4

Regulatory Evolution of Renewable Energy in Indonesia

> Indonesia will be able to contribute more quickly to the world's net-zero emissions. The question is, how big is the contribution of developed countries to us? [*Indonesia akan dapat berkontribusi lebih cepat bagi net-zero emission dunia. Pertanyaannya, seberapa besar kontribusi negara maju untuk kami?*]
>
> *–Indonesian President Joko Widodo, Remarks at the COP26 World Leaders Summit in Glasgow, 1 November 2021*

To meet its energy development goals, Indonesia faces complex challenges including increasing electrification rates by extending energy infrastructure and generation capacity, reducing energy poverty for millions without access to modern fuels, and transitioning toward clean energy. Indonesia's dependency on fossil fuels in its energy mix is in part due to the long history of oil, natural gas, and coal production (and historic abundance in hydrocarbons). In order to accelerate the nation's energy development, the Indonesian government adopted a number of ambitious policies and targets to accelerate the expansion of generation capacity. Increasingly, government energy development plans incorporate renewables into energy targets. Despite ambitious plans, a gap remains between the renewable energy targets and the realities of implementation. With mounting international attention to climate change and sustainable development, development aid to Indonesia has targeted energy sector transformation and the numerous challenges around renewable energy deployment.

The clean energy regime complex elaborated in Chapter 3 describes the landscape of actors working at the international, regional, and transnational levels to promote the diffusion of clean energy technologies globally. This is the first of three empirical chapters that investigate how the clean energy regime complex impacts domestic politics to support an energy transition. This chapter focuses on the clean energy regime complex's impacts on normative change and policy adoption to spur the deployment of renewable energy in Indonesia. In particular, the arrangement of

international actors such as multilateral development banks, bilateral development aid agencies, transnational advocacy networks focused on climate, and international organizations have been active in promoting energy transitions and development in Indonesia. To analyze the influence of clean energy governance on domestic policy change, this chapter focuses on how the regime complex has influenced Indonesia's policy change for renewable energy development, while Chapter 5 focuses on how the regime complex has influenced Indonesia's geothermal development. Through the empirical chapters, the interaction between the clean energy regime complex and domestic politics is examined through the mechanisms of the regime complex. This interaction involves the regime complex's ability to promote the convergence of domestic political interests toward renewable energy development and reframe energy security issues, particularly in the wake of energy crises or other exogenous economic shocks.

The *social learning mechanism* is demonstrated when international institutions share knowledge and information that produce a clearer picture of a problem, and result in a new perspective or alternative strategies for problem-solving and implementation (Andonova and Tuta 2015; Haas 1989; Young and Levy 1999). Social learning is evident in policy changes made by government institutions that are then transferred across different ministries and levels of hierarchy: norms and policies that were originally promoted by international actors are taken up or adapted to fit the perspective of the government. The adoption of renewable energy policy or reform of existing policies to remove regulatory barriers or incentivize investment in the renewable energy sector can serve as evidence of the mechanism of social learning. The removal of barriers to private investment in the clean energy sector can spur long-term systemic or transformative change, also referred to as "catalytic effects," as compared with project specific financing (Buntaine and Pizer 2015). Social learning can take place through a change in rules and regulations governing Indonesia's renewable energy development that results from learned information and problem-solving approaches shared by international actors.

The *capacity building mechanism* is conceptualized as resources, such as training and education, directed to building human capacity. In order for states to comply with international agreements and adopt their own national policy, there must be a certain level of institutional capacity within government bureaucracy to undertake this endeavor (Chayes and Chayes 1993). Through training and educational resources, this mechanism of the clean energy regime complex addresses knowledge and human capacity barriers to technology development. Workshops, trainings, and seminars offered by international actors to improve national data collection and train government officials in processes and procedures for renewable energy policymaking, such as how to calculate the emissions reduction of certain

projects, are all examples of the capacity-building mechanism that improves government capability.

This chapter analyzes how the clean energy regime complex can drive convergence of interests in favor of renewable energy development by offering new approaches to solving problems, changing incentive structures through new regulations and shifting norms. The convergence of domestic political interests can influence political will and impact opportunities for an energy transition. The chapter first introduces the case of Indonesia and its current state of energy development, briefly summarizing the major domestic actors and key renewable energy policies, and then examines the impact of the clean energy regime complex on the evolution of the regulatory framework promoting renewable energy and emissions reduction (see Figure 4.1).

Indonesia: Case Description

Indonesia is a country comprised of more than 17,000 islands, with incredible geographic, cultural, and ethnic diversity spread across 34 provinces and more than 500 districts or regions. With more than 275 million inhabitants, it has the fourth largest population in the world (World Bank 2024a). Indonesia is a majority-Muslim country and a democracy, though the country's political history includes dictatorships under Suharto. Former president Joko Widodo (Jokowi), who led the country from 2014 to 2024, was succeeded by President Prabowo Subianto in 2024. The country has overcome its status as a "Fragile Five" state through calculated economic reforms to manage current account deficits, and currently maintains its trajectory toward becoming one of the next major emerging economies (BBC 2014; Bland and Noble 2014).[1] In 2023, Indonesia's GDP was $1.37 trillion with a 5% growth rate (World Bank 2025). Another important indicator of poverty is the level of energy access in the country. As of 2013, 42% of the population in Indonesia – more than 100 million people – relied on traditional solid biomass for cooking and heating, and the national electrification ratio was 83% (PwC 2013; World Bank 2012a). By 2019, the share of households relying on dirty fuels for cooking had fallen to 22% and the electrification rate had risen to 98.8% (MEMR 2019a; WHO 2021).[2] Significant disparities in electrification persist across rural and urban settings, and between islands that are more densely populated and those that are more remote

[1] The "Fragile Five" is a term Morgan Stanley coined in reference to Brazil, India, Indonesia, South Africa, and Turkey and their dependencies on foreign investments to fund growth ambitions (Thomas 2014).

[2] The disparities between rural and urban settings for use of clean fuels is contrasted when looking at the bottom range for rural households in remote islands, which were at 54.4% in 2019 (WHO 2021).

Figure 4.1 Map of Indonesia.
Source: US Department of State 2017a

(ADB 2020a). Nevertheless, these huge strides are indicative of changes that have happened in the past decade in Indonesia's energy sector.

Historically, Indonesia was a major global oil producer and exporter (1962–2008) and is now one of the world's largest coal producers. Indonesia's coal development plans are an obstacle to progress in domestic energy transitions and emissions reduction, and without international support to help Indonesia phase out coal, achieving net zero ambitions will be even more difficult. Indonesia is the fifth largest emitter of GHGs in the world, largely due to deforestation and land clearing to develop its thriving palm oil industry, but also from the energy and transportation sectors (WRI 2014). Indonesia is the world's largest palm oil producer, and between 1990 and 2010, 90% of the lands were deforested and converted to oil palm across Kalimantan, the Indonesian portion of the Island of Borneo (Carlson et al. 2012; *Scientific American* 2012). Deforestation is a major contributor to Indonesia's carbon emissions, representing 60% of total emissions.[3] Since the 2007 UNFCCC COP-13 in Bali, Indonesia has come under increasing international pressure to reduce deforestation and carbon emissions and to transition to cleaner energy sources.

Major Players in Indonesia's Energy Sector

The decentralized government in Indonesia is further complicated by vested interests and a quagmire of coordination gaps among different levels of government (Damuri and Atje 2012; Jepson, Momberg, and van Noord 2002; Marquardt 2014; McCarthy 2002; Wollenberg et al. 2009). The needs and interests of regional and central government, ministries, independent power producers, and the state-owned electric utility company are often misaligned (Budiman et al. 2014). As Figure 4.2 shows, there is a mixed approach to the governance of the power sector divided between central and regional governments. The key actors in governing the power sector include the regional governments, the MEMR, the Ministry of Finance, Indonesia's state-owned electricity utility [*Perusahaan Listrik Negara*] (PLN), and independent power producers (IPP).

The MEMR holds the most central role since its main responsibilities include developing energy policy and supervising the day-to-day activities of the energy sector, as well as energy planning, funding, and regulation (Damuri and Atje 2012). The MEMR also oversees SOEs and provides data and analysis. Under the MEMR, the EBTKE was created as a subministerial agency in 2010. The creation of EBTKE strengthened the oversight of renewable energy and energy efficiency activities. The National Energy Council designs and formulates long-term energy planning and manages energy crises when they occur (PwC 2013). The

[3] See http://climateactiontracker.org/countries/indonesia.html.

