Energy Regulatory Commission	2012

Announcement of the Energy Regulatory Commission on the criteria for money allocation and consideration of community projects supported by the Electricity Development Fund in accordance with Section 97 (3) (No. 2) B.E. 2555 (2012)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2012
Announcement of the Energy Regulatory Commission on the allocation of Electricity Development Fund funds to promote the use of renewable energy and technologies used in electricity generation that have less impact on the environment B.E. 2559 (2016)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2016
Project proposals supported by the Electricity Development Fund for activities under Section 97(5) from B.E. 2560-2567 (2017-2024)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2017-2024
Energy Regulatory Commission Order No. 7/2025 on the remittance and disbursement of funds from the Electricity Development Fund under Section 97 (1) to ensure widespread electricity service and promote the policy of distributing prosperity to the regions in B.E. 2568 (2025)	Energy sector law/legislation	Office of the Energy Regulatory Commission	2025
Draft Climate Change Act B.E.	Climate action plan/framework policy/law/legislation	Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MONRE)	Expected in 2025
National Environmental Quality Promotion and Conservation Act (No. 2) B.E. 2561 (2018)	Climate action plan/framework policy/law/legislation	Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment (MONRE)	2018
Thailand Smart Grid Development Master Plan B.E. 2558-2579 (2015-2036)	Energy sector law/legislation	Energy Policy and Planning Office (EPPO), Ministry of Energy	2015
National Industrial Development Master Plan B.E. 2555–2574 (2012-2031)	Cross-sectoral development planning (incl. spatial, economic, industrial policy)	Ministry of Industry	2011
Employment Arrangement and Jobseeker Protection Act, BE 2528 (1985)	Social/employment sector law/legislation	Ministry of Labour	1985
Promotion of Skill Development Act, BE 2545 (2002)	Social/employment sector law/legislation	Ministry of Labour	2002
Occupational Safety, Health and Environment Act, BE 2554 (2011)	Social/employment sector law/legislation	Ministry of Labour	2011
Labour Relations Act, BE 2518 (1975)	Social/employment sector law/legislation	Ministry of Labour	1975

Malaysia (N=27):

Policy *	Policy type	Publishing institution	Year
Electricity Supply Act (Amendment)	Energy Sector Law/ Legislation	Energy Commission	2023
Renewable Energy Act	Energy Sector Law/ Legislation	SEDA	2011
National Energy Policy 2022-2040 (NEP)	Climate Action Plan/ Framework Policy	Economic Planning Unit, Prime Minister's Department	2022
Malaysia Renewable Energy Roadmap (MyRER)	Climate Action Plan/ Framework Policy	SEDA	2021
National Energy Transition Roadmap (NETR)	Cross-Sectoral Development Planning	Ministry of Economy	2023
Malaysia's Paris Agreement Commitments	Plans/Laws Required Under the Paris Agreement	UNFCC	2015
National Renewable Energy Policy and Action Plan	Climate action plan/ framework policy	SEDA	2010
Green Technology Master Plan	Climate action plan/ framework policy	Ministry of Energy, Green Technology and Water	2017
National Policy on Climate Change	Climate action plan/ framework policy	Ministry of Natural resources and environmental sustainability (NRES)	2009
Nationally Determined Contributions (NDC) Roadmap	Climate action plan/ framework policy	UNFCC	2022
Energy Commission Act (2001)	Energy Sector Law/ Legislation	Energy Commission	2001
Sustainable Energy Development Authority (SEDA) Act	Energy Sector Law/ Legislation	SEDA	2011
National Energy Efficiency Action Plan	Energy Sector Law/ Legislation	Ministry of Energy, Green Technology and Water	2015
Green Investment Tax Allowance (GITA)	Budget, Spending Bill, Tax Measure, or Finance Agenda	MGTC	2017
Green Technology Financing Scheme (GTFS) (2010, expanded 2021)	Budget, Spending Bill, Tax Measure, or Finance Agenda	MGTC	2010

ASEAN Plan of Action for Energy Cooperation (APAEC) 2021-2025	International Development Financing/Programme	ACE	2021
ASEAN Power Grid Initiative	International Development Financing/Programme	ACE	2020
Green Climate Fund (GCF) Projects in Malaysia	International Development Financing/Programme	GCF	2016
Low Carbon Cities Framework (LCCF)	Budget, Spending Bill, Tax Measure, or Finance Agenda	Ministry of Energy, Green Technology and Water	2011
Eleventh Malaysia Plan (2016-2020)	Cross-Sectoral Development Planning	Prime Minister's Department	2016
Malaysia's Industrial Master Plan (IMP) 2030	Cross-Sectoral Development Planning	Ministry of Investment, Trade & Industry (MITI)	2023
Green Technology Master Plan	Climate Action Plan/ Framework Policy	Ministry of Energy, Green Technology and Water	2017
National Climate Change Action Plan 2.0	Climate Action Plan/ Framework Policy	Ministry of Natural resources and environmental sustainability (NRES)	2023
Skills Development Fund Act	Social/Employment Sector Law/Legislation	ILO	2004
Employment Insurance System Act	Social/Employment Sector Law/Legislation	PERKESO	2017
Petroleum Development Act	Energy Sector Law/ Legislation		1974
Malaysia's Second National Communication to the UNFCCC Climate Change Commission	Energy Sector Law/ Legislation		2011

Annex IV: Key terms

Principle	Key Terms
Principle 1: Transparent and inclusive transition governance mechanism	just (energy) transition, fair transition, justice, policy coherence, cross-sectoral, multi-stakeholder, transparency, institutional collaboration, multi-level governance, institutional capacity
Principle 2: Meaningful and inclusive stakeholder engagement process	Stakeholder engagement, stakeholder participation, social dialogue, consultation, civil society, labour unions, industry association
Principle 3: Consideration of vulnerable groups	Vulnerable groups, marginalised groups, human rights, social inclusion, women, youth, elderly, Indigenous
Principle 4: Equitable workforce transition	Workforce transition, green jobs, upskilling, reskilling, skills development, green skills, training, education, women, informal workers
Principle 5: Economic diversification	(Economic) diversification, SMEs, start(-)up, business investment, investment promotion, economic transition, green transition, social enterprise, climate finance
Principle 6: Environmental rehabilitation and land repurposing	(Land) rehabilitation, (land) repurposing, (land) regeneration, environment, biodiversity, reclamation, restoration, community development

Annex V: Four country profiles

Indonesia Country Profile

Introduction

This country profile provides an overview of the energy transition policy landscape and the just transition (JT) governance framework in Indonesia. It also identifies the key transition challenges faced by the country. This overview is intended to inform stakeholders about the progress and obstacles in Indonesia's journey towards a sustainable and equitable energy transition.

Key facts *

Population: 278,696,200 (2023)

GDP: Rp 20,892.38 trillion / USD 1,358 billion (2023)

GDP per capita: Rp 74,964,700 / USD 4,872 (2023)

Climate neutrality target: 2050

Coal phase-out date: Unclear, but net zero target is 2050

Workers employed in coal sector: 217,707 direct workers (estimated)

* Sourced from BPS¹, MoEF², and CMMIA³

Energy transition landscape

Current energy mix

In Indonesia, annual energy consumption increased by 6.29% since 2022, reaching 1,220 million barrels of oil equivalent (BOE) in 2023, the highest level in the last six years. Energy demand was highest in the industrial sector (45.6%), followed by transportation (36.7%), households (12.4%), commercial (4.4%), and other sectors (0.9%).⁴ The industrial sector's adoption of coal and natural gas consumption was the primary factor driving the recent rise in energy demand. Within the industry, the electricity industry accounts for 57% of domestic coal use (121.2 Mt), with the metal industry coming in second with 28%.⁵

Additionally, coal is the main energy source used to generate power in Indonesia. As shown in Figure 10, almost 54.6% of all electricity generated in Indonesia comes from coal. The total power plant capacity has grown from 64.95 GW in 2018 to 91.17 GW in 2023. Perusahaan Listrik Negara (PLN), a state-owned company, is the main producer of electricity. The Sumatra-Java-Bali networks, which supply 88% of the nation's electricity needs, are linked to the majority of coal-fired power plants (CFPPs).⁶

¹ BPS (2024) Ekonomi Indonesia Triwulan IV-2023 Tumbuh 5,04 Persen. Available at: <https://www.bps.go.id/id/presse-lease/2024/02/05/2379/ekonomi-indonesia-triwulan-iv-2023-tumbuh-5-04-persen--y-on-y.html> (Accessed: 15 Mar 2025).

² MoEF (2021) Long-Term Strategy for Low Carbon and Climate Resilience 2050. Available: https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf (Accessed: 15 Mar 2025).

³ CMMIA (2024) "The Role of Coal in Indonesia Energy Transition Program." Presented at the Coaltrans Asia 2024, Bali, Sep 2024

⁴ MEMR (2024) Handbook of Energy and Economic Statistics of Indonesia 2023. Available at: <https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2023.pdf> (Accessed: 15 Mar 2025).

⁵ ibid.

⁶ MoF (2022) CIF Accelerating Coal Transition (ACT): Indonesia Country Investment Plan (IP). Available at: https://fiskal.kemenkeu.go.id/docs/CIF-INDONESIA_ACT_IP-Proposal.pdf (Accessed: 15 Mar 2025).

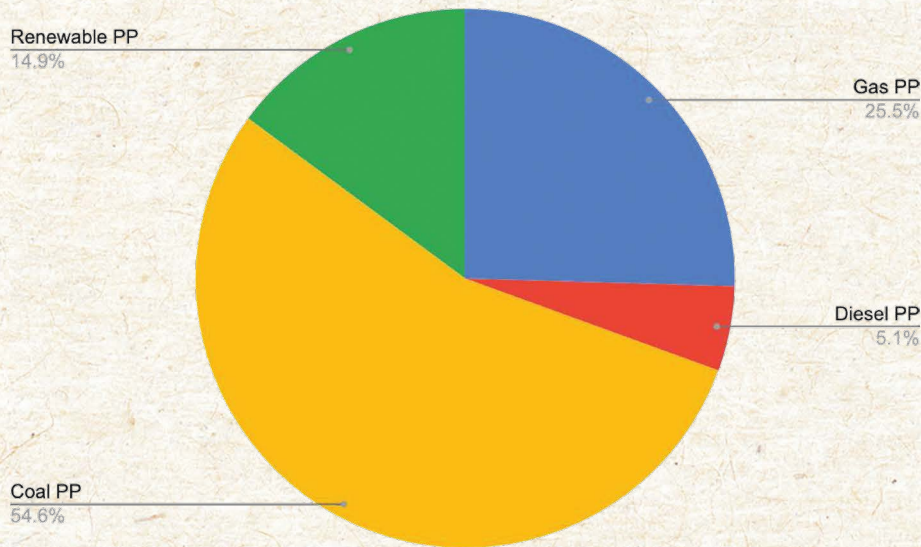


Figure 10: Electricity mix in 2023⁷

Key climate and energy policies and targets

Indonesia pledged to cut its national emissions by 31.9% unconditionally and 43.2% conditionally (with international support) by 2030 in the mitigation categories of the updated Nationally Determined Contribution (NDC) declaration presented in 2022. The updated NDC document outlines several ways to accomplish these climate mitigation objectives in the energy sector, including policies pertaining to the development of renewable energy, biodiesel, and electric vehicles.⁸ Additionally, Indonesia presented its first long-term strategy, indicating that it intends to peak its greenhouse gas emissions in 2030 and may achieve net-zero emissions by 2060 or earlier.⁹

The National Electricity General Plan (RUKN 2024-2060) contains the most recent energy transition scenarios for Indonesia's power sector.¹⁰ National electricity policy, current electricity supply circumstances, national power demand and supply predictions until 2060, and associated plans for creating a national electricity supply system are all covered in depth in the RUKN. According to the policy, new energy sources (such as nuclear) and renewable energy will account for 24.2% and 73.6% of the country's anticipated 443 GW of electrical capacity in 2060, respectively. In the meantime, 26.4% of fossil fuels will be paired with carbon capture and storage.

The Presidential Regulation on Acceleration of Renewable Energy for Electricity Supply, passed in 2022, mandates governments to create a phase-out timeline for CFPPs and forbids the construction of new ones.¹¹ There are a few noteworthy exceptions, though. If coal power facilities fulfil specific criteria, they can continue to operate. Such criteria include plants that 1) are designated as National Strategic Projects that significantly contribute to job creation, national economic growth, and added value, and that prevent the export of raw materials that are then processed domestically; 2) pledge

⁷ MEMR (2024) Handbook of Energy and Economic Statistics of Indonesia 2023. Available at: <https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2023.pdf> (Accessed: 15 Mar 2025).

⁸ Republic of Indonesia (2022) Enhanced Nationally Determined Contributions Republic of Indonesia. Available at: https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf (Accessed: 21 Mar 2025).

⁹ MoEF (2021) Long-Term Strategy for Low Carbon and Climate Resilience 2050. Available at: https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf (Accessed: 15 Mar 2025).

¹⁰ MEMR (2024) Rencana Umum Ketenagalistrikan Nasional 2024-2060. Available at: https://gatrik.esdm.go.id/assets/uploads/download_index/files/2f251-ruk-2024.pdf (Accessed: 15 Mar 2025).

¹¹ President of Indonesia (2022) Peraturan Presiden Nomor 112 Tahun 2022 tentang Percepatan Pengembangan Energi Terbarukan untuk Penyediaan Tenaga Listrik. Available at: <https://peraturan.bpk.go.id/Details/225308/perpres-no-112-tahun-2022> (Accessed: 15 Mar 2025).

to cut their greenhouse gas emissions by at least 35% in the first ten years of operation; and 3) that will cease operating by 2050.

Just transition governance framework

Just transition concept

It is generally accepted, though not always, that the energy transition's detrimental effects on society and the environment should be addressed as part of a just energy transition. The former Ministry of Maritime and Investment Affairs (CMMAI)'s white paper anticipated that a just transition would address the negative effects of the growth of the "clean energy" sector and the low-carbon economy, in addition to the labour market and economic effects of the coal transition.¹² Nevertheless, the public still does not think that the coal phase-out or even phase-down will occur anytime soon.¹³ Government stakeholders point out that the phrase "phase-down" rather than "phase-out" is used by specifically reconsidering global climate justice for emerging economies like Indonesia.¹⁴ The former suggests that stakeholders want to maintain the coal industry while attaining low-carbon development, which may be accomplished by putting relatively new and unscaled technologies like carbon capture and storage into practice.

