

Financing Community-Based, Renewable, and Distributed Energy Resources in the Philippines

A Case Study in Supporting Energy Transition Finance
for Low to Middle Income Countries

by

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Table of Contents

Executive Summary	2
Abstract	4
Objective	4
Introduction	5
Energy Systems in the Philippines.....	5
Renewable & Distributed Energy in the Philippines.....	7
Southeast Asia Context.....	9
Energy Transition Finance Context.....	10
Methodology	13
Results & Discussion	15
Stakeholder Analysis.....	15
Challenges & Opportunities Identified	19
Policy	20
Policy Challenges.....	20
Policy Opportunities.....	31
Community Engagement	33
Community Engagement Challenges.....	33
Community Engagement Opportunities.....	40
Finance	44
Finance Challenges.....	44
Finance Opportunities.....	52
Final Recommendations	54
Conclusion	55
Acknowledgements	56
Appendices	57
Appendix A: List of Acronyms.....	57
Appendix B: Full Interview Guide.....	61
Appendix C: Full Stakeholder Matrix.....	64
Appendix D: Full Codebook.....	76
Appendix E: Case Studies.....	79
Bibliography	81

Executive Summary

In the Philippines, energy transition finance is not effectively meeting the challenges of clean or distributed energy buildout, despite ample policies enacted to mobilize funding and meet the country's emissions goals. This project focuses on a bottom-up approach to energy transition finance and policy in the Philippines, with the intention of delivering implementable energy transition recommendations for multiple stakeholders. A major focus of this research is renewable distributed energy resources (DERs) and addressing gaps in their financing and siting in Philippine communities.

This study aims to address the following central question: What are the key challenges, and potential interdisciplinary approaches, to financing and implementing culturally appropriate, community-based, distributed, and equitable inputs into the energy transition in the Philippines?

The project also investigates the following thematic research questions:

Finance: Based on a review of distributed generation finance mechanisms that have been implemented in Philippine markets thus far, what gaps currently exist, and what are innovative strategies and financial instruments to fill those gaps and promote low-carbon development aligned with Philippine climate and development priorities?

Community Engagement: Based on stakeholder engagement, what are the culturally-appropriate methods to pursue workforce development, low-carbon development, and distributed generation within the Philippines, focusing on the roles of underrepresented groups (including women) and avoiding “sacrifice zones” in the energy transition?

Policy: What methods of identifying and evaluating culturally-specific financial mechanisms and community-engaged projects within this project can be applied to energy transition finance policy?

Transferable Lessons: What lessons learned from the case study of the Philippines can be utilized to inform approaches in other LMICs with similar challenges?

To address these questions, the research team conducted a literature review of the Philippine energy sector, international energy transition finance, and Philippine climate and energy policy. This project distinguishes itself in first-hand interviews of stakeholders in the Philippine energy transition. Semi-structured interviews covered topics including opportunities for partnerships in global financing; gaps in current Philippine laws that could better attract and implement energy transition funding; culturally-appropriate methods of stakeholder and community engagement; workforce development and incorporating displaced workers into

distributed generation projects; and innovative strategies and financial instruments to encourage the advancement of distributed energy resources.

Key findings include:

1. Of the 24 stakeholders identified, a disproportionately high number discussed the category of “Small Actors on the Ground” (34%) as involved in the energy transition, revealing the importance of a bottom-up approach.
2. Policy challenges within the energy transition include ineffective policy implementation, lack of policy itself, competing interests, misaligned policy priorities, access and accessibility, and outdated grid infrastructure.
3. Community engagement challenges include a lack of genuine community engagement and participation, inadequate institutional structures, monopolizing power and privatization issues, top-down policy implementation, safeguarding and gender-sensitive strategies, communication and education gaps, and human-rights and sacrifice zone issues.
4. Finance challenges include access to financing, non-inclusive financing, ongoing fossil fuel financing, energy market structure, attracting investments, and old business and energy paradigms.

Key recommendations include:

1. **Align national policies with local implementation strategies** through Local Government Units, Regional Development Councils, rural banks, electric cooperatives, NGOs, and communities. Prioritize grid upgrades and strategic transmission buildout in laying the groundwork for DER integration.
2. **Decentralize project planning, coordination, and monitoring** at a regional-local institutionalized level, with special attention to project sustainability and after-service.
3. **Pursue innovative, blended, micro-scale financing** for DER project development and leverage that finance in conjunction with Philippine energy payment mechanisms (loans, auctions, options, tariffs, new carbon credit systems, etc.).
4. **Maintain a favorable finance and policy environment for small-capacity projects** by streamlining permitting, increasing leeway for small projects, and enlisting NGOs with community knowledge for on-the-ground support. This may also entail hybridizing existing missionary electrification efforts with clean energy, and/or rolling out early distributed renewable projects on public infrastructure (hospitals, government buildings).
5. **Facilitate collaboration between project developers** and civil society groups, distribution utilities, and electric cooperatives to maintain end-user awareness of project costs and opportunities.
6. **Continue rolling out targeted local-level reforms and ordinances** in order to signal policy framework readiness to investors, decrease perceived risks, and attract international concessional finance.