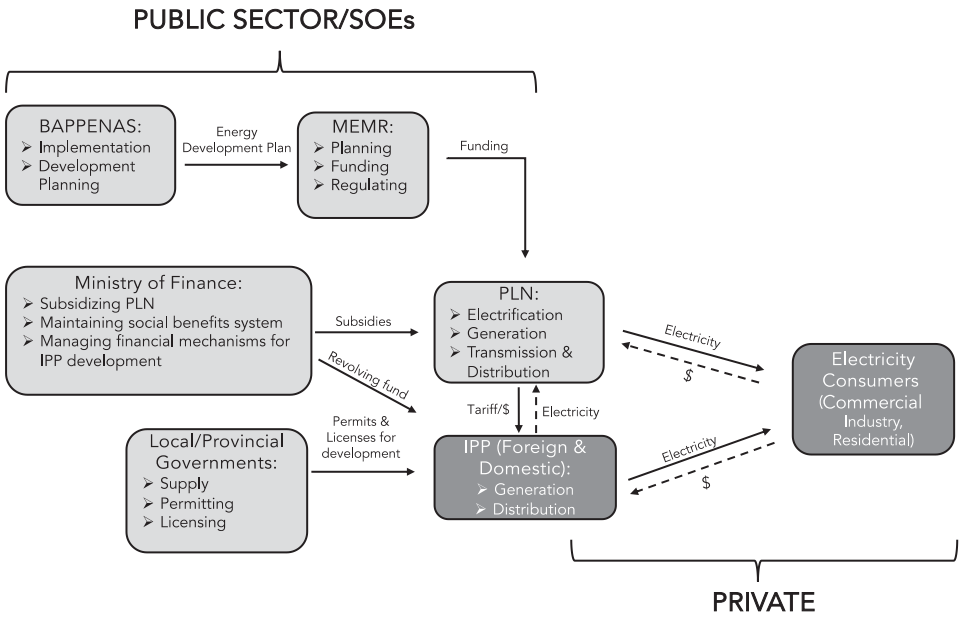

Figure 4.2 Indonesia power sector actors.
Source: Adapted from DIFFER 2012

National Energy Council also sets out strategy for energy consumption to be implemented by the MEMR. The BAPPENAS handles development planning. The BAPPENAS is quite influential in determining the direction of energy policy and aligning it to broader economic plans and regulations (Damuri and Atje 2012). It also sets out an energy development plan to be carried out by the MEMR and manages coordination among other relevant ministries that overlap with the energy sector. The Ministry of Finance has authority over approving use of government expenditure, particularly for investment incentives, such as feed-in tariffs. It is also charged with maintaining the social benefits system, allocating fuel subsidies to Pertamina (the national oil company), and electricity subsidies to the PLN.

State-owned enterprises (SOEs) are prominent in Indonesia's energy sector, even after the partial liberalization reforms of the power generation sector in the late 1990s (Damuri and Atje 2012: 8). The PLN operates power plants and holds a monopoly over transmission of electricity. Despite several regulatory reforms encouraging liberalization of the power sector, the PLN owns 60.7% of installed generating capacity as of 2022, compared to 26.5% owned by independent power producers and 5% by private utilities (ITA 2024). Law No. 15/1985 allowed for independent power producers to supply electricity to the Indonesian electricity

market, although implementation of this law has been slow, as demonstrated by the slow growth rates in private investment (Vagliasindi and Besant-Jones 2013). As with most electric utilities, the PLN has a legal obligation to provide affordable energy services and infrastructure to the poorest regions and populations under Law No. 30/2007, while also making a profit as a company.

Local governments hold significant authority in Indonesia as a result of the 2001 decentralization process under the post-Suharto democratic transition, commonly referred to as "*Reformasi*." Local governments play a key role in the implementation of energy policy by developing regulations and issuing permits for exploration and development of renewable energy projects. However, overlapping jurisdictions, vested interests, and lengthy permitting procedures have acted as a hindrance to implementation and development (EIA 2015b; Fox et al. 2006). The *Reformasi* has led to some level of increased transparency and accountability between local governments and communities, improving a system of revenue sharing from natural resource extraction (Resosudarmo 2006). Yet lack of coordination among ministries, along with conflicts among district level governments due to ambiguity of laws or jurisdictional disputes over natural resources that lie on provincial or district borders, have led to less efficient management of natural resource wealth (Pisani 2014b; Resosudarmo 2006). Despite the government's interest in increasing private sector involvement in the expansion of energy infrastructure and capacity development, these barriers have been a cause of major delays in project development (EIA 2015b).

The various actors involved in the power sector play an important role in formulating and implementing energy policy. The next section examines the interaction between the clean energy regime complex and domestic politics on climate policy and the energy transition in Indonesia.

Indonesia's Transition Opportunities and Challenges

To meet the growing energy demands and increase electrification rates, Indonesia has adopted policies to accelerate development of the vast renewable energy resources in the country over the three periods of analysis. With abundant resources in renewable energy, Indonesia can quadruple its current power-generating capacity, yet most of that potential remains underdeveloped. The country's main renewable energy resources – solar, hydropower, geothermal, and wind – hold the combined power generation potential of approximately 434 GW (see Figure 4.3).

Indonesia holds great promise and potential for renewable energy generation. The delay in utilization of these resources and continued dependence on fossil fuels are due to persistent barriers to technology development, including financial, political, and knowledge gaps, as well as vested interests and technology lock-in.

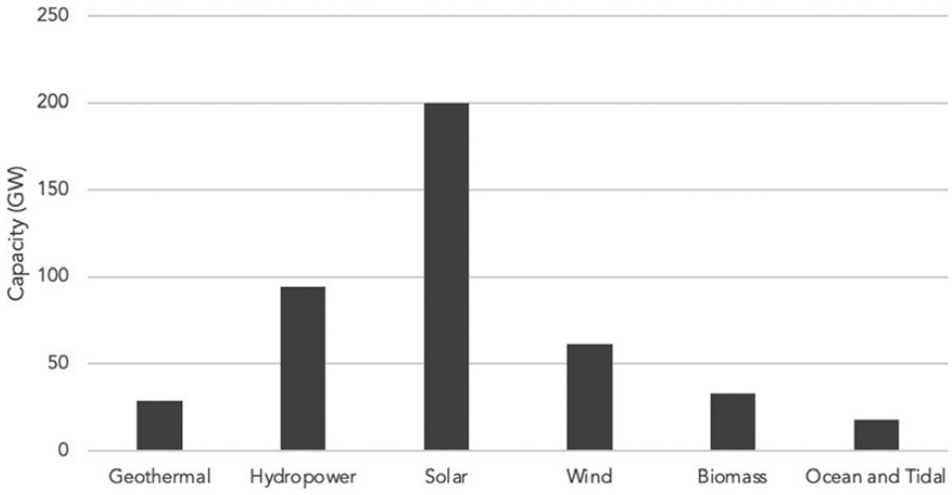

Figure 4.3 Renewable energy potential in Indonesia.
Source: ADB 2020a

Barriers to Energy Capacity Development in Indonesia

Indonesia's diverse geographical, political, and cultural landscape provides insights into the origins of not only the severe disparities in energy access across the country, but also the shortage of easy (and inexpensive) solutions. The list of barriers to energy sector development in Indonesia is long, but there are a few persistent barriers that provide an overall context: the absence of a robust regulatory framework, lack of energy infrastructure to distribute capacity across islands, difficulty in obtaining land use rights, permitting and procurement delays, and geographical barriers (Damuri and Atje 2012; World Bank 2014).[4]

The absence of a robust regulatory framework is one of the largest barriers to energy sector development. The regulations governing the energy sector are at times unclear and frequently changing, and further complicated by the decentralized government (Fox et al. 2006). Obtaining land use rights has historically been an issue in project development. In 2012, Acquisition Law No. 2 and Regulation on Land Procurement Procedures for Development and Public Interest (PR No. 71) were adopted to expedite land acquisitions for certain infrastructure projects, including power plants that specifically benefited government agencies acquiring land for public purposes (PwC 2013: 25). Furthermore, decentralization adds a further

[4] USAID-ICED interview, 2014a; PLN interview, 2015; PwC 2013; ADB interview, 2014; WWF Indonesia – Ring of Fire Program interview, 2014.

complication due to overlapping and inconsistent permitting and procurement regulations.

As Indonesia is one of the world's largest archipelagos, geographical barriers are an issue for power sector development. With 6,000 inhabited islands, electrification is difficult and interconnection between islands is nearly impossible due to location along the Ring of Fire and distance between islands. Substantial seismic activity and long distances between islands make deep-sea cables connecting island grids highly risky (FCC 2014). Furthermore, the islands with the most potential in energy resources are often not the most densely populated (e.g., Sumatra versus Java), which creates a mismatch between supply and demand across islands. A deep-sea, high-voltage transmission project to connect coal power in Sumatra to Java is still in development. The project was slated to begin in 2013 with a USD 2.13 billion loan from JICA but has been indefinitely delayed (Prakoso 2017). Overall, these barriers have been difficult to surmount and will take substantial investment and regulatory reform to reduce risks and incentivize private sector investment.

