

Energy Transition Roundtables
Policy Brief Series No. 2

ENABLING AN INCREASED SHARE OF RENEWABLE ENERGY

in the Philippines Electricity Mix

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Abbreviations

CAPEX	Capital Expenditures
CREZ	Competitive Renewable Energy Zone
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
DILG	Department of the Interior and Local Government
EC	Electric Cooperative
ERC	Energy Regulatory Commission
EVOSS	Energy Virtual One Shared System
GENCO	Generation Company
LEC	Local Energy Committee
LEP	Local Expenditure Program
LGU	Local Government Unit
LGUOU	Local Government Unit-Owned Utility
NGCP	The National Grid Corporation of the Philippines
NPC	National Power Corporation
NREP	National Renewable Energy Program
NWRB	National Water Resources Board
PIOU	Private Investor-Owned Utility
RDC	Regional Development Council
RE	Renewable Energy
RES	Retail Electricity Supplier
SIIGs	Small Islands and Isolated Grids
TransCo	National Transmission Corporation

Highlights

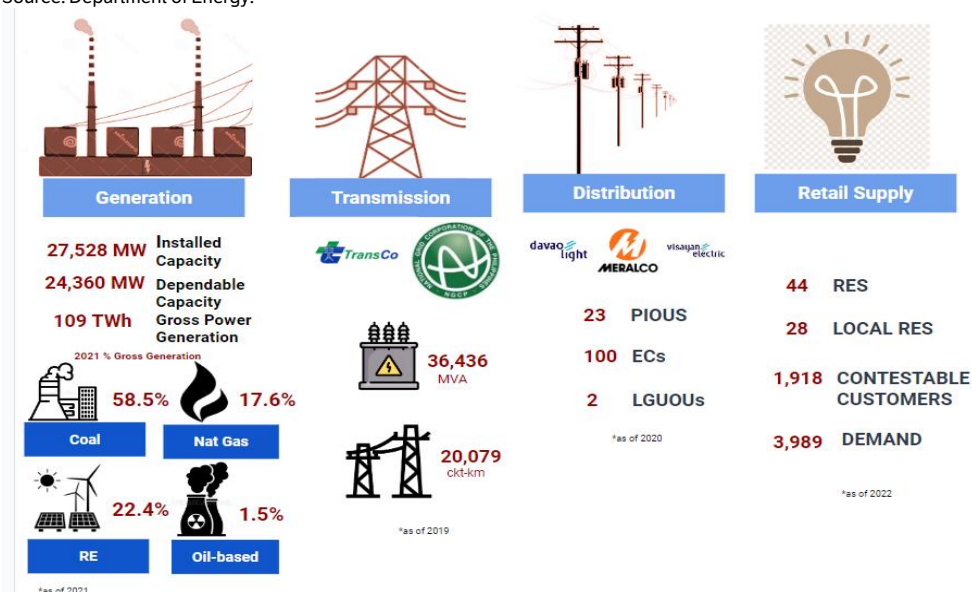
1. The Philippine power industry heavily relies on fossil fuels, with renewable energy accounting for only 22.4% of the total electricity generation in 2021.
2. Among the fossil fuels used for electricity generation, coal has the largest share, representing 59% of the total electricity generation in 2021.
3. The Government has established targets to increase the share of renewable energy in the generation mix, aiming for 35% by 2030 and 50% by 2040.
4. The Philippines encounters several challenges in facilitating a clean energy transition, including a lengthy permitting process, insufficient transmission grid capacity to accommodate variable renewables and inadequate coordination between national agencies and local government units regarding energy transition pathways.
5. Given that renewable energy investments are primarily driven by the private sector, the Government must establish an enabling market environment to foster the growth and scalability of renewable energy. This can be achieved through subsidies, incentives, de-risking mechanisms, and financing.

Problem context

The Philippine power industry plays a critical role in sustaining economic growth and realizing its middle-income status by 2040. It has transitioned from a vertically integrated monopoly to a deregulated market, with distinct sectors for generation, transmission, distribution, and retail supply. **Exhibit 1** presents the key statistics of each sector in the Philippine power industry.

Exhibit 1 | Snapshot of the Philippines power industry.

