Just Energy Transition in the Philippines:

Principles and Proposals for Action

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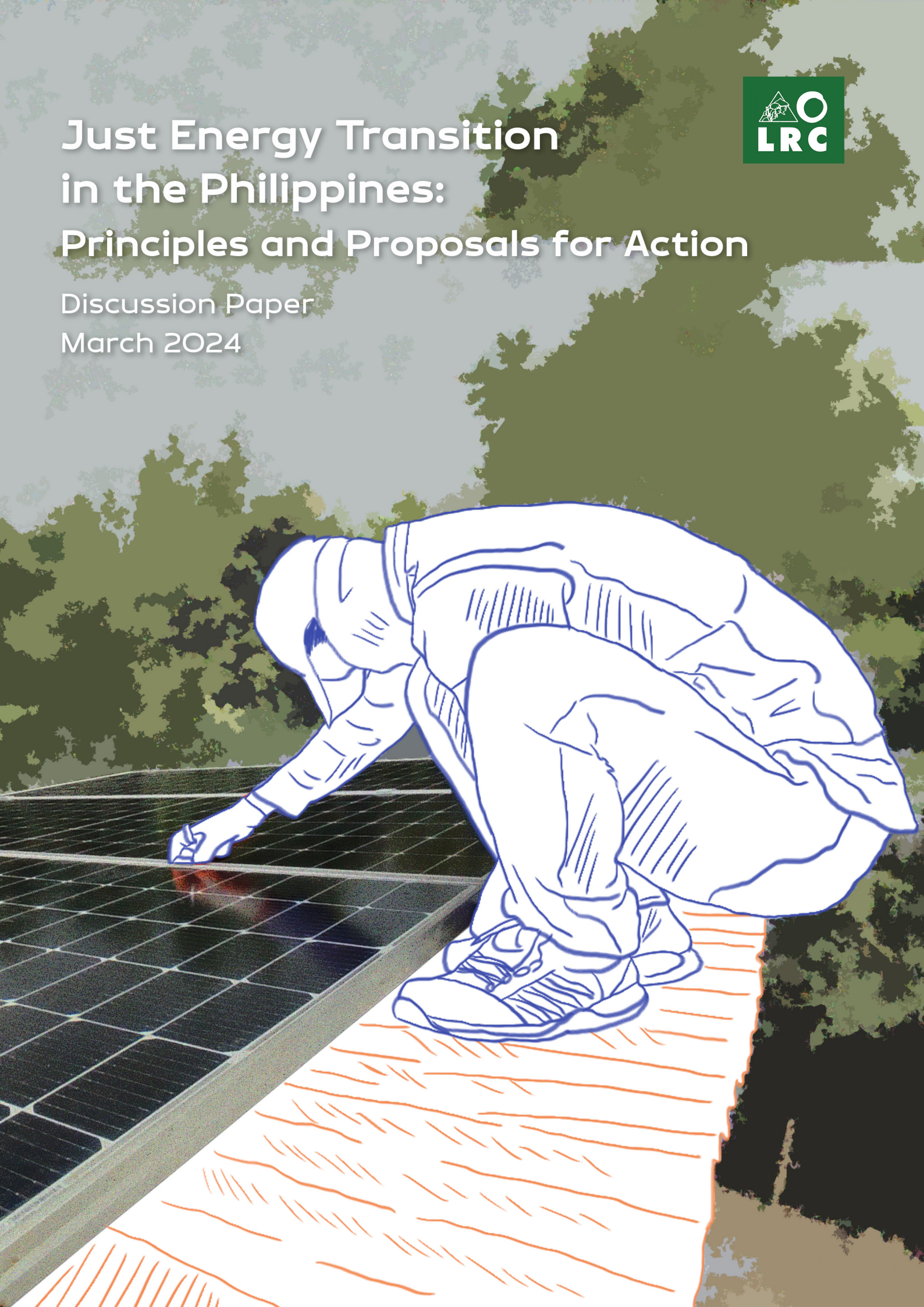

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Cover: *A T'boli-Manobo community in the village of Ned, Datal Bonlagon, South Cotabato leapfrogs from having no electricity to having power generated from an off-grid microgrid photovaltic system. Distributed renewable energy (DRE) systems are an environmentally friendly energy solution for far-flung communities.*

LRC

LRC is a legal and scientific non-governmental organization that helps indigenous peoples and poor upland rural communities entangled in resource rights issues. LRC is the Philippine member of Friends of the Earth International. For more information or any clarification about this publication, send an email to lrcksfoeph@gmail.com.

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Executive Summary

The Philippine energy sector is heavily privatized. Of the country's current energy capacity, coal dominates the energy supply at 42%. Renewable energy (RE) sources, such as hydroelectric, geothermal, wind, biomass, and solar,[1] make up 29.3% of the supply, oil at 16.2%, and natural gas at 12.4%.[2] This distribution aligns with the global energy landscape. Despite institutional commitments to lessen reliance on coal, its global use remains high, with 65% of coal power plants still in operation.[3]

The most recent Intergovernmental Panel on Climate Change reports that the window for climate action is rapidly closing, and—unless immediate and urgent policies are put in place—the effects of climate change may soon be irreversible.[4] Following this, the idea of transition surfaces as a response to the climate crisis.

Among the current and developing transition policies, phasing out the fossil fuel industry through financing, beginning with coal, is one of the most dominant models. This transition model is largely dependent on market support for 'foreign direct green investments', which, for the most part, reveal an asymmetric relationship between the so-called green finance and foreign direct investment with environmental sustainability and energy equity.[5] This is not just transition.

The recent global crises have underscored the risks of relying heavily on fossil fuels, which not only reinforce energy security issues but also accelerate the pace of climate change.[6] Another consideration is the increasing human rights violations in relation to RE development.[7]

A new area that has gained prominence in recent years as the discussion on responding to the climate crisis broadened is 'just' transition, specifically just energy transition (JET). Its primary focus has been on the societal need for a fair transition to a low-carbon economy. Similar to loss and damage, JET is a climate justice mechanism that asks: (1) Given our understanding of the impact of extractivist industries and the predominant role of fossil fuels in driving climate change, how can we effectively tackle this complex problem and (2) how does our current situation inform our energy consumption and production approaches to ensure that no one gets left behind as we reach our climate targets?

The JET framework, which was shaped by energy, climate, and environmental justice movements, brings to fore the shifts in energy control to communities, democratizes wealth and the workplace, advances ecological restoration, and gives emphasis on racial justice and economic and social equity. A community-focused transition re-localizes most production and consumption, and retains and restores cultures and traditions.

Advocating for JET presents a pivotal moment to transition from an extractivist economic model to a regenerative economy, fundamentally transforming our energy system. It opens a window for transforming the model of development itself, which currently creates an unsustainable system largely driven by corporate energy interests.[8]

Recommendations

Drawing from principles of just transformation, anchored on energy sufficiency, sovereignty, and democracy and informed by the just minerals transition framework, the recommendations below prioritize sustainable RE, decentralization, and viewing energy as a public good. These recommendations aim to spearhead a comprehensive transformation of the country's energy system:

- **Policy review.** The Philippine Development Plan[9] and the longer-term AmBisyon Natin 2040[10] need to be reconstituted to achieve just transition and, therefore, some of the hallmarks of a regenerative economy. This means the institutionalization of just energy transition.

  This encompasses the critical review of existing government policies that are labeled as renewable but carrying significant environmental risks, such as the Mini-hydroelectric Power Incentives Act (RA 7156) and the Waste-to-Energy proposals and projects. It will also entail striking a balance between reconfiguring features of the present economic system and the ideals of a regenerative economy to ensure the availability of jobs and the alleviation of poverty, among others.

  For instance, the review of the Renewable Energy Act must also be undertaken and anchored on the energy sufficiency principle toward a low-carbon pathway. A timely review of the Electric Power Industry Reform Act is also imperative. Recognizing the universality of the 'right to energy' reclaims energy as a public good. Hence, a just transition plan necessitates a restructuring of the Philippine energy system as a whole.

• **Governance mechanism.** The government must clearly outline coordination, planning, and dedicated resources toward a just transition that has for its goal ending reliance on and expansion of fossil fuels through a concrete time-bound phase-out plan. It is critical to provide a regulatory framework based on accurate and realistic demand projections, as well as the development of local operational and maintenance capacities.

• **Sustainable economic development.** New opportunities must be created to replace dominant industries. This should include social protection mechanisms capable of mitigating or preventing negative consequences when combined with national climate policies and strategies. This will entail the institutionalization of meaningful community participation and decision-making rights, as well as civil society engagement in energy planning and processes of local government units (LGUs), complemented by an inter-LGU energy planning, especially for those with shared energy resources. At all levels, women's participation must also be ensured, where women are not only accounted for but also prioritized.

• **Regional and rural development.** All regions and local communities must have the capacity and support to effectively undertake just transition, particularly those directly affected by industrial shifts. This requires harmonizing policies, such as land use and zoning and agrarian reform, with just transition to ensure that these will benefit local communities and prevent displacement (e.g., prevention of conversion of agricultural lands into RE projects) and encroachment on critical biodiversity areas, among others.

• **Research and development.** Dedicated policies and resources toward developing capacities, research, and development of innovative and appropriate indigenous technologies to support just transition are warranted, prioritizing renewable technology that is climate-resilient, locally appropriate, and low-impact. Just technology transfer must also be ensured.

• **Safeguards.** Instituting safeguarding policies is important to ensure that just transition is conducted in a manner that protects and respects community rights—particularly the right to free, prior, and informed consent (FPIC)—and redress mechanisms for human rights violations.

Such mechanisms should include transparency and accountability as primary conditions such as, but not limited to, information disclosures. These include Environmental Impact Assessments and contracts related to renewable projects. To strengthen safeguarding mechanisms, applications for projects must clearly indicate potential, direct, indirect, induced, and cumulative impacts, as well as any other stringent standards covering environmental, socioeconomic, and human rights impacts. These requirements should not be limited to a one-time evaluation but conducted as periodic and timely audits throughout the entire duration of projects, particularly for commercial and large-scale renewable initiatives.

In addition, information and disclosures must include both energy and raw material use to ensure a clean supply and value chain. Full disclosures must be accessible, ensuring they are easily understandable and readily available to affected communities and stakeholders. Hence, all processes involved in the project must be made available to the public and must undergo public vetting.

• **Sustainable renewable energy (SRE).** SRE promotion must be grounded in energy sovereignty and operationalized through a decentralized energy system. The government can complete its rural electrification program with distributed renewable energy (DRE) systems, working hand in hand with indigenous peoples and communities, and promote distributed energy sources, conducted through a rights-based approach to SRE development. Decentralized and community-based projects help ensure the right of people to choose affordable, renewable, and sustainable energy sources. It, hence, frames energy primarily as a right rather than a commodity.

This should be complemented by improving policies to guarantee that basic sectors and communities have access to, align with, and derive benefits from SRE technologies and DRE (e.g., financial support, zoning delineation). These must be anchored on the promotion of and concrete support for community-owned and managed systems.

Introduction

To arrest climate catastrophe, fossil fuel sources of energy must be abandoned. The transition to renewable energy (RE), however, is not without pitfalls. Not only the source of energy must be changed in a post-climate world but also the very framework for using energy itself must be transformed.

The Intergovernmental Panel on Climate Change reports that the window for climate action is rapidly closing, and—unless immediate and urgent policies are put in place—the effects of climate change may soon be irreversible.[11] In fact, by the end of January 2024, the world had breached the 1.5-degree benchmark over a twelve-month period for the first time on record.[12] Climate impacts, already experienced worldwide, particularly in the Global South, are expected to intensify. The repercussions of a progressively warming planet will result in more severe losses and damages, exacerbating the already felt effects.

Although least responsible for the climate crisis, poor nations are nevertheless obligated to cut emissions under the principle of common but differentiated responsibility. Under its Nationally Determined Contribution (NDC), countries shall be cutting their emissions and adopting renewable energy technologies (RET) in sourcing its energy requirements. This forms part of the energy transition.