Abstract

Progress in renewable energy (RE) and distributed energy resources (DERs) is a key development opportunity for the human development of Filipino communities. The Philippines presents a compelling example for mobilizing finance toward RE and DER in low-and middle-income countries due to its centralized energy grid, archipelagic geography, energy access disparities, and robust existing energy policy. This project aims to identify the gaps and challenges gridlocking DER and RE projects in the Philippines and propose opportunities to address those challenges through policy, community engagement, and financing mechanisms. While substantial literature exists on the state of the Philippine energy system, the majority employs a top-down analytical approach that limits the inclusion of many on-the-ground stakeholders' experiences. The study team addresses this research gap through a sequence of semi-structured interviews analyzed for key themes using inductive coding methods. Final results indicate that while a robust framework of national policies exists to spur renewable DER deployment, a more targeted approach is needed to ensure that local actors—including government units, rural banks, and electric cooperatives—can better coordinate an equitable energy transition. This report outlines strategies designed to catalyze further regional, national, and international investment into Philippine renewable energy systems and improve the procedural inclusion of all stakeholders in energy project implementation.

Objective

The objective of the project is to answer the following research question: What are the key challenges, and potential interdisciplinary approaches, to financing and implementing culturally appropriate, community-based, distributed, and equitable inputs into the energy transition in the Philippines?

Introduction

Energy Systems in the Philippines

Within the United Nations Framework Convention on Climate Change (UNFCCC) landmark 2015 Paris Agreement, the Philippines joined 194 other countries agreeing to limit greenhouse gas emissions at a global temperature increase of 1.5°C above pre-industrial levels. Furthermore, the United Nations Department of Economic and Social Affairs has led the creation of 17 Sustainable Development Goals (SDGs) to achieve by 2030, including Goal 7 to “ensure access to affordable, reliable, sustainable and modern energy for all.” To fully address SDG 7, it is essential for low and middle income countries to develop sustainably and ensure a successful global transition to a low-carbon economy.

In 2022 the Jame E. Rogers Energy Access Project identified the Philippines as one of the “Next 15” countries with high emissions potential due to their high economic growth. In the words of Phillips, et al., “Investment decisions made in these countries leading up to 2030 will determine whether low-carbon pathways out of poverty and climate vulnerability are possible for millions, and whether the next global surge in emissions can be prevented.” With an economic growth rate of 6.3 percent, a 2021 population growth of 1.3 percent, and a high level of climate vulnerability, the Philippines is a prime candidate for attention in the global energy transition sector. (Phillips et al., 2022). Price, reliability, and greenhouse gas emissions are all major issues within the current Philippine energy system, and as many Philippine households lack electrification, the Philippine government grapples with the three challenges of the so-called “energy trilemma”: Energy Security, Energy Equity, and Environmental Sustainability of Energy Systems (Yap et al, 2021). The Philippine Department of Energy (DOE) is the primary agency responsible for energy policy regulation in the country, and has implemented key policies and frameworks including the Renewable Energy Act of 2008 (Net Metering for RE, Green Energy Option Program, and Renewable Portfolio Standards), DER Rules, and a 2020 Coal Moratorium. In order to properly address the global climate challenge and meet the energy demands of its population and industry, the Philippines must continue to address its growing emissions potential and the gaps in financing a clean energy sector.

An archipelago of over 7,000 islands, the Philippines’ distributed geography poses an inherent challenge in constructing and interconnecting a traditional modern electricity grid. Energy access among the Philippines’ current population of approximately 116.5 million is a primary concern, particularly in rural areas, due in part to this geographic distribution of population. According to World Bank data, 97.5 percent of the Philippine population had access to energy as of 2021, although the quality and cost of said energy is not defined. The nation’s energy access rate is as high as 98 percent in its capital region, but lags in rural regions (Taniguchi, 2019). As of June 2023, only 79 percent of the 6.15 million total households in the Mindanao major island groups were electrified (DOE, 2023). The Department of Energy (DOE) 2023-2032 National Total Electrification Roadmap outlines four key strategies to accomplish

total electrification by 2028: 1. Non-discriminatory household access to distribution services, 2. Distribution line extension to unserved areas viable for regular connection, 3. Fee-for service Stand-Alone Home Systems (SAHS) for areas not viable for distribution connections or even microgrid systems, 4. Microgrid systems in areas with clusters of households and potential for economic activities. The key administrative programs to support this implementation include 1. Total Electrification Project (TEP), funded by the DOE, 2. National Electrification Administration (NEA) programs toward barangay¹, sitio², and household electrification, 3. National Power Corporation's (NPC) Missionary Electrification Plan for regions without access to the power grid, 4. DOE's Competitive selection process for Microgrid System Service Providers, 5. DOE energy regulations to provide financial benefits to host communities.

Electric power generation and distribution in the Philippines reflects the variety of its geographic, physical, economic, political, cultural, and technological foundations. The electric power transmission grid is managed by the National Grid Corporation of the Philippines, which interconnects wholesale power generation to distribution utilities and electric cooperatives which deliver power to household consumers. Electric distribution is dominated by Manila Electric Company (Meralco), with its franchise covering 55 percent of the Philippines' electricity output (Metro Pacific Investments, 2021). Outside of the capital region, though, distribution is largely handled by numerous electric cooperatives (ECs) and private distribution utilities (PDUs). Roughly 20 ECs serve off-grid regions in the Philippines (ERIA, 2018), and as of 2023, almost 61 percent of the total households in the country received distribution from ECs, with the remainder serviced by Private Investor-Owned Utilities (PIOUs) and Local Government Unit-Owned Utilities (LGUOUs) (DOE, 2023).

The archipelagic geography and the layered distribution network of the Philippines contributes to high costs and low reliability. Connecting remote islands to a centralized grid involves building expensive infrastructure across mountains and seas, and maintaining it in the face of earthquakes and typhoons. The rising electricity cost in the Philippines is a major area of concern for consumers. At US\$0.20/kWh as of December 2023, Philippine electricity prices are among the highest in Southeast Asia (Ahmed, 2019). Additionally, power outages are frequent in the country and energy losses are high in both the transmission and distribution processes (Taniguchi 2019, IEA 2017).