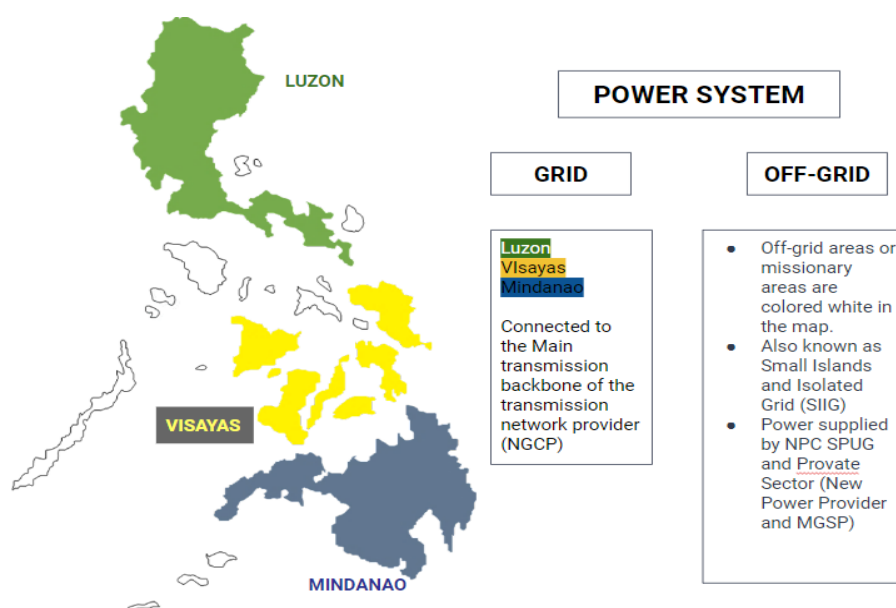
Source: Department of Energy.



The country has three primary grids serving Luzon, Visayas, and Mindanao (**Exhibit 2**). Despite progress, as of 2021, about 5% or 5.5 million Filipinos still lack access to electricity.

Exhibit 2 | Grid and Off-grid system of the Philippines.

Source: Department of Energy.



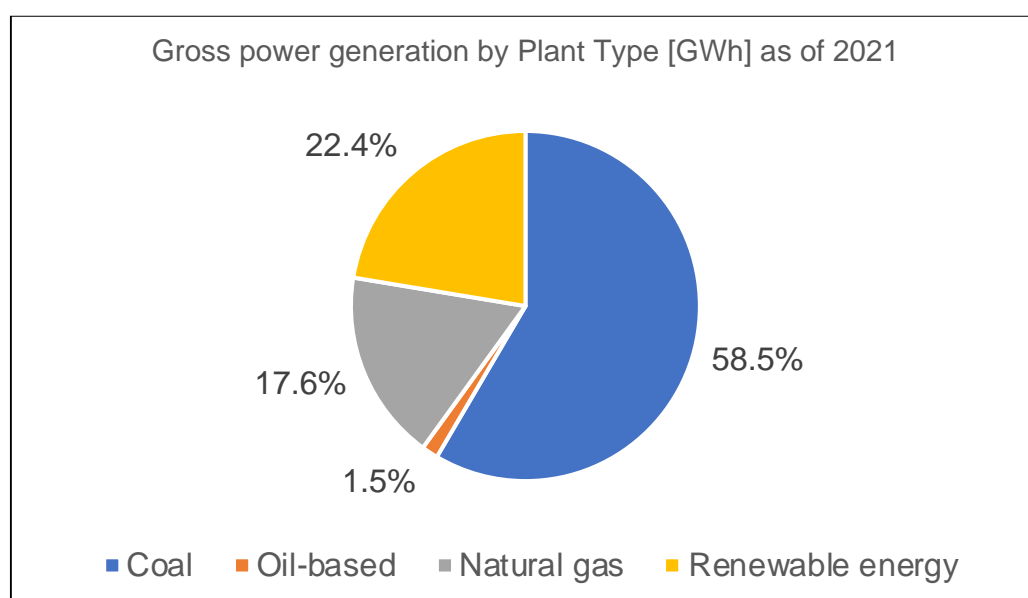
Fossil fuels dominate the power generation sector, accounting for 77.6% of gross power generation by plant type, while renewables contribute 22.4%. The system generated 106,115 GWh of power in 2021, of which coal accounted for 58.5% (62,052 GWh), natural gas followed next at 17.6% (18,675 GWh), and oil-based at 1.5% (1,616 GWh) (**Exhibit 3**).