A new area that has gained prominence in recent years as the discussion on responding to the climate crisis broadened is 'just' transition, specifically just energy transition (JET). Its primary focus has been on the societal need for a fair transition to a low-carbon economy. Similar to loss and damage, JET is a climate justice mechanism that asks: (1) Given our understanding of the impact of extractivist industries and the predominant role of fossil fuels in driving climate change, how can we effectively tackle this complex problem and (2) how does our current situation inform our energy consumption and production approaches to ensure that no one gets left behind as we reach our climate targets?

Just transition was initially framed from the labor perspective to address more than just a shift to renewable energy but also ensure that there is justice in the transformation process (i.e., not only a shift in technology but also in the upskilling and retraining of laborers and creation of new jobs). Essentially, as we move away from coal-fired power plants due to their contribution to the climate crisis, it is crucial to consider how simultaneously closing these power plants and transitioning to RE will not simply swap a fossil fuel-based energy system for a 'green' version that might pose similar risks, thereby perpetuating the crisis in a different form. This focus on transition has required broadening of considerations, interrogating energy production and consumption and business-as-usual practices.

The Global Energy Landscape

Between 1990 and 2020, the total energy supply of the planet by source had been largely dominated by oil, coal, and natural gas. Biofuels and waste, nuclear, hydropower, and other RE sources have gained prominence since the early 21st century, but their collective contribution remains insufficient to offset the substantial dependence on oil, coal, and gas in our energy landscape. While commitments to lower this heavy reliance in the next two decades exist, it is expected that the usage of oil, coal, natural gas will still increase, with the consumption of oil peaking in 2040[13]—a forecast that does not align with the temperature goals set in the Paris Agreement.

In fact, while numerous countries, multilateral development banks, and other international financial institutions have pledged to reduce reliance on the three major fossil fuels, especially coal, the global usage of coal remains substantial. A study from 2021[14] highlighted that 65% of coal power plants worldwide are still operating, totaling 2,067 gigawatts (GW). Of this, 6% (184 GW) are actively under construction, 9% (297 GW) are in pre-construction stages (defined as announced, pre-permit, or permitted), 12% (396 GW) have been retired, and the remaining 7% (224 GW) are slated for retirement by 2030. This proves that while there are efforts to move away from fossil fuels, such efforts remain inefficient, inadequate, and often rhetorical. Total fossil fuels consumption will still rise over the next decade the world over.

The global pattern of industrial placement and, consequently, economic wealth is the underlying condition that positions the geographical distribution of energy supply. This energy resource maldistribution, stemming from geographical and political disparities, exposes the natural distribution of fuels and the real focus of industrial and social growth. There is a misallocation of energy consumption not only in terms of geography but also in population and economic activity.[15]

The distribution discrepancies between countries are determined by their consumption structures and supply linkages. A study that looked at countries' consumption patterns through their energy cost-related expenditures[16] shows that wealthier countries had higher energy costs on goods and services with high value added, while poorer countries spent more on meeting daily needs like food and direct energy.[17] Those in vulnerable positions often rely more on energy-intensive, processed goods and services. According to estimates, every 1-% increase in food prices, which are heavily impacted by production cost of which energy is a major input, will push nearly 10 million more people to extreme poverty.[18] Thus, the climate crisis also needs to be contextualized with the issue of energy poverty. This underpins not only the fact of differentiated responsibility but also the disparities in economies and development.

Recent geopolitical tensions have prompted short-term policies aimed at addressing immediate impacts, inadvertently sidelining considerations for climate-mitigation targets and longer-term sustainability commitments in development agendas. The undermining of energy transition continues through subsidies and tax breaks for fossil fuels.[19] Paradoxically, there is an increase in investments in fossil resources.[20] Some European countries are in fact looking for other sources abroad. This has, among others, significant implications on environmental issues, for example, concerning liquified natural gas in the Asia-Pacific region and investments in infrastructures, such as for liquefied natural gas (LNG) floating storage and regasification units in the Philippines.[21]

The inequity in the global energy system can be gleaned from the fact that during the recent Ukraine and Russia conflict, profits for energy businesses increased while many suffered because of high energy and daily living costs.[22]

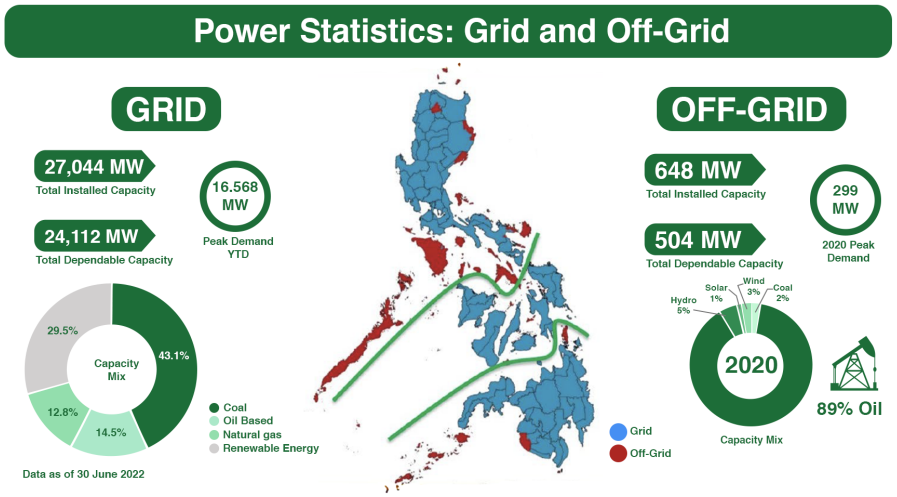
The RE sector has, at present, widespread support as an industry that promises to both mitigate climate change and provide energy access to millions who currently lack it. However, there have been rising reports of human rights violations related to the sector.[23]

Philippine Energy and Power Landscape

The situation in the Philippines mirrors the global landscape.

The Philippine electricity sector is fully privatized, with Meralco holding 80% of the market. Yet, this remains insufficient in meeting the electricity needs of the country, which requires approximately 43 GW of additional capacity by 2040, considering its population as well as its developing economy. Of its current energy capacity, coal dominates the energy supply at 42%. RE sources, which includes hydroelectric, geothermal, wind, biomass, and solar energy,[24] make up 29.3% of the supply, followed by oil at 16.2% and natural gas at 12.4%.[25]

However, the country and its citizens remain energy insecure, lagging behind other Southeast Asian countries. More than 2 million households in the Philippines still have no access to electricity.[26] Wood stands as the most widely used fuel for cooking, relied upon by approximately 8.9 million households.[27] Furthermore, while a large percentage of the country is on-grid, with a total installed capacity of 27,044 MW (and a total dependable capacity of 24,112 MW), off-grid areas, which are heavily reliant on oil, have a total installed capacity of 648 MW (versus its total dependable capacity of 504 MW).



Despite and perhaps because of all of these, the Philippines is ranked as the 30th out of the 80 most expensive countries when it comes to electricity prices, with the Greater Manila Area ranking as having the third highest electricity rate in Asia. The higher costs of electricity and other requirements force vulnerable individuals into energy poverty and, in some cases, acute poverty.[28]

Electricity and coal consumption

As earlier noted, coal continues to dominate the energy mix in the Philippines. While global reliance on coal persists, the Philippines has notably experienced an exponential surge in coal's share within its energy mix over the past decade, with a significant portion directed toward powering the electricity sector. In fact, coal consumption by the electricity sector is at 83% in the Philippines, which is significantly high compared to its neighbors China (58%), Indonesia (73%), and Vietnam (61%).[29]

Oil and petroleum

As of November 2022, the Department of Energy (DOE) reported that the country's crude oil imports were at 2,493 million liters (ML) in year-to-date (YTD) as of June 2022. This is more than double or 105.5% more than the 1,213 ML in YTD in June of 2021. During the first half of 2022, crude oil imports were 100% sourced from the Middle East, with the Kingdom of Saudi Arabia supplying 56.79%, making it the biggest crude oil supplier to the country.[30]

As regards finished petroleum products, China was the country's biggest exporter in 2021, but it later suspended oil export. This meant that local oil companies transitioned to importing mostly from South Korea (34.08%) and Singapore (20.09%). With a total oil import of 81.9% (2021), the country was and continues to be heavily dependent on China, Singapore, and South Korea.[31] This dependency on oil importation renders the Philippines vulnerable to the volatility of the global market and geopolitical tensions.

Philippine Energy Policy Landscape

By the 1990s, what was initially an electric industry based on a public utility model was transformed to become increasingly privatized. As the country embarked toward the development of RE sources, the government virtually left this to the hands of the private sector. In 1997, Executive Order (EO) No. 462[32] was enacted, enabling private sector participation in the exploration, development, utilization, and commercialization of ocean, solar, and wind (OSW) energy resources for power generation and other energy uses. This was amended by EO No. 232 to specify the scope of production-sharing contracts and government share, as well as the assistance, incentives, and privileges extended to OSW developers.[33]

With the Electric Power Industry Reform Act (EPIRA) in 2001,[34] the government envisioned "a framework for the restructuring of the electric power industry". EPIRA encompassed two key reforms: (1) the restructuring of the electricity supply industry and (2) the privatization of the National Power Corporation (NAPOCOR). This led to the separation of the various components of the power sector: generation, transmission, distribution, and supply. EPIRA became the basis to sell the assets, generation, and transmission (i.e., power plants and transmission lines) of NAPOCOR to individual investors.[35] In 2008, the State Grid of China Corporation acquired a 25-year concession for a 40% stake (for USD 2.95 billion) in the National Grid Corporation of the Philippines (NGCP). It is a move largely regarded as an effective privatization of the NGCP that rendered the country's energy sovereignty vulnerable.[36]

EPIRA, however, did not realize its intended goal. Instead, it has resulted in the rise of conventional energy, such as coal, and the deregulation paved the way for the privatization of the electrical industry, which only gave rise to energy monopoly and increased consumer costs.[37] The country has one of the highest power rates in Asia, and the dominance of NAPOCOR in the power generation industry was simply replaced by large power corporations.[38]

In 2006, language to effect mitigation of GHG emissions found articulation in the Biofuels Act,[39] which mandated the use of biofuels as a measure to develop and utilize indigenous renewable and sustainably sourced clean energy sources to reduce dependence on imported oil and mitigate GHG emissions.

The uptake for biofuels, however, has been hampered by feedstock availability and pricing concerns. The law's biodiesel blending requirement has remained stagnant at 2%, as biodiesel in the country is solely sourced from coconut. This led to farmers experiencing price volatility[40,41] and the environment suffering from the dangers of biofuels. Biofuel production gives a strong incentive to expand agriculture, which has traditionally been a primary driver of land clearing.[42]

Moreover, most locations suited for feedstock agriculture are located near biodiversity hotspots.[43] While positioned as an alternative to potentially replace fossil fuels and their products, the environmental sustainability of biofuel remains complex. Issues spanning ecological and socioeconomic factors, such as the food versus fuel debate, necessitate deeper research and stringent implementation of social and environmental safeguards.[44]

In 1991, Congress enacted a law granting incentives to mini-hydroelectric power developers known as the Mini-hydroelectric Power Incentives Act (RA No. 7156) in order to provide power developers the "necessary incentives and privileges to provide an environment conducive to the development of the country's hydroelectric power resources to their full potential". As a result, small hydropower, couched as one type of RE, has grown exponentially in the last decade.

Small hydropower, often assumed to have no emissions and with low rehabilitation concerns, is being promoted to fulfil rising energy demands.[45] Scientists, however, have warned against labeling the entire sector as 'ecologically friendly'[46] because the definition of small hydropower differs by country, ranging from 1 MW to 50 MW. In the Philippines, it is defined as 101 kilowatts (KW) to more than 10,000 KW (0.101 to 10 MW). According to some research, the cumulative impacts of small hydropower must be considered to account for their environmental, economic, and social consequences.[47] Additionally, the absence of accountability and monitoring raises doubts about the extent to which socioeconomic benefits are reaching local communities.[48]

In 2008, with the Renewable Energy Act,[49] the Philippines committed to the "accelerated development and enhancement of RE sources, and the development of a strategic program to increase their utilization." It took 18 years before this was enacted by the Congress. Among its salient provisions is the reduction of coal imports by 20% within 10 years of its passing. The law mainly incentivizes RE players, granting both fiscal and nonfiscal incentives, such as a seven-year income tax vacation; duty-free imports; and special realty tax rates on RE machinery, equipment, and supplies, among others.[50] Likewise, energy customers and local governments with RE-producing facilities are also given incentives in the form of a subsidy for their energy consumption.[51]

In the Renewable Energy Roadmap 2017–2040, which sets the pathways for achieving the country's RE goals as required by the Renewable Energy Act, the DOE presented numerous commitments, including increasing the country's installed capacity for clean energy to at least 20,000 MW by the year 2040 and reducing GHG emissions and avoidance by 75% of the business-as-usual scenario from 2020 to 2030.[52]

Meanwhile, the updated the National Renewable Energy Program (NREP) 2020–2040[53] (released in 2021), which includes the Green Energy Option Program,[54] sets new RE targets, including reverting the share of RE to at least 35% of the power generation mix by 2030 and aspiring to increase it to at least 50% by 2040. Translated, this could equate to about 15 GW of wind and solar by 2030.

