

A just coal transition in Indonesia: actors, framings and future directions

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Contents

Abstract:	4
1. Introduction	4
1.1 Methodology	5
2. Historical political-economic context	6
3. Just coal transition in Indonesia: some theoretical reflections	8
4. Key actors and networks	9
4.1 Government actors.....	9
4.2 State-owned enterprises.....	9
4.3 Coal mining companies.....	10
4.4 Non-governmental and civil society organizations.....	10
4.5 Finance providers.....	10
4.6 Informal mining entities	11
5. Framings of a just coal transition	12
6. Main challenges in national and regional contexts	15
6.1 Economic barriers	15
6.2 Socio-cultural barriers.....	16
6.3 Technology barriers.....	17
6.4 Policy barriers	18
7. Key recommendations	21
References	23
Annexes	27

ABSTRACT

Indonesia, the world's third largest coal producer after China and India, committed to becoming a "net-zero" economy by 2060 at the UN Climate Change Conference (COP26) in Glasgow in 2021. However, reaching this objective will be difficult, given the importance of coal for both the country's economy and power generation, but also necessary. Included in the many challenges are diverging visions of stakeholders as to how and sometimes whether to phase out coal usage, and how to follow a "just energy transition" pathway. This paper, based both on a desk review of scientific and other literature and on in-country stakeholder consultations, explores how those diverging visions and priorities might hinder a coal phase-down and, in the end, a phase-out of coal in Indonesia. In addition to exploring those visions, the report also sheds light on the socio-economic barriers to a truly just energy transition in the country.

1. Introduction

Throughout human history, coal has been both a boon and a curse. On the one hand, it literally powered the Industrial Revolution and allowed countries to make leaps in productivity and innovation, thus lifting millions out of poverty. Today, around 20% of all the energy we consume still comes from coal, topped only by oil (31%); non-hydropower renewable energy sources remain far smaller (6.7%; BP, 2022).

On the other hand, coal is particularly harmful to the environment and human health, releasing particulate matter and chemical compounds such as sulphur dioxide or nitric oxide into the air when burned, which causes a panoply of cardiovascular and respiratory diseases (Hagemeyer et al., 2019; Laney & Weissman, 2014). Indeed, Koplitz et al. (2017) estimated that around 20 000 people die each year in Southeast Asia from coal-fired power pollution, most of them in China and Indonesia.

Moreover, digging up the fuel from the ground usually allows for metals such as arsenic or lead to seep into groundwater and streams, affecting the livelihood of people living around mines (Hendryx, 2015), while simultaneously disfiguring a landscape and uprooting trees and vegetation, contributing to the destruction of biodiversity and to the increased likelihood of disasters such as floods (Fünfgeld, 2016). Coal mines also are often developed in conflict with local communities, where traditional land stewardship often clashes with the interests of coal and other mining companies (Mulyoutami et al., 2009), and burning coal for energy releases significant amounts of CO₂, a major contributor to global warming.

Indonesia, like many southeast Asian countries, is no exception to this dichotomy of boon versus bane. Coal is economically important for the country, which is one of the leading coal producers globally (BP, 2022). According to the most recent report of the Extractive Industries Transparency Initiative (EITI), to which Indonesia is a signatory, coal and lignite mining accounted for around 1.8% of Indonesian GDP between 2019 and 2020 (EITI, 2022). Coal is also seen as a cheap means of bringing electricity to Indonesian citizens. As of 2021, the International Energy Agency (IEA) estimated that around 67% of the country's electricity generation comes from coal-fired power plants (IEA, n.d.). At the same time, environmental pollution due to coal mining and burning is ripe in Indonesia, as are other problems exacerbated by the coal mining industry, such as deforestation, displacement of people, or opportunity for corruption (Atteridge et al., 2018).

Against this backdrop, Indonesia recently joined the debate around “just transitions” away from coal (see Section 3 for a discussion about what constitutes a “just” transition). If global warming is to be limited to 2°C or possibly 1.5°C, coal would need to be almost completely phased out by 2050 according to the IPCC (IPCC, 2022). To address this challenge, the Indonesian government launched its Energy Transition Mechanism (ETM; PT Sarana Multi Infrastruktur, n.d.), identifying more than 15 GW of coal-fired power for early retirement. At the same time, in cooperation with donors such as the EU, the UK, US and Japan, Indonesia signed on to a Just Energy Transition Partnership (JETP), a USD 20 billion investment partnership that should bring Indonesia in line with the Paris Agreement’s objectives (European Commission, 2022).

These steps are promising, but the needed coal phase-out might be easier in theory than in practice. Coal industries are often highly entrenched in local communities where coal is much more than a fuel but a means of earning a livelihood, a lubricant to the political machine, and a source of revenues to build infrastructure and provide public services, particularly in Indonesia (Fünfgeld, 2016; Ohlendorf et al., 2022; Ordonez et al., 2021). That facilitates not only a certain “lock-in” of coal but makes a just transition away from coal also a very complicated endeavour that can only be unlocked by shared visions of all stakeholders involved on how to move beyond coal.

1.1 Methodology

This report sheds light on the complexities of energy transitions and coal phase-out in Indonesia, while at the same time analysing the diverging narratives and visions among involved stakeholders. Our research used a three-pronged mixed-methods approach. First, we carried out a scoping literature review, using the snowball technique to identify further papers. We focused on academic literature but used country reports provided by international organizations, such as the IEA, where appropriate to supplement our insights.

As a second step, we carried out a multi-stakeholder workshop in Jakarta, Indonesia, in October 2022, using the Participatory Impact Pathways Analysis (PIPA) method to elicit qualitative information from the participants. Those participants were placed into four groups: (i) government agencies; (ii) civil society, academia and think tanks; (iii) industry associations and (iv) international organizations. These groups discussed diverging visions and challenges when it comes to just energy transitions and coal phase-out in Indonesia.

To complement our research, we then went to East Kalimantan (a major coal producing region) and conducted fieldwork in the form of semi-structured interviews with 10 stakeholders from civil society organizations, local government units, and coal industry workers.

Using the insights of this triangular approach, we investigate which actors and dynamics might shape the transition away from coal and what barriers they might encounter. In addition, we describe the barriers and opportunities that lie ahead on any transition pathways.

This work is the fruit of several strands of research, which all focused on a bottom-up approach. We paid special attention to engaging with voices on the ground (coal workers, advocacy groups, local community representatives) and benefited from them sharing their experiences and their visions with us. This report enriches the debate on just transitions away from coal with first-hand experiences from the Global South, a perspective often underrepresented in global energy transition research.

2. Historical political-economic context

The history of coal development in Indonesia can be divided into five periods: the colonial era (1849–1945); early independence (1945–1965); the centralized era (1960s–1998); the decentralization era (1998–2009); and the contemporary era (2009 to present). During the colonial era, the first coal mining company, Oranje Nassau, started its operations in 1849 in Pengaron Village, Banjar District, South Kalimantan. A few decades later, another mining site was opened in Sawah Lunto, West Sumatra, that made Sumatra the key coal-producing region during the Dutch colonial era. However, the development of the coal industry during this period was limited due to the lack of demand and the shift to oil as the main energy source (Friederich & van Leeuwen, 2017).

In the early independence era, the Indonesian coal industry was centralized, when the newly established government nationalized Dutch coal mining companies and put them under the Bureau for State Mining Affairs (BUPTAN; Prijono, 1988). Given the political instability and lack of domestic demand, coal production did not increase significantly. The centralized political systems continued when the second president, Soeharto, came into power in 1965, which became the turning point for the coal industry in Indonesia. Following President Soeharto's power takeover, he pursued an outward-looking policy through trade and investment liberalization, including in the mining sector (Myint, 1984; Nalle, 2016).