Gross power generation by Plant Type [GWh] as of 2021

Energy source	GWh	%
Coal	62,052	58.5%
Oil-based	1,616	1.5%
Natural gas	18,675	17.6%
Renewable energy	<u>23,772</u>	<u>22.4%</u>
	106,115	100%

Source: Department of Energy, 2021

Exhibit 3 | 2021 Gross power generation



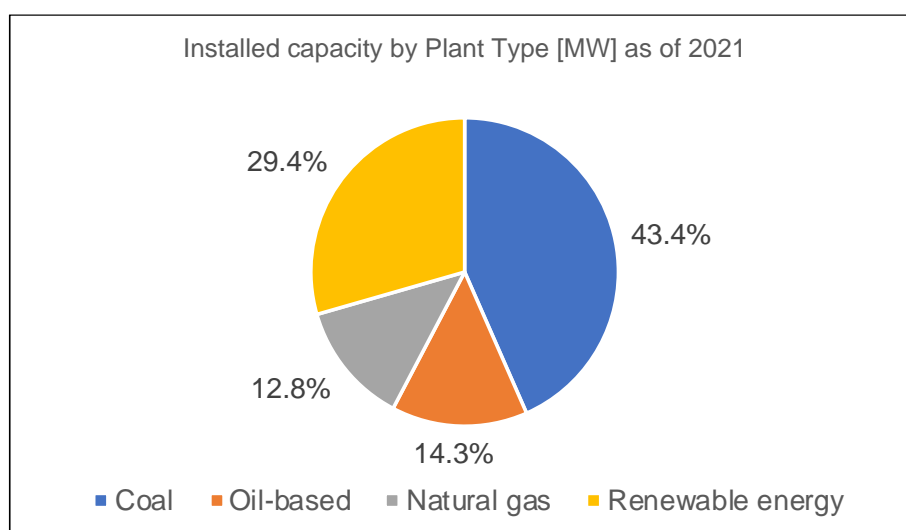
In terms of installed capacity, fossil fuels accounted for 70.6%, with coal at 43.4% (11,669 MW), oil-based at 14.3% (3,874 MW), and natural gas at 12.8% (3,452 MW). Renewable energy contributes 29.4% of the total installed capacity (7,914 MW).

Installed capacity by Plant Type [MW] as of 2021

Energy source	GWh	%
Coal	11,669	43.4%
Oil-based	3,847	14.3%
Natural gas	3,452	12.8%
Renewable energy	<u>7,914</u>	<u>29.4%</u>
	26,882	100%

Source: Department of Energy, 2021

Exhibit 3.1 | 2021 Installed Capacity by Plant Type



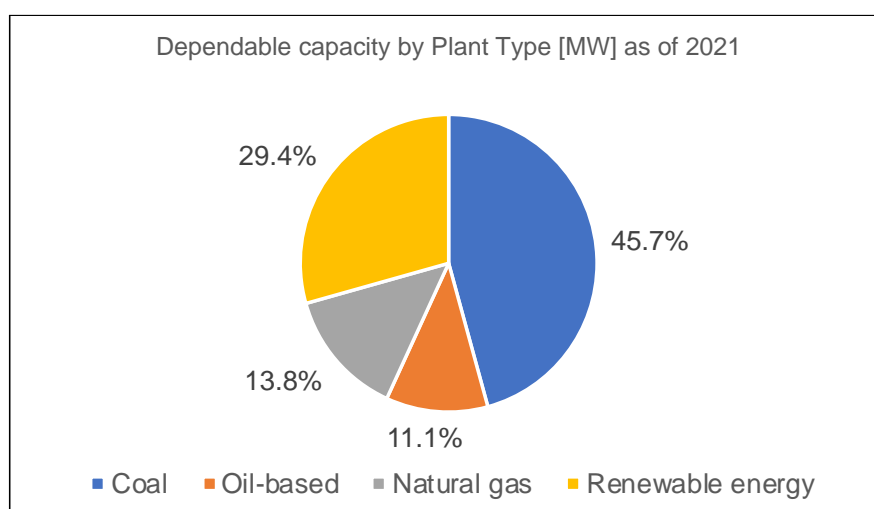
As of 2021, there is a deficit of 3,027 MW, considering that the total dependable capacity stood at 23,855 MW relative to installed capacity at 26,882 MW, with coal at 45.7% (10,913 MW), followed by natural gas at 13.8% (3,287 MW), and oil-based at 11.1% (2,650 MW). Renewables are similarly at 29.4% (7,005 MW).