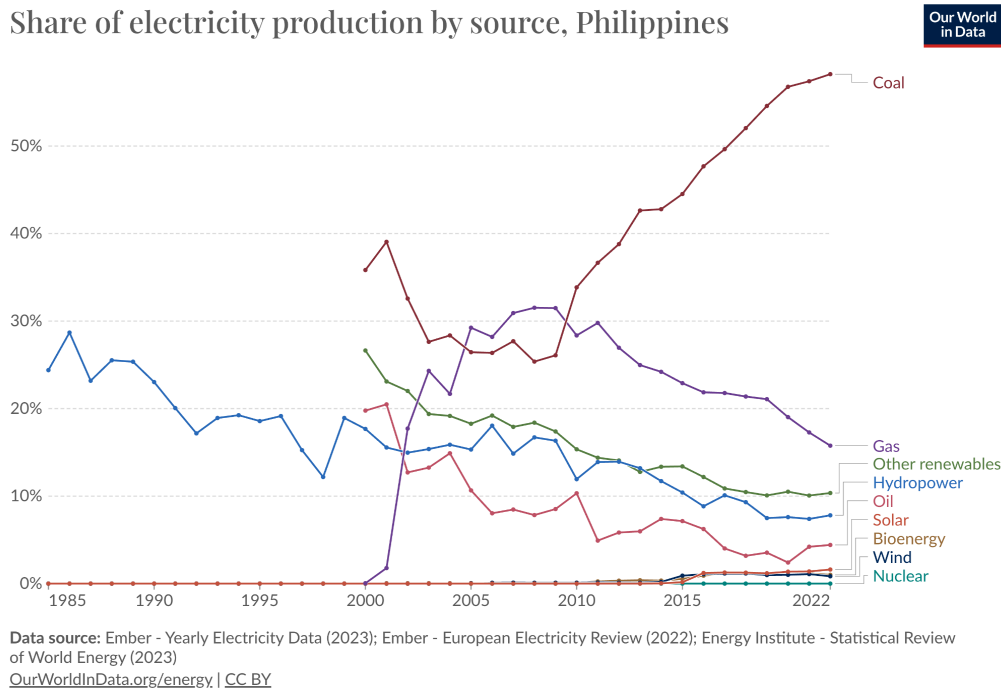
Meanwhile, the existing energy infrastructure is heavily reliant on fossil fuels. As of 2020, coal dominated the installed capacity of the Philippine power sector, at 42 percent, followed by 29 percent combined renewable energy sources, 16 percent oil, and 13 percent natural gas; hydro and geothermal occupy the majority of renewable resources, with only 4 percent of the installed capacity met by solar, 2 percent met by wind, and 2 percent met by

¹ Barangay is a term in Filipino denoting a village or community and represents the smallest political unit in the Philippines.

² Sitio is a term used in the Philippines to describe a cluster of households, often referred to as a hamlet, located within a dispersed, rural barangay.

biomass (DOE, 2021). As Figure 1 demonstrates, the expansion in demand over the past two decades has primarily been met by a massive rise in coal. As the country continues to industrialize and energy demand continues to grow, so too will greenhouse gas emissions unless the Philippines prioritizes the development of RE and the phasing out of fossil fuels.

Figure 1: Electricity Production Over Time



Source: Ritchie et al., 2020

Renewable & Distributed Energy in the Philippines

Although the Philippines' power sector still largely depends on centralized coal power plants to generate its electricity, the country has made progress toward developing utility-scale renewable energy projects. As of 2019, the country's geothermal power plants have a total installed capacity of 1.93 GW. The majority of this capacity is located in Makiling-Banahaw, Tiwi, Maibarara, Bacon-Manito, Tongonan, Palinpinon, and Mt. Apo. (Gulagi et al., 2021). By 2019, wind power made up approximately 1.9 percent of the Philippines' total energy capacity, with key installations in regions like Ilocos Norte, Rizal, Aklan, Mindoro, Guimaras, and Romblon (Gulagi et al, 2021). Additionally, Meralco has been encouraged by investors to explore opportunities in offshore wind projects (IEEFA, 2019). The Philippines' hydropower sector achieved a 3.8 GW overall installed capacity in 2019, predominantly from large dam-based plants situated in mountainous areas like the Cordillera and Sierra Madre ranges, as well as Bukidnon and Lanao. Moreover, the country's energy portfolio includes run-of-river hydropower installations (Gulagi et al., 2021). As of 2021, the DOE listed 62 solar power

projects operating in accordance with the country’s renewable portfolio standards (RPS); these projects’ capacity ranged from 0.21 MW (0.0002 GW) to 100.6 MW (0.1 GW), totalling 1.31 GW (DOE, 2021).

In its chapter on Distributed Energy Systems (DES) in the Philippines, ERIA defined DES as any “distributed generation or decentralized power system where electric power is produced and consumed locally at or near the consumers” (ERIA, 2018). It further clarified that DES can be utility- or consumer-owned, and either off-grid (no connection to the national grid) or embedded or self-generating (connected to the grid) generation. DES technologies are not limited only to renewables, and can include biomass, diesel, coal, and gas (ERIA, 2018). While roughly half of existing DES in the Philippines is powered by diesel fuel, for the purposes of this project’s consideration of the transition to renewable energy, the focus will be on *renewable* Distributed Energy Systems (DES), Distributed Energy Resources (DER), and Distributed Generation (DG). These technologies are solar photovoltaic (PV), wind, solar thermal, hydro, and geothermal.