In 1967, the government implemented what was called *Kontrak Karya Pengusahaan Pertambangan Batubara* or Coal Contract of Work through the enactment of Law No. 1 on Foreign Investment and Law No. 11 on Mining. Through the Coal Contract of Work, private companies were given a 30-year contract to conduct mining activities, from exploration to exploitation. Between 1981 and 2000, permits under the Coal Contract of Work were issued in three batches, with a total of 141 companies becoming permit holders (Lucarelli, 2015).

After democratic reform in 1998 and the change of government, Indonesia started decentralizing its governance systems through Law No. 22 on Regional Government. Consequently, the authority to issue mining permits shifted from the central government to the provincial and district governments through *Izin Usaha Pertambangan* or a “mining business permit” (Friederich & van Leeuwen, 2017), making the previous Coal Contract of Work scheme void. The implementation of both the Coal Contract of Work and *Izin Usaha Pertambangan* favoured domestic companies, including state-owned enterprises (Lucarelli, 2010).

The Mining Law (Law No. 11) was revised twice, first in 2009 and again in 2020, and those revisions expanded the types of entities eligible as mining businesses. However, when it comes to coal, local communities have been effectively banned from acquiring permits for coal mining activities, thus exacerbating the unequal distribution of benefits from coal mining activities. Table 1 presents some of the key differences of both versions of the Mining Law and its main beneficiaries.

As a result of these developments, coal production in Indonesia has been growing exponentially since decentralization in the early 2000s. After the enactment of the 2009 Mining Law, its growth sped up even more. By 2021, coal production in Indonesia reached 614 million metric tons per year, 12 times higher than the production in 1996 (Figure 1).

The Job Creation Law (Omnibus Law) enacted in 2020, which amends part of the 2020 Mining Law, offers incentives and centralizes authority for coal mining companies. For instance, they do not have to pay royalties if they develop coal derivatives, such as coke or coal gas.

This is in line with the government's plan to grow the coal derivative industries in the country, such as coal-to-liquids (or coal liquefaction) and coal gasification (Reuters, 2022). Moreover, the

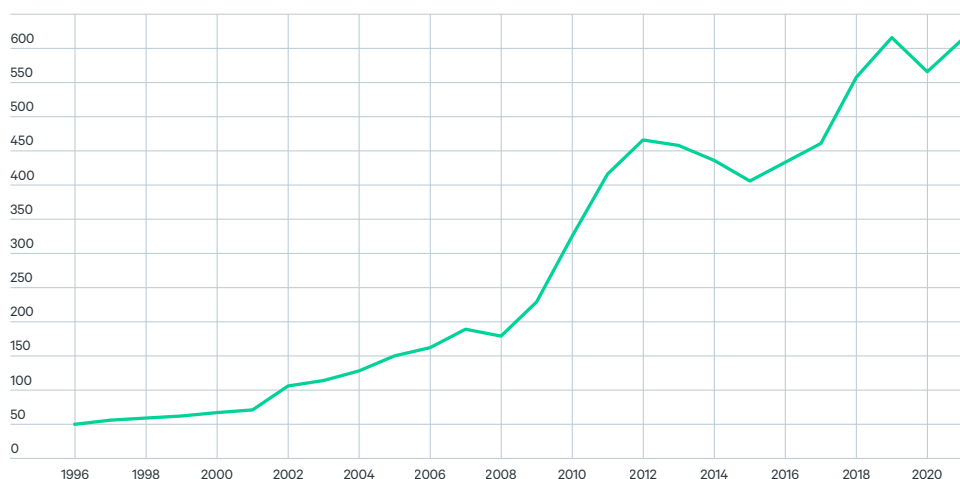
Table 1. Key permits according to the 2009 and 2020 mining laws

Permit Type	2009 Mining Law	2020 Mining Law
Mining Business Permit (Izin Usaha Pertambangan)	<ul style="list-style-type: none"> • Corporations • Cooperatives • Individuals 	<ul style="list-style-type: none"> • Corporations • Cooperatives • Individuals
Special Mining Business Permit (Izin Usaha Pertambangan Khusus)	<ul style="list-style-type: none"> • State-owned enterprises (<i>Kementerian Badan Usaha Milik Negara</i>, BUMN) • Local government-owned enterprises (<i>Badan Usaha Milik Daerah</i>, BUMD) • Private companies 	
Community Mining Permit (excluding coal)*	<ul style="list-style-type: none"> • Local communities • Individuals • Groups • Cooperatives 	<ul style="list-style-type: none"> • Individuals living in the mining sites • Cooperatives with members living in the mining areas
Surat Izin Penambangan Batuan (Mining Permit Letter)	Not applicable	<ul style="list-style-type: none"> • Village-owned enterprises (<i>Badan Usaha Milik Desa</i>, BUMDes) • Domestic companies • Cooperatives • Individual companies

* While local communities can pursue other mining activities, the new law effectively banned them from coal mining activities.

Source: *Hukumonline* (2020)

Figure 1. Coal production in Indonesia, 1996–2020



Source: *Statistics Indonesia* (2022, 2023)

Job Creation Law also limits local governments' authorities in coal and other extractive industries, centralizing control over the mining industry in the national government again.

Despite promised benefits of this law contributing when it comes to the creation of jobs, there has been strong resistance from public and civil society organizations because of the law's lax environmental and labour standards (Strangio, 2023). Civil society organizations challenged the law in court and succeeded in requiring parliament to revise the law (Constitutional Court of the Republic of Indonesia, 2021). In March 2023, the parliament passed Law No. 6/2023 that approved the government regulation to replace the 2020 Job Creation Law. However, the new law retains the original law's ease of environmental safeguards for mining and other business. For instance, a mining business does not need to conduct an environmental impact assessment (EIA) if a project is aligned with local zoning plans, but those zoning plans and policies are often non-existent, thus basically exempting the mining business from conducting an EIA (Hadi et al., 2023). Moreover, coal companies are exempt from paying royalties if they pursue value-added coal products such as coal derivatives (Nugroho, 2020).

3. Just coal transition in Indonesia: some theoretical reflections

Recent literature on energy transitions and on fossil fuel phase-out added questions of justice and equity to the debate. Originating in the labour movement of the 1970s and appearing in academic literature in the 2000s (Newell & Mulvaney, 2013; Stevis et al., 2020), just transition debates first focused on the implications of energy transitions for employment (McCauley & Heffron, 2018). Later, other aspects of transitions were taken up, such as environmental justice (Schlosberg, 2004) or energy justice, meaning equal access to energy (Sovacool et al., 2016). The uptake and development of the concept by various disciplines has resulted in a diverse set of definitions of and frameworks for just transitions (Wang & Lo, 2021).

Scholars argue that justice, in energy transition and environmental contexts, would have at least three dimensions: procedural justice, such as due process or multi-stakeholder participation; distributional justice, including redistribution of costs and benefits, which has been the focus of past just transition studies (McCauley & Heffron, 2018); and recognition justice, in the sense that one should recognize the diverse set of actors and interests in energy and sustainability transitions, as suggested by Elliott and Setyowati (2020). From an energy transition perspective, which is quite relevant in the Indonesian case, some scholars, such as McCauley and Heffron (2018), have argued for the inclusion of another aspect of justice: restorative justice, applicable for instance to former or abandoned mining sites.

In addition to those aspects of justice, it is important to keep in mind that not every actor has the same “power” and the same opportunity to influence transition pathways. When talking about power, agency and resistance to just transitions, two concepts might be useful to structure thinking: the multilevel perspective (Geels, 2002, 2011) and the concept of power itself.