Dependable capacity by Plant Type [MW] as of 2021

Energy source	GWh	%
Coal	10,913	45.7%
Oil-based	2,650	11.1%
Natural gas	3,287	13.8%
Renewable energy	7,005	29.4%
	23,855	100%

Source: Department of Energy, 2021

Exhibit 3.2 | 2021 Dependable Capacity by Plant Type



Republic Act No. 9513, otherwise known as the Renewable Energy (RE) Act of 2008, promotes the development and utilisation of renewable energy

resources.¹ The National Renewable Energy Program (NREP) sets ambitious targets for a minimum 35% renewable energy share by 2030 and 50% by 2040.²

Achieving these targets requires overcoming structural and non-structural barriers. This policy note highlights these challenges and provides recommendations based on policy roundtables organized by AMPERES, Ateneo School of Government, University of San Carlos and the Australian National University for the Southeast Asia Energy Transition Partnership in September 2022. The policy roundtables were a structured program of three working sessions involving 43 government, industry, local Government, and civil society groups. During the working sessions, participants were provided technical inputs from Filipino and Australian experts and then worked through an inclusive, deliberative process that characterized issues, identified solutions and set sustainable priorities for response.

Challenges

The Philippines faces increasing energy demands as its population grows and the economy expands. Despite several renewable energy (RE) initiatives, the low-carbon energy transition is hindered by various gaps and challenges. Nine challenges were identified as being of strategic importance for the success of the energy transition in the Philippines.

1. **Achieving decarbonization without compromising national socio-economic development plans:** The Philippines is tackling the problem of decarbonization at a time of significant expansion in the power sector. The Philippine economy is projected to grow on an average of 6% to 7% annually from 2023 to 2028.³ This places significant pressure on the electricity service industry to expand capacity in generation and transmission. Unlike countries like Australia, where demand has been stagnant, the challenge of decarbonization for the Philippines is both one of out-competing new fossil fuels added as well as replacing existing fossil fuel capacity.
2. **Ensuring energy justice:** The energy service industry in the Philippines receives substantial subsidies and support from the national Government. The energy transition must be utilized as an opportunity to improve and advance energy justice in the Philippines. Legitimate concerns exist regarding job displacement and economic losses due to the closure of coal-powered plants and reduced dependence on fossil fuels. Energy justice aims to achieve equitable social and economic participation in the energy system while mitigating burdens on vulnerable groups.
3. **Challenges in permitting and legal compliance:** Establishing RE power plants involves obtaining permits from various entities such as Local Government Units (LGUs), Regional Development Councils (RDCs),

¹ 14th Congress of the Philippines (2008, December 16). Republic Act No. 9513 or An Act Promoting the Development, Utilization, and Commercialization of Renewable Energy Resources and for other purposes (Renewable Energy Act of 2008). Official Gazette. <https://www.officialgazette.gov.ph/2008/12/16/republic-act-no-9513/> (Accessed 1 February 2023)

² Department of Energy. (2021). List of Existing Power Plants (Off-Grid) as of December 2021. Available at: https://www.doe.gov.ph/sites/default/files/pdf/electric_power/05b_lvm_off-grid_summary_loepp-11302022.pdf?withshield=1 (Accessed 1 February 2023)

³ Department of Energy. (2020). Philippine Energy Plan 2020-2040. Energy Center, Taguig City, Philippines 1632.

and national agencies like the Department of Environment and Natural Resources (DENR), National Water Resources Board (NWRB), Department of Energy (DOE), and Energy Regulatory Commission (ERC). The permitting process is time-consuming, expensive, and involves navigating complex regulatory frameworks and bureaucracy, all of which are inconsistent with the urgency and timescales required for system-wide decarbonisation.