The Philippines’ DES required capacity is expected to rise for off-grid and on-grid (“embedded”) areas alike, through 2025 and 2040 (Phoumin et al., 2018). In late 2022 the The Energy Regulatory Commission (ERC) released a set of rules to oversee DER in the Philippines to support the advancement of renewable energy, democratizing the grid, and reducing price fluctuations. These DER rules guide “interconnection standards, certificate of compliance requirements, pricing methodologies, commercial arrangements governing the sale of energy produced and operations of the DER and payment of subsidies” (Mercurio, 2022). These rules exclude DER technologies such as microgrids, net metering, and stand-alone battery storage. DER end-users of less than 1 MW (and over 100kW for on-grid systems) nameplate capacity can export up to 30 percent of its capacity to the grid for compensation (Meralco, n.d.). In areas without grid access, the emphasis is on developing renewable energy grids, particularly those powered by solar PV panels, primarily for local residents who lack reliable and affordable electricity (Uddin et al, 2023).

Still, renewable DER deployment looks promising for the Philippines from a technical perspective. Some integration studies, including one focused on the Luzon-Visayas region of the Philippines, did not find a technical limit to renewable energy penetration ([USAID, 2018](#)). In that study, all high-RE scenarios could be balanced on an hourly basis by the modeled 2030 Luzon-Visayas system. The scale, proximity, and system flexibility of DERs make them an increasingly desirable choice for the Philippines in particular, potentially at par with centralized generation in the near future (ERIA, 2018). However, the DOE 2024-2028 plan for total household electrification in the Philippines plans to primarily address underserved households through regular power grid connection. 27.47 percent (a little over 1 million households) will be addressed through Standalone Home Systems, 9.68 percent to be served through extension of distribution lines, and less than 1 percent to be served through microgrid systems for areas not viable for conventional line extension (DOE, 2023).

The Philippines possesses significant renewable energy potential for development, with a clear opportunity for Distributed Energy Resources (DER) to address the energy needs of remote and island areas with limited or no grid connectivity (Gulagi et al, 2020). One 2023 study identified an RE potential of 1,200 GW in the Philippines and projected through models that a transition to near-100% renewables was possible without jeopardizing energy costs (Hölsch et al., 2023). DER offers several advantages for the Philippines, enhancing energy access by providing reliable electricity to remote areas. This improvement in energy access is crucial for underserved communities, contributing significantly to socio-economic development. Moreover, DER contributes to grid resilience, a vital aspect in a country prone to natural disasters like typhoons and earthquakes. By decentralizing power generation, it ensures a less disrupted energy supply during emergencies (Green.org, 2024). DER also empowers consumers by enabling them to become prosumers – both producers and consumers of electricity – leading to reduced electricity costs and fostering increased participation in the energy market, while simultaneously encouraging consumers to take ownership of their energy access. Furthermore, DER supports the low-carbon transition, especially when based on renewable sources, by reducing reliance on fossil fuels and lowering greenhouse gas emissions, aligning with global sustainability goals.

Southeast Asia Context

Several countries within Southeast Asia are undergoing similar energy transitions to that of the Philippines, competing for resources and attention in the global energy transition finance sector. Energy systems, resources, and financial inputs in Southeast Asia are shifting as the region develops economically within the context of the energy transition, with energy demands projected to surge by 60 percent by 2040 (IEA, 2019). The region relies heavily on energy imports, sourcing over 40 percent of its energy needs from abroad as of 2021 (PwC, 2021). Meanwhile, each country is at a unique stage of embracing regulatory frameworks, and thereby attracting finance, for clean energy development and distributed energy resources.

Vietnam, for example, has emerged as a leading market for renewable energy in Southeast Asia, significantly increasing its installed solar power capacity and a national aim for carbon neutrality by 2050. The country plans for renewable energy to power 75 percent of its electricity by 2045, despite challenges like grid development and regulatory clarity (Fallin et al, 2023). This ambition is largely driven by favorable government policies and feed-in tariffs, which have particularly boosted solar and wind power capacities (Thang Nam Do et al., 2021). Additionally, in December 2022, Vietnam announced a Just Energy Transition Partnership (JETP) in coalition with the United Kingdom, the United States, and the European Union, among others. (Energy Transition Partnership, n.d) The JETP is designed to mobilize \$15.5 billion to help facilitate Vietnam's renewable energy targets and carbon emission reductions, aiming to account for at least 47 percent electricity generation by 2030 (Guild, 2023).

Thailand has also committed to aggressive targets for RE, aiming to generate 50 percent of its electricity from clean energy by 2040, achieve carbon neutrality by 2050, and realize

net-zero greenhouse gas emissions by 2065 (Fallin et al, 2023). Thailand's efforts to reduce reliance on natural gas imports and enhance energy security through clean energy extends to biomass, given its large agricultural sector (IRENA, 2017). The Royal Thai Government implemented the Power Development Plan (PDP) for 2018 - 2037, which includes targets for wind and solar energy production. The country also has a very successful rooftop solar program, encouraging the adoption of solar panels among residential and commercial users (GIZ, 2023).