Indonesia has built up a considerable regulatory framework with numerous policies and targets aimed at accelerating renewable energy technology deployment, reducing emissions, and committing to climate change mitigation and adaptation. However, many of these policies have not been fully tailored to the needs of the specific technology or context, nor are they able to overcome the numerous challenges related to the broader structural constraints existing in Indonesia. There have been subsequent efforts by bilateral and multilateral agencies (the clean energy regime complex) to assist Indonesia in removing particular barriers to renewable energy technology development and facilitating investment in this sector. Indonesia's participation in the clean energy regime complex and climate change negotiations, as well as bilateral and multilateral efforts to support clean energy deployment represent major influences on policy change.

Period 1: The Legacy of Oil Production

Indonesia's wealth of natural resources, and particularly oil, has greatly influenced the country's economy over recent decades. The timeline presented in Table 4.1 highlights some of the political and economic events that have driven Indonesia's energy development policy. Following the 1973 oil crisis, Indonesia benefited from skyrocketing oil prices, and production and export revenues drove the country's economic growth throughout the late 1970s to the early 1990s. However, due to gross mismanagement of oil resources, corruption, and underinvestment in exploration, production waned. By 2004, Indonesia shifted from being a net exporter to net importer of oil. In 2008,

Table 4.1 *Timeline of major events affecting Indonesia's energy development*

	Year	Major external shock or energy crises in Indonesia
Period 1	1973	Global oil crisis
	1970s–1990s	Economic boom from oil exports
	1997	Asian financial crisis followed by fall of Suharto regime
	2001	*Reformasi* (democratization) and decentralization
Period 2	2004	Indonesia becomes net importer of oil
	2006	Fast Track Program I launched
	2007	UNFCCC COP-13 held in Bali
	2008	Indonesia leaves OPEC
Period 3	2010	EBTKE created
		Fast Track Program II launched
	2014	Global oil prices fall
	2015	35,000 MW plan announced
	2022	JETP Launched

Indonesia had formally left the OPEC.[5] In Figure 4.4, the overall trends show Indonesia's dwindling production and rising consumption of oil, creating newfound energy insecurity as Indonesia eventually became a net importer. Notably, the production dropped most dramatically following the Asian financial crisis in 1997 and the fall of President Suharto in 1998 after 30 years in power.

Indonesia energy security policy has changed over time in response to these external shocks, as well as to shifts in supply and demand, to reorient energy production from serving export markets toward meeting domestic consumption (EIA 2015a). Throughout these developments, Indonesia has been subsidizing its fossil fuel (domestically produced or imported) to feed domestic energy demands, but these subsidies have created large budget deficits. Since Indonesia has bountiful reserves in coal and natural gas, its energy security approach has primarily focused on reducing the share of imported oil in its energy mix to 25% by 2025, while raising the renewable, coal and natural gas portions to at least 23%, 30%, and 22% respectively, per the KEN (EIA 2015b, 2021; GoI 2014; PwC 2014).

Indonesia's energy mix is still dominated by fossil fuels, which represented 87% of the country's primary energy supply in 2023 (see Figure 4.5). While historically Indonesia's oil production and exports were a major contributor to the domestic economy as a net exporter, a new trend has developed as coal replaces oil as

[5] Indonesia rejoined OPEC in 2016, despite the fact that it was a net oil importer, in order to increase cooperation with oil-producing nations (see EIA 2015a).

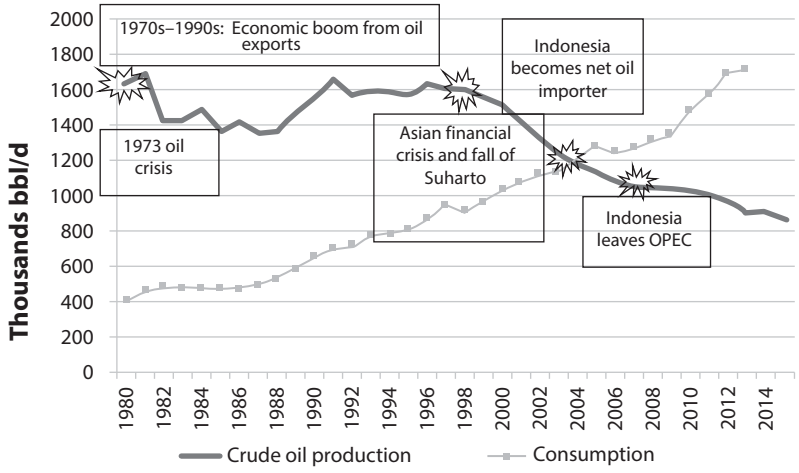

Figure 4.4 Indonesia's oil production and consumption over time.
Source: EIA 2016 data with author's added text

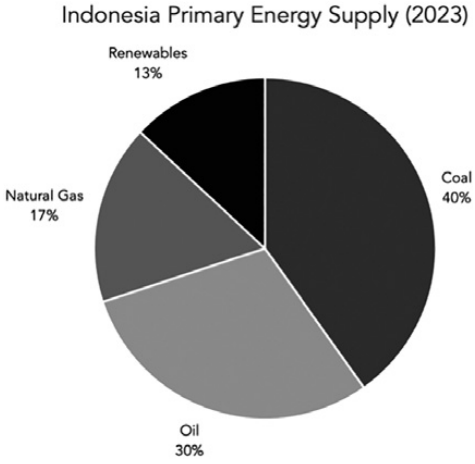

Figure 4.5 Indonesia's primary energy mix by fuel source (2023).
Source: MEMR 2023

a primary commodity. Indonesia is one of the world's largest exporters of thermal coal since 1995, and as of 2018, it surpassed Australia as the largest global exporter of coal by weight (EIA 2021). From an energy transition perspective, Indonesia's growth in renewable energy is dwarfed by the escalation of coal production. The PLN has committed to stop building coal after 2040 with international support, but separately the country aims to continue developing coal projects through the 35,000 MW Plan and an additional 7 GW of coal-fired capacity outlined in the Fast Track programs (EIA 2021; Geddie 2021; IEA 2020; Mediatama 2021).

Indonesia's legacy of oil production is also manifest in the history of its fossil fuel subsidies. Fuel subsidies have consumed government spending particularly since the country shifted to being a net oil importer in 2004, because the government now subsidizes imported fuels. The government has tried to reform subsidies since 1998 in the aftermath of the Asian financial crisis, and in response to International Monetary Fund (IMF) stabilization loans, but many early reform attempts resulted in protests and even violent riots due to rapid energy price increases and inflation without any social assistance programs to provide a buffer for vulnerable populations (Beaton and Lontoh 2010; IMF 2013; Mydans 1998). The most durable reforms have incorporated social assistance to compensate for rising fuel prices, but the long-standing legacy of subsidies and attempts to remove price control is still felt today (Chelminski 2018).

Indonesia's history of oil production and fossil fuel subsidies has created vested interests and corruption, often referred to as the "Oil and Gas Mafia." Corruption included embezzlement of funds from the MEMR, extortion, tax fraud, and smuggling (Buehler 2020; Chelminski 2018; Sukoyo 2014). One issue is the black market created by subsidized fuels: cheap, subsidized oil is smuggled and sold at a profit (but less than market prices) to businesses or consumers who are not eligible for the subsidy or need more than their quota.[6] Oil theft in Indonesia is estimated at 10,000 to 15,000 barrels a day (Harsono 2020). Pertamina was forced to close its South Sumatra pipeline after an explosion in Tempino-Plaju – caused by crude oil theft and pipeline tapping – that killed three and injured dozens. Government officials have estimated as much as 5% of Indonesia's fuel is smuggled, with Pertamina's allowance of 0.30% on its ships carrying fuel from refineries to ports (Kapa 2014). Fuel smuggling ranges from car owners looking to make a quick profit to crime syndicates of smuggling rings making huge profits from the subsidized fuels. Smuggling is rampant across Indonesia and difficult to police. Fuel smuggling contributes to distorted fuel prices and is a frequent negative externality of fossil fuel subsidies (Sdralevich et al. 2014).

Under the Joko Widodo administration, the Ministry of Energy created the Oil and Gas Task Force in 2014 to reform the oil and gas sector and reduce corruption, particularly within Pertamina. Faisal Basri was appointed to head the task force, which was made up of 11 members, including ministers, academics, bureaucrats, and activists (Sipahutar 2014).[7] The task force made the following recommendations for reforms in the oil and gas sector: the dissolution of Petral (Pertamina's oil trading arm), creation of an integrated supply chain to handle procurement instead

[6] For example, subsidized fuel was purchased for IDR 5,000/liter and sold for IDR 8,000/liter, while market prices are IDR 10,000/liter (Sadmoko et al. 2014).
[7] MEMR interview, 2015b.

of Petral, and gradual fossil fuel subsidy phaseout with the introduction of social welfare programs to mitigate price fluctuations, making upstream petroleum regulator SKK Migas more efficient.[8] The fossil fuel subsidy reform would also be the most effective way to deal with oil smuggling: if domestic fuel prices matched international prices, there would be no incentive to smuggle fuels.

The task force also suggested strategic political appointments in energy sector and government ministries to reduce corruption. It found that Petral was the main source of the "fuel mafia" and was involved in graft. Following the task force's recommendations, the government launched an investigative audit of Petral, which revealed clear signs of fraud. The audit found that third parties had rigged tenders and Petral's price calculations (Asmarini 2015: 1). Minister of Energy Sudirman Said argued that the "Petral Group's liquidation was necessary as part of an effort to improve Pertamina's supply chain management, and to complement a plan to reactivate Integrated Supply Chains" (Amidoni 2016).

Many of the recommendations of the task force were put into place in 2015 and led to reduced corruption in the oil and gas sector. The dissolution of Petral improved Pertamina's profits and contributed to economic growth without making a direct impact on fossil fuel subsidy reform. It does illustrate the existence of vested interests in preventing fossil fuel subsidies from being reformed, arising from the collusion between Petral and previous administrations, particularly under SBY (2004–2014) (Tempo 2015). Once Petral was dissolved, Pertamina made a profit of USD 20 million (IDR 260 billion), demonstrating the sheer burden of corruption (*Jakarta Post* 2015). This raised strong suspicion of not only the amount of Pertamina's budget lost to Petral's graft, but also of the lack of transparency and monitoring under SBY that allowed this corruption to continue for so long.

Apart from its history as an oil and gas producer, Indonesia is the world's largest coal exporter and coal is a major source of Indonesia' domestic energy mix (40% in 2023, as seen in Figure 4.5) (MEMR 2023). As detailed in this chapter, Indonesia's energy development plans throughout the years have placed a high priority on continued coal development for domestic energy security and as a driver of economic growth, but also as part of the country's geopolitical strategy. Coal is one of Indonesia's export commodities driving economic growth (WITS 2021). Indonesia's historical and contemporary position as an oil, gas, and coal producer, combined with the rampant corruption of this sector, is fundamental to understanding the vested interests against and barriers to transitioning to net zero.

[8] MEMR interview, 2015b.

Period 2: Rising Salience of Climate Change and Emissions Reduction

Following the Asian financial crisis of 1998, Indonesia struggled with building sufficient power capacity to meet demands, causing frequent blackouts across the archipelago. Many regions without access to electricity were reliant on traditional biomass during this time (Alfian 2010). Starting in the early 2000s, the Government of Indonesia launched a series of ambitious electrification and power sector transformation plans to develop power capacity and grid expansion relying heavily on domestic resources, but mainly focused on coal and natural gas, with small but increasing shares of renewable energy capacity targets (around 10% from renewables). The first of these programs, Fast Track I, was launched by the Indonesian government and the PLN in 2006; it was followed by Fast Track Program II launched in 2010 during Period 3, detailed next. These programs aimed to accelerate the development of 10,000 MW of new power capacity each (20 GW total). Fast Track Program I launched by PR No. 71/2006 focused on the switch away from oil reliance toward domestic coal use and was conducted solely by the PLN.

Indonesia and the Clean Energy Regime Complex

Indonesia actively participates in various international forums for clean energy and climate change. Using the clean energy regime complex dataset of major intergovernmental and transnational clean energy initiatives developed by Chelminski et al. (2022), this section analyzes the engagement of 41 different initiatives with EMDEs. Indonesia participated in 46% of initiatives, marking it as one of the most actively engaged countries. Engagement at this level is voluntary and requires low commitment. Nevertheless, Indonesia regularly attends intergovernmental negotiations for climate change; sends delegates from ministries to take part in seminars, workshops, and trainings; and has hosted several high-profile events related to clean energy and climate change.

Norm Diffusion and Social Learning

Norm diffusion and agenda setting, national policy formation, networking, and knowledge sharing are major activities occurring through participation in the clean energy regime complex. Two prominent examples of norm diffusion and agenda setting include the hosting of the 2007 UNFCCC COP-13 in Bali and the 2009 G20 summit in Pittsburgh, Pennsylvania. These were the first significant events in Indonesia's policy history that showed evidence of impact from the clean energy regime complex.

It is also important to note that the increase in Indonesia's adoption of emissions reduction policies coincides with significant external shocks to its energy security. As noted, Indonesia first became a net importer of oil in 2004, and by 2008, it had formally left OPEC, both developments signifying a decline in the country's energy security. These external shocks are also considered in an analysis of the impacts of the clean energy regime complex in Indonesia.

The choice of countries nominated to hold the climate change negotiation's COP is strategic, as it offers an opportunity for intense scrutiny of the host country's regulatory framework, emissions, and policy agenda. The COP also provides a forum for the diffusion of norms and ideas. It should come as no surprise that the last several host countries have been major emitters among EMDEs, and at the same time, laggards in the policymaking arena. The 2007 COP-13 was held in Bali, and Indonesia is the world's fifth largest GHG emitter (Arga 2007). While Indonesia ratified the Kyoto Protocol in 2004,[9] the Bali COP-13 in 2007 marked a turning point in Indonesian climate change and energy policy.[10] Media coverage of Indonesian policy, particularly related to deforestation and carbon emissions, spiked following the COP-13 (Cronin and Santoso 2010). The Bali COP not only highlighted the issue of climate change and the link between deforestation and carbon emissions, it also started to diffuse international norms of emissions reduction approaches to the country's government, leading to several key institutional changes. However, the trickle down of policy adoption and implementation has been extremely slow. Following COP-13, a number of policy changes were implemented. The first was the creation of the National Climate Change Council in 2008 through Presidential Decree No. 46/2008, and the incorporation of climate change considerations into national development planning through the BAPPENAS in 2008–2009 (Purnomo et al. 2013).

Following these changes, Indonesian representatives attended several other international forums, including the COP-14 in Poznan, Poland, in 2008 (which marked the beginning of a partnership between Indonesia and Norway on UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD+)), the G8 meeting in Japan in 2008, and the G20 summit in Pittsburgh in 2009. The G8 meeting provided a networking opportunity for countries to share, in bilateral meetings, thoughts on emissions reduction from the forestry sector, as well as national action plans on climate change. Through these formal and informal meetings, Indonesian leaders felt increasing pressure to appear "progressive," which likely was one of the contributing factors influencing Indonesia's ambitious emissions reduction targets announced at the 2009 G20 summit in Pittsburgh.[11] In the ambitious and

[9] See http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php.
[10] BAPPENAS interview, 2014; WWF – Coral Triangle Global Initiative program interview, 2014.
[11] UNDP interview, 2014.

controversial "26/41 Commitment" to emissions reduction targets, SBY pledged a 26% reduction of emissions by 2020 from business as usual and up to 41% reduction with international support. Cabinet Secretary Dipo Alam under President SBY announced the targets in a press release:

> This is our attempt to follow-up Bali Action Plan as agreed in the UNFCCC COP-13, while meeting Indonesia's voluntary commitment to reduce GHG emissions by 26% or up to 41% with international support by 2020. In order to do so, we conduct national action to reduce GHG emissions. *(Moss 2011: 1)*

The motivation behind these targets – and the methods used to calculate them – have been questioned. Anecdotal evidence has suggested that Japan announced a target of 25% emissions reduction, inspiring the Indonesian president to go above and beyond with a target of 26% (Anderson et al. 2015: 263; McCurry 2009).[12] This also supports the hypothesis that President SBY was under pressure to appear progressive and gain reputational benefits from an ambitious emissions reduction pledge.

The 26/41 Commitment to emissions reduction targets pushed government ministries to follow through and develop institutions and action plans to support the targets.[13] The targets led to institutional developments and subsequently to measurable change in specific reporting practices of the government ministries. By the end of 2011, two presidential decrees were issued on climate change: Decree No. 61/2011, which was the National Action Plan on GHG Emission Reduction (RAN-GRK), and Decree No. 71/2011, which created a national GHG inventory (Purnomo et al. 2013). The National Action Plan on GHG Emission Reduction was used as a baseline by the Indonesian government against which it carried out measuring, reporting, and verification of actual GHG emissions reduction. The president provided the targets, and the BAPPENAS was responsible for coordinating with different ministries on how to achieve targets. Governments were then obligated to report projects from their ministries that implemented targets.[14] The MEMR and EBTKE helped develop examples of programs and projects that would qualify for emissions reduction, such as reforestation projects after mining, energy-efficiency projects, and the switch from kerosene to liquefied petroleum gas. This is one of the first entry points through which renewable energy became integrated into policymaking and behavior change. Previously, climate change and energy were treated separately.