The multilevel perspective uses three different conceptual levels: niche, regime and landscape levels. The landscape level is the highest level of organization, with the wider socio-economic context including political visions (ideologies) or macroeconomic patterns (Geels, 2011), such as, in the Indonesian case, international energy markets based on the capitalist principle of free trade. Influenced by this landscape is the regime level, or a set of stable norms, extensive networks, rules, regulations and infrastructure that support a certain system (Geels, 2011; Markard & Truffer, 2008). For instance, a centralized energy system based on large-scale coal projects would be an example of the current Indonesian energy regime.

New and innovative technologies have to compete with established ones in this regime. They do so from the niche level, where innovation is pursued, but which lacks the stability and the infrastructure and to a certain extent the norms and networks that act at the regime level (Coenen & Truffer, 2012; Geels, 2002). For instance, decentralized small-scale renewable energies (the niche) would need a different, more flexible infrastructure set-up compared to fossil-fuel generated power, yet the current set-up favours the current fossil-fuel-based regime.

Regime-level stakeholders might not necessarily have an interest in changes to the system, since the system as it stands guarantees their livelihoods and often they have invested great sums of money in the system's current form of function. Moreover, those regime-level players are often capable of mobilizing some significant resources to stabilize the regime and hinder niche technologies from competing. This ability to mobilize resources – from physical assets such as power plants and money to mental frameworks, including beliefs, visions and information – is what gives these actors power over transition pathways, as argued by Avelino and Rotmans (2009).

This points to an ideologic component of power, namely the ability to mobilize and to propagate a certain framing of an issue at hand. For instance, framing Indonesian coal industry as an important pillar of the country's economy might lead to different future pathways than framing it as an unsustainable environmental burden.

For our study, we focus on the developments in the niche, regime and landscape levels, while we pay specific attention to power. We examine the mental resources, framings and visions that key actors in the Indonesian coal sector can mobilize and project (see Section 5).

4. Key actors and networks

The energy sector in Indonesia is influenced at several levels by a variety of actors, each having their own outlook on energy transitions. Studies generally confirm that some actors are more influential or powerful when it comes to influencing the direction of the energy transition in Indonesia, depending in part on their connection to the domestic policy sphere (Ordonez et al., 2021; Singgih, 2022). The following section presents some of the most important actors, as identified in the academic literature, as well as non-academic sources, and our fieldwork and workshop.

4.1 Government actors

At the government level, various ministries shape the energy sector. The Ministry of Energy and Mineral Resources formulates policies and regulations at both the national and the local level (Naing, 2021). *Kementerian Badan Usaha Milik Negara*, or the Ministry of State-Owned Enterprises, functions as a shareholder and ensures efficiency and profitability of state-owned enterprises, while the Ministry of Finance and the parliament allocate subsidies to them (Marquardt, 2014; Ordonez et al., 2021; Tharakan, 2015). *Kementerian PPN/BAPPENAS* (the National Development Planning Agency) is responsible for the overall planning and development of Indonesia including the energy sector (Tharakan, 2015), which is translated into regional development planning at provincial and district levels.

Most of the energy policy is decided by the National Energy Council, which brings together the National Development Planning Agency with seven ministries – Energy and Mineral Resources, Environment and Forestry, Finance, Transport, Agriculture, Research and Higher Education, and Industry – and which is chaired by the President. Other important ministries are the Coordinating Ministry of Home Affairs, which is supposed to bridge the national and subnational governance levels, and the Ministry of Manpower (*Kementerian Ketenagakerjaan*), which is a relevant player when it comes to job creation. However, based on our stakeholder consultation, it is not fully clear whether those actors – the ministries of Home Affairs and Manpower – have a keen interest in energy transitions and whether their activities are aligned with coal phase-down strategies. Moreover, several issues, such as the lack of coordination between these ministries, have been raised by stakeholders (see below, Section 6).

For a short period, provincial and district governments issued mining permits for coal mining. The process was returned to the authority of the central government, due to the issuance of illicit permits at district level (Ordonez et al., 2021).

4.2 State-owned enterprises

Indonesia has a centralized energy sector dominated by state-owned-enterprises: Pertamina for oil and gas and Perusahaan Listrik Negara (PLN) for electricity (Ordonez et al., 2021; Tharakan, 2015). For instance, PLN has a quasi-monopoly on electricity distribution and owns most of the generation capacity (ADB, 2020). Independent power producers (IPPs) can sell power to PLN, provided they negotiate a power purchase agreement (Marquardt, 2014; Ordonez et al., 2021). However, IPPs find it difficult to get into the market because prices for electricity are capped by the government, usually below market prices (Schilling, 2022), with a general overcapacity of power generation and subsidies provided to players such as PLN. Indeed, in 2019, an estimated USD 4 billion was spent on shielding PLN from rising coal prices (Kurniawan et al., 2020).

With these subsidies and other protections, production from renewable energy sources often cannot compete with PLN prices (Kurniawan et al., 2020). Beyond reports in the peer-reviewed academic literature, government representatives in our workshop confirmed this barrier, as well as a lack of funding for “clean energy” (see Section 5 for more details); this could explain why only 21% of electricity is produced by IPPs (Maulidia et al., 2019), although plans to add capacity contain intentions to have more power produced by IPPs. One can see that PLN and the centralized market design play a key role in propping up the fossil fuel regime and in hindering the emergence of a competitive niche.

4.3 Coal mining companies

Both domestic and international mining companies can operate and obtain permits in Indonesia, although the big chunk of coal mining companies are now domestic, after international ownership passed to Indonesian companies. The three largest coal producers in Indonesia according to volume produced in 2020 are PT Kaltim Prima Coal (59.7 million tons), PT Adaro Indonesia (46.7 million tons) and PT Kideco Jaya Agung (32.9 million tons; Singgih, 2022). These three companies are privately owned and are well connected to the policymaking environment in Indonesia.

Many former government officials now work for coal companies, and many former top-level administrators in coal companies have gone into politics. The investigative journalist Viriya Singgih offers a good illustration of those networks of interconnections between the coal industry and the policymaking environment (Singgih, 2022). These observations are also shared in scholarly sources, which also report good connections between the coal industry and the political sphere (Mori, 2020; Ohlendorf et al., 2022; Ordonez et al., 2021). Past observations indicate that coal industry actors have rather high capacity to mobilize assets, such as money as well as people, especially at key positions in the governance sphere; past publications point to a powerful lobby propping up the fossil fuel system (Ohlendorf et al., 2022; Singgih, 2012).

4.4 Non-governmental and civil society organizations

Mining companies frequently have a conflictual relationship with local communities, which have increasing concerns over the impact coal mining has on their environment, health and livelihoods (Brown & Spiegel, 2017; Toumbourou et al., 2020). Against this backdrop, several environmental organizations are active in Indonesia. For instance, some advocacy-based civil society organizations (CSOs) have joined protests against mining projects.

Those CSOs and other non-governmental organizations (NGOs) play a crucial role in filling knowledge gaps of the general population when it comes to mining governance and energy transitions, by creating awareness of issues such as Indigenous rights or by assisting the local community to document the impacts of coal mining to support legal action (Brown & Spiegel, 2017; Naing, 2021). However, applying the multilevel perspective–power framework to this stakeholder category, we observe that this group of stakeholders is not particularly well placed to mobilize other resources or to challenge the fossil fuel regime, therefore having less power to change things themselves. Our findings are supported through interviews and the workshop held as part of this research project; see Section 5.