Key just transition initiatives

Along with South Africa, India, and the Philippines, Indonesia was chosen in 2021 to participate in the Climate Investment Fund's (CIF) "Accelerating Coal Transition" (ACT) project, which aims to accelerate the transition from coal to renewable energy. Additionally, with the support of \$500 million in concessional funding, Indonesia collaborated with the World Bank and the Asian Development Bank (ADB) to create an Investment Plan that would accelerate the retirement of CFPPs and advance sustainable energy. In order to promote fair coal phase-out, Indonesia launched its Energy Transition Mechanism (ETM) and the JETP at the 2022 G20 Summit. ETM is a structure that mobilises commercial and non-commercial funding sources in a sustainable way to offer the financial support required to expedite the country's energy transition. Through the Ministry of Finance Regulation No. 103/2023, PT Sarana Multi Infrastruktur (PT SMI), a state company that focuses on infrastructure development financing, was designated the role of the ETM Country Platform Manager, overseeing a mixed-finance plan that will finance ETM projects. JETP is another important international initiative that presents a framework for a just transition and funding commitments for the energy transition. However, only about \$230 million of the \$21.6 billion committed are anticipated to be given out as grants by the JETP; the remainder will be distributed as equity investment, non-concessional loans, and concessional loans.¹⁵ As of the writing of this profile in March 2025, Indonesia's JETP Comprehensive Investment and Policy Plan, laying out the concrete pathway for the power sector's transition, was still being revised and expected to be published mid this year. Finally, UNDP, GIZ, and other international organisations are working to support policy development, regional economic diversification, and equitable transitions for impacted coal-dependent communities.

¹² CMMAI (2024) Indonesia Just Transition White Paper.

¹³ Perdana, AP. (2023) Coal Use Will Be Reduced, Not Eliminated. Available at: <https://www.kompas.id/baca/english/2023/11/15/en-penggunaan-batubara-bakal-diturunkan-bukan-dihapuskan> (Accessed: 15 Mar 2025).

¹⁴ Jong, HN. (2025) Indonesia mulls Paris Agreement exit, citing fairness and energy transition costs. Available at: <https://news.mongabay.com/2025/02/indonesia-mulls-paris-agreement-exit-citing-fairness-and-energy-transition-costs/#:~:text=However%2C%20Hashim%20denied%20that%20Prabowo,from%202040%20onward%2C%20Hashim%20said> (Accessed: 15 Mar 2025).

¹⁵ JETP (2025) Paparan Singkat Mengenai JETP & Transisi Berkeadilan. Available at: https://drive.google.com/drive/folders/1wf_m2Eb7WwZ8DbvcSVoDzCSZs5lxdFGwm (Accessed: 15 Mar 2025).

Key actors and coordination mechanisms

Without clear governance mechanisms in place, several ministries have created their own just coal transition-related projects. A special task force was formed by the CMMAI to expedite the country's energy transition and was given coordination duties. However, CMMAI was dissolved by the new government at the end of 2024, and now the leadership on just transition is considered to be shifted to the Coordinating Ministry of Economic Affairs (CMEA). Also, it is unclear if the government has approved JETP's transition governance framework as the sole national governance framework for the coal transition.

government at the end of 2024, and now the leadership on just transition is considered to be shifted to the Coordinating Ministry of Economic Affairs (CMEA).¹⁶ Also, it is unclear if the government has approved JETP's transition governance framework as the sole national governance framework for the coal transition.¹⁷ Policy alignment is subpar in the absence of clear roles and governance, and numerous important national ministries are only partially involved in the just coal transition debate. Various government departments have created distinct just transition plans, including the Ministry of Environment and Forestry (MoEF), the Ministry of National Development Planning (Bappenas), and CMMAI. While Bappenas created a green jobs roadmap and is currently working on just transition indicators, MoEF is including a just transition element in the next enhanced NDC submission. Notably, the process hardly ever involves other pertinent ministries like the Ministry of Women's Empowerment and Children Protection, the Ministry of Social Affairs, or the Ministry of Manpower.¹⁸ As a result, these ministries lack adequate knowledge of the just coal transition agenda, although they have the technical authority to implement certain transition-related measures. Additionally, since the Job Creation Law was issued in 2019, subnational governments have had less authority and mission to act and take ownership of the energy transition.¹⁹

Key transition challenges

Economic challenges

The importance of coal to the Indonesian economy emphasises the country's reliance on and difficulty in moving away from this resource. Indonesia is the biggest coal exporter and one of the biggest coal producers in the world. About \$80 billion in economic activity, or roughly 8% of GDP, is generated annually by coal mining, domestic transshipment, and exports.²⁰ Notably, Indonesia's coal output rate has almost doubled during the last ten years, rising from 474 Mt in 2013 to a record 775 Mt in 2023.²¹ A sizable portion of government revenue comes from coal extraction in the form of royalties and other taxes. The two provinces in the nation with the biggest coal reserves are East Kalimantan and South Sumatra. East Kalimantan ranks first (with over 44%) among the provinces on Kalimantan Island in terms of profit sharing from the mining industry in regional earnings.²² This also shows that

¹⁶ CMEA (2025) Keputusan Menteri Koordinator Bidang Perekonomian Nomor 141 Tahun 2025 tentang Satuan Tugas Transisi Energi Dan Ekonomi Hijau. Available at: <https://www.hukumonline.com/pusatdata/detail/lt67f371e462b37/keputusan-menteri-koordinator-bidang-perekonomian-nomor-141-tahun-2025/> (Accessed 2 May 2025).

¹⁷ Cahyadi, F. (2024) What Does Indonesia's New President Mean for the Country's Just Energy Transition? Available at: <https://www.jeiknowledge.org/insights/indonesia-prabowo-new-president-just-energy-transition/> (Accessed: 15 Mar 2025).

¹⁸ PSHK (2023). Just Energy Transition In Indonesia: Analysis of Regulatory Gaps in the Aspect of Protection of Affected Groups. Available at: <https://pshk.or.id/dokumen/9531> (Accessed: 15 Mar 2025).

¹⁹ Nalle, VIW. (2020) Bagaimana UU Cipta Kerja merusak desentralisasi yang dibangun setelah reformasi. Available at: <https://theconversation.com/bagaimana-uu-cipta-kerja-merusak-desentralisasi-yang-dibangun-setelah-reformasi-148091> (Accessed: 15 Mar 2025).

²⁰ MoF (2022) CIF Accelerating Coal Transition (ACT): Indonesia Country Investment Plan (IP). Available at: https://fiskal.kemenkeu.go.id/docs/CIF-INDONESIA_ACT_IP-Proposal.pdf (Accessed: 15 Mar 2025).

²¹ MEMR (2024) Handbook of Energy and Economic Statistics of Indonesia 2023. Available at: <https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2023.pdf> (Accessed: 15 Mar 2025)

²² World Bank (2020) Indonesia Database for Policy and Economic Research. Available at: <https://databank.worldbank.org/source/indonesia-database-for-policy-and-economic-research#> (Accessed: 15 Mar 2025)

the mining industry, especially coal mining in the coal-producing provinces, is heavily dependent on the region.

Technological challenges

Ensuring the cost, security, and reliability of energy would be difficult without the development of new energy technology. The complicated terrain of Indonesia requires the adoption of technological innovations in energy storage and grid interconnection technology to transform the country's energy transition. While emerging technologies are essential for speeding up the energy transition in Indonesia, developed and developing nations often have innovation gaps due to rapid development in developed countries.

Currently, Indonesia has greatly benefited from adopting global technological innovation, but this is insufficient without modifications to the power development institutions that encourage wider innovation adoption.²³ Policy-wise, the Indonesian government must keep promoting innovations and sustainable technology development, for example, by increasing incentives for the clean energy sector.²⁴

Financial challenges

Although the Indonesian government has set ambitious goals for the use of renewable energy, getting the required funding remains a challenge. A study by Climate Transparency and Institute for Essential Services Reform (IESR)²⁵ shows that Indonesia's energy revolution is expected to require financing between \$20 and 40 billion yearly by 2050; however, only \$1.47 billion was invested in new and renewable energy in 2023. This currently low funding realisation emphasises the importance of boosting funding for sustainable energy infrastructure and technologies. Funding, transparency, and project bankability issues still exist, despite the potential answers provided by initiatives like the JETP and the ETM.²⁶ The Ministry of Finance Regulation No. 103/2023 is a significant turning point in the creation of enabling policies. However, implementation of the regulation still needs improvement in the transparency necessary to engage the public in the review process and clarity regarding the budget allocation, indicating the amount available for disbursement on projects related to transition.

Social challenges

The transition from coal poses a great risk to already marginalised and vulnerable communities, including women, teens and children, elderly individuals, informal workers, people with impairments, and Indigenous People. According to the Alliance of Indigenous Peoples (AMAN)²⁷, Indonesia is home to around 20 million Indigenous People, the majority of whom reside in rural regions where coal mines are usually located. People whose communities have been influenced by coal mining for many generations may see major changes in their lives as a result of coal mine closures. For instance, local coal mining occupations that pay well will not be available to younger indigenous generations. Even

²³ Sambodo et al. (2024) Investigating technology development in the energy sector and its implications for Indonesia. Available at: <https://www.sciencedirect.com/science/article/pii/S2405844024036764> (Accessed: 15 Mar 2025).

²⁴ Ibid.

²⁵ Climate Transparency and IESR (2024) Public Finance on Indonesia's Energy Transition: Implementation Assessment. Available at: <https://www.climate-transparency.org/wp-content/uploads/2024/11/Public-Finance-on-Indonesia-Energy-Transition-Implementation-Assessment.pdf> (Accessed: 16 Mar 2025).

²⁶ Ibid.

²⁷ AMAN (2024) Siaran Pers Catatan Tahun 2023 Aliansi Masyarakat Adat Nusantara (AMAN). Available at: <https://www.aman.or.id/news/read/Siaran%20Pers%20Catatan%20Tahun%202023%20Aliansi%20Masyarakat%20Adat%20Nusantara%20%28AMAN%29#:~:text=Padahal%2C%20menuurut%20data%20AMAN%2C%20setidaknya.website%20aman.or.id> (Accessed: 15 Mar 2025).

though the closing of coal mines will make it possible for indigenous tribes to reclaim land that is culturally theirs, land reclamation is not carried out well in Indonesia, and only around 40% of former coal mining sites are reclaimed.²⁸ Research indicates that a rise in domestic violence against women and children in nearby villages was a result of male coal miners' income losses.²⁹ Additionally, one of the most vulnerable worker groups is informal workers. Informal workers make up 37.1% of the workforce in Indonesia's mining sector and 55.56% of all workers in rural areas, which are home to most mining sites.³⁰

Since they are neither legally protected nor registered, nor have contracts that guarantee benefits or social protection, informal workers usually lack sufficient social protection and are unable to access government social assistance programs to lessen economic shocks.³¹

Policy challenges

Policy inconsistency makes it difficult for key stakeholders to predict and react to the effects and associated timelines of transition. Although the government has established goals and policies for the energy transition, other government goals, like raising the country's yearly coal production and pledging to ensure national energy security and self-sufficiency through coal production incentives, result in a disorganised national policy framework that makes it more difficult to achieve the stated energy transition goals. According to Ordonez et al.,³² Indonesia's future energy development will be influenced by a strong incentive to continue coal mining because royalties from the industry greatly contribute to local and national public budgets. China's readiness to finance and export equipment and services to develop new CFPPs overseas, especially in Indonesia, aligns well with this local stake in maintaining the coal industry.³³ Furthermore, several legislative and regulatory tools provide strong incentives for the coal business. For example, the condition that a coal mine's maximum size be restricted to 15,000 hectares has been lifted by Law No. 3/2020 on Mineral Mining and Coal. Additionally, the law forgoes royalties for coal processing operations that have a measurable added value.³⁴ Key stakeholders, including companies along the coal value chain, are deterred from evaluating and reacting to the economic, environmental, and social effects of the transition by these conflicting policy signals and the lack of significant government incentives to encourage departure from the current status quo.

²⁸ Setiawan et al. (2021) Evaluation of Environmental and Economic Benefits of Land Reclamation in the Indonesian Coal Mining Industry. Available at: <https://doi.org/10.3390/RESOURCES10060060> (Accessed: 15 Mar 2025).

²⁹ Sawiji, HW. (2024) Where Are the Women in Indonesia's Energy Transition?. Available at: <https://smeru.or.id/en/article/where-are-women-indonesia%E2%80%99s-energy-transition> (Accessed: 15 Mar 2025).

³⁰ BPS (2022) Booklet Survei Angkatan Kerja Nasional Agustus 2022. Available at: <https://www.bps.go.id/publication/2022/12/23/70829445f7981a364b4064e4/booklet-survei-angkatan-kerja-nasional-agustus-2022.html> (Accessed: 15 Mar 2025).

³¹ Mertins-Kirkwood, H., and Z. Desphande (2019) Who Is Included in a Just Transition? Considering Social Equity in Canada's Shift to a Zero Carbon Economy. Canadian Centre for Policy Alternatives. Available at: <https://policyalternatives.ca/publications/reports/who-is-included-just-transition> (Accessed: 15 Mar 2025).

³² Ordonez et al. (2021) Coal, Power and Coal-Powered Politics in Indonesia. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1462901121001271> (Accessed: 15 Mar 2025).

³³ Tritto, A. (2021) China's Belt and Road Initiative: From Perceptions to Realities in Indonesia's Coal Power Sector. Available at: <https://www.sciencedirect.com/science/article/pii/S2211467X21000109> (Accessed: 16 Mar 2025).

³⁴ Christensen, LT., and Suharsono, A. (2022) Achieving a Just Energy Transition in Indonesia. Available at: <https://www.iisd.org/publications/brief/achieving-just-energy-transition-indonesia> (Accessed: 16 Mar 2025).

Philippines Country Profile

Introduction

This country profile provides an overview of the energy transition policy landscape and the just transition (JT) governance framework in the Philippines. It also identifies the key transition challenges faced by the country. This overview is intended to inform stakeholders about the progress and obstacles in the Philippines' journey towards a sustainable and equitable energy transition.

Key facts*

Population: 114,891,199 (2023)

GDP: USD 437.15 billion (2023)

GDP per capita: USD 3,804.9 (2023)

Climate neutrality target: 75% reduction in carbon emissions by 2030

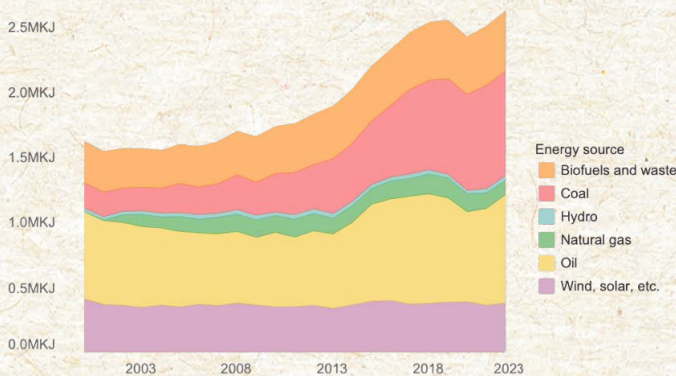
Coal phase-out date: not applicable

Workers employed in coal sector: 24,000 direct workers (estimated)

* Sourced from World Bank¹

Energy transition landscape

Trends in Total Energy Supply in the Philippines (2000–2022)



Source: International Energy Agency (IEA), "Philippines: Energy Mix," Available at: <https://www.iea.org/countries/philippines/energy-mix> (Accessed: 24 March 2025).

consumer of final energy consumption at 35% of the total in 2022 followed by the residential sector at 29% and the industry sector at 20%. This trend has largely remained the same in the last two decades.² The Philippines has yet to set a coal phase-out date. However, the government has issued a moratorium on the development of greenfield coal-fired power plant (CFPP) projects in 2020.³

Current energy mix

The current Philippine energy mix relies heavily on non-renewable sources. According to data from the International Energy Agency (IEA), the country's total energy supply (TES) in 2022 was dominated by coal and oil with 30% and 32% of total TES, respectively. Renewable energy (RE) sources such as hydropower, solar, and wind accounted for about 16% of total TES. Energy produced from coal saw the largest growth among all energy sources at 312% during the 2000-2022 period while RE sources experienced a 5% decline. The transport sector was the largest

¹ World Bank (2024) World Development Indicators. Available at: <https://databank.worldbank.org/source/world-development-indicators> (Accessed: 21 March 2025).