Indonesia, as the largest energy consumer in Southeast Asia, has vast potential for low-carbon development. Despite leading the world in potential geothermal energy resources (Rachman, 2023), the country's reliance on coal and fossil fuels remains high (Guild, 2023; Mahiddin et al 2023). Indonesia's archipelago shares a similar geographical challenge with the Philippines, presenting opportunities for DER to provide energy solutions to its many remote islands. The Ministry of Energy and Mineral Resources (MEMR) has introduced net metering policies to support the deployment of rooftop solar panels for decentralized energy access, as well as MEMR Regulation No.50 (2017), which aims to boost the utilization of renewable sources for electricity production (Mahiddin et al, 2023). Indonesia's JETP is another critical initiative aiming to expedite the country's transition to renewable energy. With a planned investment of \$20 billion, the JETP focuses on increasing the generation of renewable energy to meet ambitious electricity production targets by 2030 (Guild, 2023).

Understanding these country contexts and the broader ASEAN landscape is crucial for the Philippines as it navigates its own energy transition. In particular, the regional dynamics of competition and collaboration in attracting international finance for energy projects highlight the importance of strategic positioning for the Philippines in the global energy transition landscape.

Energy Transition Finance Context

In order to transition the Philippine energy sector to lower emissions technology, improved access, and more resilient infrastructure, the Philippine government and developers require vast sums of finance support from domestic and international sources. Global development and electrification in the 20th century, funded both publicly and privately, favored fossil fuels due to factors such as availability of resources and technology and ease of transport. Governments encouraged this development through fossil fuel subsidies, and fuel-intensive technologies returned a high profit to traditional lenders and investors. However, many developing countries, including the Philippines, now face compounding challenges of delivering affordable and reliable energy access to their population and burgeoning industries, while contending with the global need to cap global warming at 1.5 degrees Celsius. Despite an urgent need for finance in the transition to renewable energy and various frameworks and commitments agreeing to this priority, national governments, development banks, and private funders all continue to favor incumbent fossil fuel actors and technologies. Additionally, these funds remain heavily oriented toward utility-scale, grid-reliant energy projects, despite the evidence-based need for distributed energy technology to serve energy-poor and rural populations (Practical

Action, 2017). The just energy transition—centered , centered in energy access, climate justice, and the urgency to reduce emissions in line with Paris Agreement goals—requires financiers and governments alike to invest in renewable energy, both at the large/centralized and small/distributed scales, and actively disinvest in fossil fuel systems.

The UNFCCC defines climate finance as “local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change.” Within climate finance, energy *transition* finance (ETF) specifically seeks to finance the large-scale investments required in clean energy technology, infrastructure, and access. ETF directs funds on the local, national, and international level toward transitioning economies toward renewable energy, but can also include disinvesting from fossil fuel projects, financing the premature decommissioning of fossil fuel infrastructure, and mitigating the effects of hard-to-abate sectors that are necessary in an industrialized world. Basic mechanisms in ETF include private securities financing (i.e. corporate bonds and project bonds), private credit financing (i.e. soft loans and non-recourse project financing), equity financing, international concessional loans, bilateral subsidies of power connection, and philanthropic grant support.

In order to reach net-zero emissions by 2050 (the target that climate scientists agree upon to limit warming to 1.5 C), annual investments in clean energy in emerging and developing economies must increase from just \$150 billion US in 2020 to more than \$1 trillion US by the end of the decade (IEA, 2021). The International Energy Agency (IEA) found in 2012 that roughly 55 percent of energy transition finance will need to be allocated to distributed systems. Meanwhile, the Philippines requires over 153 billion USD for its clean energy transition (Fuentebella, 2022). Of this, the DOE has identified 62 percent (\$94.3B) to be allocated toward the construction of new RE power plants, but over \$48 billion is allocated to oil, gas, coal, and conventional power development, as seen in Figure 2 below (Fuentebella, 2022).

Figure 2: Investment Requirements for a Sustainable and Clean Energy Future in the Philippines



Source: Fuentebella, 2022

Equity activists have long advocated at climate negotiations for improved accountability from developed Global North countries to help bridge the economic and energy development gap in the Global South, as well as climate risk mitigation for vulnerable countries. Loss and Damage Funds were outlined at the 27th and 28th COPs, to address risks such as increasingly severe climate events and rising sea levels, but do not directly address energy transition finance. At the 2022 Glasgow Conference (COP26), the UNFCCC identified the opportunity for Just Energy Transition Partnerships (JETPs), which are international partnerships between countries with coal-dependent or emerging economies and other countries willing to finance their transition toward cleaner energies (Stone, 2023). A pilot partnership between South Africa and France, Germany, the UK, the USA, and the EU was launched in 2021. Many developing countries, including the Philippines, are showing increased interest in JETPs, signifying a willingness to engage in complex, drawn-out processes to secure financing for transitioning to low-carbon energy sources. In fact, the Rockefeller Foundation is currently in a partnership with Climate Smart Ventures (CSV) to consider The Philippines for a JETP; the organizations have named a 9 billion USD need for investment capital and a preference for a nationally owned mechanism to fund near-term energy transition priorities (The Rockefeller Foundation, 2024). Though no JETP exists yet, the Philippines is home to the world's first Energy Transition Mechanism (ETM), a new financing program from the Asian Development Bank (ADB) enabling the early retirement and transitioning of coal plants. The Philippines' lack of just transition funding, existing energy legislation, and climate vulnerability make it an excellent candidate for energy transition finance focus from the global community (CEED, 2018).

Through the 1990s, the Philippines saw a rise in exogenous finance from actors such as the World Bank, ADB, and the International Monetary Fund (IMF), in an effort to restructure the nation's power sector amid a pre-liberalization economic and power crisis (Saculsan & Mori, 2022). The Philippine government has regularly been offered official development assistance (ODA) in the form of loans and grants in order to support power system reforms (La Viña et al 2011). Recently, with its privatized energy sector, the Philippines has been integrating more private capital investment into generation (ERIA, 2018), and has concurrently transferred more early-stage risk to the private sector (Ibid). In 2022 the DOE amended a Philippine ownership requirement in the 2008 Renewable Energy Act, opening 100 percent (from the previous 40 percent) equity options to foreign investors looking to fund RE development and generation projects (Chipman Koty, 2023). Although the Philippine energy sector, policymakers, and international finance actors have made commendable changes to the system, gaps remain in financing a community-based, renewable, and distributed energy system.

Recent literature has identified several challenges in the international financing (and siting) of DERs in the Philippines. These challenges include the capital intensity of renewable DERs (La Viña et al.), attracting investors amid risk-averse financial attitudes (IEA, 2021), difficulties in lending to small-scale borrowers, higher cost of finance itself, limited capacity allocation and technical assistance for operation & maintenance (Syaqui et al., 2021), project

de-risking, perceptions of markets being too small (Mitigation Action Facility, n.d.), and complex permitting processes. At a larger scale, these challenges can be grouped into several discrete categories, as will be further elaborated in the Finance Challenges section.

Methodology

In order to address the project inquiries on finance, policy, community engagement, and transferable lessons of an equitable Philippine energy transition, the research team first conducted a review of current literature on the energy context of and distributed energy resource deployment in the Philippines. The research team reviewed over 100 academic papers, journal articles, and technical resources related to distributed energy resources in the Philippines and extracted key themes, which inform the background sections above, as well as the challenges and opportunities/recommendations below. Additionally, the team identified several crucial gaps to be factored into further stages of data collection.

The second stage of research involved interview outreach. Team members identified and compiled a comprehensive list of over 120 potential contacts based on their experience in the Philippines energy transition, with approval from the Duke University Campus Institutional Review Board. Outreach targets were set by subdividing interviewees into five categories: 1) Philippine Government Employees; 2) Philippine Developers, Implementers, and local NGOs; 3) Energy Transition Financiers/Investors; 4) International Energy Transition Specialists; and 5) Leaders in Communities Affected and Involved in Philippine Energy Transition. The team used a snowball recruitment strategy to add contacts across sectors, aiming for a balance across the five categories. The distribution of final interviewees across categories is further explained in this paper's Stakeholder section. Team members then conducted twenty-four (24) semi-structured 30-90 minute interviews with participants, using various interview guides corresponding to the participant's category and area of expertise. The semi-structured nature of interviews assured a general consistency in focus while also allowing for flexibility in novel feedback, clarifications, and follow-up questions.

Finally, the team reviewed interview transcripts for key themes using a qualitative, inductive ("ground-up") coding approach, which combined elements of open coding, descriptive coding, and pattern coding. Specifically, the team developed an a-priori codebook of 15 prevalent topics from interviews, traced those topics in interview transcripts, and conducted analysis using NVivo software. The full codebook can be found in Appendix D. Codes consisted of the following parent and child terms:

Parent codes	Child codes	Definition
Finance	Challenges	Challenges or barriers related to finance
	Opportunities	Opportunities or facilitators related to finance
	Compelling Quotes	Compelling quotes that are primarily about Finance and are worthy of being extracted and bolded in our report
Community Engagement	Challenges	Challenges or barriers related to community engagement.
	Opportunities	Opportunities or facilitators related to community engagement
	Compelling Quotes	Compelling quotes that are primarily about community engagement and are worthy of being extracted and bolded in our report
Policy/Implementation	Challenges	Challenges or barriers related to policy, government, or governance (at any level: regional, national, international).
	Opportunities	Opportunities or facilitators related to policy, government, or governance (at any level: regional, national, or international).
	Compelling Quotes	Compelling quotes that are primarily about Policy/Implementation and are worthy of being extracted and bolded in our report
Stakeholders	Energy System Players	Electric Coops, Utilities, Project Developers, NGOs active in development
	Finance Actors	Multilateral Development Banks, Commercial Banks, Local Banks, Grant Financing, Climate Funds, Large NGOs with funding identity
	Policymakers & Administrators	Global, Domestic, Provincial, Local
	Small Actors on the Ground	Communities, Community Representatives, Small Businesses, Small-Scale Advocacy NGOs/CBOs/CSOs
	Technical and Advisory Experts	Large Think Tanks, NGOs, Consultants, etc., including foreign, international, and domestic
Project Recommendations		Any recommendations from the interviewee directly to the research team on framing the MP and resulting product.

There are several limitations to this data. Due to the size and scope of the interview pool and the time and resource constraint on this project, the team recognizes that these findings do not comprehensively reflect Philippine energy transition issues. Results are intended to offer a deeper insight into first-hand experiences within and insights into that transition. The team additionally recognizes that the majority of interview participants come from on-grid, urban backgrounds, meaning interview results are biased toward grid-connected stakeholders. While the team made efforts to snowball-recruit community members across all regions, project results may not apply to the most rural, remote communities lacking digital communication access. In spite of this, the team was able to gain insights on distributed energy resource development that ultimately aims to electrify and connect those communities to the broader network of energy-transitioning communities.

The research team recognizes that the interview guide is intentionally flexible, thematic, and allows for informal deviations from the research script. Each interviewee was asked

questions from this interview guide, but due to time constraints, was asked a shortened list of questions curated to their expertise. The full interview guide can be found in Appendix B.