4.5 Finance providers

Finance for coal mining comes from both external and internal sources, such as foreign banks. China is the leading funder of Indonesian coal power, with China Development Bank and China EXIM Bank as the key financing institutions (Tritto, 2021). Approximately USD 118 million in coal mining investments have been made by China in 2007–2022 (NSWI, 2022). Apart from China, Indonesia has also received foreign investments from Japan, Korea, Singapore, Hong Kong and Malaysia; more rarely, the US and European companies have also invested. Tritto (2021) observed a pattern in these investments whereby Chinese institutions tend to provide the sole funding

of projects or partner with Indonesian institutions, whereas other countries tend to practice co-financing with foreign investors.

Existing literature generally reports a synergy between Chinese investments and Indonesian coal policies. For instance, Maulidia et al. (2019) suggested that China's coal demand has been influential on policies in Indonesia to further exploit coal, even more so than rising domestic demand. In the same vein, Mori (2020) argued that Chinese investors usually generate a “policy feedback effect” by partnering with Indonesian coal stakeholders, who then lobby the government to ensure favourable policies. For instance, when the administration of former President Yudhoyono restricted access of international investors to Indonesian markets, Chinese actors teamed up with the Indonesian coal industry to set up joint IPPs with PLN to sell their electricity to the state-owned company (Mori, 2020). According to Tritto (2021), Indonesia's attitude towards coal combined with economically motivated Chinese investors ultimately led to several deals opening up new coal mines, thus pointing to the powerful impact of being able to mobilize large amounts of capital.

4.6 Informal mining entities

Coal mining in Indonesia is not only done in official mines. Many illegal mining operations called *Penambangan Tanpa Izin* (PETI) or literally translated “Mining Without Permits” exist in regions such as East Kalimantan (Dutu, 2016). Local populations often refer to these activities as *tambang rakyat* (peoples' mines) or artisanal mining, since before the amendment of the existing mining law in 2020 (see Table 1), artisanal community mining was permitted under certain conditions (Singgih, 2021).

We found no peer-reviewed study in the academic literature that focused on illegal mining operations in Indonesia or on reporting statistics and occurrences. Journalistic sources suggested that 3.7 million people are engaged in illegal mining at 2741 locations, of which only 133 are located within areas officially permitted to mine coal (but the mines themselves are illegal), 480 are outside officially permitted areas, and the rest are not clearly attributable (Bhwana, 2021). While detailed information about the customers of those illegal mines is not available, Thomson and Finenko (2014) pointed out that an estimated 60 million tons of coal are illegally shipped from Indonesia to China every year, while many local enterprises, such as cement, iron or brick factories, seem to buy artisanally mined coal (Singgih, 2021).

The reasons for those artisanal mines are manifold. A surge in illegal mining started when the country faced a financial crisis in mid-1997. Due to a rise in unemployment and a drop in wages, people were forced to find other streams of income to supplement earnings from farming (Lestari, 2007). Lestari (2007) also indicated that the decentralization process marked by a sudden collapse of an autocratic system after the fall of Soeharto resulted in the weakening of law enforcement and to inconsistencies in between national and local government policies that eventually increased illegal mining.

Local populations around mining sites owned by companies often don't possess the necessary qualifications to work for mining companies, thus they seek employment in the informal mining sector. Also, local communities suffering from the negative environmental impacts of coal mining may seek a share of the profits that the official coal mines generate for their owners as some sort of compensation (Singgih, 2021).

Coal mined in artisanal mines is often cheaper than market price, which leads to increasing demand from this source. Often, miners must bribe local government officials with a share of their profits, which ultimately also contributed to widespread illegal mining (Dutu, 2016).

5. Framings of a just coal transition

As mentioned in Section 3, framings of a just transition away from fossil fuels play an important role in determining a country's policy direction on a potential coal phase-out. This section presents framings of key stakeholders mentioned in Section 4, including regional stakeholders that play a crucial role in managing transitions at the local level (Atteridge & Strambo, 2021), based on information gathered during our workshop and fieldwork (see methods, Section 1.1).

During the workshop, actors were grouped around four tables: government, CSOs and academics, private sector actors and associations, and international organizations. We asked each of the participating stakeholders to identify which aspects their work mostly focused on. To assist the mapping, we categorized the framings into four archetypes and put them into a quadrant: (1) technology or innovation, (2) environment or climate, (3) economic and (4) social.

While these categorizations are somewhat arbitrary, they were derived from the internal discussions between research teams from SEI and the Institute for Essential Service Reform (IESR) during the design stage of the workshop and are in line with past research. For example, Wang and Lo (2021) highlighted five themes in just transition literature focusing on labour issues, justice, technology, governance and public perception. The main assumption was that some stakeholders would be more concerned with the technology and innovation aspect of energy transitions (1), while others might be more concerned with the social aspects of transitions such as issues around "land-grabbing" or poverty alleviation (4). Some stakeholders might be more interested in the environmental and climate impacts of transitions (2), while other stakeholders might prioritize economic visions such as employment or tax revenues (3).

In the following discussion, insights are attributed to a specific workshop group, designated as "WS" with the stakeholder type: for example, WS Government Agencies. Figure 2 provides an overview of self-ascribed priority framings of participating stakeholders, with designations used throughout the rest of this report. For an anonymized list of interviewed stakeholders, see the annex.

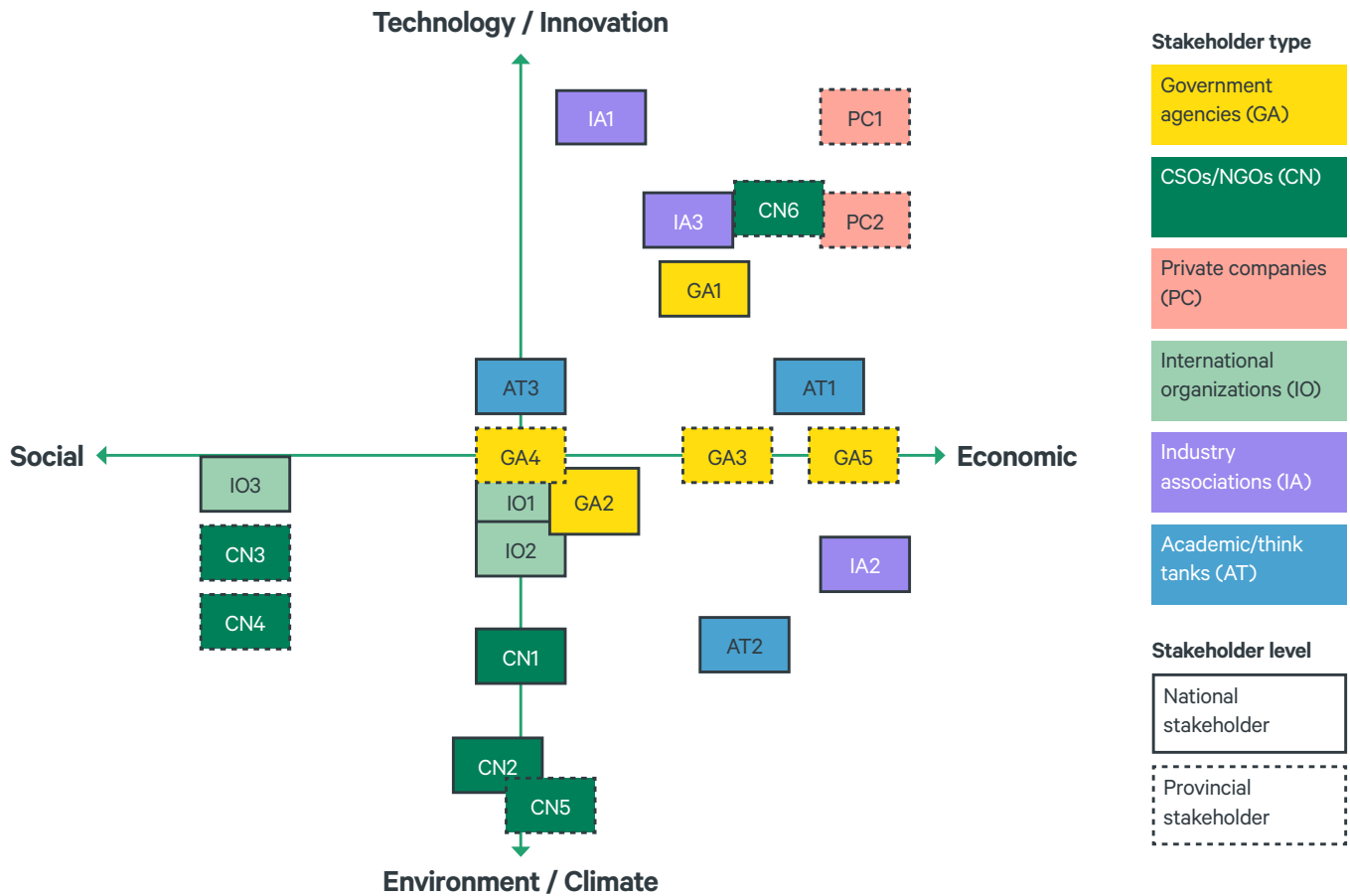
Based on this visual representation of 22 stakeholders, it appears that a significant part of the just transition framing is concentrated in the "economic" and "technology" quadrant. Those visions are dominant among government and private sector stakeholders (Figure 2).