² International Energy Agency (n.d.) 'Philippines: Energy Mix'. Available at: <https://www.iea.org/countries/philippines/energy-mix> (Accessed: 21 March 2025).

³ Department of Energy Philippines (2020) 'Advisory on the Moratorium of Endorsements for Greenfield Coal-Fired Power Projects In Line with Improving the Sustainability of the Philippines' Electric Power Industry'. Available at: <https://doe.gov.ph/announcements/advisory-moratorium-endorsements-greenfield-coal-fired-power-projects-line-improving> (Accessed: 21 March 2025).

Key climate and energy policies and targets

According to the Philippines' most recent Nationally Determined Contribution (NDC) submitted in 2021, the country aims to reduce and mitigate its greenhouse gas emissions by 75% from a business-as-usual scenario. About 3% of the committed mitigation measures will be funded by domestic resources while the remaining 72% is dependent on external financing. These domestic-funded mitigation resources aim to decarbonize mainly the transport, energy, waste, and industrial sectors.⁴ According to the Philippine Development 2023-2028, these measures are expected to mitigate about 38 million tonnes of carbon dioxide equivalent. The transport sector is expected to contribute 69% of the total emission reduction while the energy sector will account for only 9%.⁵

Based on projections from the Philippine Energy Plan (PEP) 2023-20250, the country's TES is expected to increase to 140 million tons of oil equivalent (Mtoe) by 2050 which is more than double the current level of 62 Mtoe. The PEP targets to increase the installed generation capacity of RE sources in the country's energy mix from 27% in 2024 to 50% by 2040. On the other hand, the share of coal is expected to significantly decline from 60% of total in 2022 to just 14% by 2050 while maintaining its current level of installed generation capacity.⁶

Just transition governance framework

Just transition concept

The just transition is still a relatively new concept but is gaining traction in climate discussions and policies in the Philippines. The government has jump-started the process of developing the country's just transition framework (JTF) with relevant stakeholders in late 2024. The most recent public draft of the JTF⁷ included considerations for the following:

- socio-economic development priorities;
- environmental protection and conservation;
- skills development, reskilling and upskilling of the workforce;
- industrial potential;
- energy security, access, and affordability; and
- sustainable transport.

A scoping study commissioned by the World Bank found varying levels of awareness and support toward the just transition among stakeholders. Local communities and workers that are reliant on CFPPs are concerned mostly about job losses while government stakeholders are particularly worried about reduced tax revenues. Private sector players view the transition as an opportunity to obtain subsidies rather than as a risk to their business. Additionally, academics and climate justice advocates underscored the need for transparent planning, equitable decision-making, and sustainable solutions to mitigate the transition's adverse effects on impacted communities and local economies.

⁴ Climate Change Commission (2024) 'The Philippines' NDC Implementation Plan'. Available at: <https://www.climate.gov.ph/public/ckfinder/userfiles/files/Knowledge/The%20Philippines%20NDC%20Implementation%20Plan%20-%20072024.pdf> (Accessed: 21 March 2025).

⁵ National Economic and Development Authority (2023) Philippine Development Plan 2023-2028. Available at: <https://pdp.neda.gov.ph/philippine-development-plan-2023-2028/> (Accessed: 21 March 2025).

⁶ Department of Energy (2023) Philippine Energy Plan 2023-2050. Available at: <https://doe.gov.ph/sites/default/files/pdf/pep/PEP%202023-2050%20%28Volume%20I%29.pdf> (Accessed: 21 March 2025).

⁷ Department of Environment and Natural Resources (2024) 'Developing the Philippine Just Transition Framework' Available at: <https://drive.google.com/file/d/1siKmpWl3oScTev46IatCJInQeJEP-OP/view> (Accessed: 21 March 2025).

Key just transition initiatives

The development of the JTF is led by four national government agencies including the Department of Environment and Natural Resources (DENR), Department of Labor and Employment (DOLE), the Department of Energy (DOE), and the Department of Transportation (DOT). The DOLE is spearheading the National Green Jobs Human Resource Development (NGJ HRD) Plan 2020-2030 which aims to protect worker rights, design programs to prepare affected workers for new opportunities in the green economy and establish social safety nets for those affected by the energy transition. The Philippines was also among the first countries to sign up for the Energy Transition Mechanism (ETM) in partnership with the Asian Development Bank (ADB) in 2021. Under the ETM, CFPP operators leverage public and private investments to decommission or and/or repurpose coal power assets to reduce emissions and promote investments in the RE sector. The country has initiated the decommissioning two CFPPs namely the 200 MW Mindanao CFPP⁸ and the 246 MW South Luzon Thermal Energy Corporation (SLTEC) CFPP.⁹

Key actors and coordination mechanisms

The just transition in the Philippines is largely led by the central government with support from development partners, the private sector, and civil society organizations. Public sector stakeholders include the Climate Change Commission, Department of Finance (DOF), DENR, DOE, and DOLE. Development partners working closely with local stakeholders include the World Bank, Southeast Asia Energy Transition Partnership, United Nations Development Program, and ADB. Leading civil society organizations and national coalitions working on the JT space include the Institute for Climate and Sustainable Cities, Oxfam Pilipinas, Center for Energy, Ecology, and Development, Ateneo School of Government and Manila Observatory. The Makati Business Club is among the most involved local business associations in the energy transition in the Philippines. Despite their critical role in managing the social, environmental, and economic impacts of the energy transition at the local level, local government units (LGUs) currently play a limited role in just transition initiatives. For instance, the development of the JTF primarily involves national government agencies and civil society organizations with minimal participation from LGUs.

⁸ Flores A. (2024). 'Gov't plans to retire 210-MW Mindanao coal power plant'. Available at: <https://manilastandard.net/?p=314414261> (Accessed: 21 March 2025).

⁹ ACEN (2024). 'ACEN, GenZero and Keppel join hands to catalyse retirement of coal-fired plants in Southeast Asia'. Available at: <https://www.acenrenewables.com/2024/08/acen-genzero-keppel-mou-transition-credits/> (Accessed: 21 March 2025).

Key transition challenges

Economic challenges

The shift to cleaner forms of energy poses significant economic challenges as energy demand continues to increase alongside the government's push toward energy-intensive industries. These industries such as manufacturing rely heavily on affordable and stable energy supplies to remain competitive. However, the cost of electricity in the Philippines is among the highest in the region posing a major cost to businesses and households alike.¹⁰ Given the country's heavy reliance on non-renewable energy sources for power generation, the energy transition could lead to stranding of significant coal, oil, and gas assets leading to economic losses and resistance from private sector players. The economic cost of retiring CFPPs will be significant given that they are relatively new with an average duration of operation of just 11 years.¹¹

Technological challenges

A major concern in the decommissioning of CFPPs is the country's thin power supply which increases the risk of energy shortages due in part to the country's outdated grid infrastructure. The grid infrastructure of the country requires major upgrades as it is designed largely to accommodate baseload power sources such as coal and natural gas which provide a steady electricity supply.¹² This setup poses a challenge in managing the intermittency of RE without battery energy storage systems, smart grid technologies, and reliable ancillary service providers. These challenges hinder the full scaling of RE in the country and underscores the need for grid modernization and investments into storage systems.

Financial challenges

The shift to cleaner forms of energy sources requires massive investments. According to a 2024 Organization for Economic Co-operation and Development report, the Philippines will need over USD 300 billion in cumulative investments from now to 2040 to support its clean energy transition efforts.¹³ Financing remains a major challenge due to the government's limited fiscal space and the privatized capital-intensive nature of the power sector. This context makes energy transition projects in the country highly dependent on private capital and financing mechanisms which can be limited due to high upfront costs, market risks, regulatory uncertainties and bureaucratic delays. For instance, geothermal energy development has stalled in the last 30 years as exploration and drilling require significant capital investment and development typically takes decades making it a riskier venture for investors.¹⁴ This is also true for solar and wind projects which have heavily relied on financing from their much larger parent companies.¹⁵ The government's limited fiscal space is also reflected on the high dependence on external funding of the Philippines' NDC with 72% of its emissions reduction commitment contingent on international climate finance. The country's high reliance on international climate finance is exemplified by a recent USD 800 million loan from the World Bank (WB) to scale up RE.¹⁶ However, by providing loans (with interest) instead of grants, the financial burden of the

¹⁰ Ravago M. (2022). 'The Nature and Causes of High Philippine Electricity Price and Potential Remedies'. Available at: https://www.ateneo.edu/sites/default/files/2023-01/AdMU%20VWP%202023-01_0.pdf (Accessed: 21 March 2024).

¹¹ Department of Energy. (2024). 'List of Existing Power Plants'. Available at: <https://doe.gov.ph/list-existing-power-plants> (Accessed: 21 March 2025).

¹² Adonis M. (2024) 'Grid infrastructure can't cope with RE boom – BMI research'. Available at: <https://business.inquirer.net/446086/grid-infrastructure-cant-cope-with-re-boom-bmi-research> (Accessed: 21 March 2025).

¹³ Organisation for Economic Co-operation and Development (2024) 'Clean Energy Finance and Investment Roadmap of the Philippines' Available at: https://www.oecd.org/en/publications/clean-energy-finance-and-investment-roadmap-of-the-philippines_7a13719d-en.html (Accessed: 21 March 2025).

¹⁴ Asian Development Bank (n.d.). 'Philippines: Geothermal Resource De-Risking Facility'. Available at: <https://www.adb.org/projects/58245-001/main> (Accessed: 21 March 2024).

¹⁵ Barroco, J., & Herrera, M. (2019). 'Clearing barriers to project finance for renewable energy in developing countries: A Philippines case study' Available at: <https://doi.org/10.1016/j.enpol.2019.111008> (Accessed: 15 April 2024).

¹⁶ World Bank (2025). 'World Bank Approves Support for Energy Transition and Resilience in the Philippines' Available at: <https://www.worldbank.org/en/news/press-release/2025/03/31/wb-approves-support-for-energy-transition-and-resilience-in-ph> (Accessed 15 April 2025).

energy transition is effectively passed on to the Philippines and its citizens, in the present and future, despite the country's tight fiscal space. This approach undermines the principle of climate justice as it puts undue burden of the transition on countries that are already disproportionately suffering from the impacts of climate change.

Social challenges

The social aspect of the energy transition in the Philippines presents both opportunities and challenges. A 2023 Pulse Asia survey found that 85% of Filipinos believe that increasing RE sources is important.¹⁷ However, an estimated 24,000 direct jobs and many more indirect jobs may be affected by early retirement of CFPPs. Without retraining, upskilling, and alternative employment opportunities, these workers in coal-related industries could face job losses. Additionally, many communities hosting large-scale RE projects experience displacement risks, disruptions in their livelihood, and developmental aggression causing local opposition among vulnerable groups including fisherfolks and Indigenous Peoples.¹⁸

Policy challenges

The current energy policy landscape in the Philippines is marked by regulatory inefficiencies, market failures, and political economy constraints which hinder RE adoption, fair competition, and electrification.¹⁹ Bureaucratic red tape remains a barrier in the RE phase-in particularly in the permitting and approval processes which typically involves multiple national and local government agencies, numerous requirements, and lengthy processing timeline.²⁰ This discourages investments as delays translate to higher economic and direct costs. Additionally, the DOE's technology-neutral policy in energy development sends mixed signals to the private sector as there is no clear-cut prioritization for clean energy alternatives. Lastly, the central government is exploring the development of carbon pricing instruments, voluntary carbon markets, and carbon trading to help the country mobilize resources for its ambitious climate goals.²¹

¹⁷ Rappler (2023) 'Most Filipinos see urgency to shift to renewable energy'. Available at: <https://www.rappler.com/business/most-filipinos-see-urgency-shift-renewable-energy/> (Accessed: 21 March 2025).

¹⁸ Laqui I. (2024). 'Floating solar project to affect over 800 fishers in Laguna de Bay — group'. Available at: <https://www.philstar.com/headlines/2024/06/16/2363324/floating-solar-project-affect-over-800-fishers-laguna-de-bay-group> (Accessed: 21 March 2025).

¹⁹ Yap, J. T., Escresa-Guillermo, L., & Paras, Y. G. M. P. (2020) Access to Sustainable Energy in the Philippines: Market Failure and Political Economy Considerations. ASOG Working Paper 20-006. Available at: <https://ssrn.com/abstract=3578493> (Accessed: 21 March 2025).

²⁰ ASEAN Centre for Energy (n.d.) 'Red tape, tight rules discourage investments in renewable energy'. Available at: <https://aseanenergy.org/news-clipping/red-tape-tight-rules-discourage-investments-in-renewable-energy/> (Accessed: 21 March 2025).

²¹ Department of Finance (2024). 'Recto calls for study of carbon pricing instruments, underscores need to identify optimal mix for PH'. Available at: <https://www.dof.gov.ph/recto-calls-for-study-of-carbon-pricing-instruments-underscores-need-to-identify-optimal-mix-for-ph/#:~:text=Secretary%20Recto%20specifically%20thanked%20the%20Six%20of%20the%20Paris%20Agreement> (Accessed: 21 March 2025).

Thailand Country Profile

Introduction

This country profile provides an overview of the energy transition policy landscape and the just transition (JT) governance framework in Thailand. It also identifies the key transition challenges faced by the country. This overview is intended to inform stakeholders about the progress and obstacles in Thailand's journey towards a sustainable and equitable energy transition.

Key facts *

Population: 65.95 million (BOI, 2024)

GDP: \$513.5 billion (BOI, 2024)

GDP per capita: \$7,331.5 (BOI, 2024)

Climate neutrality target: Thailand's greenhouse gas (GHG) reduction target is 30% by 2030 compared to the business-as-usual scenario and 40% conditional target (with international support). Thailand sets a long-term goal of carbon neutrality by 2050 and net-zero GHG emissions by 2065. (UNFCCC, 2022)

Coal phase-out date: No phase-out plan

Workers employed in coal sector: N/A

* Sourced: BOI 2024¹, UNFCCC 2022²

Energy transition landscape

Current energy mix

According to the Ministry of Energy (2023)³ Thailand's primary commercial energy consumption is estimated at 2 million barrels of oil equivalent (BOE) per day in 2023, with an increase of 0.8% from 2022 due to the country's economic recovery. The use of oil and natural gas increased by 0.3% and 9.1%, respectively, from 2022 to 2023 for electricity generation purposes, while the imported energy from hydropower decreased by 6.1% due to drought situations in Laos. In 2023, coal and lignite consumption decreased by 16.1% and 10.6%, respectively, due to the reduced use for both electricity generation and in industry.