The mandated feed-in tariff (FIT) policy, which was designed to provide a guaranteed set price to RE investors for 20 years to promote renewable technology, is an important aspect of the law and the NREP. FITs are regarded as an effective support mechanism to promote RE development. However, an evaluation of the efficacy of FIT found that the increased capacity of FIT-eligible generating plants has not resulted in a greater share of RE in the power generation mix. [56]

The implementation of the Renewable Energy Act has been slow. FIT was only implemented four years after the law was passed, while other mechanism—such as the Renewable Portfolio Standard (RPS), net metering, Green Energy Option, and priority dispatch—have yet to be fully implemented, with only the RPS having mandated compliance in 2020.[57] More than a decade since the passing of the Renewable Energy Act, coal remains the dominant energy source of the country.

In 2016, the Green Jobs Act[58] was enacted, incorporating aspects of the just transition framework. Section 2 of the Act provides the declared policies of the State to:

> (a) Affirm labor as a primary social economic force in promoting sustainable development;
>
> (b) Afford full protection to labor, local and overseas, organized and unorganized, and promote full and productive employment and equality of employment opportunities for all; and
>
> (c) Promote the rights of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.

Section 2 also states: “The State shall identify needed skills, develop training programs, and train and certify workers for jobs in a range of industries that produce goods and render services for the benefit of the environment, conserve natural resources for the future generation, and ensure the sustainable development of the country and its transition into a green economy. In recognition of the participation of individuals and business enterprises in jobs creation, the State shall provide incentives therefor.”

In addition to all of these are the Energy Efficiency and Conservation Act of 2019,[59] the Murang Kuryente Act of 2019,[60] and the recently legislated Microgrid Systems Act of 2022.[61]

A salient feature of the Murang Kuryente Act provides that to reduce electricity rates, a portion of the net national government share from the Malampaya Natural Gas Project (amounting to PHP 208 billion) will be allocated to pay for stranded contracts costs, as well as stranded debts assumed by the Power Sector Assets and Liabilities Management Corporation (PSALM). Essentially, PSALM absorbs the safety net for energy corporations with consumers paying for stranded contract costs and National Power Corporation debts to PSALM through the universal charge (passed on to consumers).[62]

While its implementing rules and regulations (IRR)[63] state that no new universal charges for stranded contract costs and stranded debts shall be collected upon effectivity of the IRR, the Malampaya Fund, which is expected to be commercially depleted by 2027, will soon cease. Without the Malampaya share and with PSALM's inadequate budget, the government-owned and controlled corporation created under the EPIRA is put on a path of debt with high interest rates.[64] Inevitably, this will create a scenario where, unless safety net features favoring electric corporations are removed, the burden of charges will once again be passed on to consumers.[65]

PSALM is seeking an extension of its corporate existence beyond 2026, as mandated by law.

The Philippine Development Plan (PDP) 2023–2028, released by the National Economic and Development Authority, provided that the government "will collaborate with the private sector and international community to scale up sustainable and green investments that propel economic transformation for a prosperous, inclusive, and resilient society. Innovative policies and measures to advance low-carbon development will also be pursued while ensuring just transition and job creation." The PDP likewise said that "the government will strengthen the enabling environment for private sector engagement in mitigation, promote the development of green technologies, and implement transformative policies and actions to curb GHG emissions while ensuring just transition of the workforce," as well as "prioritize actions based on the mitigation hierarchy that lead to the best outcomes for the communities and the environment, wherein the following strategies are prioritized in order to: (a) avoid adverse impacts, (b) minimize impacts that cannot be avoided, (c) restore or rehabilitate damage or degradation, and (d) offset or compensate for unavoidable impacts."[66]

Philippine Energy Plan 2020-2040

REFERENCE SCENARIO	CLEAN ENERGY SCENARIO
• Present development trends and strategies continue	• 35% and 50% RE share in the power generation mix by 2030 and 2040, respectively
• 35% RE share in the power generation mix by 2040	• 5% blending for biodiesel starting 2022
• LNG importation starting 2022	• 1.5% increase in aggregated natural gas consumption from the transport and industry sectors between 2020 and 2040
• Energy consumption levels that support an accelerated economic expansion post COVID-19	• 10% penetration rate of electric vehicles for road transport (motorcycles, cars, jeepneys) by 2040
• Current blending schedule for biofuels (2% biodiesel and 10% bioethanol) maintained until 2040	• 5% energy savings on oil products by electricity 2040
• 5% penetration rate of electric vehicles for road transport (motorcycles, cars, jeepneys) by 2040	• At least 12% reduction in the GHG emission for the NDC
• Current efforts on Energy Efficiency and Conservation (EEC) as a way of life continues until 2040	

Achieving this requires substantial shifts in investment from the current reference scenario (REF) toward the clean energy scenario (CES).

Sector	Scenario	
	REF	CES
Upstream [1]	**1,176.50**	**1,183.87**
Oil and Gas	502.51	502.51
Coal	656.06	656.06
Renewable Energy (Pre-Development)	17.93	25.30
Downstream	**384.90**	**354.73**
Oil Depot	103.51	93.94
Oil Import Terminal	67.76	53.11
LNG Terminal [2]	88.77	88.77
Biodiesel	0.28	4.84
Bioethanol [3]	124.59	114.07
Power	**5,582.05**	**6,110.95**
Generation	5,233.70	5,762.60
Transmission [4]	348.35	348.35
Total	**7,143.45**	**7,649.55**

Notes:

1. Includes exploration and development (production)
2. Based on the approved LNG Project applications
3. All bioethanol supply requirement is to be produced locally
4. Proposed Transmission Projects from 2021-2030 (Source: Draft Transmission Development Plan 2021-2040)

DOE's Philippine Energy Plan (PEP) 2018–2040 laid down plans to build more baseload power despite a current moratorium[67] on endorsements for greenfield coal power plants. That said, the PEP 2022–2040, which was drafted and released after the onset of COVID-19, reflecting more current commitments, provided that by 2040, fossil fuels—oil, coal, and natural gas—are projected to decrease their shares significantly under CES to 35.5%, 20.8%, and 11.6%, respectively. Meanwhile, the RE target outlined in the CES sees an enhanced aggregate share of 32% compared to the 25.5% in the REF.

Within this context, the Energy Transition Mechanism (ETM) was launched by the Asian Development Bank (ADB) in COP26. The ETM is touted to be a funding vehicle to phase-out coal while scaling up renewables in Southeast Asia, which will try and ensure the transition toward a greener, low-carbon, resilient economy. Among its goals are to retire 50% of the entire coal fleet, with a combined capacity of 30 GW in Indonesia, the Philippines, and Vietnam in the next 10–15 years, and to help cut 200 million tons of CO2 emissions per year.[68] The ETM finds translation in the Just Energy Transition Partnership (JETP), with the ADB committing to provide financing for technical assistance.[69] Within this mechanism, the other end of energy-as-emission can be gleaned not in just transition but in offsetting. Already, as the JETP deal is being rolled out in Indonesia, some concerns and foreboding for the Philippines are being raised. These include JETP being heavily influenced by corporate interest and the absence of civil society participation in the process. Additionally, the scheme of coal-to-clean offsets will simply give rise to the dominance of the carbon market, allowing for countries to exchange offsets and apply them to their climate goals or NDCs.[70] Ultimately, it does not compel corporations to actually curb their emission behavior.

The country's NDC is at best vague and optimistic. It is short on a coherent decarbonization strategy. It pegs a high percentage for conditional commitments and minimal (2.71%) using the country's resources (unconditional). Considered as politically supported blueprint for climate goals, the country's NDC is a testament to its grounding on whether its transition is not only impactful but just. Because the country is highly vulnerable to the impacts of the climate crisis, a refinement and urgent development of transition, mitigation, and adaptation plans must be in place, underpinning the principle of common but differentiated responsibility as a matter of historical responsibility and climate justice.

The Energy Efficiency and Conservation Act of 2019 (EEC Act) has the potential for promoting energy efficiency technology in the country. The establishment of the Minimum Energy Performance Standards (MEPS) and Minimum Energy Performance for Projects (MEPP) and energy labeling have been its principal approaches to manage household energy consumption. A diagnostic review of energy efficiency development in the Philippines, however, found that despite the law, relevant government agencies are unable to engage energy service companies to implement energy-efficient products in their facilities; government agencies and local government units are also unable to adopt energy efficiency because of their inability to access energy efficiency services; and knowledge and capacity regarding energy efficiency remain low overall.[71]

In 2022, the Microgrid Law was enacted. Supporters of this law see it as a viable alternative to the existing energy generation and distribution system in the country. Studies reveal that installing extra RE capacity in the Philippines is exceptionally appropriate owing to its archipelagic terrain,[72] high irradiation,[73] and low cost of alternatives. There is yet to be a comprehensive data on microgrid installations in the country. In promoting its implementation, there exist studies that could significantly inform and enhance strategies, particularly regarding the promotion of decentralized RE. Among the challenges noted are on identifying the appropriate technology, capacitating of manpower, the availability of parts for maintenance, and the initial financial barrier to set it up. [74]

There are also the many versions of the Waste-to-Energy (WtE) Act, which remain pending in both the House of Representatives and the Senate.[75] WtE is not without concern. Among these is the fact that, despite attempts of the government to frame it as RE, it is not. Municipal waste, on the whole, is not only made up biomass, as defined by the Renewable Energy Act.[76] The ongoing concerns revolve around weak implementation and monitoring, particularly regarding WtE plants. There is apprehension that these facilities might generate additional toxins, exacerbate environmental degradation, and potentially release more harmful GHGs instead of effectively serving as a reliable source of RE, as often marketed.[77] Moreover, proposals for WtE stand to alter the Clean Air Act by allowing the use of incineration.[78]

Transition discussions in the Philippines are also couched as policies toward climate change adaptation and mitigation, with proposals of allocating PHP 464.5 billion from the total PHP 2.2 billion budget of DOE to climate change adaptation and mitigation. Of this proposed allocation, 67% or PHP 11.11 billion is earmarked for Risk Resilience Program convergence projects.[79]

Because of its geography and location, the Philippines is at risk when it comes to climate impacts. This risk is exacerbated due to increasing global temperature levels. Already, this is felt on a practical level as, for instance, a prolonged El Niño will require extensive energy to cool homes and other buildings. Structurally, looking at planning from the perspective of the climate-resilience-energy nexus is also important, as more intense and frequent typhoons, landslides, and other hazards can disrupt power generation, destroy connectivity and infrastructure, and make electricity more expensive.

In the last 30 years alone, there have already been plenty of policies instituted by the government with regard to Philippine energy. With the shifting global energy landscape, as well as new technologies and scientific knowledge, it is expected that the Philippines will continue to enact new laws and amend existing ones that will have for its focus RE and the optimistic transition away from fossil fuel sources. It is, however, a meandering path forward.

Concerns have also been raised with government proposals for alternative energy sources, such as LNG, green hydrogen, and small modular reactors (SMRs).