When it comes to the technology framing, government agencies prioritize the development of innovative downstream products of coal value chains, such as coal gas, liquid coal and other coal derivatives (WS Government Agencies). Such a framing reflects the ambiguity of government's commitment towards coal phase-out. On the one hand, power production from coal is to be phased down in the coming years, while at the same time, new coal power plants are expected to come on stream.

This ambiguity was also confirmed by interview partners (Stakeholders 6 and 7), who argued that the government would still see coal as part of their economic strategy, and particularly derivative products from coal such as briquettes, coke production, coal-to-liquid pathways and coal gasification pathways. This framing is shared by industry associations and coal companies, who see coal derivatives as a way to diversify their portfolios, a view that emerged as a recurring theme from the discussions (WS Industry Associations). As pointed out by some stakeholders, this is partly due to the lack of renewable energy alternatives and the lack of clear regulations on renewable energy deployment by the local government, as well as a lack of ("clean") technology and infrastructure (Stakeholder 2; WS Government Agencies).

At the national and provincial levels, government bodies and private sector players often employ an economic framing to energy questions in general and to issues concerning coal in particular (Jakob et al., 2020; Ohlendorf et al., 2022). Policy stakeholders in the workshop hailed from the national level; the framing exercise did not include stakeholders from the provincial level, but we

Figure 2. Just transition framings of national and local stakeholders in Indonesia



Source: Stakeholder workshop and interviews; authors' own information

asked the question through our interviews with provincial stakeholders and placed their positions in the quadrant (see Figure 2). The economic framings of stakeholders revolve around the impacts of a decline of economic activities from the mining sector, should coal phase-out policies be enacted, that might mean the loss of jobs and livelihoods in the coal-dependent regions (WS Industry Associations; WS Government Agencies). This was also a concern shared by the NGOs and think tanks.

The issues of upskilling and reskilling the labour force, as well as finding alternative economic activities for coal-dependent regions, were discussed quite extensively among almost all the workshop groups, except the national government representatives. Workshop participants opined that the upskilling and reskilling of the labour force should be combined with alternative economic sector development plans for coal production-intensive regions. Here, the representative of the industry association group in the workshop was particularly keen on investing in technological “know-how” on coal derivatives. When it comes to transitioning away from coal, both government and industry players would need to have access to research on alternative economic activities to inform their policies and decisionmaking, according to participants from the coal industry (WS Industry Associations; Stakeholder 2).

For government stakeholders, the framing was slightly different. For national policymakers, economic narratives are based on the premise that Indonesia has huge coal reserves with a domestic market obligation policy in place, allowing it to produce relatively cheaper energy (Jakob et al., 2020). Political promises to invest in public infrastructure also prop up this economic narrative, whereby political elites use coal revenues to pay for infrastructure and affordable

energy access as part of their election promise (Ordonez et al., 2021). In the interviews, regional governmental representatives expressed concern with the potential loss of revenues in their annual budget and the potential increase in uncertainty for the large labour force that works in the coal industry (Stakeholder 3).

The socio-environmental framings of just transitions were dominated by the CSOs and international organizations that work at both national and local levels. The NGOs generally supported energy transitions to phase out coal, as they believe that coal has more negative impacts on Indonesian society than benefits, particularly for local populations (Stakeholders 4 and 5). Moreover, social equity concerns and environmental degradation from coal mining activities are those CSO stakeholders' main concerns. For them, the benefits generated from coal do not really trickle down to the local communities, given that many of the workers in the coal industry are from other provinces than East Kalimantan, where the stakeholder interviews took place (Stakeholders 4 and 5). They also acknowledged that a just coal transition should be done in a manner that will not perpetuate or recreate already existing inequalities.

Much of the CSO and NGO workshop discussion also centred on environmental degradation from coal mining activities. The group discussed the fact that there were a lot of post-mining sites that are left without proper reclamation, causing massive pits that are often filled with water. This is in line with findings in the literature (Toumbourou et al., 2020). Moreover, those abandoned mining sites, left untreated, continue to pose an environmental hazard for local communities living around those former mines. For these CSO and NGO stakeholders, just coal transitions should also consider how these abandoned post-mining sites are reclaimed and repurposed to benefit local communities. Some ideas of how to use former mining sites in a sustainable and economically attractive manner include the use of these sites for floating solar farms, reforestation, or the planting of crops and plants with high market value (Stakeholder 1).

The climate change mitigation aspect of a coal phase-out or a coal phase-down was not the main concern of any of the stakeholders. While the need to act on climate change mitigation was indirectly (and sometimes directly) acknowledged by the participants, and especially by the participants from CSOs and NGOs, other concerns such as equity or economic concerns seemed to dominate the discussions.

Also noteworthy is a seeming lack of intersection between the debates about technological innovation and its environmental impacts or the framings thereof. For example, even though the government and private sector actors are keen on developing coal derivatives as an economic diversification strategy, discussions about the negative externalities of this value chain pathway were rarely discussed in the workshop.

This absence of a well-defined environmental frame is especially concerning, as industry players consider coal derivatives as "eco-coal", which would emit less CO₂ than direct coal combustion for power generation. However, scientific evidence shows that coal gasification can only reduce carbon emissions if production sites for coal derivatives are equipped with strict carbon capture and storage technologies (Lu et al., 2019; Rao & Phadke, 2017). Moreover, this capture technology is costly to install, and there is no guarantee that industry players would invest in those solutions in the absence of stringent regulations.

As for liquified coal, this pathway emits a comparable amount of greenhouse gases to petroleum-based fuels (Jaramillo et al., 2008; Zhou et al., 2019). In any case, coal technologies, however advanced they may be, are significantly more carbon and emission intense than energy generated from renewable energies. Therefore, continuing to invest in fossil fuel-based derivatives might be in contradiction with net-zero targets, which need a phase-down and, over the long term, a complete phase-out of fossil fuels in line with scientific evidence (IEA, 2022a; IPCC, 2021; SEI et al., 2021). Moreover, there may not be enough demand for coal derivatives, since producing them might be too costly in current market conditions (Peh, 2022).

Analysing those frames and visions more closely and drawing on the multilevel perspective and power frameworks described above, several observations can be made. First, when it comes to energy transitions in Indonesia, mental frames of stakeholders seem to differ significantly. Government and industry stakeholders seem to privilege an economic and technological framing, while NGOs, think tanks and international organizations seem to place more emphasis on the social and environmental aspect of low-carbon transitions in general and coal phase-out in particular. Notably, while NGOs, think tanks and international organizations voiced concerns over environmental degradation when continuing down carbon-intensive pathways, they also worried about negative employment effects should coal be phased down.

Second, those players able to mobilize significant monetary and mental resources (e.g. government or private sector actors) are also those that seek to extend the lifetime of the fossil-fuel regime level. Indeed, visions of niche technologies in Indonesia seem to be not just renewable energies, such as floating solar farms on old mining sites, but also products derived from coal. So instead of replacing the fossil fuel regime with technologies from the renewable niche level, emphasis on coal derivatives and finding new products from coal might perpetuate the fossil-fuel- or coal-based regime for the foreseeable future, with potentially negative impacts on environment and people.

Third, a few barriers and challenges must be overcome if low-carbon transitions and coal phase-out trajectories are to gather steam in Indonesia. The following section presents some of the main challenges identified through the workshop, interviews and literature review.

6. Main challenges in national and regional contexts

Besides the diverging frames, visions and interests that the stakeholders might have in transitions – or, on the contrary, in maintaining the status quo – several other barriers to just transitions exist, not only in Indonesia, but also in the Southeast Asian region and indeed globally. The following categorizations, based on our insights gathered from the literature review as well as from the feedback from stakeholders (workshop, interviews), put the issues laid out in the previous sections in a larger landscape-level context.

6.1 Economic barriers

Coal in Indonesia is an important economic factor. Traditionally, Indonesia has been an exporter of coal, mainly to China (Maulidia et al., 2019). Revenues from these exports are an important source of foreign currency for the Indonesian government (Gao et al., 2021), which is used to co-finance large infrastructure projects, one key election promise of current President Joko Widodo (Ordonez et al., 2021). However, coal use is also incentivized domestically. For instance, the Indonesian government has capped the price at USD 70 per ton for coal sold on Indonesian markets (Ordonez et al., 2021), thus deliberately building a local market after lobby efforts by coal stakeholders in the 2000s (Jakob et al., 2020).

Depending on coal prices, annual revenues for the government from the coal sector averaged around USD 2.17 billion (or IDR 31 trillion), or 1.5–2% of the national GDP, between 2015 and 2018, with coal revenues being much more important on the regional level (Arinaldo & Adiatma, 2019). For instance, Ordonez et al. (2021) observed that around 80% of coal royalties would go to different district (sometimes called a regency) and provincial governments, based on a regulation that mandates a split of 16% to the provincial government, 32% to the producing regency and 32% to neighbouring regencies in the same province.

Indeed, during our fieldwork in East Kalimantan, provincial government representatives said that all mining activities, including quarrying, accounted for almost 46% of local government revenues

in the first quarter of 2022 (Stakeholder 1). However, one stakeholder argued that this money is often used to sustain a bloated bureaucracy (Stakeholder 4) and not necessarily used for projects of common interest, such as infrastructure. Similarly, while scholars found a statistically significant relationship between oil and gas revenues and economic growth on the provincial level, they did not find such a relationship for coal in Indonesia (Hilmawan & Clark, 2019). These findings point to an optimization potential for how government revenues from different economic sectors are used.

Workshop participants identified this economic role of coal as one of the main barriers to a just transition. Here, the challenge is to find alternative revenue streams to the income coal usually generates (WS International Organization). Finding alternative revenue streams might be additionally rendered difficult by the lack of capacity for governments to support nascent industries or renewable energies (WS CSO/NGO), which could absorb at least parts of the coal labour force.

Coal is an important employer regionally and subnationally, even though nationally, “only” an estimated total of 250 000 people work formally in coal- and coal-dependent industries in a country of a population of 250 million. For instance, in East Kalimantan the coal industry is said to account for 11% of jobs (Adiatma & Suryadi, 2022). For those fortunate enough to land a highly skilled job (administrative, engineering) at coal companies, wages in the industry can rival those of the start-up sector and often come with a long-term job guarantee (Stakeholder 6). Moreover, in addition to official employment, artisanal mining (see Section 4.6) in the numerous mines exploited without a permit is often an important source of livelihood for local communities.

Employment issues, including issues of job security, workers’ rights protections, and the provision of reskilling and training services, composed one of the red threads throughout the workshop discussions (WS International Organizations; WS Industry Associations) if coal phase-out was to be successfully implemented. Similarly, policymakers will need to think about how to provide local communities with job opportunities outside of artisanal mining activities, particularly since some stakeholders were worried that coal is difficult to replace in terms of revenues and job opportunities (Stakeholder 1). As mentioned above during the workshop, interviewed stakeholders argued that afforestation, renewable energy (floating photovoltaic installations on former mining sites), agroforestry systems or high-value biomass plantations, as well as ecotourism, could fill this revenue gap (Stakeholders 1 and 2).

Lastly, the market structure in Indonesia is deemed an important factor in explaining the prevailing fossil-fuel-based regime level. For instance, Ordonez et al. (2021) reported that the Indonesian energy market is an almost quasi-monopoly in certain areas, such as electricity distribution, with PLN being the most important player (see above, Section 4). This coal-favouring market structure was also mentioned by several workshop participants (WS International Organizations), where PLN is bound via long-term power purchase agreements and capacity payments to take electricity from coal power plants. In addition, subsidies to fossil fuel consumption and price caps keep electricity prices low, which therefore helps to prop up the fossil fuel regime (Arinaldo & Adiatma, 2019). Also, these make renewable energy less competitive, as renewable IPPs find it difficult to compete with the government-sanctioned electricity tariffs (WS Industry Associations).

6.2 Socio-cultural barriers

One interesting argument gathered from the literature review process was the fact that some stakeholders in Indonesia would not place much emphasis on socio-ecological reflexivity, i.e. the capacity to recognize, rethink and respond to new information and inputs, especially when it comes to climate change (Yanuardi et al., 2022). Analysing company documents, Yanuardi et al. (2022) concluded that Indonesian coal stakeholders often do not place much emphasis on issues such as transparency or sustainability and that only recently has this situation improved.

Therefore, without such reflexivity, a continuation of regime practices and business as usual would be deemed as much easier by stakeholders, which is also in line with comments made during the workshop (WS International Organizations).

Indeed, and as mentioned above, several workshop participants argued that mismatching narratives and mental frames would hinder low-carbon transitions and a coal phase-out in Indonesia. Several workshop participants argued that stakeholders would not have the right “mindset” when it comes to energy transitions and that their visions about where, when and how the country should transition away from coal were actually not well-defined, which would translate into a lack of motivation to change (WS International Organizations). Also, environmental priorities would be low, particularly among government and coal stakeholders, which speaks to the diverging mindset observation (WS CSO/NGO).

A similar observation from the workshop participants was that the public is not as informed as they would have hoped, nor does the public have the knowledge necessary about energy transition to drive change by demanding concrete actions and exercising pressure on the government to act. Therefore, one element of pressure – public opinion – is lacking to spur the government into action (WS CSO/NGO). In the same vein, the lack of communication about government plans to the local populations around mining sites, but also to the general population, was identified as a reason as to why energy transitions do not move forward in Indonesia (WS CSO/NGO).

Another barrier mentioned was the issue of corruption when it comes to the energy sector and the permitting process, not only for mines but also for renewable energy installations (WS Industry Associations). This issue was not only mentioned by workshop participants but also has been discussed in the literature (Boyd et al., 2010; Ordonez et al., 2021). Similarly, one stakeholder argued that oftentimes, mining permits were issued before local elections, thus pointing to the strong network of interdependencies between the private coal sector and local politicians (Stakeholder 4). As an interesting side point, one interviewed stakeholder argued that coal companies would often buy or found local CSOs themselves, which would then reach out to local communities to ensure their buy-in in new coal projects (Stakeholder 3). While this tactic could not be independently verified, it speaks to exploiting different visions and frameworks of different stakeholders (economic development versus environmental protection, for instance).

6.3 Technology barriers

Quite interestingly, several workshop participants also pointed to a lack of innovation and skills when it comes to a low-carbon energy and economic system that might replace the coal value chain. For instance, Indonesia has some significant reserves of minerals needed for the transition to renewable forms of energy – Indonesia is the world’s largest nickel producer by volume (Purdy et al., 2022) – but the country might lack the technology and innovation skills to tap into the higher value end of the value chain, such as mineral refining (WS Government Agencies).

Recent academic literature also includes arguments that Indonesia’s energy system might suffer from two technological barriers. On the one hand (and in line with workshop insights), skills and know-how are lacking when it comes to implementing those clean technologies that could replace the fossil-fuel-based regime. On the other hand, Indonesian energy infrastructure might not yet be ready for an increased share of renewable energies due to a lack of smart-grid applications, insufficient transmission capacity, and the inflexibility of the grid to accommodate high shares of renewable energies (Sambodo et al., 2022). For instance interviewed stakeholders argued that a better interconnection between the regions of East and South Kalimantan could offer some grid flexibility to accommodate more renewable capacity (Stakeholder 1). Moreover, as workshop participants have observed, regulatory frameworks and support policies for renewable energies might be either lacking or deployed suboptimally (WS CSO/NGO).

6.4 Policy barriers

Other barriers to just energy transitions in Indonesia are regulatory- and policy-related. Scholars have assessed policies relevant for the energy sector as “unwieldy” due to their frequently changing nature (Dutu, 2016), which is a general barrier to energy transitions (Setyowati & Quist, 2022). Besides the often-changing nature of regulatory frameworks, researchers also identified the lack of coherence between the national and the regional level as a barrier to energy transitions and renewable energy scaling (Maulidia et al., 2019).

This latter sentiment was shared by several workshop participants (WS International Organizations). For instance, the “recentralization” of certain competencies such as the issuance of mining permits and the absence of a concrete roadmap or action plan for a comprehensive energy transition (including a coal phase-out) resulted in even more uncertainty among stakeholders. In the same vein, stakeholders said during interviews that central government planning would not be translated into local initiatives due to lack of regional policies (Stakeholder 1). For instance, planning for renewable energy sources would be the remit of PLN, so the provincial government could only install renewables in off-grid communities. Furthermore, rooftop photovoltaic installations and the trading and distribution of electricity generated by solar power installations would be the remit of PLN and not the regional government, thus making the regional government dependent on actions on the national level (Stakeholder 1). Similarly, planning for renewable capacity would be the responsibility of the national government, which would hinder local development (Stakeholder 2). Therefore, more clarity could come from a clearly laid out roadmap to clarify the transition steps needed as well as the delegation of authority to the most appropriate actors, as noted by workshop participants (WS CSO).

Interestingly, this lack of coherence between the levels does not only affect the coal sector but was seen as a wider issue by workshop participants, who also argued that the policy incoherence and the lack of coordination applied to many other sectors, such as employment or industrial development (WS International Organizations), as well as by scholars reporting in the scientific literature. For instance, Sambodo et al. (2022) found that shortcomings in the governance sphere would hinder renewable uptake in Indonesia.

Sambodo et al. (2022) also noted that if Indonesia cannot replace coal power easily with renewables, that might further slow the transition to clean energy. Workshop participants shared this sentiment and argued that while there were renewable targets set by policymakers, concrete implementation (i.e. how to do it) would often be lacking (WS International Organizations). In the same vein, loopholes and ineffective sharing of competencies is said to be a contributing factor to the proliferation of illegal mines, allowing stakeholders to exploit those loopholes (Listiyani et al., 2023).

Moreover, Dutu (2016) found that land rights issues and lack of clear laws on who owns the land (a confusion oftentimes stemming from the colonial period) would hinder investment in energy infrastructure. Similarly, Brown and Spiegel (2017) argued that the current legal framework for land rights would favour local elites, thus making it difficult for local populations to have an actual say in how land is used. Workshop participants also argued that political influence and lack of political determination act as barriers to a just coal transition, since influential coal stakeholders would be interested in keeping the country’s dependency on coal as the source of energy (WS International Organizations).

Lastly, lacking policies and the implementation thereof also affect the management of abandoned mines to avoid additional environmental damages. Indeed, proper rehabilitation of post-mining sites is insufficient according to scholars, which results in accumulation of acidic drainage and chemical deposits in abandoned mine pits (Fünfgeld, 2016; Naing, 2021).

It should be noted that the Indonesian Coal Mining Association has outlined plans for responsible mining operation to minimize adverse environmental impacts. Having said that, Dutu (2016) pointed out that a large amount of mining pollution reportedly comes from illegal mining operations, which was also in line with the insights from our interview with local stakeholders (Stakeholder 5). These mining businesses are often small and lack capacity and willingness to follow rehabilitation guidelines (Dutu, 2016). The regional government acknowledges that numerous small and illegal companies do not carry out reclamation work or bear any consequences of their polluting work (Stakeholder 3). However, local governments reportedly do not have authority over reclamation and rehabilitation issues, as this would be the sole responsibility of the mining companies (Stakeholders 1 and 3).

Moreover, the reclamation guarantee fund into which coal companies must pay when they get their mining concession and that serves as a collateral is transferred to the central government. When reclamation does not happen, there is no clear mechanism of how to get the money from the national government back to the local government. These negative impacts are often not “priced in”, in effect lowering the price for coal artificially by ignoring externalities (Arinaldo & Adiatma, 2019); in other words, coal power is not as cheap as it seems.

Despite all those barriers, conflicting visions and negative environmental impacts, Indonesia has made some progress on just low-carbon transitions and coal phase-out. As mentioned above, the JETP and ETM are key steps forward, among other initiatives discussed in our workshop. See Box 1 for details.

BOX 1. CASES OF JUST TRANSITION IN ACTION

Since 2022, two major initiatives were launched to support coal phase-out in Indonesia: The Just Energy Transition Partnerships (JETP) and the Energy Transition Mechanism (ETM). Agreed during the G20 meeting in Bali, the JETP program includes a commitment by Indonesia and countries such as the US, Japan and several EU countries to mobilize USD 20 billion over the next three to five years that will be used to phase out coal and invest more in renewable energy. The ultimate goal of this program is to achieve 34% renewable energy in the market by 2030 in Indonesia, as opposed to 25% initially planned by the government (Koty, 2023).

Meanwhile, the ETM is supported by the Asian Development Bank (ADB) with an aim to help some of the country's coal-fired power plants retire early, and support a shift to renewable energy. The memorandum of understanding was also signed during the G20 Summit in Bali, provisions of which include the acceleration of the retirement of the 600 MW Cirebon-1 coal power plant (ADB, 2022). However, there is no clear sign that the Cirebon-2 power plant, located right next to Cirebon 1 and with much larger capacity (1 GW), will be shut down.

Apart from these large-scale initiatives, stakeholders at national and local levels have also been implementing various initiatives on achieving a just transition in the energy sector (Table 2). The list of just transition initiatives presented in Table 2 is not exhaustive and is based on the information provided by the stakeholders attending the workshop.

Table 2. Existing work relevant for just transition debates in Indonesia

Type	Just Transition Initiatives	Level	Actor
Awareness-raising	Campaigns on green jobs for the youth	National	Think tanks, academics, CSO/NGOs
	Awareness-raising on climate change and energy transition	National	Industry associations
Industrial partnerships	Partnerships with electric vehicle battery manufacturers to create domestic production	National	Governments
Research	Research on economic transformation in coal-producing regions	Local	Think tanks, academics, CSO/NGOs
	Research on governance issues and critical minerals	National	Think tanks, academics, CSO/NGOs
	Research on just transition's problem identification	National	Think tanks, academics, CSO/NGOs
	Stakeholder mapping for climate and environmental issues	National	Think tanks, academics, CSO/NGOs
	Research on policy readiness for just transition	National	International organizations
Stakeholder coordination	Bi-party agreement between companies and labour unions to mitigate transition impacts	National	Industry associations
Technical assistance	Technical assistance on coal phase-out in East Kalimantan and South Sumatra	Local	International organizations
Technology uptake	Hybrid mining equipment although with low level of uptake	Local	Industry associations

Source: National workshop held on 13 October 2022; authors' own.

Most of the initiatives from these stakeholders are geared towards research on various aspects of just transition at the national level. This research bias is partly due to the stakeholders present at the workshop where we tried to elicit insights on existing just transition activities. Consequently, the mapped initiatives at the local level have been quite limited, partly due to the centralization of energy and mining authorities. Our interviews with local stakeholders in East Kalimantan and South Sumatra indicate that initiatives that can support just transition processes, e.g. renewable energy development and post-mining reclamation, at the local level are often hindered by the lack of implementation authority of local governments.

7. Key recommendations

Based on our three-pronged research approach – literature review, stakeholder workshop and stakeholder interviews – we offer some key recommendations that would lead Indonesia towards a more sustainable, just energy and coal transitions pathway. We observe five key points that could assist in a just coal transition in the country that merit further discussions.

- **Economic diversification beyond coal is key to a just energy transition; such diversification must ensure equal access and benefits to local communities.** While coal remains an important source of revenues for local governments and economic diversification remains challenging, our research has shown that benefits often don't accrue to local communities and stakeholders. This needs to change if the transition away from coal is to be successful, by offering economic alternatives to people working in the coal sector. However, some of the economic alternatives – such as “clean coal” or nickel mining – should be carefully examined, as they will probably lock in high emissions pathways (coal, especially in the absence of carbon capture and storage, will always be higher in emissions than renewables) or risk repeating past mistakes (simply exchanging one mining activity with another).
- **The scaling of niche-level technologies, such as renewable energy sources, requires market support and better regulatory settings.** Given the current market and barriers to entry for replacements for fossil fuels (IEA, 2022b; Kurniawan et al., 2020), levelling the playing field is key for renewable technologies. To compete with coal power and deliver lost-cost energy and electricity to Indonesian consumers, policymakers can work towards increasing market flexibility, adopting more impactful support policies for renewable energy sources, and streamlining investment regulation while doing away with bureaucratic hurdles that hinder renewable energy development.
- **Education policies, capacity building and public information campaigns are needed to prepare communities for an economy post-coal and to get their buy-in for transition pathways.** The change of the economy in coal-producing regions will eventually require skill upgrading of the local labour force to meet the technical needs of the new industries beyond coal (Stanley et al., 2018), as well as informational campaigns to inform people of economic alternatives and innovative, renewable energy solutions. Moving forward, a just coal transition should consider up- and reskilling of the local labour force that will support alternative economic sectors and activities in post-mining regions. In addition, public “ownership” of coal transitions should be increased by awareness and information campaigns, given that, so far, energy-related issues have been decided in a rather top-down manner without appropriate buy-in of local communities. Similarly, the capacity of policymakers, particularly on the local level, should be strengthened to adopt stringent coal transition policies that empower local communities.
- **Governance barriers need to be resolved, particularly the lack of coordination between central and local governments, as well as the delegation of authority and monitoring.** As indicated in the discussion, some changes in the governance systems in 2020 partly reversed the decentralization of decisionmaking power. As a result, local governments do not have the authority to initiate coal transition-related activities, such as renewable energy development, as now the central government has the authority to deploy renewable energy sources. While issues such as accountability, transparency and capacity might warrant a higher degree of centralization, it may be equally important to delegate some of the decisionmaking powers to local governments, in order to allow provinces to adapt the support for coal phase-out or renewable energy deployment to local needs. This is especially important to enable more “transition ambitious” regions and regencies to move forward more swiftly on a transition pathway, compared to the national average.

Clarifying the roles and responsibilities on coal transition through policy synchronization between central and local governments can be a start. Only if policy coherence is established can coal phase-down and eventually coal phase-out be successful. Moreover, stringent monitoring mechanisms should be put in place and national development plans should be brought into alignment with regional development plans (Lewis, 2015).

Interestingly, one workshop participant argued that the government could learn from the Covid-19 pandemic on how to improve coordination between the national and the local governance level. Apparently, the Covid-19 taskforce that coordinated the country's response to the pandemic was successful in coordinating different ministries at different government levels (WS International Organizations). Maybe, a "coal transition taskforce" might be established, copying the effective operational modes of the Covid-19 taskforce.

- **A better understanding is needed of power constellations that may hamper or support a just coal transition. Research should clarify these power dynamics, which could inform transition-minded stakeholders in building coalitions to counter entrenched forces that maintain the current fossil fuel regime.** The fossil-fuel regime level is robust in Indonesia due to the importance of coal for the economy, the fossil-fuel-based "vision" of important stakeholders in the private and the government sector, and the good connections coal stakeholders enjoy with the political sphere. Understanding those power networks better and how they act and interact might give more transition-minded stakeholders insights into potential windows of opportunity and leverage points that could be used to drive a transition away from coal.

This better understanding should be followed by coalition-building efforts among non-state actors to demand for tangible policy actions to accelerate the transition away from coal. Instead of working in silos, non-state actors working together can push the just transition agenda; they can lobby policymakers and other relevant stakeholders to allow them a seat at the table to guarantee participatory approaches to policymaking, including a wide array of stakeholders.

These five key recommendations require that **all stakeholders consider justice on transition pathways**. Keeping the justice aspect of energy and fossil fuel transitions in mind can help translate these recommendations into reality. Economic diversification should ensure that not only the select few benefit from a transition, but that economic benefits accrue to the local population, particularly in former coal mining sites (distributive justice). Similarly, the increased uptake of renewable energies would lend itself to forming local energy cooperatives where power production is generated on site and cost savings help local communities. Training and education should also focus on former coal communities so that local people can benefit from learning new skills and trades. Coalition-building should focus on giving each concerned stakeholder a voice in the process of how energy transitions should be carried out (procedural justice) and recognize that every stakeholder might have a different vision for how to move beyond coal (recognition justice). And finally, government stakeholders should ensure that former mining sites are reclaimed and cleaned up by coal regime actors, thus contributing to restorative justice.

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Annexes

Annex 1. List of PIPA Workshop Groups

Workshop Group Name	Details
WS International Organization	International organizations working on energy transitions
WS Industry	Coal-related industry players and associations
WS CSO	Civil society organizations, think tanks and academic institutions
WS Government	Government agencies

Annex 2. List of Stakeholders engaged during fieldwork

Stakeholder	Type
Stakeholder 1	Local Government
Stakeholder 2	Local Government
Stakeholder 3	Local Government
Stakeholder 4	Local NGO
Stakeholder 5	Local NGO
Stakeholder 6	Mining Company
Stakeholder 7	Mining Company
Stakeholder 8	Local Government
Stakeholder 9	Local NGO
Stakeholder 10	Local NGO

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