Results & Discussion

Stakeholder Analysis

As mentioned in the Methodology section, the research team interviewed 22 individual and two groups of experts in the subject matters of community-based energy transition finance and renewable distributed generation in five interviewee categories: 1) Philippine Government Employees (four); 2) Philippine Developers, Implementers, and local NGOs (four); 3) Energy Transition Financiers/Investors (four); 4) International Energy Transition Specialists (six); and 5) Leaders in Communities Affected and Involved in Philippine Energy Transition (six).

Table 1: Interviewee Count

Category	Count
1: Philippine Government or Agency	4 (2 individuals, 2 groups)
2: Philippine Energy Developers, Implementers, NGOs	4
3: Energy Transition Financiers/Investors	4
4: International Energy Transition Specialists (Experts)	6
5. Community Leaders and Members	6

Interviewees regularly mentioned stakeholders in their responses, which the team categorized and coded into five stakeholder categories upon analysis: Energy System Players; Financiers; Policymakers; Small Actors on the Ground; Technical and Advisory Experts. In total, the team tallied the mentions to 557, distributed across these groups. As displayed by Table 2, the Small Actors on the Ground were disproportionately high at 34 percent of mentions, and Technical & Advisory Experts were disproportionately low at 6 percent of mentions. Noticeably, mentions of Small Actors on the Ground were generally evenly spread (20-29%) across Categories 2-5, but only 3 percent of these mentions came from Category 1 (Philippine Government Employees).

The mentions of stakeholders were generally evenly distributed from the categories of interviewees. However, 46 percent of the mentions of Technical & Advisory Experts came from Category 4 (International Energy Transition Specialists) Interviewees. Similarly, 49 percent of all of Category 1 (Philippine Government Employees) Interviewees' mentions were coded as Policymakers & Administrators and 38 percent of Category 5 (Leaders in Communities Affected and Involved in Philippine Energy Transition) Interviewees' mentions were coded as Small

Actors on the Ground. Interestingly, 43 percent of Category 2 Philippine Developers, Implementers, and local NGOs) Interviewees' mentions were *also* Small Actors on the Ground. It is unsurprising, but worth noting, that multiple interviewees disproportionately mentioned the stakeholder groups with which they are most aligned.

Table 2: Total coded stakeholder mentions

Stakeholder	Defining Examples	Count	% of total count
Energy System Players	Electric Coops, Utilities, Project Developers, NGOs active in development	99	18%
Finance Actors	Multilateral Development Banks, Commercial Banks, Local Banks, Grant Financing, Climate Funds, Large NGOs with funding identity	120	22%
Policymakers & Administrators	Global, Domestic, Provincial, Local	119	21%
Small Actors on the Ground	Communities, Community Representatives, Small Businesses, Small-Scale Advocacy NGOs/CBOs/CSOs	187	34%
Technical & Advisory Experts	Large Think Tanks, NGOs, Consultants, etc., including foreign, international, and domestic	32	6%
Total		557	100%

Table 3: Percent of coded stakeholder group mentions

	Energy	Finance	Policy	Small	Tech
Cat 1 (61)	<i>11%</i>	<i>10%</i>	28%	<i>3%</i>	<i>4%</i>
Cat 2 (81)	<i>8%</i>	<i>17%</i>	<i>9%</i>	20%	21%
Cat 3 (119)	27%	33%	<i>9%</i>	20%	<i>11%</i>
Cat 4 (153)	22%	30%	28%	27%	46%
Cat 5 (134)	32%	<i>11%</i>	26%	29%	<i>18%</i>
	100%	100%	100%	100%	100%

Table 4: Percent of coded mentions by interviewee category

	Energy	Finance	Policy	Small	Tech	
Cat 1 (61)	20%	20%	49%	<i>10%</i>	<i>2%</i>	100%
Cat 2 (81)	<i>11%</i>	26%	<i>12%</i>	43%	<i>7%</i>	100%
Cat 3 (119)	26%	34%	<i>8%</i>	29%	<i>3%</i>	100%
Cat 4 (153)	<i>16%</i>	24%	20%	31%	<i>8%</i>	100%
Cat 5 (134)	28%	<i>10%</i>	21%	38%	<i>4%</i>	100%

Italicized numbers represent <20%. Numbers in blue represent <10%. Bold numbers represent >20%. Numbers in red represent >35%.

The research team then categorized these 557 stakeholders mentioned into 55 stakeholder groups within community-based energy transition finance and renewable distributed generation, as seen in Table 5. (The full list of stakeholders can be found in Appendix C.)

Table 5: Coded and grouped stakeholder mentions

Stakeholder	Count	Sector
National Government - Agencies	57	Policy-makers & Admin
Local Government	18	Policy-makers & Admin
Generic Government	12	Policy-makers & Admin
National Government	11	Policy-makers & Admin
Politicians / Officials / Policy-makers	11	Policy-makers & Admin
Political Influencers	5	Policy-makers & Admin
International Governance	3	Policy-makers & Admin
Development Finance/Banks	28	Finance Actors
Financier - generic	17	Finance Actors
Large NGOs with funding identity	15	Finance Actors
Private/Big banks	12	Finance Actors
Foreign governments	9	Finance Actors
Banks - General / Generic	8	Finance Actors
Government banks	6	Finance Actors
Foreign investors	5	Finance Actors
Local banks	4	Finance Actors
Land banks	3	Finance Actors
Cooperatives	3	Finance Actors
Investors	2	Finance Actors
Consumers / MCOs / Prosumers	28	Small Actors on the Ground
Electric Cooperatives	26	Energy System Players
Distribution Utility	22	Energy System Players
Developers	15	Energy System Players
Generation	8	Energy System Players
Fossil fuel companies / projects	3	Energy System Players
Energy Market	2	Energy System Players
Transportation sector	2	Energy System Players
Communities: General / rural small	20	Small Actors on the Ground
Communities: Affected	20	Small Actors on the Ground
Communities: Island Provinces	13	Small Actors on the Ground
Communities: Cities	4	Small Actors on the Ground
Community Orgs / CSOs	16	Small Actors on the Ground
Youth	12	Small Actors on the Ground
Activists/Advocates - General	6	Small Actors on the Ground
Communities of faith	4	Small Actors on the Ground
Marginalized People: Indigenous	16	Small Actors on the Ground
Marginalized People: the Poor	11	Small Actors on the Ground
Marginalized People: Women	7	Small Actors on the Ground
Marginalized People: General / Other	3	Small Actors on the Ground
Private Sector (Big energy companies & Big families)	18	Energy System Players
Private companies	6	Finance Actors

MSMEs	3	Small Actors on the Ground
Foreign Governmental/Intergovernmental Organizations	10	Tech & Advisory Experts
Think-tanks / Advisory NGOs	8	Tech & Advisory Experts
Large Domestic NGOs	4	Tech & Advisory Experts
Workforce: Agriculture/Aquaculture	10	Small Actors on the Ground
Workforce (rural, displaced)	8	Small Actors on the Ground
Workforce (technical)	3	Energy System Players
Universities	3	Tech & Advisory Experts
Technical experts	3	Tech & Advisory Experts
Networks	2	Tech & Advisory Experts
Other / Unclear	6	Small Actors on the Ground
Unclear	2	Policymakers & Admin
Unclear	2	Finance Actors
Unclear	2	Tech & Advisory Experts

From the full list of stakeholder mentions, the team identified twenty-four (24) key players, who were specifically mentioned more than twice. Mentions of affiliated programs were included with their overarching stakeholder. While all stakeholders in this system need to be involved in developing and implementing solutions to the challenge of an equitable energy transition in the Philippines, these stakeholders merit special attention as particularly important to consult and/or uniquely well-equipped to play a key role in implementing an effective transition.

- Local governments / Local Government Units (LGUs) (18)
- Department of Energy (DOE) (16)
- Indigenous Peoples (15)
- Electric cooperatives (small and large) (15)
- Poor communities (11)
- Asian Development Bank (10)
- Energy Regulatory Commission (10)
- Agriculture/Aquaculture workers (9)
- National Electrification Administration (7)
- World Bank & International Finance Corporation (IFC) (7)³
- Women (6)
- Meralco (5)
- ROMELCO / Romblon (5)
- Department of Finance (DOF) (5)
- Displaced fossil fuel workers (4)
- Department of Interior and Local Government (DILG) (3)
- National Economic Development Authority (NEDA) (3)

³ 8 mentions of World Bank and 6 mentions of IFC, 4 and 5 of which, respectively, were from an IFC representative.

- Development Bank of the Philippines (3)
- CPII, the Center for Power Issues and Initiatives (3)
- Center for Energy ecology and development (3)
- Major families (3)
- Generating households, residents, and businesses (3)
- MSMEs (3)
- DENR (3)

Challenges & Opportunities Identified

Through the aforementioned review of literature, policy, and interviews, the research team determined numerous challenges and opportunities for improved efficacy in financing and implementing community-based, renewable, and distributed energy resources. The following sections provide insight into challenges identified in the categories of Policy, Community Engagement, and Finance, followed by opportunities to generally or specifically address system challenges through mechanisms in this same category.

Policy

Policy Challenges

In the Philippines, where both the geographical and regulatory landscape are theoretically conducive toward DER deployment, the implementation, prioritization, and financing of DER-favorable policies remain a challenge. It is difficult to disentangle the role of local legislative and regulatory schemes from the larger landscape of international finance when it comes to DER deployment. The Philippines has a robust policy history in the passage of the The Renewable Energy Act of 2008, which facilitates the development of renewable energy through mechanisms like feed-in tariffs (FITs), Renewable Portfolio Standards (RPS), and net metering for installations up to 100kW or less. However, the uptake of these rules has been slow since their approval in 2013 ([Mitigation Action](#) Facility, n.d.). The 100kW size restriction also excludes many small-scale facilities. Therefore, some of the Philippine's DER expansion will require an enhancement of legal, regulatory, and policy landscapes (Ramos, 2020).

Specifically, some of the most prevalent challenges mentioned in stakeholder interviews fall into these six categories: **1) ineffective policy implementation, 2) lack of policy itself, 3) competing interests, 4) misaligned policy priorities, 5) access and accessibility, and 6) outdated grid.** Understanding these categories provides a valuable contextual backdrop to DER finance in the Philippines.

1. Ineffective policy implementation

“When it comes to policies, policy makes a good foundation. But, if it's not followed through to implementation, that's where everything falls to the ashes. Basically, it becomes like a black hole—everything that those policymakers have done just goes to waste.” – Owner of a local bank cooperative

Stakeholders frequently referred to the shortcomings of policy implementation more than policy itself as a challenge for equitable and community-based Philippine DER development. The general perspective of interviewees was that the Philippines does have good, progressive energy laws—they are just not implemented or monitored properly. One activist nicknamed these policies “paper laws.” For others, it was more about the pace of policy rollout, and frustration toward a longer lag time between policy and implementation. