Powering Prosperity

A framework for a fair and inclusive energy transition in Indonesia

CPD CENTRE FOR POLICY DEVELOPMENT

ABOUT CPD

The Centre for Policy Development (CPD) is an independent, not-for-profit policy institute with staff in Sydney, Melbourne, Canberra and Jakarta.

Our vision is a fair, sustainable society and wellbeing economy that serves current and future generations in Australia and Southeast Asia.

Our mission is to help create transformative systems change through practical solutions to complex policy challenges. We tackle the hard questions, working towards change that is systemic and long-term.

Through our work, we aim to contribute to governments that are coordinated, collaborative, and effective, with an eye to both the near and longer term. We strive to build a social services system that helps people and communities to thrive now and in the future, and drive shifts in policy making practice with a focus on wellbeing and sustainability rather than primarily economic growth.

CPD uses a distinctive Create-Connect-Convince method to influence government policy making.

Acknowledgements

This report was co-authored by Dr Ruddy Gobel, Dr Mara Hammerle and Caitlin McCaffrie with special thanks to Dr Silvia Irawan for all of her contributions, expertise and advice. Thank you to all those institutions and individuals who provided feedback on previous drafts of this report, and to CPD colleagues particularly Curtis Moore, Christy Kumesan and Annabel Brown for helping to make the report a reality.

Published by the Centre for Policy Development

Cite this paper as: Centre for Policy Development (2025) Powering Prosperity: A framework for a fair and inclusive energy transition in Indonesia.

CONTENTS

EXECUTIVE SUMMARY

Indonesia's rapid economic growth since the late 1990s has set it on track to become one of the world's largest economies by 2040. While this growth has lifted millions out of poverty and positioned Indonesia to achieve high-income status by 2045, much of it has been driven by mining, manufacturing and other emissions-intensive industries. Indonesia now faces a complex challenge; tackling climate change and adapting to a global economy swiftly shifting away from fossil fuels—without losing sight of its development goals.

Climate change poses significant risks to Indonesia, with increased flooding, cyclones, and extreme heat already affecting lives and livelihoods across the archipelago. Critical sectors like agriculture, forestry, and fisheries are particularly at risk, and the World Bank estimates these climate impacts could cost Indonesia up to 7% of its GDP by 2100.

Decarbonisation is essential—not only to protect the environment, but to safeguard Indonesia's long-term economic competitiveness. As the world's largest exporter of thermal coal, Indonesia urgently needs to diversify its economy as demand for fossil fuels declines.

Recognising this, the government has set ambitious climate targets—including cutting emissions by 31.89% unconditionally by 2030, and 42.20% with international support, phasing out coal-fired power by 2040, and reaching net-zero by 2060. Achieving these goals could transform Indonesia into a global leader in renewable energy and green technology, unlocking huge economic opportunities.

But success will depend on more than just hitting emissions targets. A just transition must focus on people—not just creating new jobs for fossil fuel workers, but supporting all households, workers and regions affected, from those displaced by critical mineral mining to farmers and fishermen dealing with the effects of deforestation and pollution.

This report outlines three core principles to guide a just transition in Indonesia:

1. Enable those affected by the transition to have a voice and access to choices;
2. Ensure those who face vulnerability are not made worse off;
3. Ensure the benefits and costs of the transition are shared equitably.

This framework will support the whole-of-society approach needed to ensure the transition is fair, inclusive and effective. Economic transformation must be matched by strong protections for vulnerable groups and a fair distribution of benefits. Giving communities a meaningful voice in transition planning will be critical to building public trust, maintaining social cohesion, and ensuring lasting, inclusive growth.

Indonesia should now set out a clear national vision for a just and effective energy transition—supported by detailed policy roadmaps to guide decisions, robust coordination across government, and genuine engagement with all stakeholders. A national coordinating body is needed to steer these efforts and ensure they are progressing in the right direction. International partners also have a role to play, particularly in supporting the development of community consultation plans and workforce assessments.

Indonesia has the resources, ambition, and global relevance to lead. Done right, the energy transition can lift living standards, strengthen the economy, and show the world what a fair, inclusive shift to net zero can look like.

RINGKASAN EKSEKUTIF

Pertumbuhan ekonomi Indonesia yang pesat sejak akhir tahun 1990-an telah menempatkan Indonesia di jalur yang tepat untuk menjadi salah satu negara dengan ekonomi terbesar di dunia pada tahun 2040. Meskipun pertumbuhan ini telah mengangkat jutaan orang dari kemiskinan dan menempatkan Indonesia untuk mencapai status negara berpendapatan tinggi pada tahun 2045, sebagian besar pertumbuhan ini didorong oleh sektor pertambangan, manufaktur, dan industri yang menghasilkan banyak emisi. Indonesia kini menghadapi tantangan yang kompleks; mengatasi perubahan iklim dan beradaptasi dengan ekonomi global yang dengan cepat beralih dari bahan bakar fosil—tanpa melupakan tujuan pembangunannya.

Perubahan iklim menimbulkan risiko yang signifikan bagi Indonesia, dengan meningkatnya banjir, angin topan, dan panas yang ekstrem yang telah mempengaruhi kehidupan dan mata pencaharian di seluruh nusantara. Sektor-sektor penting seperti pertanian, kehutanan, dan perikanan sangat berisiko, dan Bank Dunia memperkirakan dampak iklim ini dapat merugikan Indonesia hingga 7% dari PDB pada tahun 2100.

Dekarbonisasi sangat penting—tidak hanya untuk melindungi lingkungan, tetapi juga untuk menjaga daya saing ekonomi Indonesia dalam jangka panjang. Sebagai pengekspor batubara termal terbesar di dunia, Indonesia sangat perlu melakukan diversifikasi ekonomi seiring dengan menurunnya permintaan bahan bakar fosil.

Menyadari hal ini, pemerintah telah menetapkan target iklim yang ambisius—termasuk mengurangi emisi sebesar 31,89% pada tahun 2030 tanpa syarat, dan 42,20% dengan dukungan internasional, serta menghentikan secara bertahap penggunaan pembangkit listrik tenaga batu bara pada tahun 2040, dan mencapai titik nol pada tahun 2060. Pencapaian target-target ini dapat mengubah Indonesia menjadi pemimpin global dalam bidang energi terbarukan dan teknologi ramah lingkungan, serta membuka peluang ekonomi yang sangat besar.

Namun, kesuksesan tidak hanya bergantung pada pencapaian target emisi. Transisi yang adil harus berfokus pada manusia—tidak hanya menciptakan lapangan kerja baru bagi pekerja bahan bakar fosil, tetapi juga mendukung semua rumah tangga, pekerja, dan wilayah yang terdampak, mulai dari mereka yang terpaksa pindah akibat penambangan mineral kritis hingga petani dan nelayan yang menghadapi dampak deforestasi dan polusi.

Laporan ini menguraikan tiga prinsip utama untuk memandu transisi yang adil di Indonesia:

1. Memberikan suara dan akses pilihan bagi mereka yang terdampak oleh transisi;
2. Memastikan mereka yang rentan tidak menjadi lebih buruk;
3. Memastikan manfaat dan biaya transisi dibagi secara adil.

Kerangka kerja ini akan mendukung pendekatan yang melibatkan seluruh masyarakat untuk memastikan transisi yang adil, inklusif, dan efektif. Transformasi ekonomi harus diimbangi dengan perlindungan yang kuat bagi kelompok rentan dan distribusi manfaat yang adil. Memberdayakan masyarakat bersuara dalam perencanaan transisi akan krusial untuk membangun kepercayaan publik, mempertahankan kohesi sosial, dan memastikan pertumbuhan yang berkelanjutan dan inklusif.

Indonesia kini perlu menetapkan visi nasional yang jelas untuk transisi energi yang adil dan efektif—didukung oleh peta jalan kebijakan yang rinci untuk membimbing pengambilan keputusan, koordinasi yang kuat antar lembaga pemerintah, dan keterlibatan yang bermakna dengan semua pemangku kepentingan. Badan koordinasi nasional diperlukan untuk mengarahkan upaya ini dan memastikan mereka berjalan ke arah yang benar. Mitra internasional juga memiliki peran penting, terutama dalam mendukung pengembangan rencana konsultasi komunitas dan penilaian tenaga kerja.

Indonesia memiliki sumber daya, ambisi, dan relevansi global untuk memimpin. Jika dilakukan dengan benar, transisi energi dapat meningkatkan standar hidup, memperkuat ekonomi, dan menunjukkan kepada dunia bagaimana peralihan yang adil dan inklusif menuju *net zero* dapat dilakukan.

WHY DOES A JUST TRANSITION MATTER IN INDONESIA?

As one of the largest emitters and coal producers in the world, Indonesia has made addressing climate change an increasingly central part of its international diplomacy over recent years. Energy transition was a priority of Indonesia's 2022 G20 Presidency and ASEAN 2023 Chairship. At COP26 in 2021, Indonesia announced its commitment to transition to net zero emissions by 2060, or earlier with international assistance.[1] In October 2024, President Prabowo Subianto vowed to continue his predecessor's commitments to reduce greenhouse gas emissions by 32.89% by 2030, or 43.2% with international support, in order to achieve net zero by 2060.[2]

Indonesia has also advocated for allowing developing countries to balance sustainable development with poverty reduction, including at COP29 in Baku in 2024.[3] Balancing poverty reduction, sustainable development and addressing climate change can be achieved through a truly just transition, which takes into account the human impacts of the transition. This is the spirit in which the Just Energy Transition Partnership (JETP) was announced between the Government of Indonesia and the International Partners Group in 2022.[4]

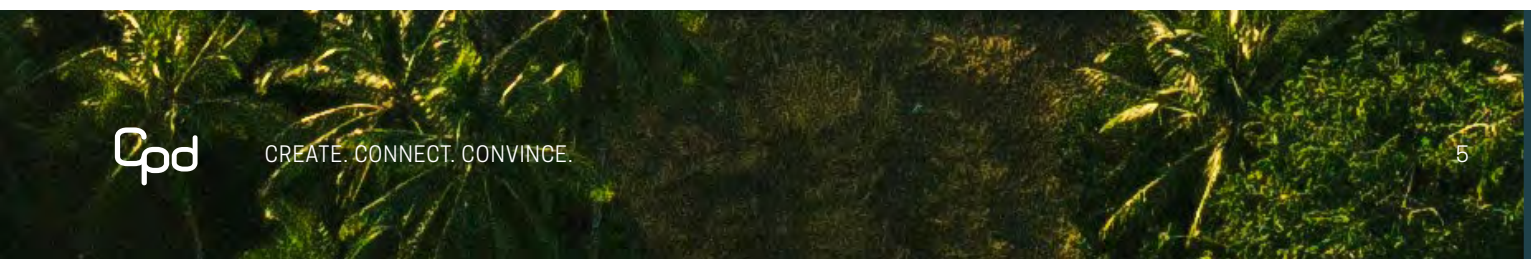
The transition in Indonesia will not be without its challenges. Currently, the energy mix still relies heavily on coal and petroleum (about 70.6% combined)[5] and Indonesia is not meeting the targets it has set for itself. Indonesia initially set a renewable energy mix target of 25% by 2025 in its 2014 National Energy Policy (KEN), which was revised down to 23% in the National Energy General Plan (RUEN) the same year.[6] This has now been further revised down to 17–20% due to the slow development of clean energy.[7] Indonesia is unlikely to meet even the less ambitious goal, as the renewable energy mix only reached 14.68% by the end of 2024[8] and the National Energy Council predicted that the renewable energy mix in 2025 will be between 13.9-15.9%.[9]

The slow adoption of renewable energy in Indonesia is also evident in the country's low renewable energy utilisation rates. In 2023, Indonesia tapped only 0.36% of its 3,687 GW renewable energy potential. Solar, with the largest potential (3,294 GW), is the most underutilised at just 0.02%. Geothermal leads in utilisation rate (11.3%), while ocean energy remains untapped.[10]

This current situation demonstrates the long road Indonesia has ahead to transition away from fossil fuels. Adopting a just transition will make this journey smoother by building social license and increasing public support for the process.

Indonesia needs to transition for two main reasons: first because it is a nation particularly vulnerable to climate impacts, and second because it will be left behind economically if it doesn't transition fast.

The transition needs to be just for the equally important goals of maintaining social stability and ensuring inequality is not exacerbated. Building social licence for the transition can also increase the pace of change, which is incredibly important as the world grapples with a rapidly changing climate.



Why is the transition essential?

Indonesia is particularly at risk from climate impacts

Indonesia ranks among the top third of countries most vulnerable to climate risks. It faces large-scale threats from flooding, tropical cyclones, and extreme heat, which is exacerbated by high population densities in hazard prone areas.[11] People living in coastal areas - around 70% of Indonesia's population - will be amongst those most affected.[12] Further, as climate change drives rising water levels and temperatures and greater storm severity, some models suggest that there could be a 13-29% reduction in the catch potential of fisheries by 2050, threatening food security.[13]

Strong dependence on natural resources for generating income also makes Indonesia particularly vulnerable to a changing climate. The World Bank estimates that the impacts of climate change could cost between 2.5-7% of Indonesia's GDP by 2100.[14] Agricultural sectors like forestry and fishing will be heavily hit, which in 2023 employed about 29% of all formal workers in Indonesia.[15] As climate change harms the economy, already vulnerable communities may be pushed further below the poverty line.

Indonesia will fall behind if it doesn't act quickly

At COP26 in 2021, forty two countries set coal phase down dates, including five of the world's largest coal users. Since then, there have been additional pledges, such as the G7 countries planning to end the use of "unabated" coal by 2035. Impacts of changes to US policy in early 2025 are still being assessed at the time of writing, however to a large extent the economic case for low-emission industries in much of the world has already been won.[16] Indeed, Indonesia has committed to reaching peak power sector emissions by 2030, and achieving net zero emissions in the power sector by 2050, as part of its JETP commitments.[17]

Many of Indonesia's top exports are high in emissions intensity, including coal briquettes, ferroalloys, lignite, and stainless steel.[18] The export markets for these products are rapidly changing. For example, 85% of countries Indonesia exports coal to have net zero emissions targets.[19] China, which imports half of Indonesia's coal (around 41% of its shipments in January-August 2024),[20] has also promised to start phasing down coal consumption from 2026. This will vastly reduce the amount of coal that Indonesia can sell. Accounting for current policy settings, the International Energy Agency indicates that global demand for coal will fall by around 40% between 2022 and 2050.[21] Countries are also looking for low-emissions alternatives for other products that top Indonesian export lists including ferroalloys and steel. Globally, customer demand, government policies and the development of new technologies for decarbonising production are driving an increase in demand for low-emissions steel. Those countries which move ahead most rapidly to develop new low-emissions industries stand to gain considerable economic advantage, while those taking a slower path will fall behind and may not catch up.

Indonesia remains the world's largest exporter of thermal coal for use in generating electricity, as opposed to metallurgical coal, which is used in steel production.[22] In 2023, Indonesia exported 502.9 million metric tons of thermal coal.[23] Domestic factors such as rising electricity demand, new steam power plant projects, and projected increases in nickel production (for which thermal coal is a major input) means that coal production is projected to increase until 2030.[24] While domestic demand may increase somewhat in the short term, Indonesia must address the global trend for declining demand and safeguard regions that currently depend on the coal industry including South Sumatra, South Kalimantan, and East Kalimantan.

Why is a *just* transition even more essential?

The global trend over the past decade has been clearly in the direction of transitioning to a low-carbon economy. Indonesia has the best chance of capitalising on this trend by moving quickly and ensuring the public is supportive. This can be best achieved through a just transition that maintains social stability, builds social licence and prevents deepening inequality.

Building social licence supports social stability and speeds up the transition

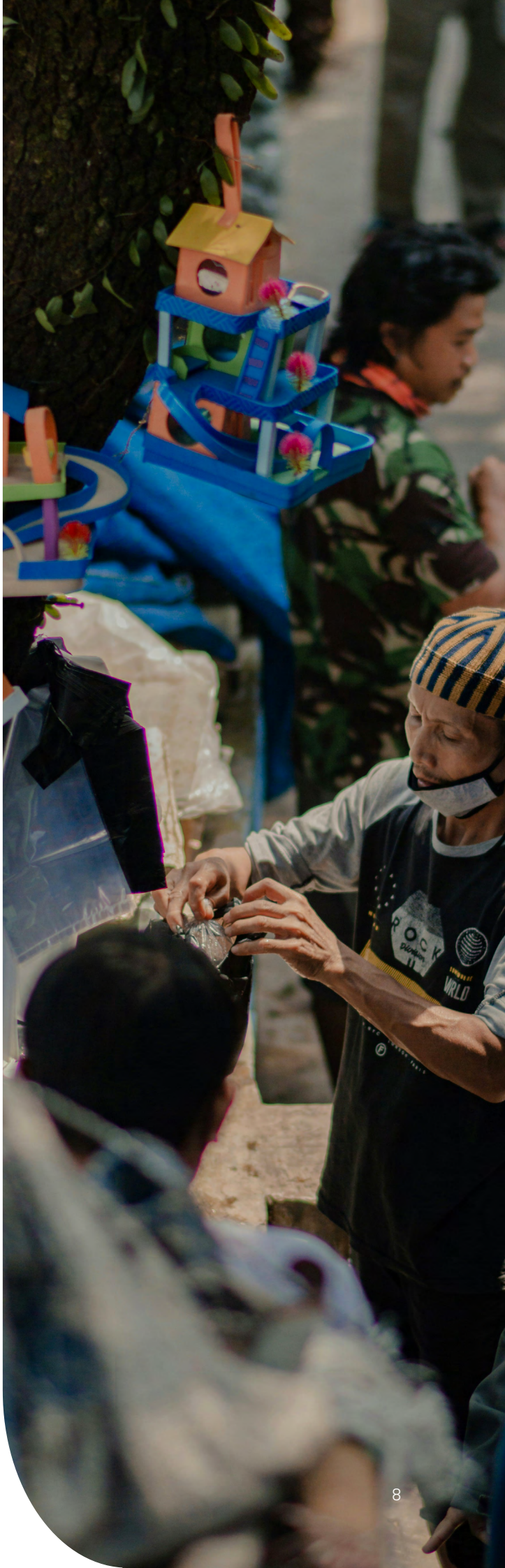
A *just* transition will ensure the transition does not exacerbate existing inequality, increase instability or undermine socioeconomic development. When people hold the belief that the world is fair, they are more likely to find their fellow citizens and institutions trustworthy, and experience greater life satisfaction and wellbeing.[25] Taking a *just* approach to the transition can increase economic and social stability, and mitigate against social unrest that may arise as a result of major changes in economic and social structures, as we have seen elsewhere in the world.[26] A just transition will also help to mitigate pushback from the public, which is likely to arise from increasing extreme weather events and other climate risks.

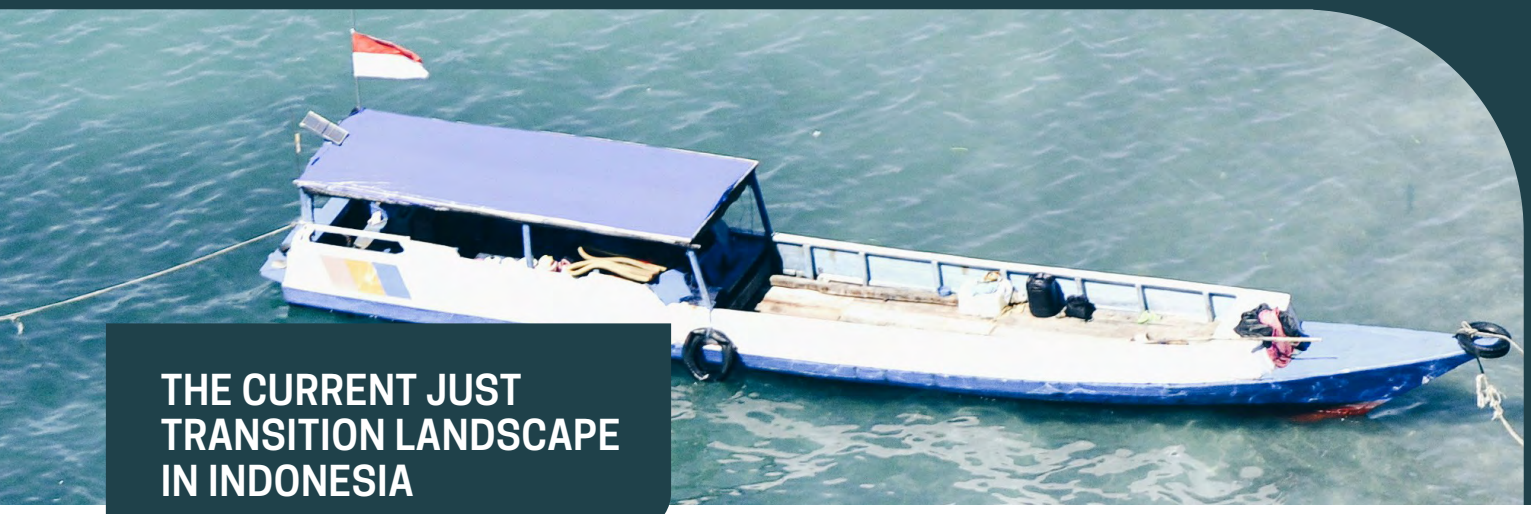
Not managing the transition well risks exacerbating inequality

The transition also risks exacerbating inequality if not managed well. When people are able to afford essentials like energy, they must make trade-offs and cut back on things like education and food, jeopardising individual and national long-term prosperity.[27] Indonesia has experienced political unrest resulting from food and fuel related price fluctuations in the past, and it will be important to manage these carefully as climate change increasingly threatens key commodities.[28] High levels of inequality can also impede financial development and put international climate finance at risk.[29]

As with any other major economic transformation, transitioning to a net zero economy will have tremendous impacts across society. The transition will create new industries and provide an opportunity to serve communities living in regions in Indonesia currently without secure energy access. To make the transition successful, industries will need to adopt new technologies, households will need to change their behaviour, and national and local governments will need to create the enabling environment for these changes, and diversify their economies. Opportunities to benefit from the transition will be different across households and regions.

If managed well and in a just way, the transition can support greater economic prosperity in Indonesia. More diverse economies tend to do better over the long-term, so a just transition which diversifies away from over-reliance on fossil fuels will be better for Indonesia's future.[30] Fossil-fuel dependent communities can build their 'adaptive capacity' to help them cope with economic and social changes, putting them in good stead for future shocks. In turn, Indonesia can focus on increasing grid reliability for households currently without access and take steps to ensure low energy prices for all.





THE CURRENT JUST TRANSITION LANDSCAPE IN INDONESIA

Indonesia has taken important steps towards decarbonising the national economy. Key national policy measures include incorporating energy transition into the National Medium-Term Development Plan 2020-2024,[31] and National Long-Term Development Plan (RPJPN) 2025-2045, which are legally binding, as well as a number of Presidential Regulations including on carbon trading, closing coal-fired power plants, boosting the use of electric vehicles and increasing regional governments' role in the transition. Indonesia also submitted an Enhanced Nationally Determined Contribution ahead of COP27, in 2022, and a Net Zero Emission Target for 2060, contained in the Long-Term Strategy for Low Carbon and Climate Resilience 2050 document, submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2021. Indonesia was only the eighth developing country to submit this long term strategy document. While these international commitments are significant it should be noted they are not legally binding. See Annex A for more details on these national policies and regulations.

In contrast to these policies and targets, Indonesian progress on just transition has been slower. The just transition has only recently started to grow in salience and popularity, particularly following the launch of the USD 20 billion JETP at the G20 in 2022. Many of Indonesia's domestic policies focus more on technical and/or financial aspects of the transition, rather than speaking to community-level impacts or how to manage the impact on the population. For example, to support financing Indonesia established the Energy Transition Mechanism Country Platform in 2022, led by PT SMI. However, this mechanism is focused on mitigation, early coal phase-out and renewable energy investment, with a much smaller focus on justice.[32]

The Indonesian Government has two national policy positions on just transition: the Just Energy Transition Partnership Comprehensive Investment and Policy Plan (JETP CIPP) and a Just Transition White Paper.

Just Energy Transition Partnership Comprehensive Investment and Policy Plan

The JETP CIPP is a collaborative effort between the Indonesian government and an international partners group dedicated to supporting the JETP Indonesia. The main purpose of the CIPP is to deliver a blueprint to facilitate Indonesia's decarbonisation and energy transition focusing on the power sector, including financing needs and technical requirements, but also including the social and human aspects.

Indonesia published the CIPP for the first time in 2023 and is revising it at the time of writing. The draft updated version of the CIPP makes a number of important changes related to just transition.[33] This includes expanding the concept of just transition from one focused on protecting workers and businesses to one that also incorporates gender equality, disability and social inclusion in government policy-making. Additionally, the update operationalises a just

transition framework through a high number of stages and the identification of key 'enablers'. The energy transition is approached in a human-centered manner, emphasising workforce retraining, social protection, economic diversification, and inclusivity.

Three important additions in the revised CIPP are:

- Commitment to the principle of "leave no one behind": the definition of a just transition now includes a specific gender equality, disability, and social inclusion dimension by including the "beneficiaries" of energy transition policies. This change stresses the importance of ensuring that vulnerable groups—including women, youth, and Indigenous peoples—are not only protected but also have opportunities to participate meaningfully in decision-making.
- The updated CIPP also clarifies the roles and responsibilities of national and local governments, the JETP Secretariat, developers and financial institutions, and civil society organisations.
- A new framework promotes the use of social and economic indicators during the planning, implementation, and evaluation phases of projects. This change is aligned with ensuring project decisions are not solely technology- or finance-based but also consider the social impact and real needs of local communities. The framework explicitly mentions the value of conducting stakeholder mapping of all impacted stakeholders and identifying risks and opportunities that could potentially be related to the transition.

This document is important to encourage energy transition in Indonesia to be seen not only as a technical issue, but as a comprehensive social and economic transformation process.

Just Transition White Paper

In addition to the updated CIPP, the government has also released a White Paper on Just Transition. The White Paper explicitly reinforces the importance of the social and human dimensions in the energy transition. It states that energy projects should not only be financially and technically feasible but should also prioritise impacts on diverse communities including coal workers, women, people with disability, and Indigenous people. This aligns with the expansion of the definition of just transition in the CIPP 2025 by viewing the transition as a socio-economic transformation rather than one that prioritises technological and financial aspects.

What is encouraging is that the White Paper emphasises preparing strategies, roadmaps, indicators, and coordination structures to operationalise just transition. The White Paper affirms that the success of just transition depends on coordination among ministries, local governments, the private sector, civil society organisations, and grassroots communities. The perceived importance of cross-ministerial cooperation is also evident in the large number of organisations involved in the development of the White Paper. The White Paper highlights the impacts on jobs, the needs for reskilling, the opportunities for the economy and emphasises the involvement of micro, small and medium enterprises and women's groups.

+
This change stresses the importance of ensuring that vulnerable groups are not only protected but also have opportunities to participate meaningfully in decision-making.

In summary

The update of CIPP 2025, along with the White Paper published in 2024, reflect good progress in thinking about how a just transition can be achieved in Indonesia. However, the existing literature falls short in terms of recognising that the transition will majorly affect many emissions-intensive industries. Instead, the literature focuses primarily on the economic transformation of the energy sector and on the workers and (to a lesser extent) regions affected by the phase-out of coal. For example, the two recommendations in the White Paper involve "transforming the local economy" and "improving local governance to support the economic transformation". This focus makes sense given the energy focus of the JETP and that the White Paper was shepherded by a working group of the National Energy Transition Taskforce.

These documents represent a solid starting point and significant step forward from the state of play only five years ago. However implementation will be key, and will require a whole-of-government and whole-of-society approach.

In this report, we draw on these existing reports and extend them in several ways:

- While the existing literature focuses largely on workers, making several references to the work on just transition by the International Labour Organization, this report emphasises the importance of also considering and mitigating against the differing impacts across households and regions. All three categories of the economy should be given the same priority to achieve a just transition. Sections 4 and 5 of this report demonstrates how to apply just transition principles to these three categories of the economy.
- The existing literature focuses in detail on the workforce transition, including the importance of reskilling and increasing human resource capacity for the transition. In addition, this report examines the ramifications of the transition for aspects like health (for example due to loss of regional identity), household budgets, and the choices available to people. A true just transition goes beyond work and economics to also value other aspects of wellbeing for societies.
- The Just Transition Framework in the existing literature could be more detailed, for example it is not entirely clear what specifically would need to be achieved to "leave no one behind". This report provides three clear principles that can apply to all aspects of the transition and all low-emissions projects.
- The existing literature provides solid advice on the different aspects of economic transformation to consider, as well as the various government groups and stakeholders that are most important. However, it does not comprehensively apply the Just Transition Framework to any distinct aspect of the transition, instead taking a more high-level approach. This report instead provides three clear examples of how to apply the three principles to achieve a just transition, thereby demonstrating how the framework and principles can be implemented.

Ultimately, this report and the just transition framework it contains aims to complement the existing literature in Indonesia, and demonstrate how the framework and principles can be practically applied to different sectors by using examples from expanding microgrid access, developing electric vehicle (EV) supply chains and phasing out coal.

PRINCIPLES TO GUIDE AN EFFECTIVE AND EQUITABLE TRANSITION

The transition towards a net zero economy should bring economic prosperity and strengthen communities, workforces, and broader society. A just transition seeks to achieve an outcome where the most vulnerable; for example, those on low incomes, female-headed households, people living with disability, the elderly and people in remote areas, are not disadvantaged and the benefits and costs of the transition are shared equitably.

The **distributive dimension** of justice focuses on how resources, risks, benefits and costs of transitions are shared in society. Where distribution is unequal, tools and mechanisms exist to redistribute resources, benefits, and costs. Importantly, the transition also offers a chance to address past injustices that were created during earlier stages of development. This is known as **restorative justice**, and involves actively repairing harm done to people, society, or the environment, and taking steps to prevent future harm. This can take many forms, for example: progressive taxation requiring higher contributions from wealthier individuals or corporations can generate resources for providing basic public services for historically vulnerable and marginalised groups.

For the economic transformation to be inclusive it is important to ensure that those most affected have "agency", or a voice in the process and the ability to make decisions about their future. This is about more than just being part of the conversation, but about having the power to influence decisions. This type of justice is known as **procedural justice**. When planning an economic transformation, policymakers should also recognise and acknowledge the injustices that already exist, both in the outcomes and in the processes. Sometimes, due to social hierarchies or stereotypes, certain groups are left out of discussions, important issues are ignored, or some people are not allowed to speak about certain topics. This **recognition justice** dimension helps to ensure vulnerable groups are not harmed when distributing costs and benefits of the economic transition.

These four types of justice are embedded in the three principles that guide a just transition:

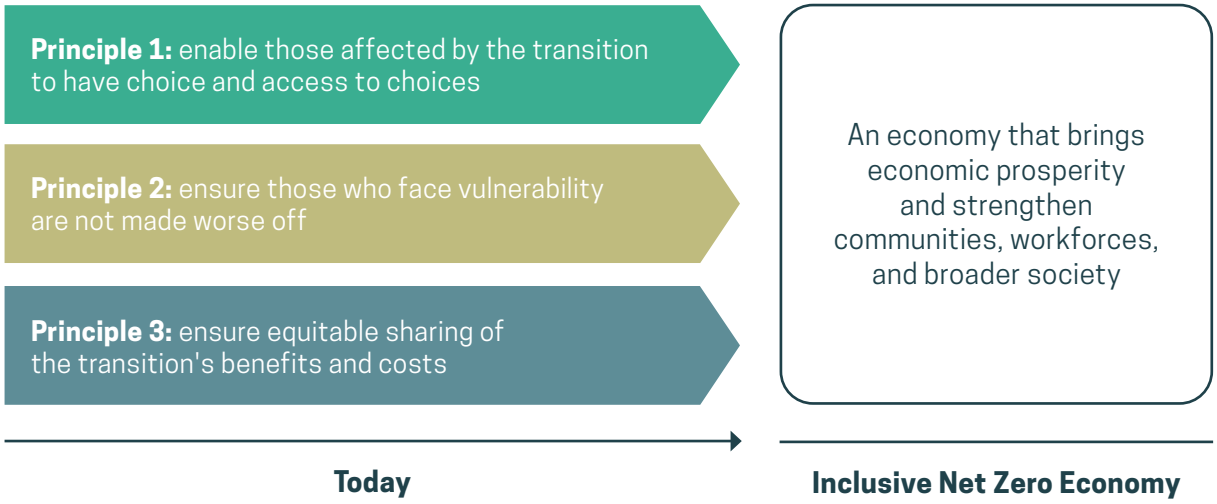


Figure 1. *The Just Transition Framework*

These three principles can be embedded across all government policies related to the transition to a net zero economy. The principles can be applied throughout the policy cycle. At the beginning of the policy cycle, policymakers can use the principles as a basis for identifying possible disruptions from the transition, including the potential impacts on different regions, workers, and households across Indonesia. Based on the possible disruptions, policymakers can then design and implement specific interventions to prevent harm to vulnerable groups and to distribute the benefits and costs equitably across society. Throughout the policy cycle, policymakers can meaningfully involve the most affected stakeholders in decision-making processes to ensure the long-term success of the policies and ultimately of the transition.

The framework developed in the JETP CIPP highlights two pillars – "leave no one behind" and "sustainability and resilience". The three principles in this report align well with these pillars: they show how "leave no one behind" can be applied in practice, and how bringing households, workers and regions along can result in greater "sustainability and resilience".

PRINCIPLE 1: ENABLE THOSE AFFECTED BY THE TRANSITION TOW HAVE VOICE AND ACCESS TO CHOICES

Involving those who are directly affected in policy design leads to greater buy-in and acceptance of policies and ultimately increases the chances of successful implementation. Households should be able to participate on their own terms. Workers and unions should have a seat at the table designing workforce strategies. Industrial transition in regions should be led by local authorities and communities. A just transition would lead to communities thriving in a low-carbon future, precisely because government policies take into account local contexts and acknowledge local wisdom.

PRINCIPLE 2: ENSURE THOSE WHO FACE VULNERABILITY ARE NOT MADE WORSE OFF

The most vulnerable people in society will face a disproportionate share of the costs of transition unless careful steps are taken. People facing vulnerability will also find it difficult, if not impossible, to participate in the transition without external support. This support is needed to increase access to reliable renewable energy sources and to ensure that energy bills are kept low during the build-out of renewable energy.

+
It is crucial that those who face vulnerability are taken into account in planning the transition, and are supported either to gain new employment through training or through receiving adequate social security systems.

Additionally, the development of large-scale low-emissions projects can have large impacts on groups facing socioeconomic disadvantage that rely on a region's natural resources. For example, the construction of the world's third largest floating solar power plant project, which occupies part of the Cirata Reservoir area in West Java, made it more difficult for local fishermen to catch fish. Meanwhile, the electrification of transportation threatens thousands of small workshops and informal mechanics with skills in servicing traditional modes of transport. It is crucial that those who face vulnerability are taken into account in planning the transition, and are supported either to gain new employment through training or through receiving adequate social security systems.

PRINCIPLE 3: ENSURE EQUITABLE SHARING OF THE TRANSITION'S BENEFITS AND COSTS

The transition will create both economic benefits and costs. The benefits will arise primarily from new ways to produce and consume energy, and the emergence of new low-emissions industries.

The costs of making the transition possible include those associated with purchasing and setting up new capital, changes to job markets, lost production due to changing weather patterns, and damage to property from natural disasters. Indonesia's transition to net zero must address not only economic goals, but also avoid increasing inequality. It should ensure that no one group bears a disproportionate share of either the benefits or costs. Moreover, policies should also be designed to address intergenerational equity. The current generation is being asked to pay for an energy system that will increase energy bills in the short term but will eventually lower costs for future generations. In contrast to current generations, future generations will benefit more from lower physical risks that would otherwise increase over time due to climate change.

Taking an "impact first" approach

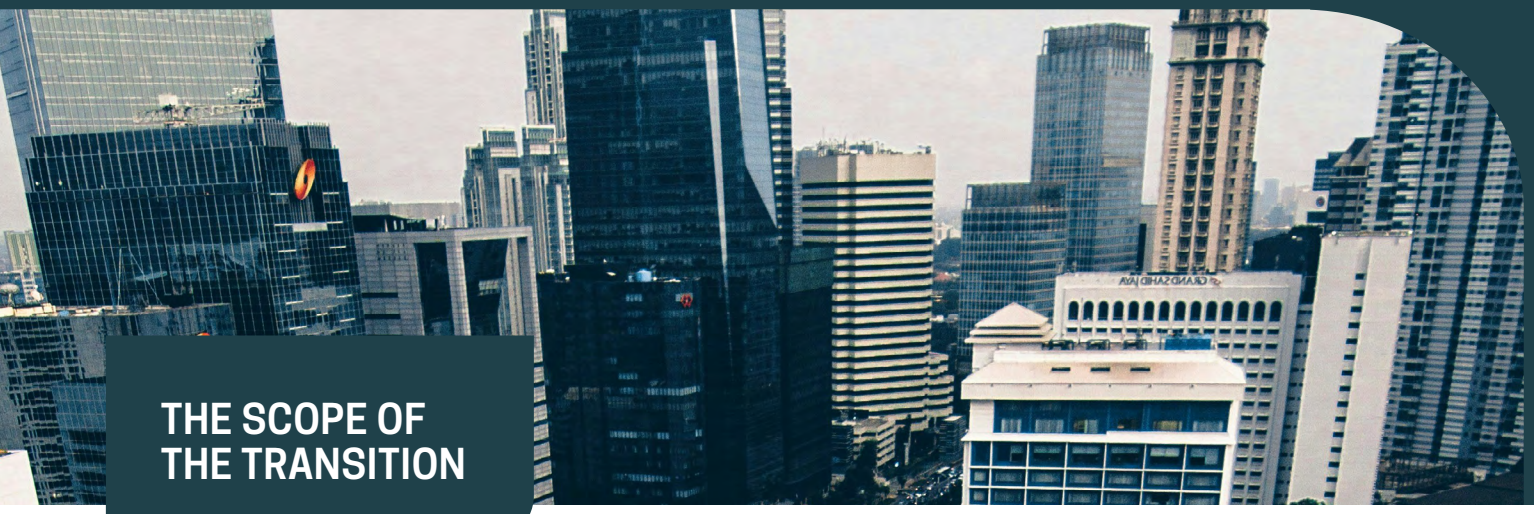
Applying the framework outlined above will require policymakers, financial institutions and private investors to change how they approach low-emissions projects. Typically, the process of developing new projects starts with an analysis of technical and financial feasibility. This may include quantitative modelling of project feasibility, cost-benefit analyses, and detailed understanding of cashflows and financing structures. Analysis of social impacts, the needs of affected communities, and the fairness of benefit distribution is often an afterthought, conducted as a complementary requirement or as a response to public resistance.

Aligned with Indonesia's work on the JETP CIPP and the Just Transition White Paper, this report also recognises the need to prioritise the impacts of transition policies on people and communities at all stages of the project design and implementation. Alongside identifying risks, governments should require the development of proactive plans to prevent negative consequences, using an "impact first" approach.

Adopting an "impact first" approach would involve changing the current framing of the transition from merely switching to low-emissions energy sources and industries to one that views it as a catalyst to improve people's welfare. An "impact first" approach would include:

- Social impact analyses conducted at the start of a project and influencing all stages of the planning process.
- Funding and licensing from financial institutions and governments that takes into account the outcomes from social impact analyses.
- Projects designed to be flexible and respond to real-life outcomes for households and communities.
- Local governments and civil society that are equipped to be actively involved in project design and implementation.
- Transparency and strong public communication that helps increase awareness and buy-in from communities throughout project design and implementation.

While some may initially view this approach as making project design and implementation more complex or costly, this report argues that the medium- and long-term benefits from an "impact first" approach will be much greater than the *status quo*. An "impact first" approach can prevent social conflict and community resistance, which are common causes of project delays and even cancellations. Taking such an approach enhances the legitimacy and acceptance of a project in the eyes of the public, ultimately accelerating implementation and reducing political and legal risks.



THE SCOPE OF THE TRANSITION

Indonesia has taken welcome steps towards developing a pathway to a just transition for fossil fuel workers. However, an equitable transition for all of Indonesia must go beyond this, and also cover the needs and aspirations of different **regions, households and workers** around the country. Building on the original labour-oriented concept of just transition, this report argues that households and local regions should receive equal attention to workers to ensure a successful transition. Local regions play a key role in developing effective policies to reach a low-emissions economy including for local investment in infrastructure and public services. Households determine everyday practices and behaviours in adopting new technologies and lifestyles in a low-emissions economy.

Regions

The geographical distribution of the costs and benefits of the transition will be uneven. Some Indonesian regions stand to benefit from reduced air pollution and investment in local, green industries. However, others may be adversely affected from increases in unemployment and reductions in the local tax revenue base from the closures of emissions-intensive industries, and higher prices for electricity due to the build-out of renewable energy.[34] Different communities will have very different capacities to adapt to these changes, based on factors like economic diversity, workforce skills, geographic connectedness, access to services and innovation.[35]

Figure 2 below shows that the region with the most coal reserves is East Kalimantan (44%). South Kalimantan and South Sumatra (both 15%) also have very sizable coal reserves. In East and South Kalimantan, coal production currently contributes 44% and 30% of regional GDP respectively, demonstrating the economic dependency on the coal industry in these regions. Unless managed carefully, these regions will face large shocks to employment and regional output from the closures of coal mines.

While the JETP CIPP and Just Transition White Paper discuss the potential for moving coal workers to the renewable energy industry, not all regions are equally capable of increasing their renewable energy production. While South Sumatra is amongst the regions of Indonesia with the highest renewable energy potential, both South Kalimantan and East Kalimantan are not. Even though South Sumatra has high renewable energy potential, utilisation of this potential remains very low. Sumatra, for example, currently generates only about 6% of the total renewable energy it could potentially produce. The Maluku, Papua, and Nusa Tenggara regions also have a high potential for renewable energy infrastructure but currently very limited access to energy.

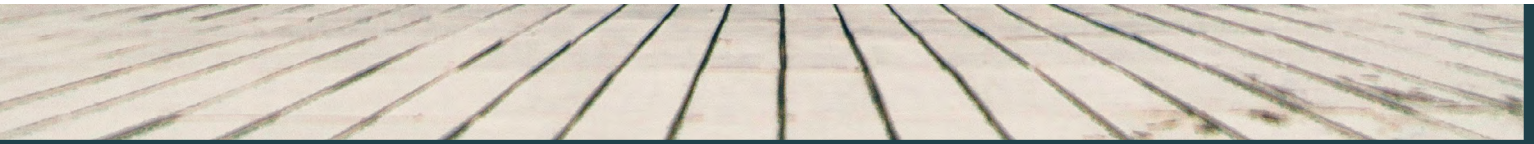
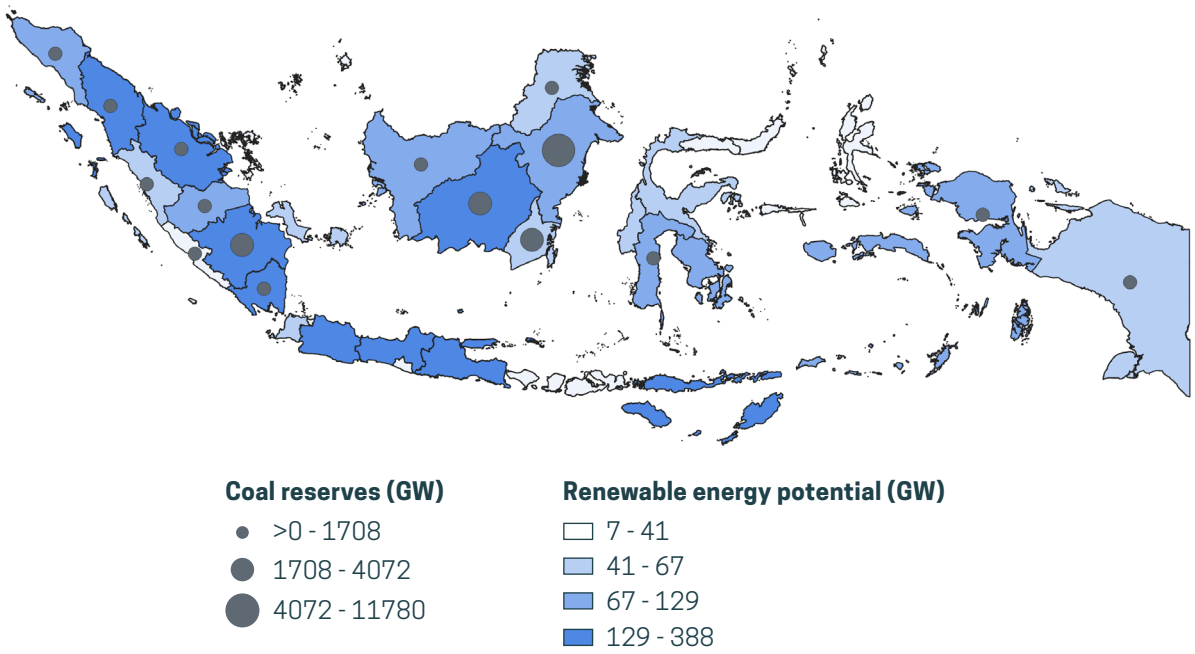


Figure 2.
Variation in coal reserves and renewable energy potential across Indonesia



Source: Dewan Energi Nasional (DEN)/National Energy Council, 2024

Differences across regions in access to natural resources is not only important for the energy sector. Close to 29% of the Indonesian workforce are in the agricultural sector,[39] yet intensive cultivation is constrained to the regions of Java, Bali, Lombok, and some parts of Sumatra and Celebes. Agriculture in Sumatra and the other islands is less intensive and primarily for cash crops. The regions also differ in terms of the types of agricultural production. For example, the northern coastal and central plains of Java concentrate on rice, while crops like corn, cassava and soybeans dominate small farms in eastern Java. These regions will need to learn new lower emissions processes to produce agriculture, and the ease of uptake of new processes will depend on the capacity of workers and agricultural sites to transition.

The need to transform regional economies with high concentrations of emissions-intensive industries is covered in the JETP CIPP and Just Transition White Paper. However, a just transition will need to be broader, touching on regional identity and its links to health, the unique needs of Indigenous communities, and how to ensure the benefits of transition are widespread. The regions with greater potential to develop new industries will be more resilient to declining demand for coal and there are some emerging signs that economic transformation is occurring. For example, while the economy of East Kalimantan remains heavily concentrated on mining, the contribution of the agricultural sector to Gross Domestic Regional Product grew by an average of 9% annually over 2011-2020.[40]

Coal is an integral part of cultural identity in many mining communities in Indonesia, with many generations of workers in a family all employed by the same industry. Elsewhere, coal has been framed as the common bond that holds communities together.[41] Thus, communication and engagement strategies must focus on addressing fears surrounding the loss of identity and build confidence in the long-term benefits of the energy transition. At the same time, governments should support the creation of new jobs that use skills similar to those in the coal sector, such as in renewable energy.[42]

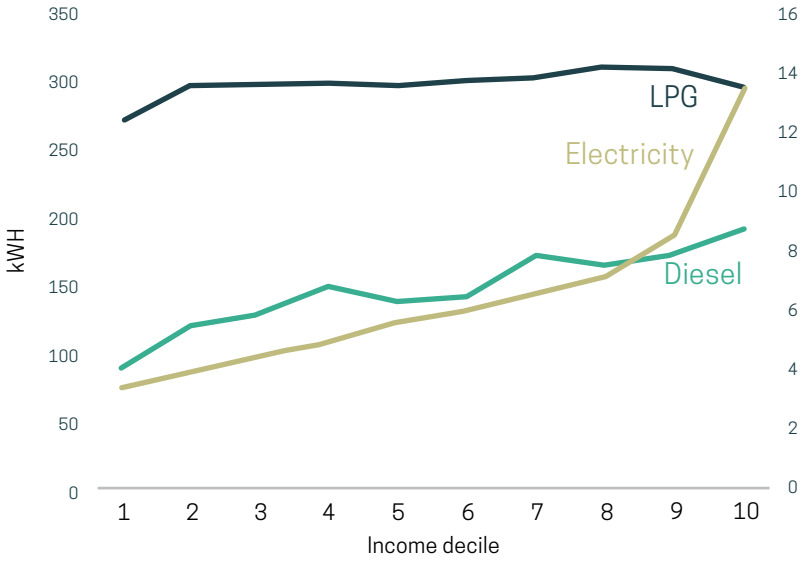
Focusing on more inclusive economic development should be achieved through equitable distribution of energy infrastructure across the archipelago, supported by new regulations and fiscal incentives. Many of the "priority" solar energy projects in the JETP CIPP are planned for regions such as Java instead of more remote areas.[43] This is partly because investors tend to prefer low-risk high return projects, and so have limited interest in investing in small renewable energy projects in remote areas. However difficulties in accessing energy, especially in remote areas and on small islands, cause many people to rely on diesel generators or traditional firewood, which are less efficient, more expensive, more polluting, and harmful for health. This in turn hinders energy security and prevents social mobility as families with lower energy access need to ration usage which can limit education and employment opportunities.

Households

Globally, those with higher incomes and wealth are more likely to be early adopters of new low-emissions technologies, as they are more easily able to afford high upfront costs and have access to the types of non-monetary resources, such as their own homes, in which to install them. Research in Indonesia finds that higher income households are more likely to have access to renewable energy sources like rooftop solar.[44] If policies are not introduced to explicitly target access to new technologies for more socio-economically disadvantaged households, there is a risk that the transition will serve to further exacerbate inequality.

One concrete example of how energy policies increase inequality in Indonesia is through the provision of energy subsidies. Indonesia has a long history of providing subsidies for the consumption of electricity (primarily from fossil fuels) and gas. In 2022, the Indonesian Government spent IDR 502 trillion (~USD 35 billion) on energy subsidies and compensation, constituting about 22.3% of total government expenditure for that year.[45] This large allocation of public funds limits the government's ability to fund other essential programs. As seen in Figure 3, households on higher levels of income consume more subsidised diesel and electricity and the same amount of subsidised LPG as those on lower incomes.

Figure 3. *Subsidised energy consumption by income groups*



Source: National Social Economic Survey (SUSENAS), National Statistic Agency (BPS), 2023[46]

Reforming energy subsidies to support energy security and affordability for vulnerable groups is a key policy lever aligned with a just transition, and would also provide savings for the Indonesian Government.[47] Moving to direct targeted subsidies to the 40% of households with the lowest socioeconomic status would free up an estimated 33.7 trillion Indonesian Rupiah IDR (~USD 1.9 billion) in financial resources from LPG and 23.8 trillion IDR (~USD 1.5 billion) from electricity subsidies.[48] These savings could be spent on sustainable development, including policies to facilitate greater take-up of renewables.

In the transition process, it is important to address issues faced by different types of households. Vulnerable groups are often overlooked in policy planning and implementation, although they have distinct needs. For example, despite traditionally playing a lead role in household management - some studies estimate the average woman in Indonesia spends 3 hours a day cooking and 13.5 hours a day on other household chores - women typically have only limited access to energy-related information, meaning they often rely on less safe and more polluting options such as biofuels.

Further, the absence of women's participation in urban planning processes has created inhospitable cities for women, which leads to safety issues, and financial losses as women are more reluctant to take up job opportunities if they occur at night.[49] Instead, involving women in planning processes for public transportation (as a relatively low-emissions transport alternative) can encourage greater use by women. More broadly, incorporating the viewpoints of a diverse set of affected people would significantly strengthen policy design.

Governments should also pay close attention to the specific skillsets and contributions that Indigenous communities can offer in the transition, and also consider how these groups are uniquely impacted from land use changes caused by industrial agriculture and mining of transition minerals.[50] Not only is the voice and agency of Indonesia's Indigenous groups critical in informing decisions about land use and land restoration, including having genuine ability to input into when and where renewable projects can happen, governments can learn from Indigenous ways of using land and growing agriculture that are historically less polluting and more sustainable.[51]

+
Vulnerable groups are often overlooked in policy planning and implementation, although they have distinct needs.

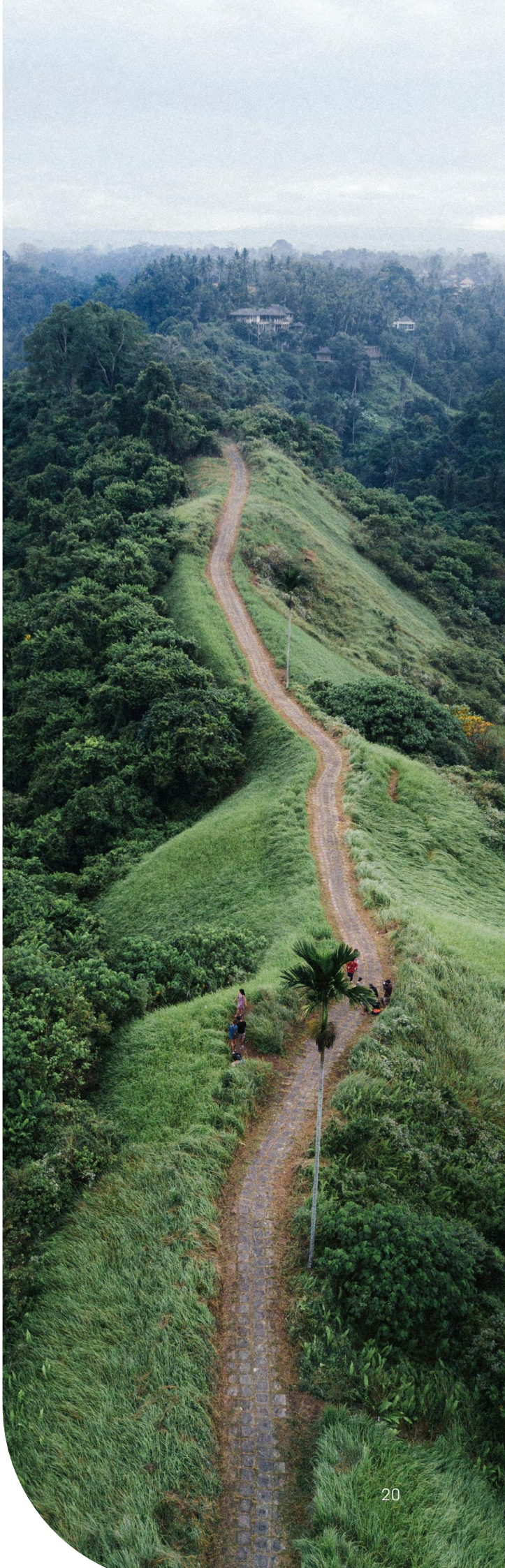
Workers

The livelihoods of workers from across Indonesia will be affected by the closure of emissions-intensive industries. Indonesia had approximately 300,000 formal workers in 2023 in just the mining sector, including coal.[52] Assuming that 60% of workers are informal,[53] this means that up to 750,000 workers (both formal and informal) will be directly affected by closures of mining companies. Some of these workers may benefit from early retirement packages. However, the majority will likely need to continue working and the JETP CIPP projects the creation of only 383,000 new jobs in the renewable energy sector by 2030.[54]

Newly-created jobs in the renewable energy sector may offer a pathway for some workers, who could either transition directly into these jobs, or after some additional training. However, many new jobs will be in different regions than those affected by coal power plant closures.[55] Relocation and reskilling may be undesirable for some, and the new jobs created may not be sufficient for all, including workers in supporting sectors such as hospitality and transportation. Workers may need to accept a lower salary because of skills and wage gaps, or travel long distances to find employment because of the geographical mismatch between where the coal plants are currently located and where they are able to find new work.

Workers employed informally will likely face different challenges to formally employed workers in the transition. In Indonesia informal labour is still regularly used in operations, with workers employed by third-party contractors and performing critical tasks such as transportation, cleaning, security, or site maintenance. These workers likely do not receive the same labour protections as formal employees and face significant risks of unsafe, unregulated labour and limited access to social protection.

It is not only the coal sector that will face large ramifications from this shift. Sectors like transportation and manufacturing will also undergo significant changes as these industries adapt to new energy sources and lower-carbon methods of production. As a result, governments need to implement policies to support effective and equitable workforce transitions across the economy. These policies should recognise and create opportunities for women and other marginalised groups to find employment in new low-emissions industries and other areas of the economy. The Ministry of Planning should coordinate with relevant ministries (such as the Ministry of Women's Empowerment, Ministry of Manpower and others) to ensure that these policies exist.



APPLYING THE JUST TRANSITION FRAMEWORK IN PRACTICE

The benefits and scope of a just transition for Indonesia have been outlined above, but the question of *how* to achieve this can be challenging. The following section outlines how the three principles in this report can be applied in practice by applying them to commitments made by the Government of Indonesia to:

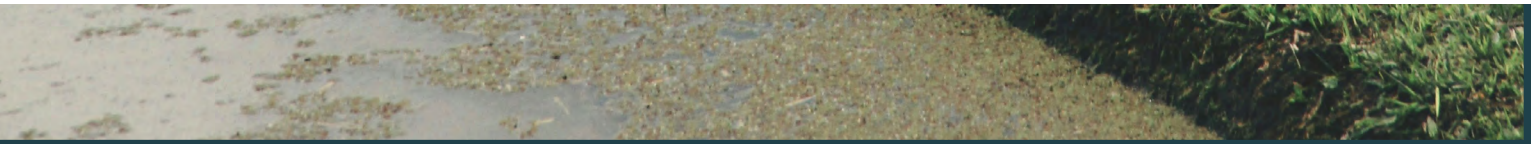
1. increase access to electricity for remote and isolated areas,
2. develop a critical minerals and electric vehicle (EV) battery industry,
3. phase out coal power plants.

This section focuses on outlining the potential risks and related policies to address them across households, regions and workers. The section also outlines the roles of different stakeholders in implementing these commitments. While the examples are largely focused on energy given Indonesian commitments to transition this sector, the lessons are applicable to other high-emissions industries.

EXAMPLE 1: INCREASING ACCESS TO ELECTRICITY FOR REMOTE AND ISOLATED AREAS THROUGH RENEWABLE ENERGY MICROGRIDS

Communities living in remote and isolated areas often have limited access to public services, infrastructure, economic opportunities and employment, exacerbated by irregular electricity access. Indonesia's state-owned electricity corporation *Perusahaan Listrik Negara* (PLN) has committed to increase electricity access to remote and isolated areas of Indonesia. Its business plan sets a target of achieving 100% coverage particularly in Maluku, Papua and Nusa Tenggara (which are currently below 95% coverage) and increasing the hour-per-day electricity supply.[56] Microgrids are one of the four specific actions included in the PLN business plan for developing small-scale power generators,[57] and can be an effective solution for energy access in isolated regions.[58]

This section demonstrates how to apply the three just transition principles across regions, households and workers in the roll-out of microgrids. These small-scale localised energy systems can operate independently or in conjunction with a main power grid, and can be powered by renewable energy sources or combined with diesel, which is currently the main source of energy in rural areas in Indonesia.[59] Microgrids allow local communities to choose whichever energy source is abundant in their region.



Principle 1: enable those affected by the transition to have voice and access to choices

Regions

Indonesia's development planning processes require a "bottom up" approach that facilitates direct involvement of communities. Village-level input is meant to be integrated into district plans before they pass to the provincial and national levels and the participation of local communities is officially legislated. However, in practice, local communities often face barriers to participation due to limited access to information, low education levels, limited time to spend taking part in these processes, and low levels of transport and communication infrastructure. Groups facing vulnerability are often further excluded - implicitly or explicitly - due to language barriers or social hierarchy. The result is that decisions are typically made in capital cities and often ignore the realities in remote and isolated areas.

Consulting communities in remote and isolated areas is beneficial for both local-level policies like microgrid development, as well as higher level strategies and policies related to energy transition including the CIPP. Designing robust community consultation systems that avoid tokenism is challenging but, when done well, can be very effective. In the case of microgrids, consulting communities would enable the collection of local knowledge such as about the particular energy sources that are abundant in specific regions. Collecting such knowledge would enable the design of microgrids that are appropriate for the local context and thereby enable the sharing of the costs and benefits of the transition (i.e. principle 3).

Households

Education and awareness raising is necessary to communicate the benefits of new technologies including microgrids in local communities. Households need sufficient information to make appropriate decisions around whether to connect to a microgrid and how it will impact them. It often takes time between adoption by first-movers and more widespread acceptance of new technologies, as can be seen in many examples from around the world, and education is a key factor for learning and adapting to new technologies. Awareness raising processes should take into account the needs of diverse groups like female-headed households and Indigenous groups. Project developers should ensure inclusive participation where the poorest groups in society are prioritised.

Workers

Formal workers affected by the transition have a voice through unions, which is important and should be protected. However as much of Indonesia's workforce is highly informal, and therefore not linked to formal unions, it is critical to consider how to include the views and needs of this group as part of the transition. A dedicated time to discuss informal workers should be ensured in community meetings. Further, in locations where microgrid infrastructure is being developed, PLN's recruitment strategy should include consultation with local communities on what jobs, skills and training they are interested in pursuing, rather than using solely external workers. This will not only give locals a voice in the development process and thereby build greater buy-in to the projects, but also will contribute to the longer-term sustainability of the microgrids if more jobs go to locals.

Principle 2: ensure those who face vulnerability are not made worse off

Regions

In 2024, the Indonesian Government classified 37 regions in Indonesia as 'left behind' or 'under-developed' (*daerah tertinggal*) based on economic activity, human resources, infrastructure, regional fiscal capacity, and accessibility.[60] These regions are mostly in Papua, Maluku and East Nusa Tenggara and have limited access to electricity. Building microgrids in these regions can be complicated due to difficulties in bringing in the various technological components and sourcing local workers for both construction and ongoing maintenance. However, the benefits generated can be transformative for economic development, food security, education and employment.

To ensure that these most vulnerable regions are not made worse off, the government should develop a national microgrid strategy to outline how microgrids can be scaled in underdeveloped districts. The strategy could also include a national maintenance framework outlining regular inspection schedules, performance standards and metrics, and maintenance procedures for microgrid components. Governments in 'left behind' districts should be allowed to use government funds to build the microgrids. For example, appropriate funds could include fiscal incentives for underdeveloped districts (*dana insentif fiskal bagi daerah tertinggal*), which are earmarked for building infrastructure, and the village fund (*Dana Desa*), which can be used to build renewable energy infrastructure.[61]

Households

Local politics can sometimes result in wealthier households in some villages receiving more benefits than less wealthy households, including from access to microgrids. While governments or companies can find it easier to work with wealthier or more educated groups because they usually are more open to change and have the time and financial resources needed to transition, it is critical to take all households into account. For example, the high upfront costs of microgrids might be prohibitive for lower income households, and the complex regulatory landscape for microgrids might be challenging for those with less political influence to navigate. There is also a risk that local elites can control or influence microgrid programs to serve their interests or benefit their businesses over others. To avoid this, the government and partners can design strong procurement processes such as using local labor, and establish microgrids to be community-owned and managed to ensure benefits are shared equitably among residents.

Governments can also play a crucial role in reducing the costs associated with microgrids. Even if less wealthy households are supported with upfront investment to connect to the microgrid, it can be difficult for them to afford their monthly electricity bill. In order to prevent these households being further disadvantaged, the government can design interventions like a subsidy for microgrid operators to serve the poorest groups, or a social security program to provide cash payments to less wealthy households to afford electricity.

+
Local politics can sometimes result in wealthier households in some villages receiving more benefits than less wealthy households.

Workers

Currently most of the 'left behind' regions are dependent on diesel for their electricity. Communities usually purchase diesel from local shops or petrol stations, which mostly hire informal workers from local communities. These people may lose their jobs as communities increasingly access electricity from microgrids. This impact may be relatively small as the work is not labour intensive and the development of microgrids will create jobs. Governments should take steps to mitigate potential consequences by identifying affected workers, particularly those employed in the informal sector, and offering retraining or reskilling to work in microgrid development or maintenance.

Principle 3: ensure equitable sharing of the transition's benefits and costs

Regions

Initiatives that unify local government, village-owned enterprises and households through the common purpose of collectively managing microgrids yield positive outcomes for local economies and the wellbeing of communities.[62] Coordination between all stakeholders is vital for the successful development of microgrids. For example, public private partnerships can support the creation of joint ventures between village-owned enterprises and the private sector to establish, manage and maintain microgrids. Such partnerships provide crucial initial capital injections, facilitate the training of local technicians for installation, operation and maintenance, and can reduce energy costs for those involved in the scheme. Working with village governments can provide a greater understanding of local electricity needs, which can address the barrier of uncertain demand for the microgrid. A key component of setting up a microgrid project should involve conducting social impact assessments, which will benefit from coordination amongst all affected stakeholders.

Expanding microgrids in remote and isolated areas such as in Papua and Maluku will not only benefit those locations, but also create business opportunities for entrepreneurs in Makassar in South Sulawesi: the business and transportation hub to the eastern part of Indonesia. New jobs will be created in microgrid construction, installation, operation and maintenance services, transportation and local trading for spare parts. Without government regulation, businesses are likely to source the necessary workers from regions with higher education levels, such as the more developed Makassar. To also encourage community building in remote and isolated areas, governments should create incentives, such as local content procurement rules, and funding through grants, loans or guarantees for local firms in the remote areas.

Households

While energy generation and storage can be financed collectively by governments and private or philanthropic funding, connections from homes to energy infrastructure are typically paid for by households. Households with more resources can pay for the costs of accessing electricity from microgrids,

while others struggle to afford it. To make sure all households can benefit from the microgrid development, those who are unable to afford this on their own - defined as those registered in the *Data Terpadu Kesejahteran Sosial* (DTKS or Integrated Social Welfare Data) system as in the lowest 40% socioeconomic bracket - should be provided with subsidies to afford the connection costs and to enable ongoing access.

In a similar vein, CPD has proposed reforming Indonesia's energy subsidy policy by implementing a direct targeted subsidy instead of the current commodity-based subsidy.[63] The proposal also recommends providing an equivalent subsidy to beneficiary households that do not use electricity from the state-owned electricity company, PLN, or LPG from the state oil and gas company, Pertamina (who currently receive no subsidy). Based on CPD's calculations, this reform could enable beneficiaries to receive a total of IDR 130,000 (IDR 45,000 from the LPG subsidy and IDR 95,000 from the electricity subsidy) per month. This amount is substantial and can assist households in accessing locally available renewable energy, thereby supporting microgrid development.

Workers

Increasing access to microgrids will create new opportunities for businesses and new jobs including for electrical and field/installation technicians, renewable energy specialists, energy storage specialists, operations and maintenance specialists and grid integration specialists. Initially it may be difficult to find local labourers that can fill these positions, indicating a need to train local workers to ensure they have the skills to operate the microgrids and can service them when they break. Indonesia can learn from countries such as India to ensure the maintenance of microgrids through standardising the technologies used, setting up centralised monitoring systems for microgrid projects across the country, providing government-supported, long-term service agreements with contractors to provide periodic inspections, performance monitoring, and the repair of key components, and investing in local skills development.[64]

Governments can offer companies incentives, such as tax breaks and training support, to hire and train local people, particularly those from traditionally marginalised groups, including women and Indigenous groups. While Indonesian law states that all employees from different regions in Indonesia have equal rights to seek employment throughout the country, regions can nevertheless implement policies to prioritise local workers in companies operating within their geographical boundaries.[65] Several local governments, including Jember Regency, Mandailing Natal Regency, and East Belitung Regency, have already implemented relevant policies. East Belitung Regency offers various incentives for companies that employ local workers, such as training support from the local labour office, simplifying the administrative and licensing processes, and providing reductions or exemptions on regional taxes and levies.[66]

Outside of private firms, the development of future-fit skills in local communities can also be encouraged by requiring state universities or incentivising private education institutions to offer relevant courses in engineering, installation, construction and maintenance of microgrid systems. Governments can also promote innovation through research and development partnerships focusing on developing cost-effective and efficient microgrid technologies that are suitable for Indonesia's specific geographic and climatic conditions.[67] Taking these steps will ensure workers around Indonesia benefit from the transition, rather than only more educated workers from Java.

Stakeholders

Efforts towards establishing greater levels of access to renewable energy microgrids in remote and isolated areas will require collaboration between stakeholders, both across different government ministries as well as with workers, communities and households. Concerted efforts will be necessary to ensure collaboration is sustained. Table 2 outlines the different stakeholders with a role to play in increasing electricity access in remote and isolated areas.

Table 2. Stakeholder responsibilities

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Energy and Mineral Resources	Oversees electrification programs and renewable energy deployment. Identifies disadvantaged groups to ensure energy equity.	• Develop a national microgrid strategy that ensures electrification for left-behind districts. • Implement a national maintenance framework for the upkeep and sustainability of microgrids. • Establish a dedicated microgrid fund to support feasibility studies, construction, and maintenance. • Integrate microgrids into the national energy mix.
Ministry of Public Works	Develops infrastructure to support access to remote areas.	• Prioritise road and transportation infrastructure to facilitate microgrid installations. • Collaborate with the Ministry of Energy to ensure synchronised electrification and infrastructure development.
Ministry of Villages	Ensures development benefits rural and indigenous communities.	• Utilise village funds (*Dana Desa*) for microgrid co-financing. • Develop regulation to promote the establishment of community-owned enterprises (BUMDes) to manage the operations of microgrid facilities. • Implement programs that ensure access to microgrids supports local economic activities (eg. agro-processing).

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Manpower	Ensures workforce development and employment opportunities in microgrid-related industries.	• Develop training programs for renewable energy technicians in partnership with local vocational schools and universities. • Implement certification programs for microgrid maintenance and operation. • Encourage businesses working on microgrids to hire and train local labour through incentives and subsidies.
Ministry of Communication and Digital Affairs	Ensures digital access for remote communities powered by renewable energy.	• Promote smart-grid technologies and digital monitoring of microgrid performance. • Provide incentives for telecom companies to use renewable energy microgrids for deploying digital infrastructure.
Ministry of Health	Ensures electrification of rural healthcare facilities.	• Ensure health centers in remote areas are prioritised in microgrid development. • Provide subsidies for energy-efficient medical equipment. • Integrate electrification with cold chain storage for vaccines and medicines.
Ministry of Environment	Ensures environmental sustainability in rural electrification projects.	• Implement environmental safeguards in microgrid development and encourage prioritisation of renewable energy sources. • Ensure the enforcement of regulations for climate adaptation at the local level.
Ministry of Forestry	Oversees forest conservation and land use planning in electrification projects.	• Ensure microgrid development does not lead to deforestation or ecosystem degradation.

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Finance	Provides funding for off-grid and micro-grid solutions.	• Offer fiscal incentives to microgrid developers targeting left-behind districts. • Establish a blended finance mechanism for microgrid investments. • Allocate subsidies for low-income households using microgrids.
Ministry of Planning	Ensures alignment with national development goals, particularly energy access under RPJMN (National Medium-Term Development Plan). Oversees development of infrastructure investment planning, including funding strategies for rural electrification.	• Public-Private Partnerships (PPPs) to encourage investment in decentralised energy solutions (eg., microgrids, solar PV). • Targeted subsidies and incentives (together with the Ministry of Finance) to develop financial support for households and businesses transitioning to microgrids. • Integrated Development Plans to potentially link electricity access to economic empowerment programs in remote areas.
Ministry of Small and Medium Enterprises (SMEs)	Supports the development of small and medium businesses in newly electrified areas.	• Provide business development services to SMEs in newly electrified villages. • Offer microcredit schemes to foster entrepreneurship linked to energy access. • Support the creation of local supply chains for energy services and equipment.
Ministry of Industry	Facilitates industrial development and local manufacturing to support microgrid development.	• Encourage local manufacturing and servicing of microgrid components. • Provide incentives for renewable energy companies that support microgrid development. • Link the newly electrified areas with the closest industrial clusters to boost local economies.

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Social Affairs	Encourages the involvement of marginalised groups in energy access initiatives.	• Integrate energy access into social assistance programs. • Develop community empowerment initiatives focused on electrification efforts.
Danantara (Sovereign Wealth Fund)	Engages state-owned enterprises to enhance rural electrification and infrastructure.	• Utilise expertise and resources from State-Owned Enterprises (SOEs) to develop and sustain microgrid systems. • Promote coordinated investments among SOEs for rural electrification.
Local Government	Ensures local regulations are in place to support the provision of rural electrification; mobilises officials at district and village level; and provides additional funds from the local government budget.	• Allocate local budgets (APBD) for microgrid projects. • Develop local policies ensuring equitable electricity access. • Facilitate community participation in microgrid planning and maintenance.
Indonesia Social Security Agency for Employment (BPJS Ketenagakerjaan)	Expands social security for workers impacted and then involved in rural electrification projects; while also ensures expanded coverage for informal workers participating in renewable energy initiatives.	• Extend social security for employment benefits (health, pension, work injury) to those workers involved in microgrid projects. • Provide alternatives or more affordable coverage of social security contribution for small-scale energy entrepreneurs or related workers in microgrids.
Private sector	Provides investment, develops new technology.	• Establish modified Public-Private Partnerships (PPPs) for microgrid deployment. • Provide training and capacity-building to local workforces.

Stakeholder	Reason for involvement	Potential policy/intervention
Civil society organisations	Supports community engagement in formal processes; involves local stakeholders in project planning, monitoring and implementation.	• Ensure community participation in project planning for microgrids. • Conduct awareness campaigns on energy access and equity. • Advocate for inclusive policies to prevent elite capture in microgrid benefits.
International development partners	Supports Indonesia to achieve electrification in remote and isolated areas through technical assistance and support.	• Provide technical assistance on best practices in the development of microgrid projects. • Offer grant funding for feasibility studies and pilot projects. • Support research and innovation.
Trade unions/ Labour organisations	Advocates for workers' rights in energy transition, ensuring fair employment conditions in renewable energy projects. Protects formal, informal and rural workers impacted by shifts away from traditional energy jobs (eg., coal workers).	• Provide support for workers to access retraining and job placement opportunities. • Ensure fair wages and working conditions for workers on microgrid projects. • Encourage and facilitate the participation of all workers in policy decisions on energy access (social dialogue and collective bargaining).
Indonesia Business Association (Apindo-*Asosiasi Pengusaha Indonesia*)	Represents businesses and supports members in transitioning to cleaner energy sources while maintaining economic viability.	• Encourage governments to provide tax breaks and subsidies for businesses in remote areas that adopt solar, microgrids, or energy efficiency solutions.

EXAMPLE 2: DEVELOPING THE CRITICAL MINERALS AND EV BATTERY INDUSTRY

Indonesia has abundant nickel and other critical mineral reserves such as cobalt, manganese and graphite, which are all necessary for the production of electric vehicle (EV) batteries. For these reasons, the Indonesian Government has made a strong commitment to develop a world leading EV battery industry, not only through nickel mining but also through developing a domestic refining industry in a process of "*hilirisasi*" or "downstreaming".

This commitment has heralded a rapid economic shift and Indonesia is now a key destination for foreign investment in critical minerals and the EV supply chain.[68] In terms of downstream processing, the government banned the export of nickel ore in 2014 and provides tax and investment incentives for purifying raw nickel before export. While only two nickel smelters existed in Indonesia in 2016, there were 60 by 2023.[69] Critically, coal is a key input for these smelters. Due to a lack of energy grid infrastructure, the smelters rely on coal power plants that are built next to them and are not connected to the grid. The capacity of this "captive coal" has increased eight-fold since 2013 and now comprises 23% of Indonesia's total coal capacity, demonstrating the negative effects of the critical minerals industry on the environment.[70]

Further downstream, Indonesia has attracted around USD 45 billion investments in the battery and EV industries, which is expected to create 47,000 new jobs in existing or announced projects.[71] Hyundai and LG have commenced mass production of EV batteries in Indonesia, and the Indonesian Government has signed an MOU with Australia to support the industry's development.[72] Finally, the government also provides tax rebates (eg. 1% VAT for factories using at least 40% local content) to accelerate the uptake of electric vehicles domestically.[73] While Indonesia currently has a small market for electric vehicles, this market has the potential to grow quickly in the coming years particularly for electric motorcycles.[74]

While the critical minerals and EV batteries industries have boomed over the past decade, their development has also presented challenges for local communities and the environment. Regions hosting nickel reserves are mostly in Sulawesi, Maluku and Papua, with some locations in Sumatra. These are often heavily forested regions where Indigenous communities have lived for generations and the destruction of forests to develop nickel reserves profoundly impacts the abilities of these communities to support their livelihoods. Forests are not only where these communities hunt, gather forest products and grow plants, but also a source of their identity and cultural heritage. These challenges are similar to those around the world, where the development of critical mineral industries has resulted in deforestation, polluted agriculture and fisheries, forced land acquisition, and poor health for workers and local communities.[75] It is vital that Indonesia builds its critical minerals industries while also respecting human rights and the environment.

+
Indonesia is now a key destination for foreign investment in critical minerals and the EV supply chain.

Principle 1: enable those affected by the transition to have voice and access to choices

Regions

A just transition for the development of the critical minerals industry would be based on in-depth consultations between firms, local communities and the affected workforce who face negative environmental and social impacts. Policymakers should ensure these consultations inform robust policies and practices to ensure sustainable and ethical mining operations, which may include compensation for land use or relocation of extractive activities. Representatives from all sectors of the community should have the chance to have a say in how the industry is set up, where projects are located, and how any royalties and compensation funds are used. Diverse stakeholders should have opportunities to represent their communities on advisory committees and boards.

Households

The Indonesian Government encourages private firms to partner with local communities through such mechanisms as Public-Private Partnerships (PPPs) and other forms of cooperation. For example, the government has actively pursued PPPs for infrastructure projects, involving local communities in the planning, implementation and operation of projects, to increase economic welfare. The Presidential Regulation No. 38/2015 mandates community involvement through public consultation in infrastructure provision.[76] Broadening this mandate beyond infrastructure, and accompanying it with clear legal repercussions, could alleviate various social issues. Unfortunately, numerous cases, especially in the mining sector, continue to harm the community. Between 2014-2019, 116 mining conflicts were recorded across the country, and in 2020 the total area that was affected by mining-related disputes was 714,692 hectares (about 0.4% of the country).[77]

Free, prior and informed consent is critical to ensure households have agency during the design and implementation of projects that have impacts on their livelihoods including any critical mineral mining activities. Communities should be fully informed about any mining activities, including its potential risks and benefits, should be free to give their consent for the projects without coercion, intimidation or manipulation, and should have opportunities to voice their opinions. Consent should be obtained from local communities before construction of any project commences and local communities should be given adequate time to obtain necessary information and make their decision.

Workers

In the mining sector, labour standards are often poor and workers are frequently exploited. Unions play a crucial role in ensuring that miners experience improved working conditions. Unions can represent workers as a collective, which gives them strong power when bargaining for better working conditions such as safety standards, better facilities and equipment. They can also bargain for improved wages, job security and protection, and better health insurance and healthcare. However the large proportion of workers who are not employed formally may be excluded from joining unions and participating in formal negotiation processes. It is important for informal workers to also have a voice, and policymakers should consider processes by which this can happen, through community forums or similar.

Principle 2: ensure those who face vulnerability are not made worse off

Regions

The effects of nickel mining differ across regions located near the mines.[78] While social wellbeing generally declines due to environmental degradation and land acquisition, the impact varies considerably, and can even be positive in some areas. Villages with high poverty levels may experience particularly damaging health and environmental impacts as they have limited resources and capacity to cope with the increase in pollution from mining. However, poorer regions may also experience the greatest benefits from mining in the form of improved living conditions and infrastructure. Revenue from mining can help improve water systems, transportation networks and other public goods. Regions also typically benefit from improved infrastructure and transportation, which are constructed because of mining operations.[79]

While the opening of a new critical mineral mine or a factory in the EV supply chain can benefit regions through economic growth, these benefits are unlikely to be dispersed evenly across members of the community. For example, Central Sulawesi Province currently hosts 17 nickel smelters[80] and several EV battery factories.[81] In the second quarter of 2024, it recorded economic growth of 9.75%, which is considerably higher than the national average of 5.05%.[82] However, despite high economic growth overall, the poverty rate in the province was 12.41% in March 2023, which was higher than the national average of 9.36%.[83] Poverty rates in nickel mining regions appear to be on an upwards trajectory, a finding echoed across Central Sulawesi, North Sulawesi and North Maluku.[84]

To ensure more benefits at the local level and to address this poverty gap, the government can also encourage downstream industries to be located closer to mining sites. Indonesia's first EV battery plant is located in Kerawang, West Java. The recent development of nickel refinery and battery factories in Morowali in Central Sulawesi should be celebrated as the economic benefits can directly flow to local communities living in nickel producing districts.

Households

Deforestation and soil and water pollution linked to the mining industry have negative impacts on the livelihoods of local communities, particularly for households dependent on subsistence farming and fishing.[85] Soil degradation due to large volumes of waste materials like tailings and slag that may contain toxic substances contaminate agricultural lands rendering soil unsuitable for farming and endangering local food security. Some companies discharge tailings into the sea causing harm to marine ecosystems on which local communities depend. Communities and households living near mines thus suffer from deforestation and pollution.

Indigenous communities are often particularly negatively affected by the development of the critical mineral mining and EV battery industries. To support these communities, the Indonesian Government should accelerate the process of recognising land ownership in Indonesia as part of the implementation of the Constitutional Court Decision 35/2012. The decision provides a legal basis for Indigenous communities to claim their rights in areas classified as state forests, where most mining operations are located. Clearly acknowledging the rights of local communities to their land provides them with the legal basis to bargain and negotiate with

companies that wish to locate their projects on their lands. There are several steps that must be followed. First, communities need to prepare a map of their claim. Next, the district government needs to acknowledge the rights of the communities by issuing local regulations. Finally, the Ministry of Forestry relinquishes the lands from the state forests. Around 3.9 million hectares of Indigenous peoples' lands had been formally recognised by the end of March 2024.[86]

Workers

Workplace conditions in nickel mines in Indonesia are reportedly dire with high levels of job insecurity for both formal and informal workers and very long working hours with no breaks.[87] Workers may have pay deducted if they take sick leave or are late, or may not be provided with sufficient personal protective equipment. Occupational health and safety issues are widespread and employees can be subject to toxic gas leakages and spills from grinding machines, at times resulting in death. Moreover, many labourers migrate from other regions or countries and live in camps with poor living conditions. Heavy reliance on workers from other regions may disadvantage local workers.

To improve working conditions for all, including vulnerable workers, the Indonesian Government needs to set and enforce standards for companies operating in the sector and develop a social safety net to protect affected formal and informal workers. It is also important for civil society organisations to carry out independent monitoring of workplace conditions. Increasing buyers' awareness of the social and environmental problems that are caused by EV battery development can also result in increased demand for more ethical products. The power of consumer habits to drive positive change can be seen through experiences in the palm oil industry, where the leading Roundtable for Sustainable Palm Oil certification system covered 20% of all crude palm oil production in 2022.[88]

Principle 3: ensure equitable sharing of the transition's benefits and costs

Regions

As noted above, nickel mining regularly brings more burdens than benefits to regions hosting the mines. One reason for the high costs for regions is a disconnect between policy levers at the national and local level. It is the national government that grants licences to mining companies in Indonesia, while local governments are responsible for providing public services for those living in their jurisdictions. The national government also collects royalties from mining companies and distributes them, providing less than one-third to the district that hosts the mine. Most of the money collected through royalties is instead retained by the national government and/or distributed to other districts and the provincial level through various intergovernmental transfers based on the national government's annual budget and priorities.

To ensure that the districts hosting the nickel mines are not unfairly burdened, the Indonesian Government should create dedicated funding streams for local governments that host mining operations, potentially through the *Dana Alokasi Khusus* (specific allocation fund) or by

sharing revenue from the export tax of nickel derived products. Nickel mining would then be treated in a similar way to palm oil. Government revenues from palm oil mostly come from export taxes, which were not redistributed back to the producing districts prior to 2023. This situation has since changed, and the national government is now sharing revenue from export taxes on crude palm oil and its derivatives with the producing regions.[89]

Governments and civil society organisations can also support the establishment of benefit-sharing models including opportunities for employment and economic development in host communities and funds managed by communities to build social license and hedge against the boom-and-bust cycle of mining. In collaboration with civil society organisations, the national government should establish an independent monitoring or oversight body to track companies' performance in meeting their social and environmental responsibilities and require companies to pay compensation to local communities if they fail to satisfy their responsibilities.

Households

The benefits of EV batteries are currently enjoyed mostly by socioeconomically-advantaged households who can afford battery electric cars and motorcycles. While the growth potential of electric vehicles in Indonesia is tremendous,[90] only those who have sufficient capital can save money from the lower fuel prices associated with EVs. The Indonesian Government currently incentivises the uptake of EVs through financial instruments such as a lower risk weight of 75% for loans for EV purchasing as compared to 100% for other purchases and an IDR 7 million subsidy for EV motorbikes. It also provides preferential access such as exemption from road restriction and parking fee discounts for EV users.[91] However, few households on low incomes are able to access these perks.

The government can share the benefits of electric vehicles more broadly through targeted financial incentives to encourage access and ownership. For example, governments can work together with private companies to design support packages to enable people from marginalised communities to purchase EVs. Policymakers should also increase investment in electric public transport, as this would have a far greater public benefit than continued use of individual vehicles, no matter how renewable their energy sources are.

Workers

Despite the government's commitment to the critical minerals industry, it needs to be realistic about the potential workforce benefits. Estimates show that in resource-rich Central Sulawesi, only 1.3% of the total local workforce can be employed in the nickel mining industry. Further, these employment opportunities are estimated to decline in the next fifteen years. While the industry is projected to create jobs for 66,000 people initially in Central Sulawesi, this number is estimated to decline rapidly after only nine years.[93] The decline in employment is associated with reduced outputs from mining and excavation over time as nickel ore supply declines and air and water pollution threaten public health and labour productivity.[94]

Long-term planning to ensure workers in the nickel mining industry can be retrained and rehired by other industries is crucial and should start early. The formal labourers hired in the nickel mining industry are mostly skilled and well-educated and will therefore be likely to find new employment opportunities relatively easily. However, informal workers will be more vulnerable as they lack formal education. Governments should work with businesses and other relevant stakeholders to ensure that workers can access training and development opportunities.

Stakeholders

Table 3 outlines the different stakeholders with a role to play to ensure justice and equity in the nickel mining and EV battery industries.

Table 3. Stakeholder responsibilities

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Energy and Mineral Resources	Regulates sustainable extraction of critical minerals.	• Enforce stricter environmental, social, and governance standards in critical mineral mining operations. • Require transparency and equity in royalty payments to ensure fair distribution to local communities. • Implement 'Free, Prior, and Informed Consent' regulations for affected communities.
Ministry of Industry	Leads domestic EV battery manufacturing and ensures compliance with sustainability principles.	• Enforce mandated sustainable local content requirements in EV battery supply chains. • Provide incentives for battery recycling. • Mandate green technology adoption across industries.
Ministry of Manpower	Ensures labor protections and upskilling of workers.	• Develop re-skilling and upskilling programs for workers. • Enforce labour rights protections. • Strengthen policies for informal workers and include these workers in existing social protection systems.
Ministry of Environment[95]	Enforces environmental regulations in mining areas.	• Implement stricter pollution measures in mining regions. • Require mining companies to rehabilitate the environment damaged by their activities. • Strengthen monitoring of environmental compliance. • Monitor carrying capacity and ensure critical ecosystems in and around mine sites remain sustainable.
Ministry of Forestry	Manages forest areas affected by mining and prevents deforestation.	• Ensure businesses with mining permits in forested areas comply with strict land-use regulations. • Strengthen land tenure rights for Indigenous and local communities in state forests. • Require mining companies to restore forest ecosystems post-extraction. • Implement sustainable land-use planning to balance mining activities with conservation.

Stakeholder	Reason for involvement	Potential policy/intervention
Ministry of Human Rights	Protects community rights; ensures land tenure recognition; prevents human rights violations in mining operations.	• Ensure corporate accountability for human rights violations in mining-related activities. • Oversee access to justice mechanisms for affected communities and workers. • Require mining companies to comply with international human rights standards in labour and land use.
Ministry of SMEs	Supports local businesses in EV battery supply chains.	• Provide financial and technical support to SMEs for integrating into the battery industry. • Establish green small business financing schemes. • Offer skill and capacity-building programs for SMEs working near critical mineral mines.
Ministry of Investment	Designs investment policies for responsible mining and battery production.	• Condition investment approvals on companies' adherence to social and environmental standards. • Establish enforceable requirements for ethical sourcing of critical minerals. • Develop benefit-sharing mechanisms to ensure investments benefit local communities.
Ministry of Social Affairs	Develops and integrates social protection programs for marginalised groups affected by mining and industrial changes.	• Develop and implement a social safety net for workers required to relocate for work. • Ensure programs to support workers in these industries are aligned with existing programs like cash transfers and other social assistance.
Social Security Agency for Employment (BPJS Ketenagakerjaan)	Expands worker protection programs to all affected workers.	• Expand worker protection coverage to include informal and contract workers in the mining and EV sectors. • Design special social insurance schemes for workers in industries likely to decline over time like nickel mining.

Stakeholder	Reason for involvement	Potential policy/intervention
Danantara (Sovereign Wealth Fund focused on SOEs)	Oversees the sustainable management and transformation of Indonesia's state-owned mining enterprises.	• Enforce high ESG compliance and standards across all subsidiaries involved in the EV supply chain. • Guarantee transparent benefit-sharing and community development initiatives. • Require SOEs to champion best practices in sustainable mining, including human and social practices.
Local government	Enforces local regulations; implement stricter environmental monitoring.	• Allocate local government budget (including from mining royalties) for local infrastructure and community development based on community input. • Strengthen local enforcement of environmental and labour standards. • Facilitate community engagement forums on mining impacts through meaningful consultations.
Private sector	Ensures compliance with environmental and social standards; contributes to community welfare and ecological restoration.	• Develop compensation mechanisms for communities impacted by development of the EV supply chain. • Integrate community benefits into corporate strategies in order to build social license. • Use sustainable mining and rehabilitation practices.
Civil society organisations	Advocates for environmental and labor rights.	• Conduct independent monitoring of mining companies' social and environmental performance. • Advocate for policy reform on land tenure and community rights. • Facilitate public awareness campaigns on social and environmental impacts of mining.
International development partners	Provides technical assistance, funding, and capacity-building for sustainable development.	• Support capacity-building programs for governments and local communities. • Facilitate international knowledge-sharing on best practices in responsible mining. • Provide funding for community development and environmental restoration projects.

EXAMPLE 3: PHASING OUT COAL POWER PLANTS

According to the Indonesian Government's long-term strategy for achieving a net zero economy by 2060,[96] the majority of energy will come from renewable energy and natural gas rather than coal by 2050. Although the strategy has no specific deadline for when coal-fired power generation should cease, retirement is slated to begin in 2031. Since the submission of the strategy to the UNFCCC in 2021, the phase-out of coal has been much debated. To be successful, the phasing out of coal must go hand-in-hand with economic diversification of local communities, be tailored to local communities, and draw on knowledge of what has worked well elsewhere.

Principle 1: enable those affected by the transition to have voice and access to choices

Regions

Typically, regions with coal mines have a large proportion of the workforce employed by the mining companies that operate them. Thus, the closure of coal mines requires a fundamental rethinking of what other industries could arise to replace this gap in industrial output and employment. Regions that can successfully diversify their economies typically involve multiple stakeholders in decisions about which alternative industries may be successful and in carrying out the development of these new industries. Governments play a critical role in ensuring that the voices of those who live and work in the affected regions are incorporated into formal planning processes. One option is to create a multi-stakeholder platform, which can be powerful in creating alternative visions for each region, agreeing on a roadmap to achieve a collective vision, and bringing people together to achieve the vision. On a larger scale, this platform might bring together people from different tiers of governance including local governments, the business community, trade unions, academia and NGOs working on just transition, climate and the environment. Policymakers should also create opportunities to bring together different stakeholders for specific regions.

Households

A key voice in determining the future of specific regions should be that of the households that live there. Various policies may be implemented to assist with equitable closures of coal mines, for example, retraining for affected workers as well as the build-out of new infrastructure for emerging industries. Policymakers should involve households that are directly impacted by these policy decisions in the decision-making process through public consultations including surveys, polls and focus group discussions. Depending on the policy being introduced, it may make sense to have both open and inclusive engagement with the broader public as well as targeted consultations that focus on specific stakeholder groups.

Workers

The closure of coal mines will affect many workers and their abilities to provide for their families. In Indonesia, key trade unions such as the Indonesian Trade Union Confederation and the Confederation of Indonesian Prosperity Trade Union are working to ensure trade unions are included in discussions about the energy transition and that the livelihoods of coal workers are supported. One of their key objectives is to guarantee that green jobs provide decent incomes, adequate benefits including healthcare and pensions, and protect fair work rights including to join a union. However, while these unions are able to represent the interests of the formal coal mine workers who are their members, informal workers are typically not organised into trade unions. Governments and mining operators should facilitate regular dialogue with trade unions on energy transition policies.

Principle 2: ensure those who face vulnerability are not made worse off

Regions

The ability of regions to adapt to the closure of coal mines depends on various factors including whether they have other industries that can absorb the former coal workers and how remote they are from other areas with more diversified economies. The ability of regions to develop new industries will also depend on factors such as the level of entrepreneurship of their residents, how financially well-off they are, and their ability to work together cooperatively. Some regions are more likely to prosper after the closure of coal mines, while other regions may fall into decline, with a steady and considerable reduction in population numbers and an increase in poverty rates.

The national government should identify those regions that are likely to suffer the most egregious impacts of coal mine closures and support them through the transition. Identification of these regions could come from a simple analysis of levels of socioeconomic disadvantage in coal-mining regions using national statistics or through a more refined analysis of the impacts of specific coal mine closures on employment, income and poverty levels on neighbouring regions. These regions are likely to have differing needs in terms of how governments can best support them. For example, some regions may require assistance to increase education levels or improve access to key public services, while others may need to focus more on developing entrepreneurship and attracting non-fossil-fuel sectors.

Households

Households experiencing socioeconomic disadvantage in coal-mining regions will be amongst those least able to cope with loss of income and increased difficulties in accessing basic services such as energy, housing, education and health. They will also face considerable difficulties in relocating to other areas in search of new opportunities. Policymakers should design transition adjustment assistance for such households in a way that encourages self-reliance and ideally helps them avoid the trap of ongoing welfare dependence. Key elements of such a package could involve fast-tracked access to comprehensive support for skills training, guidance on starting a small business, information seminars about available job opportunities, and assistance with job applications.

People who remain living in or near ex-mining areas may suffer from pollution of water supplies, degraded soil quality, and poor health as many mining companies fail to restore the lands to their original conditions. While restoration is a legal requirement, this is often ignored by many private companies. Local governments inherit the problem and typically have limited resources to address it. When the destruction to local ecosystems is dire, the areas cannot be used for other purposes such as developing agriculture as a key industry for a region. The ex-mining areas experience poor soil fertility and water quality over the long-term, in turn affecting local community livelihoods. Casualties may also arise from abandoned barely-filled open mine pits near residential areas.[97] After mining companies leave, it is also not uncommon for illegal miners to move in and try to make a living by collecting the remaining reserves. Illegal coal mining can cause environmental damage and accidents from coal tunnels and mining shafts being vulnerable to collapse.[98]

A key step towards fixing these problems is for the national government to require companies to rehabilitate mining sites upon closure, educate the public about the risks of illegal mining, and for law enforcement to regularly monitor sites after mining activity has ceased.

Workers

Informal workers, mostly from local and Indigenous communities, are especially vulnerable to coal plant closures as they typically don't have access to formal retirement programs or other types of social benefits. Local governments should develop a tailored strategy to educate informal workers and ensure they can successfully transition into new employment. Informal workers can be trained in a variety of roles, such as in farming, fishing, downstream agricultural commodities, or ecotourism. At a higher level, the national government can use tax incentives, financial instruments such as grants and loans, and investments in common infrastructure to increase the willingness of businesses to set up in former coal-mining regions and employ informal workers.

Principle 3: ensure equitable sharing of the transition's benefits and costs

Regions

Many of Indonesia's regions have experienced commodity booms and busts throughout history, and can provide invaluable lessons for coal-mining regions as they too transform. In the agriculture sector, rubber and coffee were once planted in many regions. However, changing economic conditions leading to lower profitability and environmental degradation caused these regions to increasingly switch to new, profitable commodities including palm oil and timber.

As coal power plants close, other low-emissions industries including in renewable energy are creating new businesses and jobs in some regions. These new industries offer a possibility for some coal-mining regions, as long as local community members are equipped to work with the new technologies. For example, the installation and operation of wind turbines requires a very specific and advanced skillset that is currently uncommon in Indonesia. It will therefore be challenging to rapidly scale-up a wind power workforce in many remote areas that benefits local workers. As an alternative, local workers could provide a more valuable and immediate contribution to electricity generators that use

biomass as a feedstock, or to simple solar panel systems. Local energy communities, involving people coming together to produce and consume energy, can also be a particularly effective tool for increasing community welfare and involving people who might otherwise be excluded in the clean energy transition.

Alongside opportunities in renewable energy, regions can also benefit from the development of other industries. In Sawahlunto, West Sumatra, government and community stakeholders worked together to transform its economy from predominantly coal mining to tourism centred around its mining heritage.[99] This new focus prevented Sawahlunto from becoming a ghost town and contributed to a reduction in the poverty rate by around 12% from 1999-2017, following the coal mine closure.

Households

Access to financial resources is a large determinant of whether households can recover from the closure of coal mines in nearby regions and the emergence of new low-emissions industries. Wealthier households are more easily able to recover from any loss of income from closing mines as well as provide the entrepreneurship, land and financial capital necessary for new industries to develop. Meanwhile, households facing socioeconomic disadvantage are more likely to experience poor mental health and an increase in loneliness particularly if they are unable to emigrate away from coal-mining regions. Their lack of assets and skills means they are less able to benefit from the development of new industries.

Policymakers should take steps to ensure that the costs and benefits of the transition are shared amongst all households in coal-mining regions. Equity in this regard may involve funding investments in public infrastructure that everyone can benefit from, such as public transportation or rebates and incentives to encourage the adoption of new technologies to ensure less wealthy households are able to access them.

More broadly, private companies often benefit the most from any government support for new industries. Wealthy households are more likely to own these companies and be on their boards. Policymakers can help ensure that economic growth from new markets is as inclusive as possible by recouping some of the potential financial gains from public sector investments in these new industries through some extent of public ownership. Another alternative is to require companies to provide benefits for households located near their projects.

Workers

Job losses and resulting socio-economic instability will be concentrated in specific fossil-fuel-dependent regions.
To support the transition due to the closure of coal power plants, the national government should carry out a workforce assessment to understand the existing skills, capabilities and readiness for change for both formal and informal workers in coal-mining regions. The assessment should be complemented by a skills gap analysis to understand the differences between the current skills of the workforce and the skills needed for future industry demands. As a follow-up, the national government should work with other relevant stakeholders, such as other levels of government, the business community, trade unions and education institutions to develop a strategy to rehire and retrain coal-mining workers. The baseline skills level of individual workers should inform the upskilling process, with formal mine workers for example potentially being suitable for renewable energy jobs in power plant operation as well as mechanical and electrical engineering.

Stakeholders

The stakeholders detailed in Table 4 are all valuable in ensuring a just transition as Indonesia transitions away from coal mining.

Table 4. Stakeholder responsibilities for coal mine closures

Stakeholder involved	Reason for involvement	Potential policy/intervention
Ministry of Energy and Mineral Resources	Develops and implements a national coal phase-out strategy and transition plans for coal-mining regions.	• Develop a national coal phase-out roadmap based on regional strategies. • Align energy transition policies with workforce reskilling programs in collaboration with Ministry of Manpower. • Provide regulatory incentives for economic diversification in coal-dependent regions.
Ministry of Manpower	Develops reskilling and alternative employment programs for coal workers.	• Design and implement workforce retraining and redeployment programs, including mobility programs. • Ensure informal workers are included in labour protection. • Conduct national workforce assessments to identify affected workers and skills gaps.
Ministry of Industry	Supports the transition of coal-dependent industries towards sustainable sectors.	• Develop targeted industrial transformation policies for coal-producing regions. • Support the adoption of green technologies in industries previously reliant on coal. • Provide incentives for industries shifting to renewables.
Ministry of Finance	Develops blended finance mechanisms; allocates funds for economic diversification and transition programs.	• Encourage the use of blended finance mechanisms to support new projects in former coal communities. • Provide tax incentives for companies investing in renewable energy and sustainable industries in coal-dependent regions.
Ministry of Social Affairs	Ensures social safety nets for affected workers and communities.	• Ensure that social protection covers displaced informal and formal workers, and consider the livelihoods of workers in adjacent industries (transport, hospitality).

Stakeholder involved	Reason for involvement	Potential policy/intervention
Ministry of Environment	Develops and enforces environmental standards and manages environmental remediation.	• Enforce company obligations to rehabilitate the environment in former coal mining areas. • Strictly enforce post-mining land use and reclamation regulations. • Monitor air and water pollution levels in coal regions.
Ministry of Forestry	Ensures no further deforestation; strengthens forest protection; develops strategy for land repurposing efforts.	• Develop and oversee forest rehabilitation programs in former mining areas. • Promote sustainable forestry-based livelihoods as an alternative for affected workers. • Collaborate with local governments and communities on afforestation and conservation programs.
Ministry of Health	Addresses public health concerns related to coal plant pollution.	• Strengthen healthcare facilities in coal-affected communities. • Conduct public health assessments in coal regions. • Provide medical and psychological support for workers affected by the closure of coal mines.
Ministry of Human Rights	Ensures protection of labor rights, indigenous communities, and vulnerable groups affected by the transition.	• Ensure compliance with international labour and human rights standards in the transition process. • Strengthen access to legal assistance and grievance mechanisms for affected workers and communities.
Ministry of Small and Medium Enterprises (MSME)	Supports SMEs to recruit transitioning workers and stimulating new local economic activities through SMEs.	• Develop financing and market access through technical assistance programs for SMEs in coal-mining regions. • Facilitate new business incubation in coal-mining regions.

Stakeholder involved	Reason for involvement	Potential policy/intervention
Danantara (Sovereign Wealth Fund focused on SOEs)	Directs SOE investments into emerging green sectors and just transition efforts.	• Shift investments from coal assets to renewable energy, green industries, and infrastructure. • Create a platform that supports collaborative transition projects between SOEs and the private sector. • Incorporate just transition principles into the sustainability strategies of SOEs.
Local government	Ensures adherence to relevant local regulations; enforces stricter environmental monitoring.	• Conduct local workforce assessments to identify affected workers and skills gaps. • Bring different community stakeholders together to develop local transition strategies. • Facilitate land repurposing initiatives at former mine sites.
Private sector	Implements reskilling programs for employees and other workers affected by coal plant closures; invests in new businesses; abide by rules for land rehabilitation.	• Develop and finance workforce reskilling programs. • Provide early retirement and financial support schemes for formal and informal workers. • Invest in new low-emissions industries. • Conduct land rehabilitation projects of former mining sites.
Civil society organisations	Advocates for community and labor rights.	• Support participatory decision-making processes. • Provide training and awareness programs for affected communities. • Monitor government and corporate commitments.
International development partners	Provides financial and technical assistance for the transition.	• Facilitate funding for transition projects through grants and loans. • Support research and capacity-building initiatives. • Assist in the integration of best practice from regions transitioning away from coal around the world into Indonesian policy.

NEXT STEPS AND RECOMMENDATIONS

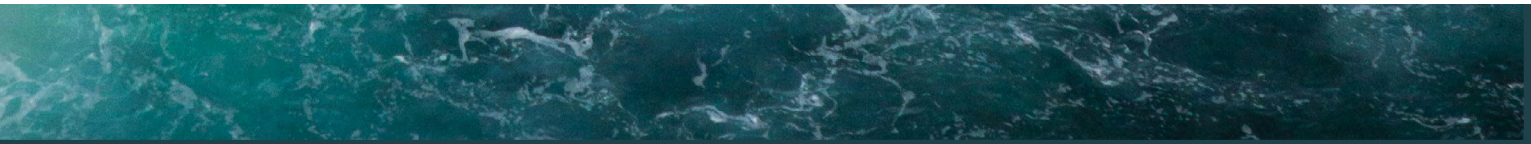
Indonesia faces considerable challenges in transitioning from an economy heavily reliant on coal exports to one that is decarbonised and fit for a low-emissions world. Indonesia has made many high-level commitments to lower its greenhouse gas emissions including via reduced use of coal-fired power plants. It must now implement new policies to ensure that it can achieve those commitments. To make the transition as smooth as possible and ensure that it attracts social license and public buy-in rather than incentivise political unrest, it is essential that the transition is equitable. The transition must address not only the technological and financial challenges but also focus on how particular policies may impact regions, workers and households and the differing impacts on various parts of society.

The report supports the JETP CIPP and Just Transition White Paper as a solid starting point, and seeks to show in detail how just transition principles can be applied in practice. This paper demonstrates how to apply the principles for all people affected, and in a range of transition areas, beyond coal. A truly just transition must go beyond closures of coal mines to also plan for transitions of other emissions-intensive industries, including agriculture and the built environment. It must go beyond workers to ensure that the differing impacts on regions and households are handled with similar importance.

This report has proposed three principles for a Just Transition Framework that we recommend the Government adopt:

1. Enabling those affected by the transition to have voice and access to choices,
2. Ensuring those who face vulnerability are not made worse off,
3. Ensuring equitable sharing of the transition's costs and benefits.

To be truly effective, these three principles should be applied to every project from inception through to monitoring and evaluation. This report has demonstrated how they can be applied across regions, workers and households by using three live policy examples of increasing access to electricity for remote and isolated areas through renewable energy microgrids, developing the critical mineral and EV battery industry, and phasing out coal.



To support implementation of the Just Transition Framework, we further recommend the Indonesian Government take the following steps:

- **Embed just transition principles across all high level regulations in Indonesia** to ensure a whole-of-government approach is taken and that all parts of government are working towards a low emissions future.
- **Take an 'Impact First Approach' to project planning by** reversing the traditional planning approach to start with considering social and human aspects before the financial and technology considerations of green projects.
- **Develop 'social and human aspects roadmaps'** to accompany major financial and technical milestones and net zero commitments, laying out important considerations beyond financial and technical priorities.
- **Establish a coordinating body within government** that brings together all relevant stakeholders for the just transition to ensure efforts are coherent, coordinated and well-integrated.

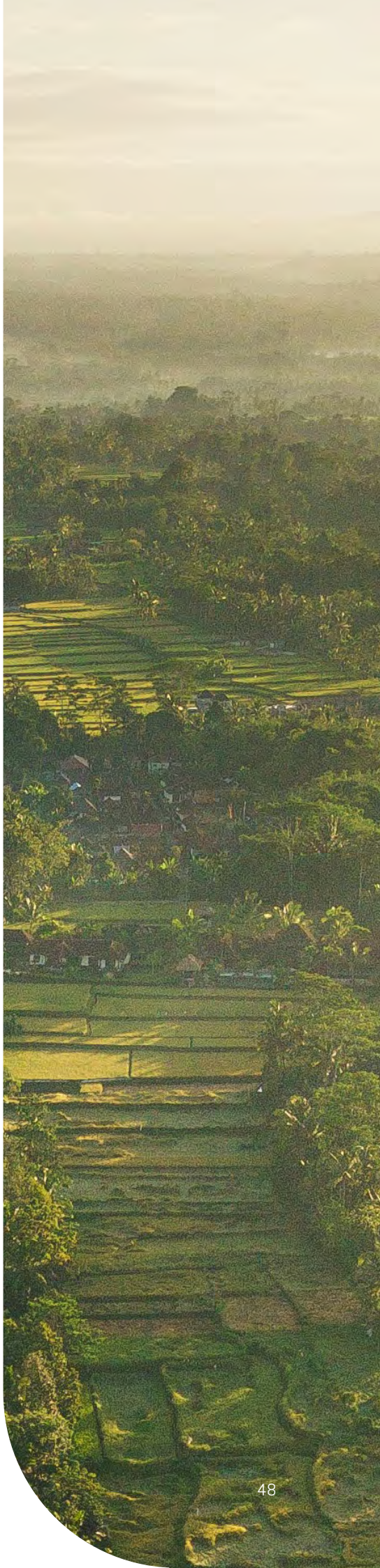
CPD looks forward to supporting the Indonesian Government in progressing these priorities.

ANNEX A: LANDSCAPE IN INDONESIA

Indonesia has made several important commitments globally, including signing the 2018 Silesia Declaration on Solidarity and Just Transition and joining the Just Energy Transition Partnership, which shows the country's commitment to supporting fossil fuel energy workers impacted by the transition.

At the international level, Indonesia has:

- Submitted an Enhanced Nationally Determined Contribution (NDC) ahead of COP27 in 2022. The enhanced NDC indicated a more ambitious commitment to reducing greenhouse gas emissions.
- Submitted a Net Zero Emission Target for 2060, contained in the Long-Term Strategy for Low Carbon and Climate Resilience 2050 document, to the United Nations Framework Convention on Climate Change (UNFCCC) in 2021. Indonesia is only the eighth developing country to submit this long-term strategy document.
- Prioritised energy transition at the G20 and ASEAN in 2022 and 2023.
- As part of its commitment to achieve net-zero emissions by 2060, Indonesia is creating measures to minimise the use of coal-fired power plants. For example, Indonesia's plan to replace coal-fired power plants with gas-fired power plants and renewable energy sources is in accordance with the National Energy General Plan.
- Committed to reaching peak power sector emissions by 2030 and achieving net zero emissions in the power sector by 2050, as part of its JETP commitments.[c]



In addition to these international commitments, Indonesia's national policy frameworks and regulations include:

- Presidential Regulation (98 of 2021) on Carbon Economic Value, which regulates carbon trading including through a cap and trade scheme, emission offsetting through a carbon offset scheme, performance-based payments (result-based payments), and carbon levies.
- Presidential Regulation (112 of 2022) on the Acceleration of Renewable Energy Development and the Termination of Coal-fired Power Plant Operations, which mandates the creation of a roadmap to accelerate the termination of publicly- and privately-owned coal-fired power plants.
- Presidential Regulation (11 of 2023) regulating government affairs related to new and renewable energy as part of efforts to expand the use of renewable energy and ensure policy alignment between the central and regional governments.
- Presidential Regulation (14 of 2024), facilitating the development of carbon capture and storage activities.
- Presidential Regulation (55 of 2019) aiming to accelerate the uptake of battery-based electric vehicles.
- Presidential Instruction (7 of 2022) supporting an increase in the uptake of EVs by central government agencies and regional governments.[ci]
- The Financial Institution Authority (OJK) Regulation Number 14 of 2023 regulating carbon trading through carbon exchanges and encourages a transparent and sustainable carbon market.
- The Decree of the Minister of Environment and Forestry (LHK) No. 168/2022 establishes a Forestry and Other Land Use (FOLU) "Net Sink 2030 Plan".
- The Energy Transition Mechanism Country Platform supports funding of the energy transition and is led by PT SMI.
- The Ministry of Energy and Mineral Resources has developed a roadmap for achieving net zero emissions by 2060.
- The National Medium-Term Development Plan for 2020-2024 incorporates energy transition issues.

ENDNOTES

1. Ministry of Energy and Mineral Resources. 2021. 'At COP26, Energy Minister gives Indonesia's commitment to net zero emission' 2 November.
2. Cabinet Secretariat of the Republic of Indonesia. 2024. 'President Prabowo reaffirms Indonesia's commitment to renewable energy' 18 November.
3. Government of Indonesia. 2024. 'Statement by Indonesia at the Closing Plenary COP29 Baku', 23 November.
4. European Commission. 2022. 'Joint statement by the Government of the Republic of Indonesia and International Partners Group members on the Indonesia Just Energy Transition Plan', Bali, 15 November.
5. Al Fikri, M. 2024. 'Arah kemandirian energi RI di tengah konflik global dan krisis iklim' *CNBC Indonesia*, 2 December.
6. Trichandi, R. 2018. 'A Brief Review on Indonesia's National Energy Policy' *Purnomo Yusgiantoro Center*, 31 December.
7. Institute for Essential Services Reform. 2024. RPP KEN Pangkas Target EBT Menjadi 19 Persen di 2025, 31 January.
8. Wuryandani, D. 2025. *Perubahan target bauran energi baru terbarukan Indonesia*, Badan Keahlian DPR RI, 3 February.
9. Indonesia National Energy Council. 2024. Indonesia Energy Outlook 2024. Sekretariat Jenderal Dewan Energi Nasional (DEN).
10. Indonesia National Energy Council. 2024. Neraca Energi Nasional 2024. Sekretariat Jenderal Dewan Energi Nasional.
11. World Bank and Asian Development Bank. 2023. Indonesia: *Climate Risk Country Profile*.
12. Pratami, D. 2023. 'Riding the waves for a blue future in Indonesia', *UN Sustainable Development Group*, 24 August.
13. World Bank and Asian Development Bank. 2023. *Indonesia: Climate Risk Country Profile*.
14. World Bank and Asian Development Bank. 2023. *Indonesia: Climate Risk Country Profile*.
15. International Labour Organization (ILO) Department of Statistics. 2023. Indonesia, 'Share of Agriculture'.
16. Garnaut, R. 2024. 'The renewables boom within our reach' *Superpower Institute*, 27 February.
17. European Commission. 2022. 'Joint statement by the Government of the Republic of Indonesia and International Partners Group members on the Indonesia Just Energy Transition Plan', Bali, 15 November.
18. Observatory of Economic Complexity (OEC). 2023. *Indonesia Country Profile*.
19. JETP 2024. *Comprehensive Investment Policy Plan*, page 34.
20. The Coal Hub, 2024, 'Indonesian coal exports up by over 8 percent', *The Coal Hub*, accessed 5 March 2025.
21. If the global energy sector is to achieve net zero carbon emissions by 2050, global coal demand should fall by 91% over that timeframe. International Energy Agency (IEA). 2023. *World Energy Outlook 2023*.
22. Saha, S. and Raj, P. 2024. 'Indonesia unlikely to relinquish top exporter position in foreseeable future', *S&P Global*, 8 February.
23. Saha, S. and Basu Roy, S. 2024. 'Higher long-term deals with China keep Indonesia's thermal coal export steady despite weak spot demand', *S&P Global*, 20 June.
24. Just Energy Transition Partnership (JETP). 2024. *Comprehensive Investment Policy Plan*, page 2.
25. Han. C, et al. 2012. Perceptions of inequalities: Implications for social cohesion, *Centre for Learning and Life Chances in Knowledge Economies and Societies*, Research Paper 35.
26. Examples of social conflict linked to inequality include the "yellow vests" movement in France, and protests in Nigeria in 2020 and India in 2021 against fuel price increases. See Jenkins, K. et al. 2016. Energy justice: A conceptual review. *Energy Research & Social Science*, vol. 11, pp. 174-182; Sovacool, B. et al. 2013. *Energy Security, Equality, and Justice*. Routledge.

27. Stiglitz, J. 2016. 'Inequality and Economic Growth' in Mazzucato, M. et al. 2016. *Rethinking Capitalism*, pp. 134-155.
28. For a more detailed breakdown of climate risks in Indonesia see: Copage, M. et al. 2025. *Indonesia in 2035: Climate risks to security in the Indo-Pacific*, Australian Strategic Policy Institute.
29. Roe, M. and Siegel, J. 2011 'Political instability: Effects on financial development, roots in the severity of economic inequality' *Journal of Comparative Economics*, vol. 39, issue 3. pp. 279-309.
30. OECD and WTO. 2019. 'Chapter 5: Economic diversification: Lessons from practice' *Aid for Trade at a Glance*, pp. 135-160.
31. Republic of Indonesia. Appendix Presidential Regulation no 18 of 2020 concerning The National Medium-Term Development Plan 2020-2024.
32. Muhammad, F. 2025 'Justice in Indonesia's Energy Transition Policies' *Energy and decarbonization in Southeast Asia*, vol. 2, ISEAS Publishing.
33. Draft copy of the updated Comprehensive Investment and Policy Plan 2025 reviewed by authors.
34. Rishanty, A. et al. 2023. 'Coal phase-out: socioeconomic impact in achieving just energy transition in Indonesia' Bank Indonesia Working Paper, WP/04/2023.
35. Hammerle, M. & Phillips, T. 2023. *Making Our Way: Adaptive capacity in Australia's at-risk fossil-fuel-exposed regions*, Centre for Policy Development.
36. Setyawati, D & Setiawan, D. 2024. *Indonesia's expansion of clean power can spur growth and equality*. Ember, 14 August.
37. Rishanty, A. et al. 2023. 'Coal phase-out: socioeconomic impact in achieving just energy transition in Indonesia' Bank Indonesia Working Paper, WP/04/2023.
38. Indonesia National Energy Council. 2024. Neraca Energi Nasional 2024. Sekretariat Jenderal Dewan Energi Nasional (DEN)
39. World Bank. 2022. 'The World Bank supports Indonesia's agriculture sector to become more resilient and inclusive' 9 September.
40. Mariyah & Nugroho, A. 2022. 'Role of the agriculture sector in poverty reduction in East Kalimantan' Advances in Biological Sciences Research, 7 January.
41. Carley, S. et al. 2018. 'Adaptation, culture, and the energy transition in American coal country'. *Energy Research & Social Science*, vol. 37, pp. 133-139.
42. Carley, S. et al. 2018. 'Adaptation, culture, and the energy transition in American coal country'. *Energy Research & Social Science*, vol. 37, pp. 133-139; The Next Economy. 2022. 'Gladstone Region Economic Transition Roadmap, 24 October.
43. JETP. 2024. *Comprehensive Investment Policy Plan*, pages 272-274.
44. Haryadi, F. et al. 2021. 'The analysis of residential rooftop PV in Indonesia's electricity market', Economies, vol. 9, issue 4.
45. Compensation in this context refers to the reimbursement paid by the government to state-owned enterprises for offering services below market cost. Ihsan, A. et al. 2024. *Indonesia's fuel subsidies reforms*. Equitable Growth, Finance and Institutions Insight Washington D.C. World Bank Group.
46. The primary y-axis is for electricity; the secondary y-axis is for LPG and diesel fuel. The original kilogram values for LPG were converted to litres by multiplying through by 1.96.
47. Gobel, R. et al. 2024. *Why energy subsidy reform is crucial for a just transition in Indonesia and how it can be achieved*, Centre for Policy Development, November. Gobel, R. et al. 2024. 'Equity and efficiency: An examination of Indonesia's energy subsidy policy and pathways to inclusive reform', Sustainability, vol. 16, no. 407.
48. Gobel, R. et al. 2024. *Why energy subsidy reform is crucial for a just transition in Indonesia and how it can be achieved*, Centre for Policy Development, November.
49. Siregar, D. 2024. 'The forgotten voices: Women's participation in urban planning' *Institute for Transportation and Development Policy*, 29 February.
50. IIPFCC. 2023. 'International Indigenous Peoples Forum on Climate Change Final Advocacy Paper on 'Just Transition' for UNFCCC COP 28.
51. United Nations Development Program (UNDP). 2024. 'Indigenous knowledge is crucial in the fight against climate change - here's why', *Explainers*, 31 July.
52. Kementerian Energi dan Sumber Daya Mineral (ESDM). 2024. 'Sektor Pertambangan Serap 300 Ribu Tenaga Kerja di 2023', 45.Pers/04/SJI/2024, 17 January, accessed 4 March 2025. The use of the "along the value chain" method is considered based on frameworks developed by Kaplinsky and Morris (Kaplinsky, R. & Morris, M. 2001. A Handbook for Value Chain Research. *Institute of Development Studies*, University of Sussex.)

53. Sakernas, National Statistics Agency (BPS), 2024.
54. JETP. 2024. *Comprehensive Investment Policy Plan*, page 30.
55. See for example: Lim, J. et al. 2023. 'Location is a major barrier for transferring US fossil fuel employment to green jobs' *Nature Communications*, vol. 14.
56. PT PLN. 2021. Rencana Usaha Penyediaan Tenaga Listrik (RUPTL).
57. The other three specific actions are communal solar photovoltaics (PV), tower PV, solar home system and battery banks.
58. Wright, S. 2024. 'Here's how 'microgrids' are empowering regional and remote communities across Australia', *The Conversation*, 4 July; Sinha, P. 2020 'Solar microgrid - A game-changer for India's rural electrification and transformation' *Economic Times*, 7 February.
59. Wright, S. 2024. 'Here's how 'microgrids' are empowering regional and remote communities across Australia', *The Conversation*, 4 July; Sinha, P. 2020 'Solar microgrid - A game-changer for India's rural electrification and transformation' *Economic Times*, 7 February.
60. Based on a set of criteria set by the Government Regulation 78/2014. Sutrisna, T. 2024. 'Kemenko PMK: 37 daerah akan tetap berstatus tertinggal pada 2024' *Kompas*, 24 June.
61. Parsetyo, A. 2020. 'Dana Desa untuk proyek energi terbarukan' *Kompas*, 22 September.
62. Solagratia, H. et al. 2024. *Electrifying the last mile: Community-based renewable energy for Eastern Indonesia*, July.
63. Gobel, R. et al. 2024. *Why energy subsidy reform is crucial for a just transition in Indonesia and how it can be achieved*, Centre for Policy Development, November.
64. International Solar Alliance and Ministry of New and Renewable Energy India. 2023. *Report on roadmap of solar energy for universal energy access*.
65. Prasityo, P. 2020. Kewajiban Pemberdayaan Tenaga Kerja Lokal di Perusahaan, *Hukum Online*, 11 May.
66. Peraturan Daerah Kabupaten Belitung Timur No. 12 Tahun 2017 Tentang Perlindungan Tenaga Kerja Lokal.
67. One example of this is the Australia-Indonesia KONEKSI research partnership program.
68. Walker, R. and Palaon, H. 2025. 'The future of Indonesia's green industrial policy' *Lowy Institute*, 4 March.
69. Medina, A. 2024. 'Indonesia's electric battery industrial storage' *ASEAN Briefing*, 2 February.
70. Walker, R. and Palaon, H. 2025. 'The future of Indonesia's green industrial policy' *Lowy Institute*, 4 March.
71. Walker, R. and Palaon, H. 2025. 'The future of Indonesia's green industrial policy' *Lowy Institute*, 4 March.
72. Nangoy, F. and Sulaiman, S. 2024 'Hyundai Motor, LG Energy Solution launch Indonesia's first EV battery plant' *Reuters*, 3 July, accessed 4 March 2025; Australian Government. 2024. 'Australia-Indonesia electric vehicle mechanism first senior officials' meeting', Media Release, 9 August.
73. Gaikindo. 2024. 'Penjualan mobil listrik nasional naik, segmennya mencapai empat persen' September.
74. AC Ventures. 2023. *Indonesia's Electric Vehicle Outlook*, July.
75. David, F. and Hobbs, S. 2024, 'Critical minerals and the case for human rights in the just transition' *Lowy Interpreter*, 25 November, accessed 4 March 2025.
76. Presidential Regulation No. 38/2015 Concerning Cooperation Between Government And Business Entities In Infrastructure Provision.
77. These disputes included those about land acquisition, unfair termination of employment and pollution. Of these cases, 13 involved military or police officers. Thea, A. 2021. 'Ini empat jenis konflik pertambangan sepanjang tahun 2020' *Hukum Online*, 26 January.
78. Lo et al. 2024. 'Nickel mining reduced forest cover in Indonesia but had mixed outcomes for well-being' *One Earth*, vol. 7. November 15.
79. Lo et al. 2024. 'Nickel mining reduced forest cover in Indonesia but had mixed outcomes for well-being' *One Earth*, vol. 7. November 15.
80. Lo et al. 2024. 'Nickel mining reduced forest cover in Indonesia but had mixed outcomes for well-being' *One Earth*, vol. 7. November 15.
81. Herman. 2025. 'Meninjau kemajuan industri baterai kendaraan listrik di Indonesia: Langkah besar menuju transformasi energi hijau' *Indikator Bisnis*, 2 March.

82. Purwanti, A. 2024. 'Tantangan sulteng mengimbangi pertumbuhan ekonomi yang tinggi' *Kompas*, 20 August.
83. Theodora, A. 2024. 'Ironi kemiskinan di sentra nickel pekerjaan rumah pemerintah menumpuk' Kompas, 7 February; BPS Statistics Indonesia. 2023. 'Indonesia poverty profile in March 2023'
84. Theodora, A. 2024. 'Ironi kemiskinan di sentra nickel pekerjaan rumah pemerintah menumpuk' *Kompas*, 7 February.
85. Lo et al. 2024. 'Nickel mining reduced forest cover in Indonesia but had mixed outcomes for well-being' *One Earth*, vol. 7. November 15.
86. Ariya. 2024. 'Status pengakuan wilayah adat di Indonesia pada hari kebangkitan masyarakat adat nusantara 2024' *Berita BRWA*, 19 March.
87. Inkrispena. 2024. *Critical minerals, critical conditions: The struggle of nickel mine workers in Indonesia*.
88. RSPO. 2023. 'ACOP 2022: CSPO production hits 15 million mt milestone' 29 September.
89. KPPN Manna 'Dana bagil hasil sawit bagi kesejahteraan masyarakat lokal'.
90. AC Ventures. 2023. *Indonesia's Electric Vehicle Outlook*, July.
91. AC Ventures. 2023. *Indonesia's Electric Vehicle Outlook*, July.
92. Purwanti, A. 2024. 'Tantangan sulteng mengimbangi pertumbuhan ekonomi yang tinggi' Kompas, 20 August.
93. CREA & CELIOS. 2024. *Debunking the value-added myth in nickel downstream industry* 20 February.
94. CREA & CELIOS. 2024. *Debunking the value-added myth in nickel downstream industry* 20 February.
95. The Ministries of Environment and Forestry were separated into two ministries in President Prabowo's Cabinet from October 2024.
96. Government of Indonesia. 2021. Indonesia: *Long-term strategy for low carbon and climate resilience 2050*.
97. Apriando, T. and Kartanegara, K. 2017. 'Danau asam, danau maut, milik siapa?' *Mongabay*, 15 May.
98. Martokusumo, W. 2010. 'The ex-coal mining city of Sawahlunto revisited: Notions of revitalisation, conservation and urban development' *Nakhara Journal of Environmental Design and Planning*, vol. 6, no. 1, article 9, pp. 107-118.
99. Syafrini, D. et al. 2022. 'Transformation of a coal mining city into a cultured mining heritage tourism city in Sawahlunto, Indonesia: A response to the threat of becoming a ghost town' *Tourism Planning and Development*, vol. 19, issue 44

[c] European Commission. 2022. 'Joint statement by the Government of the Republic of Indonesia and International Partners Group members on the Indonesia Just Energy Transition Plan', Bali, 15 November.

[ci] This Presidential Instruction also regulates the preparation and determination of budget allocations to support the acceleration of the implementation of the program for the use and procurement of battery-based electric motor vehicles and the conversion program for combustion motor vehicles into battery-based electric motor vehicles.

CENTRE FOR POLICY DEVELOPMENT

CREATE. CONNECT. CONVINCE.

CONNECT WITH US

@centrepolicydev

centrepolicydev

Centre for Policy Development

Cpd.org.au

CONTACT

Melbourne
Level 18, 1 Nicholson Street,
East Melbourne VIC 3002

Sydney
Level 14/175 Pitt St, Sydney
NSW 2000