4. **Industry barriers to unlocking the Philippines' RE potential:** Ambitious targets for RE expansion face hurdles due to stranded assets of coal-powered plants. Stranded assets refer to investments becoming prematurely obsolete or non-performing due to regulatory changes⁴. The increasing competitiveness of RE and policies supporting its deployment poses a challenge to fossil fuel power plants, which typically have a lifespan of 25-30 years. Private generation companies (Gencos) dominate the generation capacity (89% baseload), with the National Power Corporation (NPC) at 11%. Gencos may delay the entry of variable RE sources into the national grid until they reach a viable payback period on their existing assets, impeding the unlocking of the Philippines' significant RE resources.
5. **Weak implementation of competitive RE zones:** The DOE's Competitive Renewable Energy Zones (CREZ) process aims to identify optimal RE resource areas for accelerated development and transmission planning. However, challenges remain in disseminating spatial data models, location information, map compilations, and visualizations of potential RE resource sites through accessible platforms.
6. **Insufficient grid capacity and operating standards:** Inadequate grid capacity hampers the transition to RE. The National Grid Corporation of the Philippines (NGCP), responsible for managing the grid network, faces challenges in accommodating variable renewable energy sources such as wind, solar, and biomass. These challenges reflect a disconnect between the planning and deployment of RE and the conventional grid network planning and investment process. RE is being proposed and deployed in locations where the potential is high but typically not locations of new capacity identified in network expansion plans, leading to transmission congestion due to insufficient capacity.
7. **Insufficient investment in transmission and distribution infrastructure:** While the national Government's role in enabling the expansion and development of the transmission and distribution system provides opportunities for RE integration, existing policies have enabled monopolistic tendencies among energy actors. The interests of actors responsible for transmission and distribution are often tied closely with those of fossil fuel generation, which will also impede progress on decarbonization.
8. **Poor capacity and understanding of LGUs about feasible energy transition pathways:** LGUs have specific responsibilities in the energy transition, but their capacity and understanding of viable pathways are limited. Devolved powers and increased tax allocations aim to support

⁴ Department of Energy. (2020). National Renewable Energy Program 2020-2040. Energy Center, 34th St., Rizal Drive, Bonifacio Global City, Taguig City, Philippines 1632. Available at: https://www.doe.gov.ph/sites/default/files/pdf/renewable_energy/nrep_2020-2040_0.pdf (Accessed 1 February 2023)

LGUs in implementing energy transition programs. However, further efforts are needed to enhance their knowledge and involvement.

9. **Poor coordination between LGUs and RDCs inhibiting RE expansion and energy transition:** In the Philippines, at the sub-national level, Local Government Units are responsible for planning and implementation within their respective boundaries, while RDCs are responsible for coherent region-wide planning spanning multiple LGUs. Vertical coordination between LGUs and RDCs has been problematic, hindering not only the energy transition but also other socio-economic initiatives. LGUs need to align their local plans with renewable energy development, but the limited political power and administrative authority of RDCs over LGUs create challenges. This leads to fragmented efforts, a lack of scalability for LGU-led RE projects, and missed opportunities for mutual benefit.

Recommendations

Based on the deliberation at the ETP Roundtable Deep Dive, four key recommendations were proposed.

1

Expand grid infrastructure. The country's on-grid energy system still depends on oil, coal, and natural gas, accounting for 72% of the total energy supply, as shown in Exhibit 3. The DOE and ERC must create regulatory policies and incentives to improve RE penetration into the national grid system and compel the franchise holder, the NGCP, to allow more variable RE sources such as wind, solar, and ocean energy into the energy mix. The Government, along with the DOE, ERC, and National Transmission Corporation (TransCo), should expedite the approval of grid or transmission development projects, as approval of high capital expenditures (CAPEX) related projects could take a few years. Upgrading infrastructure capacity and transitioning to smart grid technologies are necessary to connect variable RE sources, especially distributed generation, to the grid.

2

Create a consistent regulatory environment to unlock investment and financing in renewables. Investments in RE are typically driven by the private sector under close regulation by the Government. Whilst renewables are dominating all new generation deployment globally⁵, in the Philippines, fossil fuels still contribute a substantial share of new generation capacity added to the system. This points to favorable conditions within the Philippine regulatory environment for fossil fuels. Accelerating RE as an alternative energy source requires the Government's intervention to streamline permitting processes, facilitate capital investments, de-risk projects, and provide financing. Regulatory agencies such as the DOE and ERC should promulgate the policy framework to effectively implement the Renewable Energy Act (2008) or Republic Act No. 9513 (2008) as a matter of priority. This should be reinforced with state subsidies and support provided to generators disaggregated by technology to understand the level of fossil fuels to be substituted with renewables.

3

Foster Local Government Unit (LGU) leadership in energy transition. Executive Order 138 mandates LGUs to play a leading role in energy planning, including resource development, energy efficiency, conservation, and

⁵ IEA. (2023). World Energy Investment 2023. <https://www.iea.org/reports/world-energy-investment-2023>

resiliency.⁶ However, the implementation of the regulatory framework remains challenging. LGUs often lack the capacities and competencies to mainstream RE through distributed generation, microgrids, and technology deployment. LGUs should leverage existing laws and national policies that grant them authority not only to oversee but also to plan and implement local initiatives supporting the energy transition. The Joint Memorandum Circular No. 2020-01 of the Department of the Interior and Local Government (DILG) and Department of Energy empowers LGUs to enact ordinances for their own Local Energy Plans. To facilitate local energy planning, it is recommended that:

1. Each LGU creates a Local Energy Committee (LEC) composed of key LGU staff, the Planning and Development Office, the Energy Efficiency and Conservation Office, and external stakeholders such as the locality's distribution utility, private power industry, regional offices of relevant national government agencies, and the academe.
2. LGUs take ownership of baseline data for their Local Expenditure Programs (LEPs). This includes information on local energy consumption, population and economic growth projections, existing transmission and distribution infrastructure capacities with specific locations, current RE generation from power plants and user-level generation (e.g., rooftop solar PVs), RE projects in the pipeline, and other data necessary to describe the LGU's energy scenario comprehensively.
3. The LEC takes the lead in developing local guidelines to encourage RE development and Energy Efficiency within their jurisdiction, facilitate investments, and monitor the local implementation of relevant national policies such as Energy Virtual One Shared System (EVOSS) and the requirements of the Energy Efficiency and Conservation Act (RA 11285), among others.
4. LGUs tap into the expertise of local energy experts, including those in academia. Involving academia also presents an opportunity for capacity development to address local energy issues and transfer knowledge to students, who will be instrumental in accelerating the energy transition.
5. Finally, the LEC should be granted the legal authority to craft, implement, monitor, and improve the implementation of their LEP through an ordinance, which is the LGU's Local Energy Code.

4

Use renewables to achieve universal electrification. Power distribution in the country is uneven, with abundant supply in urban areas, while remote communities lack or have unreliable power access. Currently, approximately 5.5 million Filipinos in remote islands, hinterlands, and geographically isolated areas still lack electricity; even in urban areas, many suffer from unreliable electricity supply. The DOE must facilitate investment in microgrids that utilize RE technologies to ensure underserved and unserved communities have access to electricity. The Philippines possesses strong potential for renewable energy sources such as wind, solar, biomass, geothermal, hydro, marine, and ocean energy, which can contribute to universal electrification, poverty alleviation through green jobs, investments, and other economic opportunities:

⁶ Office of the President, (2021, July 01) Executive Order No. 138. (2021). Full Devolution of Certain Functions of the Executive Branch to Local Governments, Creation of a Committee on Devolution, and for Other Purposes. Official Gazette. <https://www.officialgazette.gov.ph/2021/06/01/executive-order-no-138-s-2021/>

Conclusions

The energy transition in Indonesia's power sector is crucial for achieving the goals of the Paris Agreement. Although it comes with challenges, as an archipelagic country with abundant renewable energy resources, addressing the mismatch between resource location and demand requires technical and financial solutions. Sixteen specific recommendations were identified during the deep dive, which seek to provide sufficient finance and infrastructure for a resilient, reliable and affordable grid.



About Energy Transition Roundtables

The Southeast Asia Energy Transition Partnership (ETP) <https://www.energytransitionpartnership.org/> is a multi-stakeholder platform that aims to accelerate the energy transition in Southeast Asia and deliver the Paris Agreement targets on climate change by bringing together Government Donors, Philanthropies and Partner Governments. The ETP offers a strategic opportunity for multiple actors from Government, civil society, and the private sector actors to come together and leverage their expertise and resources to support Governments' understanding and advance a more ambitious agenda of reform to optimize the Southeast Asian energy transition.

The Energy Transition Roundtables is a two-year capacity building and networking program that aims to provide an opportunity for the region's energy transition stakeholders – in particular, mid-career policymakers from identified Southeast Asia countries (Vietnam, Indonesia and the Philippines) and regional level bodies – to engage in an intensive 24-roundtable series on the energy transition.

The roundtables are delivered by the Australian National University (ANU) and Australia-Mekong Partnership for Environmental Resources & Energy Systems (AMPERES), in partnership with the Institute for Economic and Social Research, Faculty of Economics and Business, University of Indonesia (LPEM UI), the Indonesia Research Institute for Decarbonization (IRID), Ateneo School of Government (ASOG), University of San Carlos (USC), and MOIT's Electricity & Renewable Energy Consulting, Training and Information Centre (ECTIC).

The COP Policy Dialogue organized on 2 November 2022 is a high-level strategic discussion bringing together experts from Australia and 29 COP delegates from Indonesia and Vietnam to take stock of progress made on COP 26 commitments, share insights and lessons on decarbonizing national electricity systems and identify the strategic issues that frame the agenda for effective negotiations at COP 27. This publication summarises and continues the discussion of this event.