LNG is touted as a transition gas, ensuring supply as the country bridges dirty energy to RE. The DOE sees natural gas supplying 32% of energy requirements by 2040, which is almost the same as the outlook for renewable sources at 35%.[80] Price disruptions, however, have thrown doubt on the affordability of LNG as a bridge fuel.[81] Moreover, the environmental impact of LNG leaves much to be desired: methane, its main component (being fossil methane gas in liquid state), is 80 times more potent than carbon dioxide in the short term.[82] Its lifecycle beginning from upstream emissions—from extraction through fracking, to liquefaction, to export—tallies to massive amounts of emissions. Of serious concern, following the depletion of the Malampaya gas field, the DOE, working with private corporations (e.g., First Gen LNG Holdings Corporation of the Lopez family; Excellent Energy Resources Inc., a subsidiary of SMC Global Power Holdings Corporation; Batangas Clean Energy Inc., a joint venture of Gen X Energy LLC and Ayala Group's ENEX Energy Corporation; Singaporean LNG firm Atlantic, Gulf & Pacific Company; Shell Energy Philippines Inc.),[83] is fast-tracking the creation of an LNG terminal hub along the coast of one of the country's richest marine biodiversity areas for its LNG imports.

Meanwhile, green hydrogen, made through electrolysis using RE, is being considered as a 'fuel of the future' by the Philippine government,[84] seeing it with high potential for decarbonizing different sectors, including transportation and utility.[85] However, green hydrogen, which requires massive amounts of RE to function and vast amount of water in its process,[86] is an inefficient use of electricity and water. Also, while carbon-free, it still emits nitrous oxide, which is six times worse than methane combustion.[87]

In February 2022, then President Duterte signed EO No. 164 (Adopting a National Position for a Nuclear Energy Program, and For Other Purposes).[88] In the said EO, the government adopted a national position based on economic, political, social, and environmental targets. It also reintroduced the Nuclear Energy Program (NEP),[89] which is "a process that starts with the inclusion of nuclear power in the energy mix based on a prefeasibility study on the need for and viability of nuclear power" that "includes the development of nuclear power infrastructure and encompasses the planning and construction, operational, commercial, and post-operational stages of nuclear power plants" (Section 3). EO No. 164 is a direct result of EO No. 116 (Directing a Study for the Adoption of a National Position on a Nuclear Energy Program, Constituting a Nuclear Energy Program Inter-Agency Committee, and for Other Purposes).[90]

Since assuming the presidency, President Bongbong Marcos has often made mention of the need to review and re-examine state policy regarding nuclear energy—a revival of the policy of his father, the deposed Ferdinand Marcos, Sr. He even highlighted nuclear power in his first State of the Nation Address in July 2022. Yet, nuclear power remains to be an unsafe product of an extractivist industry, especially for a seismically active and climate hazard-prone country such as the Philippines.

SMRs are gaining currency in the name of energy security. Nuclear is supposedly clean energy, but its sustainability in terms of impact need not be belabored. SMRs, in fact, could exceed the toxic waste generated by conventional plants.[91]

Finally, the Marcos, Jr. administration issued EO No. 18, which introduces "green lanes" where permits for business will be streamlined. This will include large-scale RE investments, which have a large environmental footprint. In fact, the first company to get a certification under EO No. 18 is SunAsia Energy, Inc., which is going to build a floating solar farm. If mishandled, such projects will have an impact on community livelihoods, human rights, biodiversity, and more.

On the whole, despite policy rhetoric to promote RE, actual results show lackluster performance. These aspirations juxtaposed with the current energy system reveal structural contradictions. The country's RE policies remain largely dependent on market support for corporate and 'foreign direct green investments', which, for the most part, reveal an asymmetric relationship between so-called green finance and foreign direct investment with environmental sustainability and energy equity.[92]

Just Transition: A History

Just transition takes its roots from the labor movement, specifically after World War II, when a massive shift took place from wartime to peacetime economy. Tony Mazzocchi, an American labor leader and high official of the Oil, Chemical and Atomic Workers International Union, proposed that the transition benefits to be granted to World War II veterans be provided as well to oil, chemical, and atomic workers who will also be disenfranchised by the government's disarmament policy. This framework was used for discussions on the kinds of interventions necessary (both social and economic) to secure the livelihoods of workers in the shift from high-carbon to low-carbon, climate-resilient economies.[93,94]

Thus, even early on, just transition could not be separated from the environmental movement, as workers and communities would need support for the intentional shift away from fossil fuel-related activities. This was codified in the Paris Agreement, reminding Parties to take into account "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities".[95] Due to new environmental protection policies that will necessarily leave fossil fuel-reliant workers without jobs, there is a need to include a perspective that will make sure they are protected.

By 2018, G7 countries had already identified 'just transition' as a policy goal. The following year saw the beginnings of country policies, for example, the establishment of the Just Transition Commission in the European Union (EU). By 2020, the Commission had allocated € 57 billion to the Just Transition Fund.[96] While regarded by many as a recognition of the necessity for just transition, some analysts regard the policy, specifically on transition financing, which is geared toward supporting coal transition, as threatening "to derail societies' plans to achieve a low-carbon policy".[97] This is because the policy serves as a signal of support to investors, highlighting "how coal will continue in the country for a further 18 years, and as a result there is a subsequent signal to the international community that high-income countries are still supporting coal."[98] This is also a signal to the oil and gas industries. If coal is to be sustained until 2038, will oil and gas be supported after that, and if so, at what point? It is likely that the transition funding plans developed by nations that generate all three of these energy sources—oil, gas, and coal—will last anywhere from 20 to 80 years, as in the case scenarios, for example, of Scotland, Germany, and Indonesia.[99]

The urgency by which just transition must take place is superseded by the interests of carbon majors where "in the same timeframe society now supports just transition policy which will subsidise the fossil fuel industry."[100] The plan to phase out the fossil fuel industry through financing, beginning with coal, has become the dominant model for transition. Arguably, this is not just transition.

Although just transition policies are still nascent and developing, it is critical to evaluate their immediate, medium, and long-term consequences; it is important to interrogate whether they are actually just. Clearly, there has been some variance in the understanding and interpretation of what just transition is.

Recently, a broader definition of just transition has arisen, which calls for justice in more general terms, and is not limited to laborers. It emphasizes the need to not continue to sacrifice the well-being of vulnerable groups for the sake of advancing others, which has been the direct result of an economy driven by fossil fuels,[101] the timeliness by which the climate crisis needs to be addressed, the accountability for past adverse effects, and other considerations for a meaningful just transition.

Transforming Energy Systems: Principles of Just Energy Transition

A just energy transition framework challenges decision makers to take a step back and take a deeper look at energy policies and asks relevant stakeholders the following questions:[102]

- Are environmental benefits and damages distributed equitably?
- How will local and host communities participate in natural resources governance?
- Does the policy provide any preventative measures to avoid ill effects from the proposed activities (can include bonds, insurance, or restorative costs)? Do they address and rectify past adverse effects?
- Do policies mention and/or approach global and transboundary issues? How do they address, mention, and/or approach natural resources in the context of international trade and finance flows?
- Do the policies define or provide specific protections for identified areas? This brings in the idea of location, where are the events happening (local, national or international levels).
- Do the policies provide for any time bound targets and/or work according to global or national timelines? This keeps in mind transition timelines and also the speed of the energy transition (is it happening fast enough).

These considerations can be rationalized under a "Just Framework" proposed by Raphael Heffron:

J	TRANSITION	Justice	Justice takes the form of 3 forms of justice Distribution Procedural Restorative
U		Universal	Universal takes the form of two universal forms of justice Recognition Cosmopolitanism
S		Space	Space brings in location, where are 'events' happening? (in principle, at local, national and international levels)
T		Time	Time brings into transition timelines such 2030, 2050, 2080 etc. and also 'speed' of the energy transition (i.e. is it happening fast enough?)

The following principles are proposed towards crafting a just energy transition framework:

Energy sufficiency. Energy sufficiency is premised on the equitable use of energy and on ecological limits. It departs from the concept of energy efficiency, which is enshrined in law in the country through RA 11285. This distinction is being advanced because efficiency by itself will not accomplish much, "unless it goes hand-in-hand with an intelligent restraint of growth".[103] It is a useful frame in re-conceptualizing energy vis-à-vis development.[104]

Energy sufficiency rationalizes energy use within the ambit of a more ecological reckoning of development, as opposed to energy efficiency, which does not necessarily put a cap on harnessing energy. A sunset review of RA 11285 should be undertaken precisely to reframe the lens through which energy production and energy use are viewed.

Energy sovereignty and energy democracy. Energy sovereignty has to do with peoples' choices in the way energy is generated and consumed that is appropriate to their culture and responsive to their needs.[105]

Energy sovereignty is underpinned by democratic processes. When formulating energy plans, the government must ensure participatory processes with communities, especially those who will be affected by large-scale RE projects. Decisions on energy systems are essentially democratic undertakings, principally so when ecosystems, property ownership and use, culture, and other factors are at stake. Thus, communities must be ensured of their right to free, prior, and informed consent (FPIC), as well as rights of redress. For one T'boli-Manobo indigenous community in southern Philippines, neither solar farms nor coal mining makes sense within their indigenous cosmology. As a framework, sovereignty takes off from equity and justice, promotes self-determination, and deposits access to and control of resources in the hands of communities, which often result in the conservation of biodiversity and culture.[106]

Since 2010, 197 allegations of human rights violations have been processed by the Business and Human Resource Rights Centre.[107] Combating growing abuse is critical to ensuring a just transition to the low-carbon economy. This requires not only human rights due diligence but also stringent government regulatory mechanisms for protection, monitoring, sanctions, and penalties. At the minimum, projects must observe standards according to the UN Guiding Principles on Business and Human Rights[108] and the UN Declaration on the Rights of Indigenous Peoples.[109]

Decentralization. The current model of energy generation and transmission is centralized: it is produced in large power plants and then distributed over a networked grid. There are some drawbacks to this model: (1) it can lead to leakage; (2) it overwhelmingly benefits industry and cities and not communities in the surrounding areas; and (3) it contributes to environmental degradation.[110] The main issue, therefore, with centralized energy is its environmental footprint. Many large-scale energy projects are capital-intensive and typically provide energy to areas distant from the source.

Decentralization has found interest in view of the unsustainability of large-scale energy projects. Not only are decentralized energy projects smaller in scale and therefore have less environmental footprint, but they also typically involve community decision making. Decentralizing the energy system is aimed at putting power sources closer to the people.

As particular characterizations of decentralization, distributed energy sources (DERs) and distributed renewable energy (DRE) are alternatives to a monolithic but often inequitable centralized energy production and distribution. When premised on democratically controlled technology, they become an efficient and equitable way to meet the needs of communities.[111]

Concretely, as the government shifts to RE, new projects must be decentralized, for example, as in micro-grid systems powered by photovoltaic technology. In cities, self-contained systems or DERs have the potential to generate electricity for households and to produce surplus that can be sold to other households. These systems, especially where they are implemented by community-owned cooperatives, provide additional income for communities directly while ensuring their sustainability. DERs have emerged as a decentralized but an interconnected system that is powered by different RE sources. The benefits of DERs are manifold: more efficient use, less waste, better resilience, and reduced carbon emissions. [112]

Micro off-grid solar technology is ideal for remote communities, which can leapfrog from having no electricity to having renewable energy. Credit: EM Taqueban/LRC.

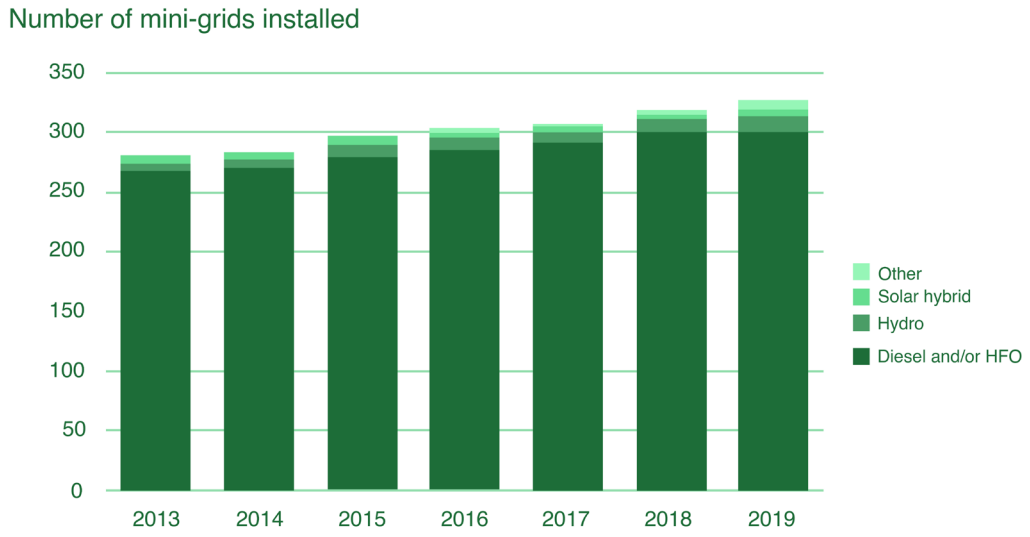
A subset of DERs is DRE, which is an energy system built at or close to the point of use, where RE is produced, stored, and used.[113] Typically off-grid, DRE is much more suited to the topography of the Philippines, especially in rural areas. DRE systems will be vitally important in providing indigenous peoples, who are concentrated in geographically isolated and disadvantaged areas (GIDAs), access to and control of energy. A recent study demonstrated that switching to photovoltaic-battery-diesel hybrids could result in considerable reductions in levelized cost of energy of up to 20% in remote, off-grid locations; however, this was limited to remote, off-grid locations.[114]

Enabling technology transfer and technology development must also be pursued collaboratively, for example, with the Department of Science and Technology (DOST) for research and development (R&D), local capacity enhancement, and so forth. Decentralized solutions must also be climate-proofed and anchored on resilience planning that factors in climate models and data, economic valuation, and standards, which promote people's climate resilience.[115]

RA 6038, passed in 1969, created the National Electrification Administration (NEA), which implements the rural electrification program (REP) for the country. As of December 2021, NEA has reported a 91-% rural electrification rate or 14,835,390 consumer connections.[116] Of the remaining areas which will be provided off-grid or missionary electrification, micro off-grid or isolated microgrid projects, which are examples of a DRE system, should be adopted.

The Microgrid Act of 2022 encourages the use of microgrids for total electrification in the Philippines, "prioritizing low-cost, indigenous, renewable, and environmentally friendly sources of energy." However, its definition of a microgrid includes those systems which are small in scale but are still connected to the grid and run on fossil fuels. While efforts have been made to streamline the application process for microgrid systems providers, it still falls short of a shift to a transformative RE policy. The graph below reveals that the energy sources for micro systems in the Philippines have been overwhelmingly fossil fuels.[117]

Equally important in rolling out the Microgrid Act are policy considerations for distributional equity—the cost of microgrid development and charging across use-cases. Subsidies rather than passing of cost, as in the current Universal Charge for Missionary Electrification (UCME) set-up, must be considered. A social welfare position can be taken, in which sufficiency and efficiency are determined by marginal social benefits and costs, thereby allowing for a more equitable assessment of the benefits of microgrids. Concretely, in GIDAs, rural or small island areas without access to financial support, government will take on the cost.[118]



The Philippines' installed mini-grids, by project. [119]

The International Renewable Energy Agency calls for the Philippine government to invest in off-grid areas using RETs, which can lower generation costs and provide reliable energy while also combating climate change.[120]

In March 2022, the Legal Rights and Natural Resources Center successfully piloted a project together with an indigenous community in South Cotabato that leapfrogged from having no electricity to a micro off-grid (or isolated microgrid) system using photovoltaic technology. This community is situated in the hinterlands of South Cotabato. Such a model may be viable in NEA's pursuit of REP, especially with the fresh mandate under the Micro-grid Systems Act.

Government support is integral for GIDAs, which are otherwise not viable commercially.[121,122] It is vital to enable a regulatory environment, accurate and realistic demand estimates, and developing local capacity for operation and maintenance.[123]

Just minerals transition. RETs and infrastructure necessitate mined minerals, which are now lumped as energy transition minerals. A large portion of energy transition mineral extractions occur on or near indigenous peoples' or peasant lands. It is estimated that ancestral domains include over 60% of mineral reserves in the Philippines.[124] Without an international and national policy, especially regulatory and accountability, to ensure just mineral transition, the environmental and social costs of RE will be borne by southern countries like the Philippines, which are already experiencing the impacts of the climate catastrophe.

The notion of historical responsibility underpins just minerals transition to avoid the mining for the energy transition as a neo-colonialist project and instrumentalized under the banner of 'green extractivism'. Such risks are apparent. In fact, global mining areas have more than doubled in the last three years, as the mining industry benefited on both the COVID-19 pandemic and the climate emergency. The most growth was seen in so-called 'critical minerals' required for energy transition.

What must be considered for just minerals transition is 'indispensable extraction', where resources shall only be extracted when they are essential to the functioning of society and ensuring wellbeing.[125] It is also premised on redistribution to correct resource intensity, which has powered the prosperity of rich nations.

In the same way that the principle of energy sovereignty and democracy ensures community participation, consent, and rights to redress, the same holds for the extraction of any material inputs needed to build energy infrastructure and develop and produce energy technologies. A just energy transition is founded on a just minerals transition.

In the recent years, there has been increasing resource nationalism and accountability among southern countries that are source for energy transition minerals.

Sustainable renewable energy. An expression of just transition in terms of RET is sustainable renewable energy (SRE). The renewability of energy sources in terms of supply for the next generations must consider its impact on people and planet. SRE provides a middle ground for energy choices in securing clean and affordable energy.

The defining characteristic of RE is the time required to replenish the energy. Coal and oil are not renewable sources because they take millennia to form, where solar is inexhaustible. Sustainable energy, on the other hand, considers the requirements of both current and future generations. Sustainability accounts for impact as well negative by-products, such as pollution.[126]

Not all RETs are necessarily sustainable. RE is considered sustainable when it conserves the environment, aids in the flourishing of people, and contributes to local economies.[127]

It is important to note, however, that all forms of RE ultimately have an environmental impact; what differentiates sustainable sources from unsustainable ones is the size of the footprint.[128] More importantly, while financing is required for capturing sustainable energy, the sources of the energy are generally free.[129] Again, supporting R&D and enhancing local capacities in the use and development of SRE technologies are integral.

Just feminist transition. Just transition must also involve women as decision makers. DRE system projects for communities, for example, must take into account the position of women, whose experience of poverty is exacerbated by energy poverty.

Micro off-grid solar technology is ideal for remote communities, which can leapfrog from having no electricity to having renewable energy. Credit: EM Taqueban/LRC.

At a practical level, women's traditional roles of managing households will be impacted by newly available energy sources. They are the first to bear the brunt of the repercussions stemming from the lack of access to energy. In other words, their often-subordinated roles correspond to their uneven access to political and economic power.[130] At a strategic level, land use decisions (e.g., on hosting solar farms or dams) have a tremendous negative impact on women's lives, especially in terms of sustainable livelihoods and food security.

This appreciation of women as political subjects and other principles form part of a 'feminist just energy transition', a frame which is emerging as a powerful tool in transforming the global energy system. A feminist analysis ensures that energy transition does not intensify patriarchy and gendered exploitation.[131] Feminist economics challenges neoclassical economics by highlighting the intrinsic tension between capital and life itself and proposing a redesign of production and consumption systems.[132]

At the minimum, the project of just transition carries with it the potential to break down gender norms and move toward developing energy infrastructure and services that improve the situation of women, including redistributing care work.[133] It must be a process that goes beyond merely 'adding women' to just transition. A transition can only be just if women's meaningful participation in addressing the root causes of injustice is promoted and protected.[134]

Energy as a public good. Arguably, the treatment of energy in the Philippines has been to (initially) regard it as a marketable public good. The principle of public goods is that they cannot be denied because of their vital importance to people's lives and as basic human rights. As a good, energy has increasingly been privatized making access more excludable and decisions regarding its production, transmission, and consumption highly dependent on market and corporate influence. This increase in privatization is underpinned by the notion that as a public good it stands the risk to be mismanaged. Current pricing and distribution scenarios, however, do not put privatization in a better light. As the effects of the climate crisis become increasingly tangible, energy policy moves from merely assessing marketable public goods to engaging in discussions about safety, health, and even survival. This highlights the essential nature of energy as a pure public good in an even more evident manner.

Existing energy policies, beyond those solely linked to RE, require thorough review. This review should aim to better align the generation, distribution, and management of energy with its status as a public good. Decision-making mechanisms, social participation, and governance criteria should better encompass and reflect its inherent nature as a public good.

Conclusion and Summary of Recommendations

Limitless growth is not always compatible with sustainable development. Systems change based on alternative to development paradigms should instead be pursued to address the climate crisis (and other crises). In other words, a discussion of energy brings into sharp relief the prevailing model of development itself.

The prevailing framing of development is the UN Sustainable Development Goals (SDGs), which have tried to marry environmental sustainability and development. But critics of the SDGs say they are still premised on economic growth—"ever-increasing levels of extraction, production, and consumption".[135] In fact, of the 17 SDGs, only four are involved in environmental sustainability; the rest zero in on development.[136] Further, current data contradicts the promise of detaching economic growth from its negative environmental externalities.[137] Sustainable development and its twin 'green growth' are an oxymoron.

Since its adoption in the Kyoto Protocol, just transition has gone beyond the demands of trade unions to proposals for the transformation of society itself. At the core of these proposals is the shift from the extractive economy (powered by fossil fuels) to a regenerative economy.[138] Regenerative economics disrupts developmentalism, which abides by the idea that economic development is indisputable and that economics dictates progress.[139] If development can only be sustained by limitless growth, then runaway climate change will not be averted. The calls for an assessment of the dominant ideas of growth economics and similar proposals have become louder precisely because of this.

Essentially, then, the just energy transition framework, particularly as it relates to climate and environmental justice, shifts the economic control to communities, democratizes wealth and the workplace, advances ecological restoration, and drives racial and economic justice and social equity. Further, it re-localizes most production and consumption, and retains and restores cultures and traditions. The just transition framework sees the economy's role in human development and its functioning as not being independent of ecological and social considerations.[140]

Conversely, an unjust transition will involve human rights issues. In wind and solar value chains, for example, these include the vitiation of FPIC and the displacement of indigenous peoples, peasants, and other vulnerable groups; forced labor; impacts on culture; public health issues; and reprisals against environmental defenders.[141]

A just transition framework requires transition within specific spaces following considerations of time (speed of transition)—the urgency by which attending to the climate crisis must be attendant with caution that it does not result in an energy transition that replaces one crisis with another.

The recent global crises have vividly highlighted that an energy system heavily reliant on fossil fuels not only exacerbates energy security concerns but also accelerates the pace of climate change.[142]

As the world collectively rebuilds itself from the harsh impacts of the COVID-19 pandemic, and as it creates and strengthens policies to build a low-carbon, climate-resilient planet, it must ensure that no one is left behind. A transition away from fossil fuel-reliant industries is only as laudable as the efforts made to ensure that workers and communities still have livelihoods and means to sustain their lives after we shift to a fully RE-reliant world. This requires not just radical but creative ways of drafting policies that enable not just our planetary health but also the certainty of our collective futures.

Recommendations

The following principles and pathways must inform the transformation of the country's energy system:

- **Policy review.** The PDP and the longer-term AmBisyon Natin 2040 need to be reconstituted to achieve just transition and, therefore, some of the hallmarks of a regenerative economy. This means the institutionalization of just energy transition.

  This encompasses the critical review of existing government policies that are labeled as renewable but carrying significant environmental risks, such as the Mini-hydroelectric Power Incentives Act (RA 7156) and the WtE proposals and projects. It will also entail striking a balance between reconfiguring features of the present economic system and the ideals of a regenerative economy to ensure the availability of jobs and the alleviation of poverty, among others.

  For instance, the review of the Renewable Energy Act must also be undertaken and anchored on the energy sufficiency principle toward a low-carbon pathway. A timely review of the EPIRA is also imperative. Recognizin g the universality of the 'right to energy' reclaims energy as a public good. Hence, a just transition plan necessitates a restructuring of the Philippine energy system as a whole.

• **Governance mechanism.** The government must clearly outline coordination, planning, and dedicated resources toward a just transition that has for its goal ending reliance on and expansion of fossil fuels through a concrete time-bound phase-out plan. It is critical to provide a regulatory framework based on accurate and realistic demand projections, as well as the development of local operational and maintenance capacities.

• **Sustainable economic development.** New opportunities must be created to replace dominant industries. This should include social protection mechanisms capable of mitigating or preventing negative consequences when combined with national climate policies and strategies. This will entail the institutionalization of meaningful community participation and decision-making rights, as well as civil society engagement in energy planning and processes of local government units (LGUs), complemented by an inter-LGU energy planning, especially for those with shared energy resources. At all levels, women's participation must also be ensured, where women are not only accounted for but also prioritized.

• **Regional and rural development.** All regions and local communities must have the capacity and support to effectively undertake just transition, particularly those directly affected by industrial shifts. This requires harmonizing policies, such as land use and zoning and agrarian reform, with just transition to ensure that these will benefit local communities and prevent displacement (e.g., prevention of conversion of agricultural lands into RE projects) and encroachment on critical biodiversity areas, among others.

• **R&D.** Dedicated policies and resources toward developing capacities, research, and development of innovative and appropriate indigenous technologies to support just transition are warranted, prioritizing renewable technology that is climate-resilient, locally appropriate, and low-impact. Just technology transfer must also be ensured.

• **Safeguards.** Instituting safeguarding policies is important to ensure that just transition is conducted in a manner that protects and respects community rights—particularly the right to FPIC—and redress mechanisms for human rights violations.

Such mechanisms should include transparency and accountability as primary conditions such as, but not limited to, information disclosures. These include Environmental Impact Assessments and contracts related to renewable projects. To strengthen safeguarding mechanisms, applications for projects must clearly indicate potential, direct, indirect, induced, and cumulative impacts, as well as any other stringent standards covering environmental, socioeconomic, and human rights impacts. These requirements should not be limited to a one-time evaluation but conducted as periodic and timely audits throughout the entire duration of projects, particularly for commercial and large-scale renewable initiatives.

In addition, information and disclosures must include both energy and raw material use to ensure a clean supply and value chain. Full disclosures must be accessible, ensuring they are easily understandable and readily available to affected communities and stakeholders. Hence, all processes involved in the project must be made available to the public and must undergo public vetting.

- **SRE.** SRE promotion must be grounded in energy sovereignty and operationalized through a decentralized energy system. The government can complete its rural electrification program with DRE systems, working hand in hand with indigenous peoples and communities, and promote distributed energy sources, conducted through a rights-based approach to SRE development. Decentralized and community-based projects help ensure the right of people to choose affordable, renewable, and sustainable energy sources. It, hence, frames energy primarily as a right rather than a commodity.

This should be complemented by improving policies to guarantee that basic sectors and communities have access to, align with, and derive benefits from SRE technologies and DRE (e.g., financial support, zoning delineation). These must be anchored on the promotion of and concrete support for community-owned and managed systems.

Annex A: Philippine energy issuances: 2019/2020 and beyond

In the last five years, there have been new updates on the Philippine energy landscape, reflecting new and updated commitments. This section will look at these new enactments and/or amendments, and a brief overview of each.

Laws and bills

Name	Date of Issuance	Overview
Microgrid Systems Act (RA 11646)	Approved 21 January 2022	The Act promotes the use of microgrid systems to develop and speed up the total electrification of unserved.[143] and underserved areas[144] in the country. The law also provides that the competitive selection process for the microgrid system provider shall: **(a)** Prioritize low-cost, indigenous, renewable, and environment-friendly sources of energy; **(b)** Be conducted based on the list of DOE-declared unserved and underserved areas; and **(c)** Be simple, uniform, streamlined, and transparent.
Energy Efficiency and Conservation Act (RA 11285)	Approved 12 April 2019	The Act established a framework for introducing and institutionalizing policies on EEC, including the promotion of efficient utilization of energy and increase in the utilization of RETs, among others (Section 8). The Act also discussed energy performance standards and labeling requirements.
Murang Kuryente Act (RA 11371)	Approved 8 August 2019	In order to reduce electricity rates, a portion of the net national government share from the Malampaya Natural Gas Project (amounting to PHP 208 billion) will be allocated to pay for stranded contracts costs as well as stranded debts assumed by the PSALM. In consultation with the Department of Budget and Management, the Bureau of Treasury, and the PSALM, the Department of Finance and DOE released Joint Circular 1, Series of 2020, which provides for the IRR of the RA 11371. The IRR specifies the rules for using the Murang Kuryente Special Account in the General Fund. It also specifies the roles and responsibilities of the various agencies entrusted with enforcing the legislation. Section 7 of the statute and Section 9.1 of the IRR state that no additional universal charges for stranded contract expenses and stranded debts will be collected once the IRR becomes effective. Section 9.2 of the IRR specifically states that PSALM shall not file any new petition with the Energy Regulatory Commission (ERC) for universal charges for stranded contract expenses and stranded debts until the allocated sum under the law has been spent and no additional allocations are approved by Congress. The IRR went into effect on 5 May 2020.

Name	Date of Issuance	Overview
RA 11357 or "An Act Granting Solar Para sa Bayan Corporation a Franchise to Construct, Install, Establish, Operate, and Maintain DER and Microgrids in the Remote and Unviable, Or Unserved or Underserved Areas in Selected Provinces of the Philippines to Improve Access to Sustainable Energy"	Approved 23 July 2018	A law that provided a private firm a distinct advantage in select targeted areas. It is regarded by its critics as providing unfair advantage over its competitors that serves as deterrent for better uptake of renewable projects.[1]
Senate Bill No. (SBN) 1789 An Act Establishing a NEP and Regulatory Framework for Facilities Utilizing WtE Technologies (WtE Act) [145]	Pending Second Reading, Special Order (21 September 2020) Note that similar bills have been filed since with regard to WtE, including: a. SBN 1746 "An Act Establishing a NEP and Regulatory Framework for Facilities Utilizing WtE Technologies" - currently pending in the Committee of Energy as of 30 January 2023 (by Senator Zubiri) [146] b. SBN 989 "An Act Establishing a NEP and Regulatory Framework for Facilities Utilizing WtE Technologies" - pending in the Committee of Energy as of 5 September 2022 (by Senator Revilla)[147] c. SBN 177 "An Act Allowing the Use of WtE Technology for Electricity, Fuel and Heat Generation, and for Other Purposes" - pending in the Committee of Energy as of 1 August 2022 (by Senator Tolentino)[148] d. SBN 151 "An Act Establishing A NEP and Regulatory Framework for Facilities Utilizing WtE Technologies" - pending in the Committee of Energy as of 1 August 2022 (by Senator Gatchalian)[149]	The Bill had for its goals avoidance of solid waste by using WtE in all local government units. The Bill classified WtE as another kind of RE resource, and that each WtE facility shall, among others, be both a solid waste management treatment facility and an energy production facility, and comply with existing laws on the environment and energy.

[1] See Altomonte, JC & Guinto, H. S. (2022). How can microgrids help the Philippines' energy transition? Adapting the Institutional Analysis and Development (IAD) framework for microgrid development. IOP Conf. Ser.: Earth Environ. Sci. 997 012012; Lagac, JMP, Yap, JT (2021). Evaluating the Feed-in Tariff Policy in the Philippines International Journal of Energy Economics and Policy, Vol 11, Issue 4.

Name	Date of Issuance	Overview
HB 00089 An Act Promoting the Research and Development of Deuterium as a Possible Source of Alternative Energy, Creating the Philippine Deuterium Research and Development Authority, Providing Funds Therefore (sic), and for Other Purposes	Pending with the Committee on Nuclear Energy since 16 August 2022	The Bill recommends the use of deuterium, "an isotope of hydrogen, as a source of alternative energy" (Section 2). The Bill also recommends the creation of the Philippine Deuterium Research and Development Authority, which shall be attached to the DOST.
HB 00027 An Act Establishing a NEP and Regulatory Framework for Facilities Utilizing WtE Technologies	Approved by the House on 12 December 2022, received by the Senate on 14 December 2022	The Bill classified WtE as "another kind of RE resource, which covers the processes to generate clean and sustainable energy through the treatment of municipal wastes, or processing of such wastes into a fuel source." Having widened the mandate of the DOE, the DOE under the Bill will have the power to issue permits and accreditation certificates to WtE facilities and include a WtE strategy in the PEP, among others.
SBN-1875 Ac Act Creating the Philippine Renewable Energy Corporation, Defining its Powers and Functions, and Appropriating Funds Therefor (Philippine Renewable Energy Corporation Charter)	Pending in the Committee (14 February 2023)	The goal of the Bill is to adopt sustainable energy development strategies to reduce the country's dependence on fossil fuels. The Bill will create the Philippine Energy Corporation, which "shall promote, explore, and undertake development, utilization, and commercial operation of new, renewable, non-conventional, and environmental-friendly energy sources and systems." It also aims to abolish the existing Philippine National Oil Corporation-Renewables Corporation, and its functions and powers shall be transferred to the Corporation.

The House of Representatives 19th Congress has been witness to the filing of several other bills[150] relating to RE, including, but not limited to:

- HB 00163 (An Act Authorizing the Establishment of an RE Park Over Laguna Bay to Accelerate the RE Capacity in the Philippines and Appropriating Funds for this Purpose)[151]

- HB 00170 (An Act Enhancing the Implementation of the Net Metering System Amending for the Purpose RA 9513 Otherwise Known as the RE Law of 2008)[152]

• HB 00295 (An Act Incentivizing the Construction, Operation, and Development of RE Storage Facilities, Amending for this Purpose RA 9513 Otherwise Known as the RE Act of 2008)[153]

• HB 00446 (An Act Protecting the Rights of Indigenous Peoples and Indigenous Cultural Communities Affected by RE Investments in their Ancestral Lands, Amending Certain Provisions of RA 9513 Otherwise Known as the RE Act of 2008)[154]

Though far less than the House, the Senate also has plenty of pending bills on RE.[155] These include:

• SBN 1694 (Industrial Energy Efficiency R&D Act of 2023)[156]

• SBN 647 (An Act Further Promoting RE, Amending Therefor RA 9513 Otherwise Known as the RE Act of 2008 and RA 7160 Otherwise Known as the Local Government Code of 1991, and for Other Purposes)[157]

• SBN 157 (An Act Providing for a National Energy Policy and Framework for a Clean and Just Energy Transition in the Country, and Appropriating Funds Therefor)[158]

Administrative Orders (AO)

Name	Date of Issuance	Overview
AO No. 2019-21 Guidelines Governing WtE Facilities for the Integrated Management of Municipal Solid Wastes	Published in the Philippine Star and the Philippine Daily Inquirer on 26 December 2019	The AO provided guidelines on the evaluation, establishment, operation, and de-commissioning of WtE facilities for the integrated management and utilization of municipal solid wastes, in compliance with RA 9003 (Ecological Solid Waste Management Act of 2000), Presidential Decree No. 1586 (Establishing an Environmental Impact Statement System), RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes Act of 1990), RA 8749 (Philippine Clean Air Act of 1999), and RA 9275 (Philippine Clean Water Act of 2004). The acceptable municipal solid waste are source segregated biodegradables or residual wastes collected from households, materials recovery facilities, residual containment areas, sanitary landfills, and other disposal facilities. In order to ensure safety, the WtE facility operator shall submit to the Environmental Management Bureau (EMB) Regional Offices self-monitoring reports, and shall install instruments to measure particulate matter and other substances. To attempt to mitigate hazards of toxins, 6.3(c) of the AO provides that:

Name	Date of Issuance	Overview
		"In coordination with EMB, WtE facilities utilizing thermal process (whether burn or non-burn) must conduct sampling and analysis for dioxins and furans based on EMB Memorandum Circular No. 2007-003 (Policy on Compliance and Permitting for Industrial Facilities Relating to Air Quality), following the prescribed methodology; all average values of dioxins and furans measured over the sampling period of a minimum of six hours and a maximum of eight hours must not exceed the limit value of 0.1 nanogram toxic equivalents per normal cubic meter (ng-TEQ/NCM). (For this guideline, Toxic Equivalency Factor (TEF) values to be used for calculation of Toxic Equivalents of a particular sample are based on the 1989 update of the United States Environmental Protection Agency, adopting the 1989 International North Atlantic Treaty Organization's Committee on the Challenges of Modern Society (NATO/CCMS) TEF values, otherwise represented as I-TEF)."

Memorandum Circulars (MC)

Name	Date of Issuance	Overview
MC No. 2020-05-001 Directing All Designated Establishments Under Commercial, Industrial, and Transport Sectors to Submit Energy Consumption Reports	13 May 2020	The MC clarified the rules about the submission of the Annual Energy Efficiency and Conservation Report of Designated Establishments to the DOE.

Department Circulars (DC) [159]

Name	Date of Issuance	Overview
DC No. 2020-07-0017 Promulgating the Guidelines Governing the Policy for the Conduct of Green Energy Auction in the Philippines[160]	14 July 2020	The Green Auction Policy laid down the framework that facilitates the procurement of supply from commercial RE projects, and is made applicable to the mandated participants of the RPS Program. The first notice of auction was published on 9 February 2022, via the Daily Tribune.[2]
DC No. 2020-08-0015 Prescribing the Guidelines of the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors, and Dealers of Electrical Appliances and other Energy-Consuming Products (ECP) and DC No. 2020-06-0016 Prescribing the Minimum Energy Performance for Products Covered by the PELP for Compliance of Importers, Manufactures, Distributors, Dealers, and Retailers of ECP	15 June 2020	These DCs set guidelines on labeling and minimum energy performance, which are applicable to all importers, manufacturers, distributors, dealers, and retailers of all ECPs, equipment, and transport vehicles.

[2] See https://www.doe.gov.ph/geap

Name	Date of Issuance	Overview
DC No. 2020-10-0022 Prescribing the Policies to Enhance the Net-Metering Program for RE Systems	22 October 2020	The DC prescribed the following policies and guidelines to provide enhancements to the Net-Metering Program: **A.** Implementation of the period of one year for the banking of net-metering credits for existing and new applications **B.** Application to off-grid or island grid systems **C.** Publication of the distribution utilities (DUs) Net-Metering Program, including their respective hosting capacities of distribution systems for net-metering purposes **D.** Development of a Net-Metering Guidebook to prescribe guidelines
DC No. 2020-12-0026 Adoption of the Guidelines on Energy Conserving Design of Building	22 December 2020	The adoption of the Guidelines on Energy Conserving Design of Buildings will lead to the adoption energy efficiency in the building energy sector.[161]
DC No. 2021-06-0016 to DC No. 2021-06-0020 Geothermal Safety, Health, and Environment Code of Practice Hydropower Safety, Health, and Environment Code of Practice Solar Safety, Health, and Environment Code of Practice Wind Safety, Health, and Environment Code of Practice Biomass and Biofuels Safety, Health, and Environment Code of Practice	11 June 2021	These DCs laid down regulations to ensure compliance with safety protocols.

Name	Date of Issuance	Overview
DC No. 2022-02-0002 Prescribing the Policies and Programs to Promote and Enhance the Development of Biomass WtE Facilities	17 February 2022	The DC was issued to: A. Promote biomass WtE facilities as baseload RE, which can contribute to additional supply sources, solid waste management, benefit to the local economy, and create green jobs, among others B. Provide classification and conditions for eligible biomass WtE facilities utilizing locally-sourced municipal solid wastes pursuant to the RE Act C. Prescribe policies and programs to enhance the electric power industry in the development of biomass WtE facilities (Section 2) The DC shall be applied to RE developers, LGUs, DUs, the Philippine Electricity Market Corporation, and independent market operators, among others. For the purpose of the DC, biomass WtE is used to "refer to the process of converting biomass WtE resources to produce heat, steam, mechanical power, or electricity through either thermochemical, biochemical, or physico-chemical processes, or through such other technologies which shall comply with the prescribed environmental standards pursuant to RA 9513" (Section 4[b]).
DC No. 2022-06-0026 Adopting Amendments to the Renewable Energy Market (REM) Rules	20 June 2022	Section 8 of the RE Act established the REM. This DC adopted amendments to the REM rules after the conduct of virtual public consultations on the proposed amendments.
DC No. 2022-06-0028 [162] Supplementing DC No. 2018-01-0001 on the Energy Resiliency Planning and Programming of the Energy Sector and on Task Force on Energy Resiliency (TFER) Functions and Structure to Mitigate Impacts of Disasters	24 June 2022	The DC forwarded amendatory and supplemental provisions to the Energy Resiliency Policy (DC 2018-01-0001), which were created in view of the National Disaster Risk Reduction and Management Plan, the Resilience Compliance Plan Assessment, and updates regarding climate change, including the country's Climate Change Adaptation Plan. It sought to ensure a holistic approach on the development of energy resiliency in the country. To do so, it revised the Energy Resilience Policy in line with the Disaster Risk Reduction and Management (DRRM) Framework.

Name	Date of Issuance	Overview
DC No. 2022-09-0030 Prescribing the Adjusted Annual Percentage Increment to be Imposed on All Mandated Participants of the RPS for On-Grid Areas	23 September 2022	The DC adjusted the annual percentage increment of the RPS On-Grid Rules, and adopted the terms defined in the RE Act and its IRR, the RPS On-Grid Rules, and the REM Rules, among others.
DC No. 2022-11-0034 Adopting the Guidelines Concerning the 3rd Open and Competitive Selection Process in the Award of RE Service Contract, and for Other Purposes	15 November 2022	This DC allows 100% foreign ownership of large-scale geothermal exploration, development, and utilization projects, with an initial investment cost of about USD 50 million capitalization through financial and technical assistance agreements. It also amended Section 19 of the IRR of RA 9513 to allow full ownership. This was a result of Opinion No. 21 released by the Department of Justice, saying that the Filipino ownership requirements under Section 2, Article XII of the 1987 Constitution relating to the exploration, development, and utilization of natural resources are inapplicable to solar, wind, hydro, and ocean or tidal energy resources. Note: For the development of RE projects, the DOE uses a service contract system. RE developers must secure a renewable energy service contract with the Philippine government through the President or the Secretary of Energy for a specified period. During this time, the RE developer has the sole right to investigate, develop, and use geothermal, hydropower, wind, ocean, and other RE resources in a specific area. Section 3.29 of DC No. 2019-10-0013 or the Omnibus Guidelines Governing the Award and Administration of RE Service and Operating Contracts and the Registration of RE.

DC No. 2022-06-0028 (mentioned above) is particularly important, as it looks at the convergence of climate, DRRM, resiliency, and energy. The General Policies and Principles of the Circular (Section 2) provides that:

> "To ensure a holistic approach on the development of energy resiliency in the country, the general policies and principles in the resiliency planning and program from Section 2 of DC 2018-01-0001 are revised and adopted in line with the DRRM Framework:

f) Develop and adapt to evolving resiliency standards for energy facilities to ensure timely recovery and minimal damage and losses through reconstruction and rehabilitation of energy infrastructures aligned with the Build Back Better principle."

Joint Memorandum Circulars (JMC)

Name	Date of Issuance	Overview
Department of Agriculture (DA) and DOE JMC No. 2021-02-001 Formulation and Implementation of Renewable Energy Program for the Agri-Fishery Sector (REPAFS)	14 July 2020	An original memorandum of agreement was entered into by the DA and the DOE in 2020 for the implementation of the REPAFS; the JMC laid down the guidelines for such initiative. REPAFS aims to promote the use of RE in the agriculture and fishery sector for enhanced productivity, sustainability, and environmental protection. The JMC laid down program components, required the promotion of existing RETs, and laid down R&D activities that should be considered, among others.

Issuances by the DOE

On December 2020, the DOE released an Advisory on Coal Moratorium[163] to improve the sustainability of the country's electric power industry.[164] In the said Advisory, the DOE—through then Energy Secretary Cusi—said it will not process applications for greenfield coal-fired power generation facility projects request for endorsements. However, existing and operational coal-fired power generation facilities will not be affected by the Advisory, as well as those:

A. Committed power projects
B. Existing power plant complexes that already have firm expansion plans and existing land site provision
C. Indicative power projects with substantial accomplishments, specifically the following: (a) with signed and notarized acquisition of land or Lease Agreement for the project and (b) with approved permits or resolutions from LGUs (city/municipality, province) and the Regional Development Council where the power plants will be located

It is apparent, therefore, that despite the seemingly laudable move away from coal, there remain plenty of caveats in the DOE's latest pronouncement that make the transition away from coal difficult—if not highly impractical.

Despite this new update and despite the Philippines joining the ADB's ETM,[165] there have been no changes and requirements for the construction and operation of coal-fired powerplants.[166,167] The Philippine Energy Contracting Period, which defines contracting policies for coal and oil projects, and the Philippine Conventional Energy Contracting Program are currently underway.

Other commitments

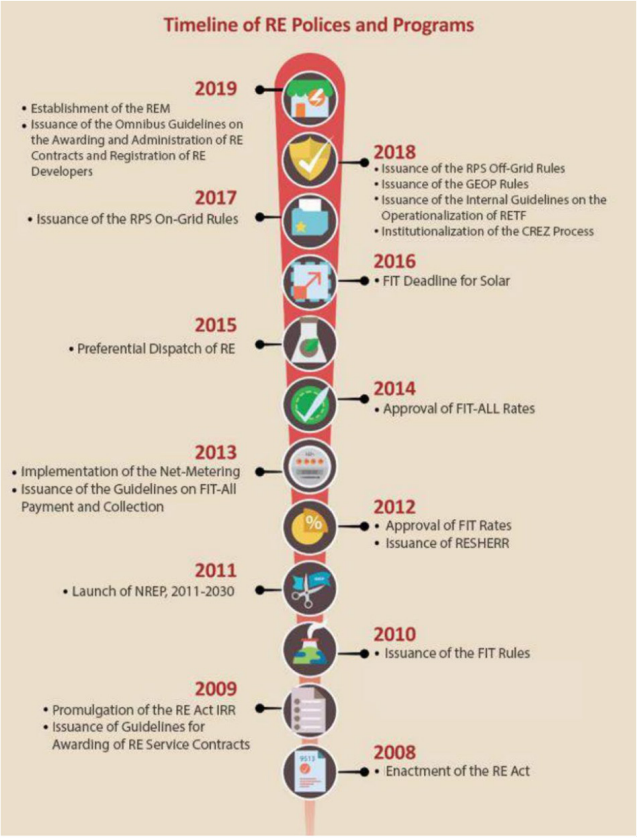
I. PEP 2020–2040

The DOE released the 'PEP 2020–2040: Towards a Sustainable and Clean Energy Future'[168] —a comprehensive energy footprint that outlines the country's vision for achieving a clean energy future, especially during its recovery from the COVID-19 pandemic. This extensive document commenced with an Energy Situationer, followed by Energy Roadmaps (including a dedicated section on RE), Strategic Focus Areas, and comprehensive discussions on the Philippine energy trajectory. It notably emphasized the comparison between REF and CES.

The PEP divided the action plans for the short term (2010–2022) and the long term (2023–2040). The former includes the implementation of the coal moratorium, the establishment of guidelines for the decommissioning of power plants, and the firming-up of privatization plans of the government's remaining power assets. The latter includes the utilization of cleaner technologies in power generation and increasing flexibility in power generation.

II.NREP 2020–2040

The NREP[169] prescribes pathways for RE and methods to achieve the country's RE goals, including the Green Energy Option Program.[170] Below is the timeline of RE policies and program as discussed in the NREP.



The DOE has also released sectoral roadmaps for the years 2017 to 2040, including an Electric Power Industry Roadmap, an RE Roadmap, a Biofuels Roadmap, an Alternative Fuels and Energy Technologies Roadmap, and an EEC Roadmap.

III. DOST

The Philippine Council for Industrial, Energy, and Emerging Technology Research and Development (PCIEERD) of the DOST has committed to focus on RE, with current projects revolving around solar, wind, ocean, and micro-hydro R&D projects, with some more R&D initiatives lined up and call for applications open for the energy sector.[171, 172] Its actual implementation has not been evaluated.

End Notes

[1] Hydroelectric: 16.3%; geothermal: 7%; solar: 5.4%; biomass: 1.8%; and wind: 1.6%. DOE List of Existing Power Plants – Grid-Connected and Off-Grid Connected (As of August 2022).

[2] DOE List of Existing Power Plants – Grid-Connected and Off-Grid Connected (As of August 2022).

[3] C40. (2021). C40 Cities Annual Report 2021. *https://www.c40.org/wp-content/uploads/2022/03/C40_annual_report_2021_V10.pdf.*

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[16] This means the "household-living burden due to direct energy price increases for fossil fuel products but also on indirect price increases induced by energy inputs to all final-use items" (Guan, Y., J. Yan, Y. Shan, et al., [2023]. p. 310).

[17] Guan, Y., J. Yan, Y. Shan, Y. Zhou, Y. Hang, R. Li, Y. Lui, B. Lui, Q. Nie, B. Bruckner, K. Feng, and K. Hubacek. (2023). Burden of the global energy price crisis on households. Nat Energy, 8, p. 304–316. *https://doi.org/10.1038/s41560-023-01209-8.*

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[24] Hydroelectric: 16.3%; geothermal: 7%; solar: 5.4%; biomass: 1.8%; and wind: 1.6%. DOE List of Existing Power Plants – Grid-Connected and Off-Grid Connected (As of August 2022).

[25] DOE List of Existing Power Plants – Grid-Connected and Off-Grid Connected (As of August 2022).

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[33] EO No. 215 was issued in 1987, allowing the private sector to participate in power-producing activities. RA 6957, often known as the BOT/BT Law, was enacted in 1990 to supplement EO 215, empowering the private sector to finance, build, operate, and maintain infrastructure projects. This was later changed in 1994 by RA 7718 (BOT, BOO, BT Law). These regulations paved the way for NPC to offer particular hydropower projects ranging in capacity from 5 MW to 50 MW to the private sector through a BOT plan (see Estoperez, N.R. [n.d.]. Country report on small hydropower. *http://www.hrcshp.org/en/world/db/philippines.pdf*).

[34] RA 9136. An act ordaining reforms in the electric power industry, amending for the purpose certain laws and for other purposes. *https://www.napocor.gov.ph/images/about_us/EPIRA_RA9136.pdf*.

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[52] As also articulated in the NDC.

[53] See NREP 2020–2024: *https://www.doe.gov.ph/sites/default/files/pdf/announcements/nrep_2020-2040.pdf?withshield=1.*

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[59] RA 11285. An act institutionalizing energy efficiency and conservation, enhancing the efficient use of energy, and granting incentives to energy efficiency and conservation projects. *https://lawphil.net/statutes/repacts/ra2019/ra_11285_2019.html.*

[60] RA 11371. An act reducing electricity rates by allocating a portion of the net national government share from the Malampaya natural gas project for the payment of the stranded contract costs and stranded debts. *https://www.officialgazette.gov.ph/2019/08/08/republic-act-no-11371/.*

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[75] WtE facilities are proposed by the DOE to provide LGUs with both solid waste management and an additional source of power.

[76] Sec. 4 (b): "Biomass resources" refer to non-fossilized, biodegradable organic material originating from naturally occurring or cultured plants, animals, and micro-organisms, including agricultural products, by-products, and residues, such as, but not limited to, biofuels except corn, soya beans, and rice but including sugarcane and coconut, rice hulls, rice straws, coconut husks and shells, corn cobs, corn stovers, bagasse, biodegradable organic fractions of industrial and municipal wastes that can be used in bioconversion process and other processes, as well as gases and liquids recovered from the decomposition and/or extraction of non-fossilized and biodegradable organic materials.

[77] Further, in 2021, Greenpeace released an article stating that WtE infrastructure will add to the harm and deaths that air pollution brings to people. In the same article, Greenpeace posited that WtE "incinerators put Filipino communities at a disadvantage because they emit significant amounts of greenhouse gases that drive the climate crisis." Read more: *https://www.greenpeace.org/philippines/press/10350/greenpeace-warns-clean-air-act-under-threat-calls-on-senate-to-uphold-law-protecting-filipinos-health/.* This was a response to the WtE Act filed in 2020 by Senators Gatchalian, Tolentino, Binay, and Pacquiao.

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[86] To make 1 kl of hydrogen by electrolysis, approximately 9 liters of water are required, meaning one ton of hydrogen requires 9,000 liters of water.

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[144] Refers to areas currently served by home power systems, microgrid systems, or distribution utilities whose supply of electricity is less than 24 hours daily because of the non-implementation of approved capital expenditure projects, noncompliance with the service parameters of the Philippine Distribution Code, or any other reason resulting to an overall failing mark based on ERC's latest annual technical evaluation of performance of distribution systems.

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[154] HB 446. An act protecting the rights of indigenous peoples and indigenous cultural communities affected by renewable energy investments in their ancestral lands, amending certain provisions of Republic Act 9513, otherwise known as the "Renewable Energy Act of 2008". *https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic_19/HB00446.pdf.*

[155] Senate Bills Registry. *http://legacy.senate.gov.ph/lis/leg_sys.aspx?congress=19&type=bill&p=1.*

[156] SBN 1694. An act to support research and development of new industrial processes and technologies that optimize energy efficiency and environmental performance, utilize diverse sources of energy, and increase economic competitiveness. *http://legacy.senate.gov.ph/lisdata/4038236792!.pdf.*

[157] SBN 647. An act further promoting renewable energy, amending therefor Republic Act No. 9513, otherwise known as the "Renewable Energy Act of 2008" and Republic Act. No. 7160, otherwise known as the "Local Government Code of 1991," and for other purposes. *http://legacy.senate.gov.ph/lisdata/3850834963!.pdf*

[158] SBN 157. An act providing for a national energy policy and framework for a clean and just energy transition in the country, and appropriating funds therefor. *http://legacy.senate.gov.ph/lisdata/3786534306!.pdf.*

[159] This paper focuses on issuances particular to RE. There are others, such as guidelines on qualifications of energy personnel (DC No. 2021-01-0001), guidelines for the endorsement of energy efficiency projects to the Board of Investments for fiscal incentives (DC No. 2021-05-0011), and guidelines in the Administration, Classification, and Certification of Energy Service Company (DC No. 2020-09-0018), which were not included

[160] There has been a bill pending in the House (HB 00162), named "An Act Enhancing the Renewable Energy Industry Through the Green Energy Auction Program", available at *https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic_19/HB00162.pdf.*

[161] See: DC 2020-12-0026. *https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2020-12-0026%20guidelines.PDF.*

[162] Further discussed below.

[163] The Advisory is available at *https://www.doe.gov.ph/sites/default/files/pdf/announcements/advisory-moratorium-endorsement-greenfield-coal-fired-power%20project.pdf?withshield=1.*

[164] The Philippines also joined the ADB ETM, which was announced and launched in COP26. It has the goal of acceleration the transition of Southeast Asian countries from coal to clean energy. Read more: *https://www.pna.gov.ph/articles/1158705 and https://www.adb.org/what-we-do/energy-transition-mechanism-etm.*

[165] Asian Development Bank. (2021, November 3). ADB, Indonesia, the Philippines launch partnership to set up energy transition mechanism. *https://www.adb.org/news/adb-indonesia-philippines-launch-partnership-set-energy-transition-mechanism* (accessed on 8 December 2023).

[166] Guidelines on Philippine Conventional Energy Contracting Program for Coal Operating Contract Application: *https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2017-09-0010_annex-a.pdf.*

[167] Delina, L. (2021). Committing to coal? Scripts, sociotechnical imaginaries, and the resurgence of a coal regime in the Philippines. Energy Research & Social Science, 81. *https://www.researchgate.net/figure/Philippine-Coal-Roadmap-2017-2040-Sources-Computed-by-the-author-from-96-97_fig3_354104419.*

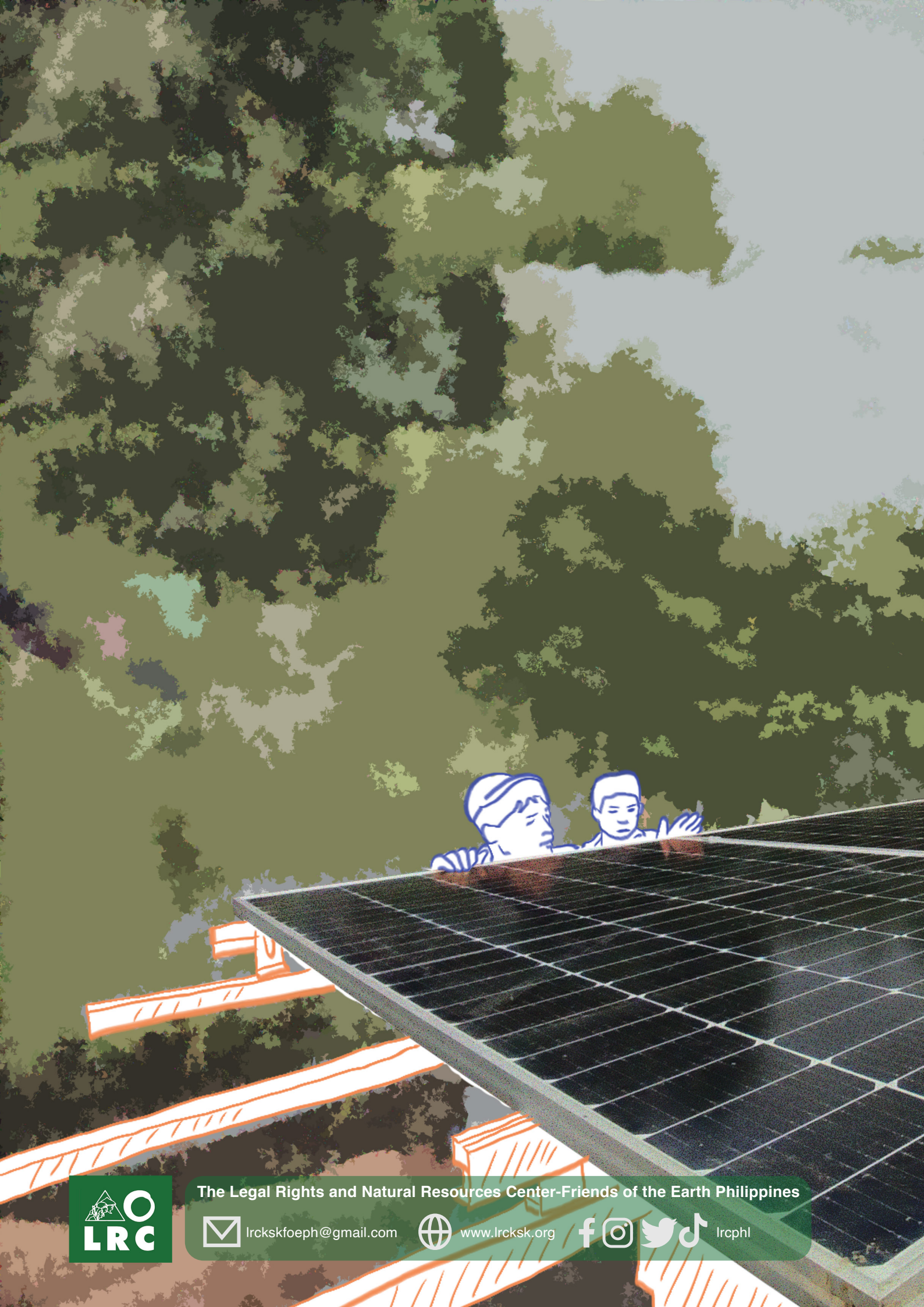
[168] DOE. (2018). The Philippine energy blueprint 2020–2040. *https://www.doe.gov.ph/sites/default/files/pdf/pep/PEP%202022-2040%20Final%20eCopy_20220819.pdf.*

[169] National Renewable Energy Board. (2022). NREP 2020–2040. *https://www.doe.gov.ph/sites/default/files/pdf/announcements/nrep_2020-2040.pdf?withshield=1.*

[170] The DOE issued DC 2018-07-0019 to lay down the guidelines and the policy framework of the GEOP.

[171] Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). (2021). Call for proposal priority areas in the energy sector. https://pcieerd.dost.gov.ph/images/callforproposal/2021/regular_call/priority_areas/Energy-Sector.pdf.

[172] PCIEERD. *https://pcieerd.dost.gov.ph/images/downloads/presentation_materials/2022/HNRDA_2022-2028.pdf.* Guidelines for its Technical Review and Evaluation are found here: *http://111.125.126.138/stpis/upload/63_PCIEERD%20Guidelines%20on%20Technical%20Review%20and%20Evaluation.pdf*



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