The 26/41 Commitment provided evidence of social learning as ideas and norms were gradually integrated into national and subnational policies. As Indonesia withdrew from OPEC as a producer country in 2008, the country's energy security was on shaky ground and renewable energy development was considered part of the

[12] Also see:www.eu.emb-japan.go.jp/japanbrief_archive-2009-08.html. [13] MEMR interview, 2014b.
[14] MEMR interview, 2014b.

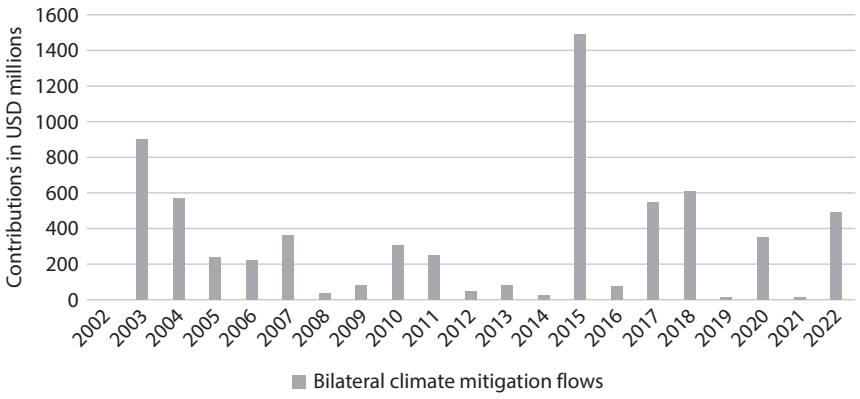

Figure 4.6 OECD DAC climate change mitigation aid to Indonesia's energy sector (2002–2022), Periods 2–3.
Source: OECD 2024

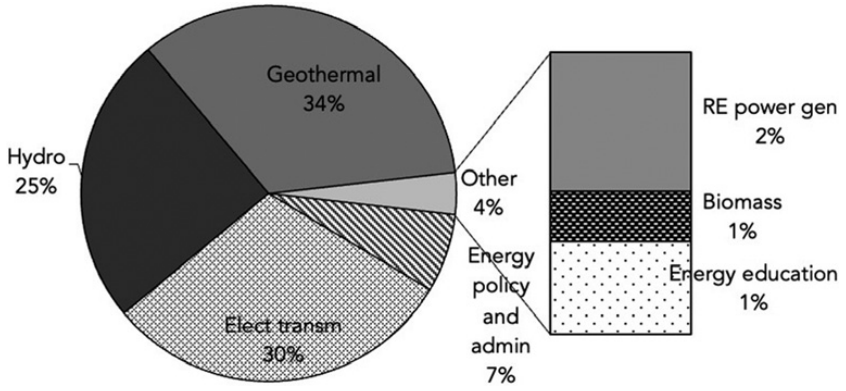

Figure 4.7 Breakdown of bilateral ODA to clean energy in Indonesia by sector (2004–2013).
Source: OECD 2014

solution to energy diversification needs. Importantly, the 26/41 Commitment also included a request for international financial support to achieve or go beyond the targets (i.e., to achieve 41% reduction) and to develop the renewable energy sector to improve diversification.

The call for development aid was an effective strategy, as USD 6.7 billion in climate change mitigation aid was funneled to Indonesia's energy sector from OECD Development Assistance Committee countries from 2002 to 2022 (OECD 2024). See Figure 4.6 for an overview of OECD Development Assistance Committee (DAC) mitigation aid over time. Furthermore, Figure 4.7 shows the breakdown of bilateral

overseas development assistance to Indonesia's energy sector, with earmarked categories.[15] The majority of bilateral climate finance flows in Indonesia (68%) were aimed at funding mitigation and adaptation projects (CPI and MoF 2014). Nearly 7% of overall climate finance was devoted to energy policy and administration, which acts as a mechanism of social learning and policy diffusion.

Technical Capacity Building

In addition to agenda setting and norm diffusion, another way that the regime complex influenced Indonesian policymaking and behavior change was through trainings and workshops hosted by international organizations that promoted capacity building in local government. The trainings provided an opportunity to develop the technical knowledge and the capacity to manage government programs on renewable energy and emissions reduction tracking and to promote learning by doing. The convening of stakeholders also provided a pathway for social learning, where countries could share best practices and lessons learned from attempts at implementing policy and developing renewable energy industries (Clark et al. 2001; Haas and McCabe 2001). International organizations can also push particular policy frameworks and further disseminate international norms.

Nevertheless, in interviews with government ministries, individuals push back against the idea that trainings and workshops have a direct impact on policy adoption, implementation, and technology diffusion in Indonesia. Stakeholders assert that policymaking and the setting of objectives happen first as a result of domestic pressures, not as a direct result of participation in trainings or workshops.[16] Trainings typically are attended by middle-management delegates or representatives from ministries, not decision-makers or persons of authority. Thus the decision to embrace a particular policy pathway may already be decided ahead of the decision to send delegates to a particular technical training hosted by an international organization. Furthermore, as shown in Figure 4.7, the bilateral development aid earmarked for energy education training was only 1% (OECD 2014). This indicates that capacity building is not a large priority and generally that the costs associated with capacity building are less than those associated with project financing.

Nevertheless, the training still succeeded in promoting technical capacity building, social learning, and norm diffusion. One example of this influence is demonstrated in Indonesia's standards and labeling and energy efficiency lighting policies.

[15] The financial aid for wind, solar, and energy research were all under 1% of total ODA, so were not included in this figure.

[16] Various stakeholder interviews, 2014.

Indonesia adopted energy efficiency and energy diversification policies in the 1980s following its first energy crisis. Indonesia's second major energy crisis in 2008 prompted initial discussions about the creation of a separate unit for renewable energy within MEMR, since the existing unit was too small to handle the tasks.[17] It was not until 2010, following the G20 Summit in Pittsburgh and SBY's infamous 26/41 Commitment that EBTKE was created with much more capacity and authority to manage renewable energy and energy efficiency policies and oversight. This signaled a change in the government's will to allocate resources for renewable energy and energy efficiency promotion.

Indonesia's National Energy Conservation Master Plan, adopted in 2005, stated the goal to reduce energy intensity by 1% annually until 2025 (IEA 2017).[18] The National Energy Management Blueprint adopted in 2006 provided an action plan of energy efficiency and energy conservation measures to achieve this objective, including the following activities: mandatory energy conservation of government office buildings and SOE energy service companies, an energy labeling program, and an energy-efficient lighting program in the residential sector. These policy objectives indicated a willingness of the government to enforce top-down energy conservation incentives and mandates.

Following the creation of Indonesia's national action plan on energy conservation, UNEP representatives visited Indonesia in 2009 and 2010 to discuss an eventual labeling requirement for compact fluorescent lightbulbs.[19] The UNEP offered to provide training on monitoring, verification and evaluation for standards, and labeling for lighting. The UNEP GEF en.lighten initiative was created in 2009 to accelerate the global market transition to energy-efficient lighting technologies and phase out incandescent bulbs. In 2011, UNEP-GEF en.lighten offered trainings in lab testing and monitoring to various Indonesian government ministries, such as the National Standardization Agency of Indonesia, the Directorate General of Customs and Excise, and the Ministry of Trade, to support capacity building for compliance. At the same time, there were efforts by EBTKE to issue a phaseout regulation for inefficient bulbs, but issues arose in reaching consensus with other ministries. The only policy in place at the time was a voluntary labeling program based on a locally derived lumen/watt-based energy efficiency index from 2008.[20]

In the following years there was a growth in LED lighting in emerging markets in the region. Producers from China, Korea, and Japan were aggressively introducing LED products. Eventually, Ministerial Regulation No. 18/2014 was passed to phase

[17] MEMR interview, 2014b.
[18] See En.lighten initiative www.enlighten-initiative.org/ResourcesTools/GlobalPolicyMap.aspx.
[19] MEMR interview, 2014b.
[20] As indicated during interviews with Indonesia's government ministries, Jakarta, Indonesia, 2014–2015.

out inefficient lighting in Indonesia in 2014.[21] There was a nine-month window for producers and manufacturers to take products off the market. A major influence on this policy development was bilateral support from Japan, Korea, and Australia (through the UNEP) on integrating minimum energy performance standards (MEPS) and label combination into the energy efficiency policies. The UNEP, Asia-Pacific Economic Cooperation, and ASEAN+3 also offered policy support and development that included recommendations and networking opportunities to demonstrate best practice in the region as far as energy-efficient lighting, standards and labeling, and MEPS.

The fragmented institutional landscape of the clean energy regime complex changes the way that member countries benefit from participating in these organizations. As outlined in Chapter 3, organizations may be largely epistemic and thus focus on disseminating knowledge and information on best practice around renewables, or diffusing norms. Thus, member countries' participation may lean toward symbolic rather than substantive contribution. The objectives and messaging of a number of key initiatives and organizations in the clean energy regime complex are still unclear and have limited reach within relevant Indonesian government agencies. Examples include the SE4ALL, the CTCN, and even IRENA. Despite representing a member state or having designated representatives within these initiatives or organizations, Indonesian policymakers have limited awareness of the programming or resources offered by these initiatives or organizations since they require little commitment or participation from member states, and interaction with member states is limited.[22] Government representatives who participate in these international organizations may not have the capacity to widely disseminate the resources and information across key ministries. Furthermore, a change in government administrations often results in turnover and loss of institutional knowledge when government staff are redistributed across ministries. For instance, the CTCN held its first training of Nationally Designated Entities for Asia in Thailand in December 2013. The designated official from Indonesia who attended this training was the secretary of the Transfer Technology Working Group, National Council of Climate Change of Indonesia. However, according to sources in Indonesia, the National Council of Climate Change does not have the authority or the capacity to reach other key ministries to disseminate this information in a substantive way.[23] This may explain why the work of the CTCN remains vague and unfamiliar to stakeholders in Indonesia following participation in training.

[21] MEMR interview, 2014b.
[22] As indicated during interviews with Indonesia's government ministries, Jakarta, Indonesia, 2014–2015.
[23] MEMR interview, 2014b.

Turning to the capacity-building mechanism, there is some evidence of the impact of the regime complex in terms of the transfer and implementation of policies during Period 2. As demonstrated through energy efficiency standards for lighting, the initial indication of interest by the Government of Indonesia was followed by international support from various agencies like the UNEP to usher in stronger policies, ultimately leading to a phaseout of inefficient lighting. Policy adoption and implementation of renewable energy targets were strongly influenced by domestic political interests in energy security. There was no significant international funding for capacity building during the three periods studied, which may be because development aid is typically provided through trainings and workshops that have minimal costs compared to project-level funding that has a large budget. Notably, the government representatives who attend the workshops led by international organizations may not have the authority to integrate or institutionalize programs beyond their designated program. They furthermore may have limited bandwidth to widely disseminate information, which is necessary to increase capacity building on a large scale.

Period 3: Shifting Political Will for Spurring Renewable Energy Deployment

After becoming a net oil importer, Indonesia adopted several key regulations affecting the energy sector with increasing prioritization of renewable energy and diversification during Period 3. The foundational energy regulations to note are the right to energy, the targets of renewable energy in the energy mix, the liberalization of power generation, and various energy and electricity development plans (see Table 4.2). Indonesia's energy development planning is set out through the KEN and its Blueprint of National Energy Management as well as the National Electricity Plan [*Rencana Umum Ketenagalistrikan* (RUKN)], which sets out targets for national electrification and specifies investment plans outlined in the long-term electricity supply business plan of the PLN. The energy development targets are created with electrification targets in mind.

The 2005–2025 KEN, adopted with Presidential Decree No. 5 (2006), originally set a target of 15% of renewables in the energy supply, with capacity targets of geothermal (9.5 GW), hydropower (500 MW on grid, 330 MW off-grid), solar energy (80 MW), biomass (810 MW), and wind (250 MW on grid, 5 MW off-grid) (IEA 2015). The 2014–2050 Blueprint of National Energy Management (RUKN) was signed into law in October 2014 with Government Regulation No. 79/2014 (GoI 2014). This law sets out targets for reducing oil use by increasing renewable energy capacity in the energy mix up to 23% by 2025 and up to 31% by 2050

Table 4.2 *Key energy regulations in Indonesia*

Key regulations and year of adoption	Description of regulations
Ministerial Decree No. 2/2006	• Obligates the PLN to purchase RE-generated electricity from facilities with a capacity falling between 1 MW to 10 MW and provides for fiscal and nonfiscal incentives
Presidential Decree No. 5/2006	• Sets a target to reduce oil use by 20% by 2025, while increasing the new and green capacity mix to 15% by 2025: 5% biofuel, 5% geothermal, 5% biomass, nuclear, hydro, and solar
Government Regulation No. 26/2006	• Revision of Gov. Regulation No. 10/1989 in order to secure national electricity • Prioritizes utilization of locally available RE resources for electricity generation • Process of procurement is implemented through direct selection (w/o tender)
Ministerial Decree No. 32/2008	• Mandatory biofuel consumption requiring a certain percentage of fuel mix to include biofuels
Law No. 30/2007	• Sets out guiding principles of national energy management, i.e., energy access in remote areas/post-disaster context • Establishes the National Energy Council as the authority to design and formulate long-term energy policy
Law No. 30/2009	• Attempts to reform the electricity sector (replaces Law No. 15/1985) • Allows for electricity supply to be distributed by either central or regional governments through the PLN or regionally owned utilities • Allows for IPPs to generate and sell electricity to end users in Indonesian market, ending the monopoly of the PLN and opening up the market for IPPs • Establishes energy access as a legal right
Government Regulation No. 70/2009 (RIKEN)	• Creates the National Energy Conservation Master Plan • Mandatory assignment of an energy manager, energy auditing, and an energy conservation program for users • Mandatory EE standards and labeling • Gov. incentives and punishment for noncompliance
Presidential Regulation No. 39/2014	• Negative Investment List: list of energy businesses closed to foreign investment, (e.g., power generation less than 1 MW capacity) and those open to foreign investment under certain conditions, (e.g., maximum ownership between 49% and 95%)
Law No. 21/2014 (Geothermal Law)	• Replaces Geothermal Law No. 27/2003 • Reclassifies geothermal so it is no longer considered mining, so that exploration and development can be carried out in forested areas • Central gov. instead of local gov. now handles tendering for geothermal projects • Creates new pricing rules

Table 4.2 (*cont.*)

Key regulations and year of adoption	Description of regulations
Government Regulation No. 79/2014	• 2014–2050 Blueprint of National Energy Management (RUKN) • Sets targets for reducing oil use by increasing renewable energy capacity in the energy mix up to 23% by 2025 and up to 31% by 2050
Presidential Regulation No. 18/2020	• Sets out the National Mid-Term Development Plan (2020–2024) • Sets out Indonesia's GHG emissions reduction targets for key sectors: forestry, energy, agriculture, transportation, industry, peatland, and waste management
Presidential Regulation No. 112/2022	• National Electricity Plan (RUKN 2019–2038) • Provides blueprint for national electricity planning that integrates renewable energy target shares outlined in Indonesia's NDCs • Sets mandatory phasing out of coal-fired power plants

Note: Gov. = government, RE = renewable energy, EE = energy efficiency, IPP = independent power producer. Source: Cahyafitri 2014; Castlerock Consulting 2010; Climate Transparency 2023; Damuri and Atje 2012; GoI 2014; Senoaji 2009; SSEK 2023

(GoI 2014). The 2014 amendment included revised targets for the energy mix to be 25% oil, 22% gas, 30% coal, and 23% renewable energy (GoI 2014).[24]

Fast Track II Prioritizes Increasing Diversification

Demonstrating a shift in policy priorities for renewable energy, the Government of Indonesia adopted Fast Track Program II launched by PR No. 4/2010 (amended to 48/2011) with an increasing prioritization on renewables. Fast Track Program II aimed at boosting generation capacity and prioritized renewable energy (49% geothermal, 17% hydro), with the remaining coming from coal (30%) and natural gas (3%) (APEC 2013). In 2014, the first phase of the Fast Track Program had reached only 73% of the target, and Fast Track Program II projects had hardly gotten to the approval stage, signifying that the deadlines for these programs were overly optimistic. Major obstacles causing delays in these projects included financing issues and lengthy permit and prolonged land acquisition processes (Enerdata 2014).

35,000 MW Plan Catalyzes Domestic Resources, Mainly Coal

The Fast Track Program delays led the new Widodo administration to replace and rebrand them as the "35,000 MW Plan." The plan aimed to develop 35,000 MW of

[24] ADB interview, 2015.

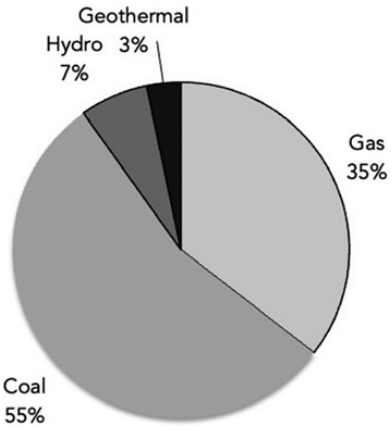

Figure 4.8 Breakdown of 35,000 MW plan by energy resource.
Source: Enerdata 2015; PLN 2015

installed generating capacity between 2015 and 2019, largely from coal production (55%) and natural gas (35%), with only 10% sourced from renewable energy, including hydropower (7%) and geothermal capacity (3%) (see Figure 4.8) (Enerdata 2015). The Widodo administration received substantial international backlash over the amount of coal in this plan (Deloitte 2016). Nevertheless, the program only completed 19% of its goal by 2020, demonstrating that the targets were overambitious (ADB 2020a). While the progress achieved under the 35,000 MW Plan fell short of targets, the plan catalyzed significant capacity development that likely would not have happened in its absence and collective focus on removing some of the barriers to deployment.

The Government of Indonesia further institutionalized its commitment to emissions reduction and to ramping up renewable energy deployment with the adoption of Presidential Regulation No. 18 (2020) and Presidential Regulation No. 112 (2022), the Acceleration of Renewable Energy Development for Electricity Generation, respectively (SSEK 2023). PR 18/2020 sets out Indonesia's GHG emissions targets in several key sectors, including forestry, peatland, agriculture, energy, transportation, industry, and waste management, while PR 112/2022 includes mandatory phaseout of coal-fired power plants and greater fiscal and nonfiscal incentives for renewable energy projects (PwC 2023; SSEK 2023). The National Electricity Master Plan (RUKN) for 2019–2038 increases the target for share of renewables in the electric mix to 28% by 2038 (MEMR 2019b).

Despite ambitious goals, Indonesia's energy policies lack strong incentives for private investors. The main incentive to promote the acceleration of renewable energy is a feed-in-tariff scheme adopted by the MEMR (ADB 2020b; Baker

McKenzie 2014; Halstead et al. 2014). Additionally, one of the most important drivers of development in Indonesia is the obligation of the state-owned electricity utility, PLN, to off-take renewable energy generation. According to MEMR Regulation No. 31/2009, the PLN is obligated to off-take electricity generated from small and medium scale renewable energy power plants up to 10 MW, or the excess electricity from state electricity enterprises, regional electricity enterprises, private enterprises, cooperatives, and NGOs, in order to improve electricity supply (Kuncoro 2011). However, the PLN also has a legal obligation to supply inexpensive electricity to consumers, making renewable energy with more expensive tariffs less attractive.

Aside from the lack of strong incentives for private investment, the regulations governing the energy sector are sometimes inconsistent and frequently changing. The policies and laws are not always implemented following adoption. Despite these limitations, there is cause for optimism. As Pradeep Tharakan, the ADB's senior climate specialist, argued in the 2015 ADB report:

> Notwithstanding some differences in the goals expressed in various planning documents, common priorities are evident. The power sector in the country is increasingly being oriented towards reduced reliance on oil, and increased reliance on coal, gas, geothermal, hydropower and energy efficiency. Larger power plants and power interconnections form a significant pillar of the government's strategy. A move towards cost-reflective tariffs is being pursued alongside a renewed push for expanded electricity access. Finally, expanding the role of the private actor in the power sector is being actively promoted. *(Tharakan 2015: 38)*

Additional political and economic challenges remain obstacles to renewable energy development. These include the inflation of the Indonesian rupiah, upon which feed-in-tariffs are based, vested interests, power-sharing conflicts among different levels of government, and corruption. These political barriers may prevent adequate development of the energy sector to meet growing energy demands. However, as Tharakan outlines, the domestic commitment to increasing the share of renewables incorporated into energy development and electrification targets demonstrates domestic political interest convergence and normative change.

Just Energy Transition Partnership (JETP)

At COP26 in Glasgow in 2021, the first JETP was launched for South Africa, combining financing from France, Germany, the United Kingdom, the United States, and the European Union (IISD 2022). The next year at the G20 leaders' summit in Bali through engagement under the PGII, the Indonesia JETP deal was announced by President Widodo and the leaders of the IPG, including the United States, Japan, Canada, Denmark, the European Union, France, Germany, Italy, Norway, and the United Kingdom (IISD 2022; USWH 2022). The JETP

dramatically increased the target for renewables deployment and emissions reduction in Indonesia under the condition of support from international development aid. The JETP utilizes innovative finance models to help coal-dependent emerging economies make a just energy transition, and is financed by multilateral development banks, bilateral development banks, and development financing agencies (IISD 2022). Under this ambitious 2050 net zero plan, Indonesia would expedite its emissions reduction goals and ramp up renewable energy generation to 34% by 2030 with significant support from multilateral development banks, bilateral development aid, and private financing (USWH 2022). The increasing role of renewables in Indonesia's move toward an energy transition is evidence of the impacts of both international pressure and support to decarbonize. These programs speak to the government's shift in prioritization of renewable energy over time, demonstrating the impact of the clean energy regime complex. They also demonstrate the challenge of achieving all aspects of energy development, including energy access to clean and modern fuels and energy security.

The JETP in Indonesia includes an initial commitment of USD 20 billion in financing from bilateral and multilateral donors, as well as private sector investors, and leverages the expertise, resources, and operations of multilateral development banks. To support the JETP, USD 10 billion in IPG funding was pledged to catalyze USD 10 billion of private financing from Glasgow Financial Alliance for Net Zero (GFANZ): involving investments from Bank of America, Citi, Deutsche Bank, HSBC, Macquarie, MUFG, and Standard Chartered (IISD 2022; JETP 2023; USWH 2022). One important aspect of the JETP is the ADB Energy Transition Mechanism, which provides blended financing to support early retirement of coal plants in Indonesia and other EMDEs (ADB 2023a).[25] In Indonesia, an initial memorandum of understanding between the government and the ADB was signed with support from the Energy Transition Mechanism Partnership Trust Fund and CIF Accelerating Coal Transition window to accelerate the early retirement of the 660 MW Cirebon Electric Power coal project and replace it with clean energy (ADB 2023b).[26]

The JETP Indonesia program aims to cap carbon emissions at 290 MT of CO2 in 2040, down from baseline value of 357 MT CO2, and to establish a net zero emissions goal in the power sector by 2050, speeding up the target by 10 years and, importantly, accelerating deployment of renewable energy by at least 34% of all power generation by 2030 (USWH 2022). The renewable energy targets outlined in the JETP would double renewable deployment over the next decade compared to current plans. As shown in Figure 4.9, the forecasted growth in

[25] MEMR interview, 2024. [26] See www.adb.org/what-we-do/energy-transition-mechanism-etm#cirebon.

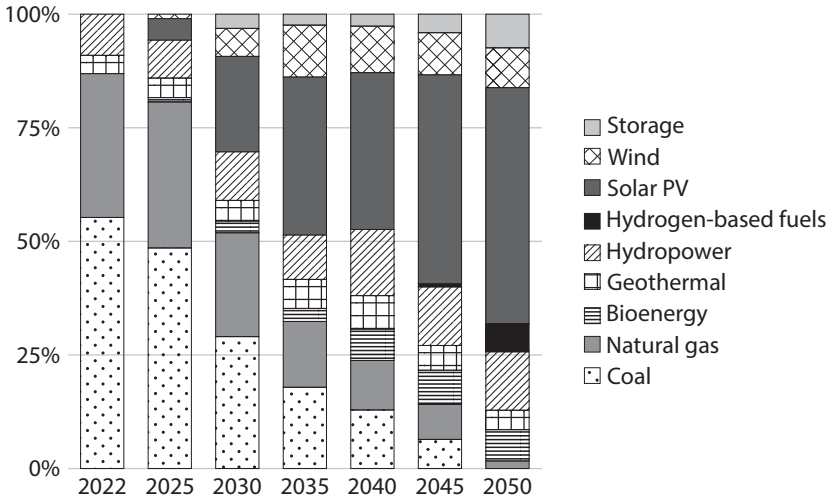

Figure 4.9 JETP scenario capacity by technology type.
Source: JETP 2023

renewable energy technologies energy would be exponential, while coal and natural gas are set to decline by 2050.

The JETP created a separate secretariat with funding for institutional capacity building and training from ADB and Japan, which institutionalizes the partnership between the Government of Indonesia and multilateral and bilateral donors and international organizations (various clean energy regime complex institutions) (JETP 2023). The JETP secretariat coordinates working groups led by international institutions including the Technical Working Group, led by the IEA, which consolidates the energy transition pathway for power sector transformation and identifies priority projects; the Policy Working Group, led by the World Bank, which analyzes policy enablers and provides recommendation to support power sector decarbonization; the Finance Working Group, led by the ADB, which identifies financing needs, requirements, and vehicles for particular projects; and the Just Transition Working Group, led by the UNDP, which synthesizes the Just Transition Framework to guide the just and equitable aspects of implementation of the overall JETP program (JETP 2023: 1). To realize the power sector transformation, in particular the investment in renewable deployment and transmission build out, estimated investments of at least USD 97 billion between 2023 and 2030 and USD 580 billion between 2023 and 2050 are needed to achieve the JETP goals (JETP 2023: 3).

Indonesia's energy transition plans have increased the share of renewables over time, but neither the Fast Track plans nor the 35,000 MW plan are as ambitious as the goals outlined in the JETP (with the aid of international support). However,

even with the less ambitious plans for electrification and energy transitions, only a fraction of the targeted capacity was developed, which casts doubt on the likelihood of achieving the JETP plans. Over the course of 13 years between the 2009 G20 Summit in Philadelphia and the 2022 G20 Summit in Bali, the trajectory of Indonesia's energy transition followed through with SBY's original intent in the 26/41 Commitment that Indonesia would commit to emissions reduction at a much more ambitious rate with international support. However, if Indonesia is to meet the JETP net zero targets, the barriers and delays that plagued the first electrification and energy development plans will need to be addressed with the support of international organizations working on the ground in Indonesia.

Conclusion: Regime Complex Impacts on Policy Adoption and Social Learning

This chapter has provided an overview of the impact of the clean energy regime complex on policy change in Indonesia related to climate change mitigation and the promotion of renewable energy. The complex challenges facing the Indonesian government in achieving development targets – eradicating poverty, increasing electrification rates, and ensuring energy security while increasing renewable energy and reducing emission – is a lofty objective when political, geographic, and economic hurdles exist. The government's engagement in the clean energy regime complex suggests that it is committed to achieving targets but requires financial and technical assistance. The analysis of the clean energy regime complex's impact is revealing in the ways in which the various organizations, initiatives, and forums have impacted Indonesian domestic policymaking through social learning, capacity building, and financial aid. Multilateral and bilateral organizations were highly active in promoting policy and regulatory change to catalyze an energy transition and climate mitigation in Indonesia. The regime complex can have an important impact through social learning as policies are diffused from an international level to national and subnational actors across both the public and private sector in Indonesia (see Table 4.3). The clean energy regime complex can further impact Indonesia's target setting and policy adoption through the reputational aspects of various member organizations, as seen through SBY's 26/41 Commitment to emissions reduction or the "naming and shaming" around the prioritization of coal development in the 35,000 MW Plan. The major evidence of norm and policy diffusion is in the change in prioritization of renewable energy between Fast Track I and Fast Track II. The latter Fast Track program clearly prioritizes building renewable energy installed capacity, followed by increasing shares of renewable energy development targets in the 2014 and 2019 RUKNs.

Table 4.3 *Summary of facilitating conditions of regime complex impact in Indonesia's renewable energy policy adoption*

Period factors	Conditions and mechanisms of impact	Summary
Period 1: Suharto's fall and democratization 1973 Oil crisis and Asian financial crisis	Condition for impact: • Oil crisis positively impacts energy security and AFC negatively impacts economic security Regime complex impact through mechanisms: • Finance and technical assistance have little impact	• Rampant corruption and vested interests in oil industry • Impacts of external shocks benefit energy security and lead to technology lock in • Lack of political will ➢Regime complex has limited impact in Period 1
Period 2: Rise of energy diversification: Indonesia becomes a net oil importer and hosts UNFCCC COP-13 in Bali	Condition for impact: • Energy insecurity is high following failures of domestic oil industry • Repeated exposure to international discourse and norms around climate change mitigation, led to reputational pressure to commit to emissions reduction, changing political will Regime complex impact through mechanisms: • Social learning and persuasion/pressure to reduce emissions, particularly after COP-13 • Capacity building through trainings and technical assistance focused on energy efficiency and the phaseout of incandescent lighting	• External shock reduces energy security • Political will for policy change on climate change as government integrates climate considerations into development planning and creates new agencies focused on climate change ➢Regime complex effectiveness increases toward the end of Period 2 as there is increasing awareness and prioritization for climate change, as well as energy efficiency
Period 3: Prioritization of renewables: Indonesia formally leaves OPEC	Condition for impact: • Energy insecurity is high • International pressure • Political will shifts Regime complex impact through mechanisms: • International finance/ technical capacity building, social learning • Policy advising, financial aid for geothermal development	• Energy insecurity increases need for diversification • Political will for energy transition increases • Adoption of stronger renewable energy prioritization in energy development plans and institutionalization of climate and renewable energy within government ministries ➢Regime complex has visible impact in Period 3 as government institutionalizes climate change as a priority in government agencies

From the analysis of the evolution of renewable energy and emissions reduction policy in Indonesia, there is evidence that the clean energy regime complex has had the most impact through the social learning mechanism in influencing the adoption of policy. In contrast, through processes of social learning, government officials became aware of the benefits offered through renewable energy development and energy diversification, as they increasingly saw opportunities to bolster energy security and receive international funding to do so. President SBY's 26/41 Commitment on emissions reductions targets is one example of social learning. The international forums on emissions reduction and climate change organized by the clean energy regime complex had an impact in pressuring the Indonesian government to adopt emissions reduction targets. At the 2009 G20 summit, SBY made a statement committing to 26% emissions reduction, which was eventually translated in policy and implemented at the national and subnational levels. The social learning process is demonstrated through the clean energy regime complex diffusing information on emissions reduction to the Indonesian government, followed by learning and capacity building at the national and subnational levels of government about how to implement policy targets by calculating projects that result in emissions reduction. This reinforced the development of renewable energy as a climate-mitigating technology and a primary vehicle for emissions reduction.

The clean energy regime complex's social learning and capacity-building mechanisms supported a change in Indonesia's domestic political interests toward diversification with renewable energy, which is evident in the energy policy shifts between Period 2 and Period 3. Indonesia's shift to becoming a net oil importer in 2008 raised energy security concerns, which opened a window of political opportunity for the clean energy regime complex to support change in domestic political interests toward an energy transition. There was also a shift in the connections between climate change and energy development manifested in the creation of the EBTKE in the MEMR in 2010. However, while social learning is evident in policy change and institutional reform, numerous regulatory barriers still need to be removed to catalyze private sector investment in renewable energy in Indonesia.

The energy security issues surrounding Indonesia's shift from oil exporter to oil importer and a drop in production levels were significant in influencing energy policy change and the prioritization of energy diversification. Indonesia's increasing openness to the clean energy regime complex during this period suggests that energy security concerns played a role as a motivating factor. This does not negate the fact that the regime complex has had an impact through the social learning mechanism; however, it does show that the openness to the policy change likely depended on the presence of domestic political interests converging in favor of renewable energy development, rather than the exclusive influence.

There is support for the argument that the clean energy regime complex was successful in incentivizing the convergence of domestic political interests in favor of renewable energy development. Proving this causal relationship between clean energy regime complex incentives and domestic political change is challenging because there are many intervening variables in the causal chain. The stance of Indonesia at international forums (climate change negotiations and G20 summits) in favor of emissions reduction and climate change commitments changed over time, suggesting a shift in domestic special interest groups. Untangling the impact of the clean energy regime complex from the external shocks of changes in energy security and the convergence of domestic political interests is challenging, since these two variables occurred simultaneously. While there is an undeniable evolution of policy that increasingly supports renewable energy development, from the emissions reduction policy to renewable energy targets to the shift between Fast Track Programs I and II regarding renewables, there is still a long way to go to remove the long list of barriers to renewable energy development. Vested interests in fossil fuels have slowed the implementation of renewable energy policy and explain why the Indonesian government has not devoted full support and government resources to accelerating the development of its renewable energy potential.

While less funding was allocated to energy training and education during the periods studied, this may be due to lower total budget for technical assistance as opposed to lower government or donor prioritization. The examples provided of technical capacity building on energy-efficient lighting were demonstrative of effectiveness of the clean energy regime complex in promoting technical capacity building, and eventually was followed by the phaseout of incandescent bulbs. More broadly, without adequate technical capacity building that can be institutionalized across different levels of government, there is unlikely to be transformative change of institutional capacity.

Lastly, the intervening variables of energy shocks and domestic political interests are undeniable in the impact on Indonesia's energy development planning, as demonstrated by the continued subsidies for fossil fuels and prioritization of coal development. The interaction between domestic political interests in energy security coincided with the impact of the clean energy regime complex in driving forward renewable energy development. It is unlikely that the Indonesian government would have been so open to energy diversification, renewable energy policy adoption, and climate change policy adoption if energy security was not at the forefront of the policymakers' concerns. This is demonstrated by the fact that the interests in energy diversification and renewable energy development emerged after energy security concerns increased following energy crises and Indonesia's shift to becoming a net importer of oil.

These insights are useful in determining the clean energy regime complex's impact through international policymaking, technical capacity building, financial assistance, and various international forums on clean energy development and emissions reduction that act as conveners for clean energy on the evolution of policymaking in EMDEs. Looking at the overall effects of the clean energy regime complex, there are systemic impacts on the evolution of renewable energy policy in Indonesia. There is an increasing consciousness of the connection between energy mix, emissions reduction, climate change, and renewable energy development among policymakers at different levels of government. This shift coincided throughout the time periods studied. The clean energy regime complex has an impact on policy and behavior change over time, but more attention could be devoted to filling gaps and addressing stubborn barriers to policy implementation. Chapter 5 looks at the development of geothermal energy technology in Indonesia as a specific case study of the impacts of the clean energy regime complex and its overall effectiveness in addressing barriers to development.