In Thailand, the biggest sector in terms of energy consumption is transportation, accounting for 40% of final energy consumption, followed by 37% for industrial production, 12% for housing and residences, and 8% for business and commercial activities. In terms of primary commercial energy production, overall numbers decreased by 1.5 % from 2022 to 2023, with crude oil, lignite and hydropower production also decreasing by 11.7 %, 6.1 % and 0.2 %, respectively, while the natural gas and condensate production increased by 0.2 % and 3.3 %, respectively. Over the past 10 years, coal and lignite consumption in Thailand for both electricity generation and industry have been

¹ Board of Investment (BOI) (2024) 'Demographic'. Available at <https://www.boi.go.th/index.php?page=demographic> (Accessed: 27 March 2025).

² United Nations Framework Convention on Climate Change (UNFCCC) (2022) 'The 2nd National Determined Contributions (NDSs) updated in November 2022'. Available at <https://unfccc.int/sites/default/files/NDC/2022-11/Thailand%20nd%20Updated%20NDC.pdf> (Accessed: 27 March 2025).

³ Energy Policy and Planning office (EPPO) of the Ministry of Energy (2024) 'Energy Statistics of Thailand'. Available at <https://www.eppo.go.th/index.php/th/information-services/ct-menu-item-56> (Accessed: 27 March 2025).

declining from 39,310 thousand tons in 2014 to 31,187 thousand tons in 2024. While coal has mainly been imported from Indonesia, Australia, and Russia via marine transportation⁴, lignite has been produced in Thailand in two mines of the Electricity Authority of Thailand (EGAT) in Mae Moe and Krabi⁵. For the same period (2014-2024), there has been a decline in the import of coal from 20,887 to 18,451 thousand tons and of lignite from 15,150 to 12,751 thousand tons⁶. The decline in production was because one coal-fired power plant (CFPP) in Thailand, called 'Gheco-One Powerplant' in Rayong, was requested to stop production from March to October 2023 by the EGAT to shift to cheaper sources.⁷

Thailand is highly dependent on energy imports, particularly electricity from Laos and natural gas (LNG) from Malaysia, Indonesia, Brunei, Qatar, Australia and, increasingly, the United States. Therefore, the country has identified that it needs to develop new sources of energy both domestically and regionally, through collaboration with neighbouring countries as well as promoting the use of renewable energy (RE) sources and improving efficiency and infrastructure to reduce the cost of transport.⁸ In 2024, Thailand's energy consumption was based on 49% petroleum, 22% electricity, 9% natural gas, 8% coal/lignite and 11% RE.

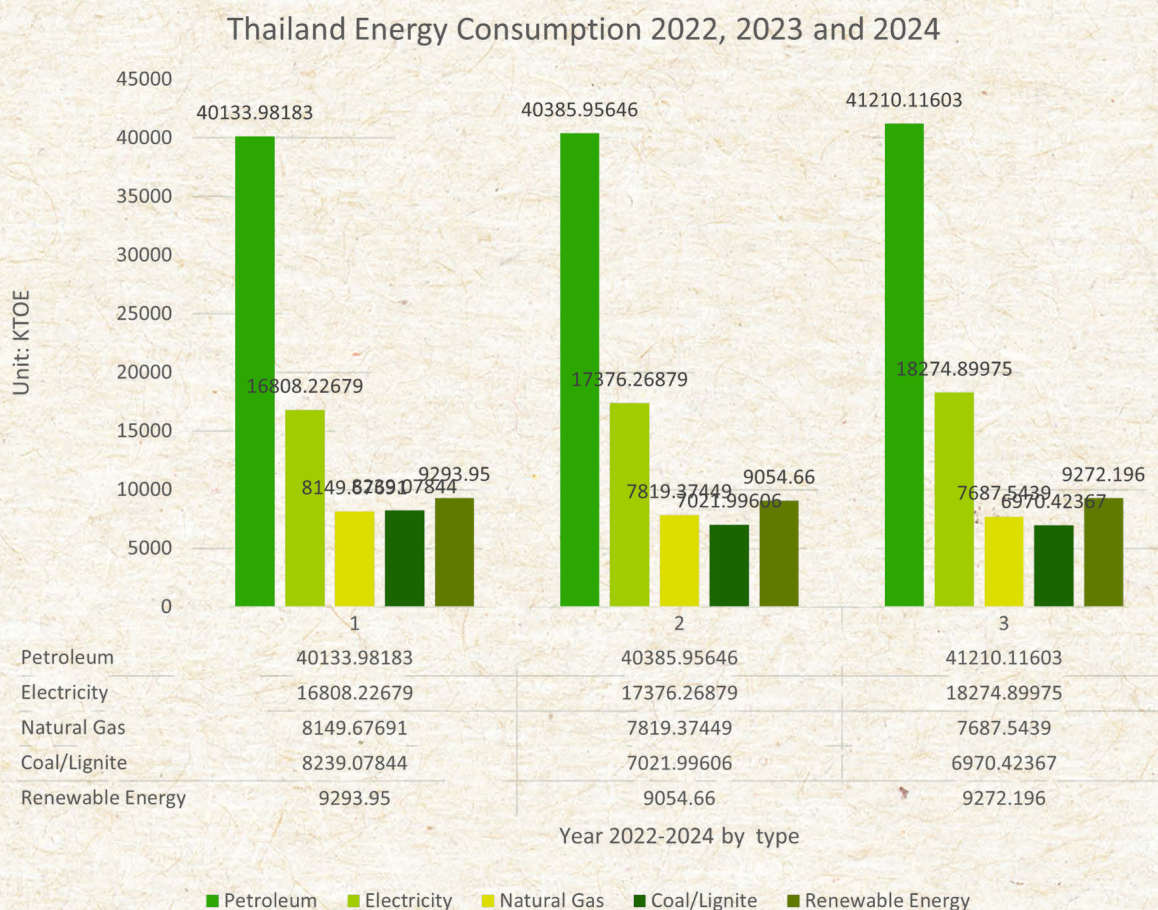


Figure 11: Final Energy Consumption 2023-2024⁹

⁴ Green Peace (2021) 'Behind the scenes of coal imports and proposals for a sustainable and just energy transition in Thailand'. Available in Thai at <https://www.greenpeace.org/static/planet4-thailand-stateless/2021/09/7b5d9e79-media-briefing--coalimport-2021.pdf> (Accessed: 24 April 2025).

⁵ Energy Policy and Planning office (EPPo) of the Ministry of Energy (2024) 'Coal and Lignite Statistics'. Available at <https://www.eppo.go.th/index.php/en/en-energystatistics/coal-and-lignite> (Accessed: 27 March 2025).

⁶ Energy Policy and Planning office (EPPo) of the Ministry of Energy (2024) 'Coal and Lignite Statistics'. Available at <https://www.eppo.go.th/index.php/en/en-energystatistics/coal-and-lignite> (Accessed: 27 March 2025).

⁷ Energy Policy and Planning office (EPPo) of the Ministry of Energy (2024) 'Energy Statistics of Thailand'. Available at <https://www.eppo.go.th/index.php/th/information-services/ct-menu-item-56> (Accessed: 27 March 2025).

⁸ Board of Investment (BOI) (2024) 'Infrastructure'. Available at <https://www.boi.go.th/index.php?page=electricity> (Accessed: 27 March 2025).

⁹ Energy Policy and Planning office (EPPo) of the Ministry of Energy (2024) 'Summary Statistics'. [https://www.eppo.go.th/index.php/en/en-energystatistics/summary-statistic?orders\[publishUp\]=publishUp&issearch=1](https://www.eppo.go.th/index.php/en/en-energystatistics/summary-statistic?orders[publishUp]=publishUp&issearch=1) (Accessed: 27 March 2025).

Key climate and energy policies and targets

The Thailand Power Development Plan 2018 (PDP2018) sets key targets in the areas of energy security, long-term economic competitiveness, and environmental sustainability until 2037. While focusing on electricity generation from RE and increasing efficiency in the electricity system, the PDP2018 sets a RE target of 20% in 2037, but the revised PDP2018, approved in 2020, upgraded the RE target to 38% in 2037.¹⁰ It should be noted that Thailand still applies the PDP2018 plan¹¹ and its RE target as the new plan called PDP2024, in which its draft identified the RE target at 51%, has not yet been approved by the Cabinet¹². However, it should be noted that Thailand has not signed any Coal Exit pledge despite a low share of coal and lignite in Thailand's primary energy mix (8% in 2024), almost all imported. Thailand had previously shifted from a dependency on coal towards a future dependency on natural gas, exacerbating fossil lock-in and energy security issues.¹³

In Thailand's 2nd updated Nationally Determined Contribution (NDC), the country set the goal of reducing GHG emissions by 30-40% to 370 Mtco2eq by 2030 compared with the 20-25% projected business-as-usual scenario included in the earlier plan. Thailand has also declared its commitment to continue upgrading related plans for GHG emission reduction, climate adaptation, and actions in the forestry and cement sectors; the adoption of carbon capture and storage (CCS) technology and climate-smart agriculture. In accordance with UNFCCC reporting requirements, Thailand plans to reach peak GHG emissions in 2025, carbon neutrality by 2050 and net zero GHG emissions by 2065, as outlined in the updated mid-century Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) from 2022.¹⁴ The BOI report on Clean Energy stressed the fact that the energy and transportation sectors are the primary targets of the GHG mitigation strategies mentioned in Thailand's LTLEDS. The identified measures include increasing energy efficiency, adopting bioenergy and CCS technology, upgrading the power grid system and introducing new, effective fleets of vehicles with increased energy efficiency. Thailand's LT-LEDS predicts a 50% RE share for total power generation by 2050, supported by increased energy efficiency across all sectors and a shift away from fossil fuels in transportation. It also estimates that by 2035, 70% of new vehicles will be electric.¹⁵

Moreover, Thailand is developing an effective and comprehensive legal framework, the "Climate Change Act," integrating appropriate carbon pricing instruments and necessary compulsory measures to induce emission reduction, incentivise low-carbon investment, and facilitate the transition towards a carbon-neutral and net-zero emission economy. This act is expected to be adopted later in 2025.

¹⁰ Energy Policy and Planning office (EPPO) of the Ministry of Energy (2020) 'Thailand Power Development Plan 2018'. Available at https://www.eppo.go.th/images/Infomation_service/public_relations/PDP2018/PDP2018Rev1.pdf (Accessed on 27 March 2025).

¹¹ Until currently, 24 April 2025.

¹² Ingkasit, Rapeepat and Junkrajan, Nawaphat (2024) Climate Finance Network Thailand (CFNT) Briefing 'A Better Path is Possible: Critique and Suggestions to Draft PDP2024'. Available at <https://climatefinancethai.com/wp-content/uploads/2024/07/A-Better-Path-is-Possible-Critique-and-Suggestions-to-Draft-PDP2024.pdf> (Accessed on 24 April 2025).

¹³ Climate Action Tracker (2022) 'Thailand Updates as of 13 December 2022'. Available at <https://climateactiontracker.org/countries/thailand/policies-action/> (Accessed on 27 March 2025).

¹⁴ United Nations Framework Convention on Climate Change (UNFCCC) (2022) 'The 2nd National Determined Contributions (NDSs) updated in November 2022'. Available at <https://unfccc.int/sites/default/files/NDC/2022-11/Thailand%20nd%20Updated%20NDC.pdf> (Accessed: 27 March 2025).

¹⁵ Board of Investment (BOI) (2024) 'Thailand Investment Review: ECO EXCELLENCE: Thailand's at Forefront of Clean Energy'. Available at https://www.boi.go.th/upload/ejournal/2024/Issue4/TIR_Newsletter_Sep2024.pdf (Accessed on 27 March 2025).

Just transition governance framework

Just transition concept

In Thailand, there has thus far been no official definition, main policy, or statement specifically adopted about Just Transition (JT) or Just Energy Transition (JET). However, since 2018, wider debates and discussions among international actors, academics, Civil Society Organisations (CSO), and Non-Governmental Organisations (NGOs) have led to a better level of understanding and awareness of JT and JET among relevant stakeholders in Thailand. The overall debate about JT and JET governance takes a holistic approach, focusing on the integration of social justice into the transition process from fossil energy dependence to a low-carbon energy economy and reducing GHG emissions to solve the climate change crisis in compliance with international commitments. Other key considerations, including labour rights aspects, especially of workers employed in the traditional energy industry, environmental justice, and wider social impacts at the community level and for low-income groups, also gained more attention in the discussions.¹⁶ From 2024 the concept of JET has gained more attention among Thai academics and CSOs following some critiques by Rapeepat Ingkasit and Nawaphat Junkrajang from the Climate Finance Network Thailand (CFNT) who claimed that Thailand's draft PDP2024 currently “falls short of achieving a JET despite claims of aligning with carbon neutrality goals”¹⁷ Importantly, it highlighted three key characteristics of JET particularly in the Thailand's context: fair compensation for fossil fuel workers, reform of energy governance to be fairer and more accountable, and the promotion of socially and environmentally responsible renewable energy. The article contends that PDP2024 fails to address these crucial elements, potentially perpetuating a centralised, fossil-fuel dependent system to the detriment of the Thai public and economy.¹⁸

Key just transition initiatives

Following the Thai Energy Industry Act B.E. 2550 (2007), the Electricity Development Fund was set up in 2007 as a key initiative aiming at 1) providing funds to develop electricity services in local and remote areas 2) expanding a good level of development to local and remote areas 3) assisting local communities affected by the operation of power plants and 4) promoting the use of renewable energy and low environmental impact technology among electricity business operations.¹⁹ Though the Power Development Fund (PDF) publishes its financial report regularly on its website²⁰, it has been criticised for the misuse of funds and even corruption cases. This fund is a mere deployment fund rather than being a specific initiative to support just and fair transitions in Thailand.

In 2019, following Thailand's PDF 2018, several more government initiatives were launched to support transitions to clean and renewable energy. The Solar Roof Program and Net Metering initiatives in Thailand (2019)²¹, for example, have enabled homes and businesses to generate their own electricity. Moreover, the government policy regarding state purchases of solar power firmed up substantially over 2019-2022, and this thus moved to a greater focus on the promotion of rooftop solar.

¹⁶ Phaha, Pattarawat (2022), 'Summary and Recommendations: How to Achieve Just Energy Transitions', SDG MOVE and Friedrich Ebert Stiftung. Available at <https://www.sdgmovement.com/2021/12/07/sdg-updates-how-to-achieve-just-energy-transition-summary-and-recommendations/>

¹⁷ Ingkasit, Rapeepat and Junkrajang, Nawaphat (2024) Climate Finance Network Thailand (CFNT) Briefing 'A Better Path is Possible: Critique and Suggestions to Draft PDP2024' Available at <https://climatefinancethai.com/wp-content/uploads/2024/07/A-Better-Path-is-Possible-Critique-and-Suggestions-to-Draft-PDP2024.pdf> (Accessed on 24 April 2025)

¹⁸ Achavanuntakul, Sarinee (2024) Climate Finance Network Thailand (CFNT) Article 'No sign of a 'just' energy transition' Available at <https://climatefinancethai.com/no-just-transition/> (Accessed on 24 April 2025)

¹⁹ Energy Regulatory Commission (ERC) (2022) 'About the Electricity Development Fund'. Available at <https://pdf.erc.or.th/MenuInternal/detail/39>

²⁰ <https://pdf.erc.or.th/MenuInternal/detail/370>

²¹ <https://www.krungsri.com/en/research/research-intelligence/Solar-Rooftop-2025>

This was achieved through a liberalisation of the rules governing installation, together with the rollout of supporting measures.²²

While government initiatives on just (energy) transition specifically seem to be rather limited, there are several capacity-building projects and programmes supported by international actors and donors which are instrumental in driving and leading initiatives related to JET in Thailand. Some examples are:

- Innovation Regions for a Just Energy Transition project (IKI JET): This project is jointly funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) and the European Commission. It has implemented stakeholder mapping, impact assessment, social dialogue, and stakeholder engagement activities revolving around the Mae Moh Project for the Electricity Authority of Thailand (Mae Moh Power Plant). Furthermore, IKI JET supports the closure and regeneration plan for Mae Moh coal mine, the revision of the Mae Moh Green Area roadmap for Lampang district (a coal region)²³ and the formulation of just energy transition plans and strategies, including policies, programs, and targeted support for potential transformational measures.²⁴
- ASEAN Power Grid (APG) under the EU Global Gateway: This APG project at the ASEAN level plays a key role in the energy transition by enabling the use of RE to achieve the clean energy transition in ASEAN countries. The construction of the APG is first done on cross-border bilateral terms, then expanded to a sub-regional basis and finally to a total integrated regional system connecting Thailand with other ASEAN countries. It is expected to enhance electricity trade across borders, which would provide benefits for Thailand and ASEAN members alike to meet the rising electricity demand and improve access to energy services in the region.²⁵

Key actors and coordination mechanisms

In Thailand, there are several ministerial stakeholders involved in the country's energy planning and executing projects related to energy. Key government actors include: 1) Ministry of Energy (MOE), especially the Energy Policy and Planning Office (EPPO) which is a pivotal agency in the formulation and administration of energy policies and planning for the national sustainability; 2) Ministry of Industry (MOI) which plays a role in setting energy standards and requirements for the industrial sector, such as determining minimum energy efficiency for machinery and equipment; 3) Board of Investment (BOI) plays an important role in attracting investment in the industrial sector, but the criteria for investment promotion should be revised to give more priority to projects that use clean and efficient energy. In addition, two bodies play a key role as government coordination mechanisms: 1) the National Energy Policy Committee plays a role in shaping the country's overall energy policy. It comprises various agencies from across ministries; and 2) The Energy Regulatory Commission (ERC) under the MOI is responsible as a regulatory mechanism to promote competition in the energy market and support the entry of small-scale power producers. Other key players at the national level are the Electricity Generating Authority of Thailand (EGAT) and the Department of Primary Industries and Mines, while provincial industrial councils play a key role in the regions of Saraburi and Lampang.

²² Idem.

²³ GIZ (2023) 'GIZ Presentation on JET-CR', September 2023, Bangkok, Thailand

²⁴ Ibid.

²⁵ ASEAN Centre for Energy (2025), 'ASEAN Power Grid'. Available at <https://aseanenergy.org/apaec/asean-power-grid/> (Accessed on 27 March 2025)

Moreover, the private sector (Siam Cement Group, Banpu, IRPC, Italian-Thai Development, TPI Polene Power, Global Power Synergy, Electricity Generating) plays an important role in investing in and developing clean energy technologies, such as the production and distribution of solar cells, electric vehicles and batteries. They can also participate in the development of energy projects with the local communities, which will help change energy consumption habits at the household level. In addition, non-government actors, including NGOs (Solidarity Centre, Greenpeace Thailand), research/academia (Thailand Development Research Institute, SDG MOVE and Friedrich Ebert Stiftung), and the wider public participate in monitoring government operations and express their opinions on energy-related policies during relevant stakeholder consultations.

Key transition challenges

Economic challenges

Despite the push for RE, Thailand still relies on fossil fuel products to drive the economy. Coal and lignite, and even more so, natural gas, play an important role in generating electricity to meet the country's electricity demand. The first key challenge in the energy transition is that Thailand's electricity market operates under an "enhanced single-buyer model". The Electricity Generating Authority of Thailand (EGAT), a state-owned enterprise (SOE), acts as the sole electricity wholesaler, controlling generation, transmission, and distribution, creating a vertically integrated monopoly, and unfortunately, this system has been observed to benefit and facilitate profit-making among Thai energy corporations and conglomerates. To drive a just and fair energy transition, experiences suggest that there will be a need for liberalisation and decentralisation in the energy sector, building more competition, and restructuring the energy business to ensure that a good level of competition among more players in the market will benefit consumers and workers across Thailand. As stressed by Asawapongphan, A. (2023) in the Thailand Development Research Institute (TDRI) article, "switching to clean energy is necessary, but not enough. Electricity liberalisation is mandatory".²⁶ Another key challenge for Thailand is the high electricity prices. Thailand's electricity prices have been a point of concern, with the government facing pressure to reduce them to address cost-of-living issues.²⁷ Moreover, the government's requirement for EGAT to provide electricity subsidies to prevent the economic impact of soaring international fuel prices has led to significant losses for EGAT, prompting the Energy Regulatory Commission (ERC) to raise electricity prices.²⁸ Hence, there is a need to review and reform the energy pricing structure in Thailand based on a more liberalised and competitive energy market.

Technological challenges

Thailand has abundant RE sources such as solar, wind, and biomass. Liberalisation of the energy sector would allow local communities and businesses to harness these resources more effectively, contributing to national energy goals. The Solar Roof Program and Net Metering initiatives in Thailand (2019)²⁹ mentioned earlier is a good initiative of how the technology could be expanded to promote greater local participation in energy production. However, the challenge remains on the scale, uncertainty, and continuation of the government initiatives and roles of the private sector in commercialising it.

²⁶ Asawapongphan, Areeporn (2023) 'End monopoly for cheap, clean energy, excerpt of the speech on Energy Reform: Key to Thailand's Survival at the 2023 TDRI Annual Conference' Thailand Development Research Institute (TDRI), Bangkok, Thailand. Available at <https://tdri.or.th/en/2023/11/end-monopoly-for-cheap-clean-energy/>

²⁷ Thai PBS (2024) 'Electricity price will be cut to 4.15 baht per unit for January-April 2024'. Available at <https://world.thaipbs.or.th/detail/electricity-price-will-be-cut-to-415-baht-per-unit-for-january-april-55607> (Accessed on 27 March 2025).

²⁸ Yin Bo-yu (2025) 'Thailand cuts electricity prices to alleviate public burden' Available at <https://www.recessary.com/en/news/th-regulation/thailand-cuts-electricity-prices-alleviate-public-burden>

²⁹ Narin Tunpaiboon (2025) 'Rooftop Solar: Global Clean Energy Trends and Investment Opportunities in Thailand' Krungsri Bank. Available at <https://www.krungsri.com/en/research/research-intelligence/Solar-Rooftop-2025>

As stressed by some policy critics, “despite Thailand's significant solar potential and decreasing costs of solar energy, the draft PDP2024 does not prioritise solar energy development. Instead, it focuses on unproven technologies like Small Modular Reactors (SMRs) and hydrogen blending and relies on socially and ecologically disruptive imports from large hydropower projects, which may not be as cost-effective or reliable as in the past”.³⁰ Moreover, the Thai government also pledged to support technologies for energy storage, carbon capture technology, and green hydrogen emission³¹ while trying to keep electricity prices low. This technological development at a fair price cannot be fulfilled without government efforts in the further liberalisation of the energy sector and large-scale investment projects in technologies, capacity-building, and skills development.

Social challenges

Thailand’s energy transition framework focuses mainly on reducing emissions and using clean energy to reduce environmental impacts. Key elements of labour and social challenges have not been strongly addressed in the national energy transition framework. Nevertheless, key social challenges have been raised and pressed by SDG MOVE and Friedrich Ebert Stiftung (2022), leading Think Tanks working to support the JET in Thailand, for example: 1) Impact on the Labour Sector: workers in traditional energy sectors (like fossil fuels) may face job displacement or changes in employment conditions without adequate policies to protect or reskill them; 2) Social and Environmental Justice: Thailand’s energy transition plan seems to overlook remedies for those groups or regions that have suffered from social and environmental injustices due to existing energy industries; 3) Fair Distribution and Reconciliation Equity: This means to ensure that the transition is equitable particularly for marginalised or vulnerable communities; 4) Capacity Building for Affected Groups and Communities: Many CSOs and NGOs mentioned a gap in strengthening the capacity of groups that are expected to be impacted by the energy transition.³² In addition, some experts also shared some concerns that many Thai businesses are becoming more and more “green” merely because they can reduce their carbon emissions, even though their operations continue to seriously pollute the environment. Hence, it is important to take into account both environmental and social aspects of the energy transitions.³³

³⁰ Ingkasit, Rapeepat and Junkrajan, Nawaphat (2024) Climate Finance Network Thailand (CFNT) Briefing 'A Better Path is Possible: Critique and Suggestions to Draft PDP2024' Available at <https://climatefinancethai.com/wp-content/uploads/2024/07/A-Better-Path-is-Possible-Critique-and-Suggestions-to-Draft-PDP2024.pdf> (Accessed on 24 April 2025)

³¹ Asawapongphan, Areeporn (2023) 'End monopoly for cheap, clean energy, excerpt of the speech on Energy Reform: Key to Thailand's Survival at the 2023 TDRI Annual Conference' Thailand Development Research Institute (TDRI), Bangkok, Thailand. Available at <https://tdri.or.th/en/2023/11/end-monopoly-for-cheap-clean-energy/>

³² Phaha, Pattarawut (2022), 'Summary and Recommendations: How to Achieve Just Energy Transitions', SDG MOVE and Friedrich Ebert Stiftung. Available at <https://www.sdgmovement.com/2021/12/07/sdg-updates-how-to-achieve-just-energy-transition-summary-and-recommendations/>

³³ Achavanuntakul, Sarinee (2024) Climate Finance Network Thailand (CFNT) Article 'No sign of a 'just' energy transition' Available at <https://climatefinancethai.com/no-just-transition/> (Accessed on 24 April 2025).

Policy challenges

One of the policy challenges in Thailand is a lack of integration and linkages between key policies that will make it relevant for a successful, fair and just energy transition of the country. Government agencies (i.e. various national committees and bodies) have been set up often but work in silos, developing and implementing rather short-term policies and campaigns without a long-term and full commitment. The necessary connections and coordination mechanisms between these bodies have not been sufficiently established, leading to gaps in addressing the broader impacts of the energy transition that are just and fair for people and consumers in Thailand. Finally, as for the policy trajectory, the current draft PDP2024, which will direct Thailand's energy transition plan towards 2037, has given no specific timeline for fossil phase-out. On the contrary, the plan still envisions adding 6,500 MW of new gas power plants, resulting in gas accounting for 41% of total energy production in 2037. Despite the country's plan and commitment to RE of 51% in 2037, another point of concern is the fact that, as pointed out in the TDRI report (2023), the government continues to approve the construction of new gas power plants. With an average life span of 20-25 years, these new plants lock Thailand into gas dependence for three decades, hampering the country's goal to embrace the clean energy transition and putting the energy system's stability at risk. Therefore, the same report suggests that the government must increase the number of clean power plants, while phasing out all gas power plants, and in the long run, gas power plants' role will gradually diminish, thanks to better energy storage technology and lower costs in clean energy production.³⁴

³⁴ Asawapongphan, Areeporn (2023) 'End monopoly for cheap, clean energy, excerpt of the speech on Energy Reform: Key to Thailand's Survival at the 2023 TDRI Annual Conference' Thailand Development Research Institute (TDRI), Bangkok, Thailand. Available at <https://tdri.or.th/en/2023/11/end-monopoly-for-cheap-clean-energy/>

Malaysia Country Profile

Introduction

This country profile provides an overview of the energy transition policy landscape and the just transition (JT) governance framework in Malaysia. It also identifies the key transition challenges faced by the country. This overview is intended to inform stakeholders about the progress and obstacles in Malaysia's journey towards a sustainable and equitable energy transition.

Key facts*

Population: 34.2 million (2024)
GDP: RM 1.93 trillion / USD 424.6 billion (2024)
GDP per capita: RM 54,894 / USD 12,578 (2024)
Climate neutrality target: 2050
Coal phase-out date: 2050
Workers employed in coal sector: 80,000 (estimated)

*Source: Department of Statistics Malaysia (DOSM)¹

Energy transition landscape

Current energy mix

Malaysia relies heavily on coal, which accounts for approximately 47% of its electricity generation. The country imports over 90% of its coal, mainly from Indonesia and Australia, making it vulnerable to global price fluctuations and supply disruptions. Malaysia has, in recent years, made provisions for a changed domestic energy landscape with the launch of the National Energy Policy (NEP) 2022-2040 in September 2022.² The plan emphasises the Government's aspirations to become a net-zero carbon nation by 2050, including the decision not to approve new coal-fired power plants (CFPPs) from 2021 and retire all of them by 2044.³

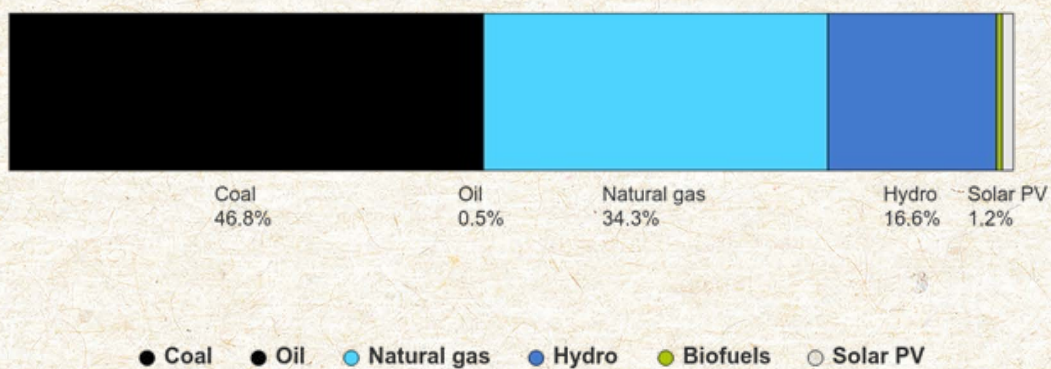


Figure 12: Malaysia Electricity Mix (2022)⁴

¹ DOSM (2024). Malaysia Dataset. Available at: <https://www.dosm.gov.my/> (accessed 28 April 2025).

² Economic Planning Unit, Prime Minister's Department. (2022) National Energy Policy (NEP) 2022-2040. Available at: <https://ekonomi.gov.my> (Accessed: 11 March 2025).

³ SEDA. (2021) Malaysia Renewable Energy Roadmap (MyRER). Available at: www.seda.gov.my (Accessed: 12 March 2025).

⁴ IEA, Malaysia. Available at <https://www.iea.org/countries/malaysia/energy-mix> (Accessed: 11 March 2025).

Based on the approved NEP, the coal capacity in the Peninsula is projected to decrease to 3,000 MW by 2041 compared to 12,061 MW in 2022. However, phasing out coal raises energy security concerns over grid stability, baseload power replacement and energy diversification, especially given the renewable energy (RE) intermittency.

Financial barriers arise due to the high transition costs, which include infrastructure upgrades and energy price volatility. Moreover, the economic dependence of coal sector workers may present societal challenges in terms of reskilling and job availability. Technological barriers may also pose issues, particularly concerning long-term degradation, maintenance, and service reliability. Despite these challenges, in 2021, the percentage of RE, particularly hydro and solar energy, in Malaysia was 15.9%, corresponding to 4,940 MW out of the total installed capacity (including self-generation and cogeneration) of 31,074 MW.⁵ This represents an increase of 18% compared to the previous year, when the installed capacity amounted to 4,584 MW.⁶

Key climate and energy policies and targets

Malaysia has set ambitious targets for achieving climate neutrality and reducing coal usage under its National Energy Transition Roadmap (NETR)⁷ and the Energy Transition Plan of Tenaga Nasional Berhad (TNB), the country's largest electricity company.⁸ The country aims to achieve net-zero greenhouse gas (GHG) emissions as early as 2050. To facilitate this transition, Malaysia has committed to phasing out coal from its power generation mix and scaling up the use of RE. The NETR outlines a Responsible Transition (RT) scenario that balances economic growth with decarbonization targets. By 2050, RE is expected to contribute 70% of installed capacity, and coal will be fully phased out for electricity generation. Simultaneously, the share of RE in the total primary energy supply (TPES) is expected to grow from 7.2% in 2018 to 17% by 2040.⁹ Additionally, the roadmap includes energy efficiency measures, increased electrification of transport, and the adoption of biofuels to curb emissions. TNB's strategy includes gradually reducing coal generation capacity, increasing RE deployment, and implementing carbon management solutions. This transition is supported by investments in large-scale solar projects, hybrid hydro-floating solar systems, and co-firing initiatives using hydrogen and ammonia.

As part of its Nationally Determined Contributions (NDC) under the Paris Agreement, Malaysia has pledged to reduce its carbon intensity by 45% by 2030 compared to 2005 levels. This commitment aligns with its Low Carbon Nation Aspiration 2040 (LCNA 2040),¹⁰ which seeks to drive low-emission development. Malaysia has also implemented complementary policies, such as the NDC Roadmap and Long-Term Low Emissions Development Strategies (LT-LEDS), to ensure a structured transition. The government is leveraging a mix of regulatory frameworks, carbon pricing instruments, and investments in emerging clean technologies, such as carbon capture, utilisation, and storage (CCUS), to support its decarbonization agenda. Additionally, investments in electric mobility and biofuel adoption for the transportation sector are crucial components of the strategy. The NEP also emphasises the need for green financing mechanisms and incentives to accelerate the energy transition and ensure a sustainable economic transformation.¹¹

⁵ Energy Commission. (2022) Annual Report. Available at: <https://www.st.gov.my> (Accessed: 11 March 2025)

⁶ Department of Statistic Malaysia. (2025) Quarterly Gross Domestic Product. Available at: <https://open.dosm.gov.my> (Accessed: 11 March 2025)

⁷ Ministry of Economy. (2023) National Energy Transition Roadmap (NETR). Available at: <https://ekonomi.gov.my> (Accessed: 11 March 2025)

⁸ Tenaga Nasional Berhad. (2023) Powering Growth Catalysing Green Sustainability Report 2023. Available at: <https://www.tnb.com.my> (Accessed: 11 March 2025)

⁹ PETRONAS-PWC. (2023) Laying the Foundation for a Just Energy Transition. Available at: <https://www.petronas.com> (Accessed: 12 March 2025)

¹⁰ Malaysian Investment Development Authority (MIDA). 2025 Driving Transformation and Value Creation. Available at: www.mida.gov.my (Accessed: 12 March 2025)

¹¹ Ministry of Natural Resources, Environment and Climate Change Malaysia (NRECC). 2024 Advancing Just Energy Transition. Available at: [https://www.st.gov.my/en/contents/files/download/188/01-44_Prospectus\(FA\)2.pdf](https://www.st.gov.my/en/contents/files/download/188/01-44_Prospectus(FA)2.pdf) (Accessed: 12 March 2025)

Just transition governance framework

Just transition concept

The official definition of a just transition is not explicitly provided, but the NETR 2023 and the NEP emphasise a fair and equitable energy transition, ensuring that the workforce and other stakeholders are supported through strategic planning and skills development. While these do not explicitly define a "just transition," they incorporate principles of fairness by promoting workforce upskilling, social equity, and affordability to mitigate the negative impacts on affected sectors. The policies highlight the need for collaboration between the public and private sectors, ensuring that Malaysia remains competitive in the green economy while addressing environmental and social governance (ESG) standards¹². The NETR indicates that there are challenges in aligning various ministries, industries, and communities in understanding and implementing a just transition. While efforts are being made through the Malaysia Energy Literacy Program (MELP) and partnerships with universities and industry players to promote informed decision-making and action by the population regarding energy usage, low energy literacy remains a significant barrier.¹³ Therefore, increasing awareness and capacity-building among stakeholders is a critical focus.

Key just transition initiatives

Malaysia employs a multifaceted approach to finance just transition initiatives, combining public funding, private sector participation, and international collaboration.

On the one hand, these initiatives focus on workforce upskilling. Supported by public-private partnerships (PPPs), Tenaga Nasional Berhad (TNB) ensures that coal industry workers can transition into green jobs. TNB aims to be coal-free by 2050 and is committed to reskilling and upskilling its employees to support the sustainability plan and energy transition by developing Subject Matter Experts (SMEs) in TNB's core business areas. PETRONAS, Malaysia's national oil and gas company, has established several educational institutions to develop a skilled workforce for the energy sector, such as the Institut Teknologi Petroleum PETRONAS (INSTEP) or the Universiti Teknologi PETRONAS (UTP).¹⁴ The National Energy Policy also emphasises human capital development, focusing on equipping workers with skills in digitalisation, automation, and advanced energy technologies.¹⁵ Small and medium enterprises (SMEs) support programs help businesses adapt to sustainability standards through funding and incentives, while community-based initiatives ensure fair access to green jobs and infrastructure.

On the other hand, initiatives focus on green energy/technology, like the Green Technology Financing Scheme (GTFS) that provides support for green tech investments, or the Energy Transition Financing scheme that aims to catalyse private & state-led initiatives. Malaysia has two Major international donors, the UEM group-ITRAMAS collaboration under the NETR, under which a 1GW Hybrid Solar PV park is being developed, and Masdar's RE, which will invest up to USD 8 billion to develop a 10GW distributed RE system across Malaysia.

¹² Ministry of Natural Resources and Environmental Sustainability (NRES). (2024) National Climate Change Policy 2.0. Available at: <https://www.nres.gov.my> (Accessed: 12 March 2025).

¹³ Energy Commission. (2022) Annual Report. Available at: <https://www.st.gov.my> (Accessed: 11 March 2025).

¹⁴ PETRONAS. Fostering a Just Transition. Available at <https://www.petronas.com/sustainability/fostering-a-just-transition> (Accessed: 12 March 2025).

¹⁵ Economic Planning Unit, Prime Minister's Department. (2022) National Energy Policy (NEP) 2022-2040. Available at: <https://ekonomi.gov.my> (Accessed: 11 March 2025).

Key actors and coordination mechanisms

The main actors involved in Malaysia's just transition process include the central government, businesses, financial institutions, labour unions, civil society organisations, and academia. Regional governments in Malaysia often play a supplementary role in the just transition process. The central government, through agencies like the Ministry of Economy and the Ministry of Energy Transition and Water Transformation (PETRA), drive policy frameworks such as the NETR and the Malaysia Renewable Energy Roadmap (MyRER) to guide sustainable energy transition efforts.¹⁶ Businesses play a key role in integrating sustainability practices, reskilling workers, and decarbonising supply chains. Financial institutions support green investments through ESG financing mechanisms, while labour unions advocate for worker protections and job security during industry shifts. Civil society organisations such as Klima Action Malaysia (KAMY), LEAP (Land Empowerment Animals People) or Sahabat Alam Malaysia (SAM) and academia contribute by raising public awareness, conducting research, and developing workforce training programs.

Coordination among these actors is facilitated through PPPs, roundtable discussions, and policy dialogues. A notable initiative is the PETRONAS-Pwc roundtable series, which convenes government agencies, the oil and gas sector, financial institutions and civil society to identify challenges and opportunities in workforce transition, supply chain resilience, and community development.¹⁷ The government also engages with businesses, for example, through the Energy Commission of Malaysia, to align policies with industry needs, and financial institutions, including national development banks like Bank Negara Malaysia (BNM) and the Malaysian Industrial Development Finance (MIDF), ensuring investment incentives and regulatory support for sustainable energy projects. Additionally, cross-sector collaborations drive the energy transition forward. Corporate-industrial collaboration enables businesses to source RE through Virtual Power Purchase Agreements (VPPAs), as seen in AirTrunk's partnership with TNB to procure 30 MW of solar energy, reducing its carbon footprint while ensuring energy stability. Finance-innovation alliances such as the Green Technology Financing Scheme (GTFS) provide SMEs with access to capital for sustainable technology adoption. Moreover, structured workforce training programs equip workers with future-ready skills in renewable energy, green hydrogen, and sustainable infrastructure development. These collective efforts ensure an inclusive and equitable transition toward a low-carbon economy, balancing economic growth with environmental and social sustainability.

Key transition challenges

Economic challenges

Malaysia's energy transition poses economic challenges, particularly in fossil-fuel dependent regions like Sarawak and Sabah, which rely heavily on oil and gas, and Tanjung Bin and Manjung, where major CFPPs are located. Phasing out coal in Malaysia presents economic challenges due to high reliance on coal for power generation, the need for substantial investment in RE infrastructure, and potential job losses and economic disruption in coal-dependent communities. These industries must adapt to shifting investment. The transition involves high costs for RE adoption, structural adjustments in key industries, and the need for economic diversification. SMEs in the coal supply chain face financial and technical barriers, while manufacturing and clean technology sectors require strategic investments to enhance competitiveness. The shift also impacts supply chains and infrastructure, requiring policy support and financial mechanisms to ensure long-term industrial growth in a low-carbon economy.¹⁸

¹⁶ SEDA. (2021) Malaysia Renewable Energy Roadmap (MyRER). Available at: www.seda.gov.my (Accessed: 12 March 2025).

¹⁷ PETRONAS-PWC. (2023) Laying the Foundation for a Just Energy Transition. Available at: <https://www.petronas.com> (Accessed: 12 March 2025).

¹⁸ Ministry of Economy. (2023) National Energy Transition Roadmap (NETR). Available at: <https://ekonomi.gov.my> (Accessed: 11 March 2025).

Technological challenges

Deploying RE and decommissioning coal infrastructure in Malaysia presents significant technical and economic challenges, particularly regarding grid stability, storage capacity, and infrastructure repurposing. One major challenge is that Malaysia's CFPPs are designed for baseload generation, meaning they provide consistent and stable electricity output, unlike intermittent solar and wind energy sources. Rapidly replacing coal without sufficient backup could lead to grid instability and supply disruptions. Additionally, repurposing CFPPs for alternative energy sources, such as biomass or hydrogen co-firing, is technically complex and costly, requiring modifications to existing systems that may not always be feasible due to ageing infrastructure, inefficiencies, or fuel supply constraints.

Malaysia's geographical and industrial landscape also affects its approach to coal phase-out strategies. Unlike some countries that have successfully converted CFPPs into natural gas or battery storage facilities, Malaysia faces challenges due to limited domestic gas reserves and high investment costs for large-scale energy storage systems. Furthermore, financing the transition is difficult, as many existing coal plants operate under long-term power purchase agreements (PPAs), making early decommissioning financially burdensome for operators and policymakers.

To maintain energy security, Malaysia must balance its coal phase-out with grid modernisation efforts, including investment in energy storage, smart grids, and distributed energy systems. However, regulatory uncertainty, limited incentives for coal repurposing, and dependency on fossil fuel subsidies continue to slow progress. These challenges highlight the complexity of transitioning away from coal and the need for a phased, well-structured approach that aligns with Malaysia's unique energy mix, financial constraints, and infrastructure readiness.

Financial challenges

Access to financing for SMEs and large-scale RE projects in Malaysia remains constrained by high upfront costs, complex regulatory requirements, and investment uncertainties. Estimates suggest that Malaysia requires billions in funding to achieve its energy transition targets, but securing sufficient capital remains a challenge.¹⁹ While green financing mechanisms such as green bonds and sustainability-linked loans are emerging, their adoption is still limited. Additionally, Malaysia has yet to secure a large-scale international financing package similar to the Just Energy Transition Partnership (JETP) seen in other countries, making reliance on domestic funding and private sector investments more critical. Financial barriers are further compounded by fossil fuel subsidies, policy inconsistencies, and the perceived risks associated with RE investments, slowing the pace of transition.

Social challenges

Malaysia's energy transition presents distinct social challenges, particularly for workers in the coal industry, low-income households, rural communities, and indigenous groups. While the number of coal industry workers is relatively low, broader supply chain jobs in transportation, logistics, and maintenance are also at risk. Coal-dependent regions such as Manjung and Tanjung Bin, where major CFPPs operate, face economic uncertainty as industries shift. Beyond workers, other vulnerable groups are also affected, including low-income households, particularly in rural Sabah and Sarawak, where energy price fluctuations and subsidy reforms could make electricity less affordable. Indigenous

¹⁹ Institute for Capital Market Research Malaysia. (2024) Market-Based Financing for SMEs in Malaysia. Available at: https://www.icmr.my/wp-content/uploads/2024/02/ICMR_SME-Financing-Report_FINAL_23022024.pdf (Accessed: 12 March 2025)

communities in areas targeted for large-scale RE projects face risks related to land use, displacement, and limited benefit-sharing, leading to tensions over project development. Social acceptance of RE varies, with community opposition to large-scale solar and hydro projects due to perceived adverse environmental and economic impacts.²⁰

Policy challenges

Malaysia's energy transition faces policy and governance challenges due to fragmented regulations, inconsistent policy direction, and coordination gaps between government agencies. The Ministry of Energy Transition and Water Transformation (PETRA) leads the energy transition agenda, but overlaps with the Ministry of Economy, the Ministry of Natural Resources, Environment, and Climate Change (NRECC), and state governments create regulatory inconsistencies. For example, state-level control over land and RE project approvals often leads to delays and differing enforcement standards. Additionally, Malaysia's power sector liberalisation remains incomplete, with TNB maintaining dominance in electricity generation, transmission, and distribution, creating uncertainty for independent power producers (IPPs) and new RE entrants.²¹

Policy inconsistencies also arise in subsidy reforms and fossil fuel phase-out strategies. While the government promotes RE expansion, continued subsidies for coal (and natural gas) create market distortions that discourage private investment in RE. The absence of clear workforce transition policies further complicates the shift, leaving workers in coal and larger fossil fuel supply chains uncertain about future employment prospects. Additionally, supply chain adaptation policies for industries dependent on fossil fuels remain underdeveloped, limiting incentives for businesses to transition. Malaysia's climate commitments, such as net-zero targets and international agreements, sometimes conflict with domestic economic policies, slowing progress on energy reforms. These governance challenges contribute to regulatory uncertainty, slower RE deployment, and difficulties in ensuring an equitable transition.

²⁰ UNFCCC. (2023) Implementation of Just Transition and Economic Diversification Strategies. Available at: <https://unfccc.int/sites/default/files/resource/A%20compilation%20of%20best%20practices%20on%20JT%20and%20EDT.pdf> (Accessed: 12 March 2025)

²¹ Ministry of Economy. (2023) National Energy Transition Roadmap (NETR). Available at: <https://ekonomi.gov.my> (Accessed: 11 March 2025).

Annex VI: Policy Assessment Framework

Policy Assessment Framework (PAF) - theory

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P1: Transparent and inclusive transition governance mechanism	1.1 Transparent governance mechanism for development of policy and/or its implementation	Lack of detail on a functioning coordination body for the development and implementation of the policy (who does what and when). Relevant documents and data are not available to policymakers and stakeholders, transparency is lacking.	Coordination body for the development and implementation of the policy is set up, but processes and roles are not clearly identified, and/or transparency is missing, and/or relevant documents and data are not available to policymakers and stakeholders.	Coordination body for the development and implementation of the policy is set up according to transparent criteria, processes and roles are identified and relevant documents and data are available to policymakers and stakeholders.	There is no mention whatsoever about this Indicator/Principle
	1.2 Horizontal policy coherence and coordination (across sectoral policies institutions at the same governance level[1])	The policy is not coherent/aligned with other relevant sectoral policies, regulations and concepts at the same governance level. There is no mention of any collaborative mechanism with (governmental) institutions at the same governance level.	The policy is somewhat coherent/aligned with relevant sectoral policies, regulations and concepts at the same governance level. Some collaborative mechanisms with some (governmental) institutions at the same governance level are noted without going into detail.	The policy is coherent/aligned with relevant sectoral policies, regulations and concepts at the same governance level. Collaborative mechanisms with (governmental) institutions at the same governance level are well explained.	There is no mention whatsoever about this Indicator/Principle
	1.3 Vertical policy coherence and coordination (across multiple governance levels)	The policy is not coherent/aligned with relevant local, regional/national and/or international transition policies, regulations and concepts. There is no mention of any collaborative mechanism with (governmental) institutions at other governance levels.	The policy is somewhat coherent/aligned with relevant local, regional/national and/or international transition policies, regulations and concepts. Some collaborative mechanisms with (governmental) institutions at other governance levels are mentioned without going into detail.	The policy is coherent/aligned with relevant local, regional/national and/or international transition policies, regulations and concepts. Collaborative mechanisms with (governmental) institutions at other governance levels are well explained.	There is no mention whatsoever about this Indicator/Principle
	1.4 Monitoring and evaluation	There is no mention of any monitoring and evaluations mechanisms for assessing the implementation of the policy.	The policy contains some follow-up mechanisms, but they cannot be classified as monitoring or evaluations since no methodology or indicators are mentioned.	The policy contains at least some indicators or methodology for evaluation or monitoring of the implemented policy.	There is no mention whatsoever about this Indicator/Principle

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P2: Meaningful and inclusive stakeholder engagement process	2.1 Identification of stakeholders and definition of their roles	The policy does not identify relevant stakeholders and their roles and status in the process of designing or implementing the policy.	The policy identifies some relevant stakeholders but without an indication of their roles and status in the process of designing or implementing the policy.	The policy clearly identifies relevant stakeholders to be involved and justifies or defines their roles or status in the process of designing or implementing the policy.	There is no mention whatsoever about this Indicator/Principle
	2.2 Transparent and clear provisions to enable and ensure effective public participation in the design, monitoring and implementation of the policy	The policy neither mentions stakeholder engagement plans nor how stakeholder views and consultation inputs have been or will be integrated into the preparation, implementation, monitoring and evaluation of the policy.	The policy mentions a stakeholder engagement plan or at least how stakeholder views and consultation inputs have been or will be integrated into the preparation, implementation, monitoring and evaluation of the policy.	The policy contains a clear stakeholder engagement plan and explains how stakeholder views have been or will be integrated in the preparation, implementation, monitoring and evaluation of the policy.	There is no mention whatsoever about this Indicator/Principle
	2.3 Communication strategy	No communication strategy accompanying the various design and implementation steps of the policy is evident.	Some communication activities have been implemented in the process of designing/implementing the policy, however, without a clear communication strategy.	A comprehensive communication strategy targeting different audiences and accompanying various design and implementation steps of the policy is available. It recognizes the need to communicate policy implications through specific activities.	There is no mention whatsoever about this Indicator/Principle
	2.4 Inclusion of frameworks for social dialogue (consultations with labour unions and/or social partners)	Social dialogue was not a part of the design process of the policy and is not considered in its implementation.	Social dialogue or other forms of engagement with labour unions and/or social partners are somewhat mentioned, without clear indication of their role in the policy design and implementation process.	Comprehensive social dialogue was/is part of the policy design and implementation process.	There is no mention whatsoever about this Indicator/Principle

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P3: Consideration of vulnerable groups	3.1 Identification of vulnerable groups (Indigenous People, low income households, vulnerable families, women, youth, elderly, informal workers, etc.) and definition of their roles	The policy does not identify specific vulnerable groups and their roles and status in the process of designing or implementing the policy.	The policy identifies some relevant vulnerable groups but without an indication of their roles and status in the process of designing or implementing the policy.	The policy clearly identifies relevant vulnerable groups to be involved and justifies or defines their roles or status in the process of designing or implementing the policy.	There is no mention whatsoever about this Indicator/Principle
	3.2 Inclusion of mechanisms to engage and respond to the needs of vulnerable groups	The policy does not mention or recognize the needs of vulnerable groups.	The needs of vulnerable groups are identified, but there are no mechanisms mentioned to address them.	The needs of vulnerable groups are identified and measures are designed accordingly to address these needs.	There is no mention whatsoever about this Indicator/Principle
	3.3 Recognizing and addressing societal inequality	The policy does not identify existing or potential societal inequalities or any measures to address these.	The policy identifies the need to address existing and/or potential societal inequalities, however without mentioning specific measures.	The policy clearly identifies the need to address existing and/or potential societal inequalities, including specific measures to alleviate these.	There is no mention whatsoever about this Indicator/Principle
	3.4 Analysis of effects on human rights	The policy does not mention human rights in the economic, social, cultural, civil or political context.	The policy identifies some human rights issues in the economic, social, cultural, civil and/or political context.	The policy identifies relevant human rights issues in the economic, social, cultural, civil, and political context and sets out how to secure these rights through measures.	There is no mention whatsoever about this Indicator/Principle

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P4: Equitable workforce transition	4.1 Identification of skills, training and education gaps	The policy does not identify skills, training and education gaps.	The policy identifies some skills, training and education gaps but only partially (e.g., only of directly affected workers or specific sector(s) or through a baseline analysis of certain sectors).	The policy identifies skills, training and education gaps (incl. also indirectly affected workers, across various sectors and forecasting/scenarios).	There is no mention whatsoever about this Indicator/Principle
	4.2 Measures to address upskilling and reskilling gaps (incl. employment programmes, vocational training, etc.)	The policy does not identify any actions or investment strategies for relevant reskilling and upskilling of workers affected by the policy.	The policy foresees relatively minor or non-specific actions and investments to address gaps for workers directly affected by the policy.	The policy foresees specific actions and investments to address gaps for workers directly and indirectly affected by the policy.	There is no mention whatsoever about this Indicator/Principle
	4.3 Measures to address higher and lower educational gaps	The policy does not identify any actions for addressing educational gaps.	The policy foresees relatively minor or non-specific actions to address educational gaps.	The policy foresees specific actions to address educational gaps.	There is no mention whatsoever about this Indicator/Principle
	4.4 Ensuring the quality of new jobs	The policy does not consider the quality and sustainability of new jobs.	The policy recognizes the need to create new jobs of quality and sustainability, however, without indicating specific measures to achieve this goal.	The policy clearly recognizes that new jobs created should be of high quality and sustainability and indicates specific measures to achieve this goal.	There is no mention whatsoever about this Indicator/Principle

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P5: Economic diversification	5.1 Analysis of the strengths, potentials and opportunities for economic diversification	The policy does not include any analysis of the strengths, potentials and opportunities for economic diversification.	The policy includes a basic analysis of economic diversification but without diversification measures for specific sectors provided.	The policy includes a detailed analysis of strengths, potentials and opportunities for economic diversification, incl. specific sectors and measures to achieve this goal.	There is no mention whatsoever about this Indicator/Principle
	5.2 Encouragement of sustainable economic diversification: away from fossil fuel-dependent industries, into carbonneutral/positive or based on clean energy industries (i.e. onshore/offshore wind and solar)	The policy does not promote economic diversification into more sustainable sectors.	The policy promotes economic diversification into more sustainable sectors, however without consideration of the necessity for new industries to be carbon-neutral/positive or based on clean energy.	The policy promotes economic diversification into more sustainable sectors, with specific actions to develop carbon-neutral/positive or based on clean energy industries. [Extra highlight if reference to sustainable critical raw materials mining is made in the policy]	There is no mention whatsoever about this Indicator/Principle
	5.3 Support for investment in SMEs, start-ups and cooperatives	The policy fails to recognize the role of SMEs, startups and cooperatives in sustainable economic development.	The policy recognizes the role and value of SMEs and/or start-ups and cooperatives without describing support mechanisms to foster their development.	The policy recognizes the role and value of SMEs or start-ups and cooperatives and describes specific support mechanisms to foster their development.	There is no mention whatsoever about this Indicator/Principle
	5.4 Identification of public or private sources of investment for economic development[2]	The policy does not identify any public or private funding sources dedicated to economic development.	The policy identifies some public and/or private funding sources dedicated to supporting economic development, but without a coherent and long-term financing plan.	The policy sets out a coherent and long-term financing plan for economic development and identifies public and/or private sources of funding.	There is no mention whatsoever about this Indicator/Principle

Principle	Indicator	Assessment scores (level of ambition)			
		Low	Medium	High	N/A
P6: Environmental rehabilitation and repurposing	6.1 Abatement of environmental legacies of fossil fuel extraction and energy generation	The policy does not address the environmental legacies of energy infrastructure and other fossil fuels inflicted environmental legacies.	The policy addresses the environmental legacies of fossil fuel extraction/energy production but does not propose specific measures to abate these.	The policy clearly addresses the environmental legacies of fossil fuels, including specific measures to abate these according to a time plan.	There is no mention whatsoever about this Indicator/Principle
	6.2 Improvement of environmental quality and biodiversity of region (indicators relating to biodiversity, air, water and soil pollution, postindustrial landscapes, and accessible greenspace)	The policy does not recognize the objective of improving the environmental quality of the region and does not foresee actions to improve biodiversity and environmental conditions and related indicators.	The policy recognizes the objective of improving the environmental quality of the region but does not identify specific actions to improve some biodiversity and environmental conditions and related indicators.	The policy recognizes the objective of improving the environmental quality of the region and identifies concrete actions to improve a wide range of biodiversity and environmental conditions and indicators.	There is no mention whatsoever about this Indicator/Principle

[1] It is expected that most policies will be from national level and therefore checked for alignment with other policies at the national level. In some cases, however, policies at the regional level will be analyzed and, therefore, checked in terms of alignment with other policies at the regional level.

[2] Overall just transition financing mechanisms will be explored as part of the four country profiles.

REFERENCES

- Achavanuntakul, S. (2024). No sign of a 'just' energy transition. Climate Finance Network Thailand. <https://climatefinancethai.com/no-just-transition/>
- Adonis, M. (2024). Grid infrastructure can't cope with RE boom – BMI research. Philippine Daily Inquirer. <https://business.inquirer.net/446086/grid-infrastructure-cant-cope-with-re-boom-bmi-research>
- Aliansi Masyarakat Adat Nusantara. (2024). Siaran pers catatan tahun 2023 Aliansi Masyarakat Adat Nusantara (AMAN). <https://www.aman.or.id/news/read/Siaran%20Pers%20Catatan%20Tahun%202023%20Aliansi%20Masyarakat%20Adat%20Nusantara%20%28AMAN%29>
- ASEAN Centre for Energy. (n.d.). Red tape, tight rules discourage investments in renewable energy. <https://aseanenergy.org/news-clipping/red-tape-tight-rules-discourage-investments-in-renewable-energy/>
- ASEAN Centre for Energy. (2025). ASEAN power grid. <https://aseanenergy.org/apaec/asean-power-grid/>
- Asian Development Bank. (n.d.). Philippines: Geothermal resource de-risking facility. <https://www.adb.org/projects/58245-001/main>
- Asian Development Bank. (2021). Energy transition mechanism.
- Asian Development Bank. (2023). Just transition financing facility and support.
- Asawapongphan, A. (2023). End monopoly for cheap, clean energy: Excerpt of the speech on energy reform: Key to Thailand's survival at the 2023 TDRI annual conference. Thailand Development Research Institute. <https://tdri.or.th/en/2023/11/end-monopoly-for-cheap-clean-energy/>
- Badan Pusat Statistik. (2022). Booklet survei angkatan kerja nasional Agustus 2022. <https://www.bps.go.id/publication/2022/12/23/70829445f7981a364b4064e4/booklet-survei-angkatan-kerja-nasional-agustus-2022.html>
- Badan Pusat Statistik. (2024). Ekonomi Indonesia triwulan IV-2023 tumbuh 5,04 persen (y-on-y). <https://www.bps.go.id/id/pressrelease/2024/02/05/2379/ekonomi-indonesia-triwulan-iv-2023-tumbuh-5-04-persen--y-on-y-.html>
- Bangko Sentral ng Pilipinas. (2020). Sustainable finance framework.
- Barroco, J., & Herrera, M. (2019). Clearing barriers to project finance for renewable energy in developing countries: A Philippines case study. Energy Policy. <https://doi.org/10.1016/j.enpol.2019.111008>
- Berenschot, W., Dhiaulhaq, A., Hospes, O., & Pranajaya, D. (2024). Corporate contentious politics: Palm oil companies and land conflicts in Indonesia. Political Geography, 114, 103166. <https://doi.org/10.1016/j.polgeo.2023.103166>
- Board of Investment. (2024a). Demographic. <https://www.boi.go.th/index.php?page=demographic>
- Board of Investment. (2024b). Infrastructure. <https://www.boi.go.th/index.php?page=electricity>

- Board of Investment. (2024c). Thailand investment review: ECO excellence: Thailand's at forefront of clean energy. https://www.boi.go.th/upload/ejournal/2024/Issue4/TIR_Newsletter_Sep2024.pdf
- Cahyadi, F. (2024). What does Indonesia's new president mean for the country's just energy transition? <https://www.jetknowledge.org/insights/indonesia-prabowo-new-president-just-energy-transition/>
- Christensen, L. T., & Suharsono, A. (2022). Achieving a just energy transition in Indonesia. International Institute for Sustainable Development. <https://www.iisd.org/publications/brief/achieving-just-energy-transition-indonesia>
- Climate Action Tracker. (2022). Thailand: Policies and action update. <https://climateactiontracker.org/countries/thailand/policies-action/>
- Climate Change Commission. (2009). Climate Change Act of 2009.
- Climate Change Commission. (2010). National framework strategy on climate change 2010–2022.
- Climate Change Commission. (2012). National climate change action plan 2011–2028.
- Climate Change Commission. (2023). Nationally determined contribution implementation plan.
- Climate Change Commission. (2024). National adaptation plan 2023–2050.
- Climate Transparency, & Institute for Essential Services Reform. (2024). Public finance on Indonesia's energy transition: Implementation assessment. <https://www.climate-transparency.org/wp-content/uploads/2024/11/Public-Finance-on-Indonesia-Energy-Transition-Implementation-Assessment.pdf>
- Coordinating Ministry for Economic Affairs. (2025). Decree No. 141 of 2025 on the energy transition task force.
- Coordinating Ministry for Maritime Affairs and Investment. (2024). Indonesia just transition white paper.
- Coordinating Ministry for Maritime Affairs and Investment. (2024, September). The role of coal in Indonesia energy transition program [Conference presentation]. Coaltrans Asia 2024, Bali, Indonesia.
- Daniel, D., & Hapsari, P. (2019). Informational asymmetry in public participation on environmental monitoring in Indonesian regulation: A preliminary discourse. *CSID Journal of Infrastructure Development*, 2(1), 4–19.
- Department of Energy. (2001). Electric power industry reform act (EPIRA).
- Department of Energy. (2008). Green energy option program.
- Department of Energy. (2008). Net metering program.
- Department of Energy. (2008). Renewable energy act of 2008.
- Department of Energy. (2008). Renewable portfolio standards.
- Department of Energy. (2019). Energy efficiency and conservation act.
- Department of Energy. (2020). Moratorium on new coal-fired power plants.

- Department of Energy. (2022). Philippine energy plan 2023–2050.
- Department of Environment and Natural Resources. (2024). Just transition framework (Draft).
- Department of Finance. (2012). People’s survival fund.
- Department of Finance. (2024). Recto calls for study of carbon pricing instruments, underscores need to identify optimal mix for PH. <https://www.dof.gov.ph/recto-calls-for-study-of-carbon-pricing-instruments-underscores-need-to-identify-optimal-mix-for-ph/>
- Department of Finance, & Department of Environment and Natural Resources. (2022). Carbon market and carbon credit system framework.
- Department of Labor and Employment. (2016). Green jobs act of 2016.
- Department of Labor and Employment. (2020). National green jobs human resource development plan 2020–2030.
- Economic Planning Unit, Prime Minister’s Department. (2022). National energy policy 2022–2040.
- Energy Commission. (2001). Energy commission act.
- Energy Commission. (2023). Electricity supply act (Amendment).
- Energy Policy and Planning Office. (2020). Thailand power development plan 2018 (PDP2018 Rev. 1). https://www.eppo.go.th/images/Infromation_service/public_relations/PDP2018/PDP2018Rev1.pdf
- Energy Policy and Planning Office. (2024a). Coal and lignite statistics. <https://www.eppo.go.th/index.php/en/en-energystatistics/coal-and-lignite>
- Energy Policy and Planning Office. (2024b). Energy statistics of Thailand. <https://www.eppo.go.th/index.php/th/information-services/ct-menu-item-56>
- Energy Policy and Planning Office. (2024c). Summary statistics. <https://www.eppo.go.th/index.php/en/en-energystatistics/summary-statistic>
- Energy Regulatory Commission. (2022). About the electricity development fund. <https://pdf.erc.or.th/MenuInternal/detail/39>
- GIZ. (2023). GIZ presentation on JET-CR [Presentation]. Bangkok, Thailand.
- Greenpeace. (2021). Behind the scenes of coal imports and proposals for a sustainable and just energy transition in Thailand. https://www.greenpeace.org/static/planet4-thailand-stateless/2021/09/7b5d9e79-media-briefing-_-coalimport-2021.pdf
- Ingkasit, R., & Junkrajan, N. (2024). A better path is possible: Critique and suggestions to draft PDP2024. Climate Finance Network Thailand. <https://climatefinancethai.com/wp-content/uploads/2024/07/A-Better-Path-is-Possible-Critique-and-Suggestions-to-Draft-PDP2024.pdf>
- International Energy Agency. (2022). Southeast Asia energy outlook 2022. <https://www.iea.org/reports/southeast-asia-energy-outlook-2022/key-findings>
- International Labour Organization. (2004). Skills development fund act.

International Work Group for Indigenous Affairs. (n.d.). Philippines. <https://iwgia.org/en/philippines.html>

Just Energy Transition Partnership. (2023). Comprehensive investment and policy plan (CIPP): Indonesia.

Just Energy Transition Partnership. (2025). Paparan singkat mengenai JETP & transisi berkeadilan. <https://drive.google.com/drive/folders/1wfm2Eb7WwZ8DbvcSVoDzCSZs5lxdFGwm>

Krungsri Bank. (2025). Rooftop solar: Global clean energy trends and investment opportunities in Thailand. <https://www.krungsri.com/en/research/research-intelligence/Solar-Rooftop-2025>

Laqui, I. (2024). Floating solar project to affect over 800 fishers in Laguna de Bay — group. The Philippine Star. <https://www.philstar.com/headlines/2024/06/16/2363324/floating-solar-project-affect-over-800-fishers-laguna-de-bay-group>

Mertins-Kirkwood, H., & Deshpande, Z. (2019). Who is included in a just transition? Considering social equity in Canada’s shift to a zero carbon economy. Canadian Centre for Policy Alternatives. <https://policyalternatives.ca/publications/reports/who-is-included-just-transition>

Ministry of Economy. (2023). National energy transition roadmap.

Ministry of Energy. (2018). Alternative energy development plan 2018–2037.

Ministry of Energy. (2018). Energy efficiency plan 2018–2037.

Ministry of Energy. (2022). Power development plan 2018–2037 (Rev. 1).

Ministry of Energy. (2024). Draft power development plan 2024–2037.

Ministry of Energy and Mineral Resources. (2016). Regulation No. 38 of 2016 on electrification.

Ministry of Energy and Mineral Resources. (2024). Decree No. 314 of 2024 on the national electricity plan (RUKN) 2025–2060.

Ministry of Energy and Mineral Resources. (2024). Regulation No. 2 of 2024 on rooftop solar power plants.

Ministry of Energy and Mineral Resources. (2024). Regulation No. 11 of 2024 on the use of domestic products for electricity infrastructure.

Ministry of Energy, Green Technology and Water. (2011). Low carbon cities framework.

Ministry of Energy, Green Technology and Water. (2015). National energy efficiency action plan.

Ministry of Energy, Green Technology and Water. (2017). Green technology master plan.

Ministry of Environment and Forestry. (2021). Long-term strategy for low carbon and climate resilience 2050. https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf

Ministry of Finance. (2022). CIF accelerating coal transition (ACT): Indonesia country investment plan (IP). https://fiskal.kemenkeu.go.id/docs/CIF-INDONESIA_ACT_IP-Proposal.pdf

Ministry of Investment, Trade and Industry. (2023). New industrial master plan 2030.

Ministry of Labour. (1975). Labour relations act (B.E. 2518).

- Ministry of Labour. (1985). Employment arrangement and jobseeker protection act (B.E. 2528).
- Ministry of Labour. (1998). Labour protection act (B.E. 2541).
- Ministry of Labour. (2002). Promotion of skill development act (B.E. 2545).
- Ministry of Labour. (2011). Occupational safety, health and environment act (B.E. 2554).
- Nalle, V. I. W. (2020). Bagaimana UU Cipta Kerja merusak desentralisasi yang dibangun setelah reformasi. The Conversation. <https://theconversation.com/bagaimana-uu-cipta-kerja-merusak-desentralisasi-yang-dibangun-setelah-reformasi-148091>
- Narin Tunpaiboon. (2025). Rooftop solar: Global clean energy trends and investment opportunities in Thailand. Krungsri Bank. <https://www.krungsri.com/en/research/research-intelligence/Solar-Rooftop-2025>
- National Economic and Development Authority. (2023). Philippine development plan 2023–2028.
- Office of Natural Resources and Environmental Policy and Planning. (2015). Climate change master plan 2015–2050.
- Office of Natural Resources and Environmental Policy and Planning. (2018). National environmental quality promotion and conservation act (No. 2).
- Office of Natural Resources and Environmental Policy and Planning. (2023). Thailand national adaptation plan.
- Office of Natural Resources and Environmental Policy and Planning. (2025). Draft climate change act.
- Office of the Energy Regulatory Commission. (2007). Energy industry act (B.E. 2550).
- Office of the Energy Regulatory Commission. (2012–2025). Electricity development fund regulations and orders.
- Office of the National Economic and Social Development Council. (2022). 13th national economic and social development plan 2023–2027.
- Organisation for Economic Co-operation and Development. (2024). Clean energy finance and investment roadmap of the Philippines. https://www.oecd.org/en/publications/clean-energy-finance-and-investment-roadmap-of-the-philippines_7a13719d-en.html
- Ordoñez, J. A., Jakob, M., Steckel, J. C., & Fünfgeld, A. (2021). Coal, power and coal-powered politics in Indonesia. <https://www.sciencedirect.com/science/article/abs/pii/S1462901121001271>
- Perdana, A. P. (2023). Coal use will be reduced, not eliminated. Kompas. <https://www.kompas.id/baca/english/2023/11/15/en-penggunaan-batubara-bakal-diturunkan-bukan-dihapuskan>
- PETRONAS Global. (n.d.). Fostering a just transition. <https://www.petronas.com/sustainability/fostering-a-just-transition>
- Phaha, P. (2022). Summary and recommendations: How to achieve just energy transitions. SDG Move & Friedrich Ebert Stiftung. <https://www.sdgmove.com/2021/12/07/sdg-updates-how-to-achieve-just-energy-transition-summary-and-recommendations/>

- President of Indonesia. (2022). Peraturan Presiden Nomor 112 Tahun 2022 tentang percepatan pengembangan energi terbarukan untuk penyediaan tenaga listrik. <https://peraturan.bpk.go.id/Details/225308/perpres-no-112-tahun-2022>
- Prime Minister's Department. (2016). Eleventh Malaysia plan 2016–2020.
- Pusat Studi Hukum dan Kebijakan Indonesia. (2023). Just energy transition in Indonesia: Analysis of regulatory gaps in the aspect of protection of affected groups. <https://pshk.or.id/dokumen/9531>
- Rappler. (2023). Most Filipinos see urgency to shift to renewable energy. <https://www.rappler.com/business/most-filipinos-see-urgency-shift-renewable-energy/>
- Republic of Indonesia. (2022). Enhanced nationally determined contribution. https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf
- Sambodo, M. T., Silalahi, M., & Firdaus, N. (2024). Investigating technology development in the energy sector and its implications for Indonesia. *Heliyon*, 10(6), e27645. <https://doi.org/10.1016/j.heliyon.2024.e27645>
- Sawiji, H. W. (2024). Where are the women in Indonesia's energy transition? SMERU Research Institute. <https://smeru.or.id/en/article/where-are-women-indonesia%E2%80%99s-energy-transition>
- Senate of the Philippines. (2022). Senate Bill No. 157: An act providing for a national energy policy and framework for a clean and just energy transition in the country, and appropriating funds therefor (19th Congress). <https://legacy.senate.gov.ph/lisdata/3786534306!.pdf>
- Setiawan, I. E., Zhang, Z., Corder, G., & Matsubae, K. (2021). Evaluation of environmental and economic benefits of land reclamation in the Indonesian coal mining industry. *Resources*, 10(6). <https://doi.org/10.3390/resources10060060>
- Siddiquee, N. A. (2023). Right to information law and open government: The Indonesian experience.
- Social Security Organisation (PERKESO). (2017). Employment insurance system act.
- Sustainable Energy Development Authority. (2010). National renewable energy policy and action plan.
- Sustainable Energy Development Authority. (2011). Renewable energy act.
- Sustainable Energy Development Authority. (2021). Malaysia renewable energy roadmap.
- Talitha, T., Firman, T., & Hudalah, D. (2020). Welcoming two decades of decentralization in Indonesia.
- Thai PBS. (2024). Electricity price will be cut to 4.15 baht per unit for January–April 2024. <https://world.thaipbs.or.th/detail/electricity-price-will-be-cut-to-415-baht-per-unit-for-januaryapril-/55607>
- Tritto, A. (2021). China's Belt and Road Initiative: From perceptions to realities in Indonesia's coal power sector. <https://www.sciencedirect.com/science/article/pii/S2211467X21000109>
- United Nations Framework Convention on Climate Change. (2015). Malaysia's nationally determined contribution.
- United Nations Framework Convention on Climate Change. (2022). NDC implementation roadmap.

- United Nations Framework Convention on Climate Change. (2022). Thailand's second updated nationally determined contribution. <https://unfccc.int/sites/default/files/NDC/2022-11/Thailand%20nd%20Updated%20NDC.pdf>
- World Bank. (2020). Indonesia database for policy and economic research. <https://databank.worldbank.org/source/indonesia-database-for-policy-and-economic-research>
- World Bank. (2024). Climate investment funds: Accelerating coal transition.
- World Bank. (2025). World Bank approves support for energy transition and resilience in the Philippines. <https://www.worldbank.org/en/news/press-release/2025/03/31/wb-approves-support-for-energy-transition-and-resilience-in-ph>
- Yap, J. T., Escresa-Guillermo, L., & Paras, Y. G. M. P. (2020). Access to sustainable energy in the Philippines: Market failure and political economy considerations (ASOG Working Paper No. 20-006). <https://ssrn.com/abstract=3578493>
- Yin, B.-Y. (2025). Thailand cuts electricity prices to alleviate public burden. Reccessary. <https://www.reccessary.com/en/news/th-regulation/thailand-cuts-electricity-prices-alleviate-public-burden>

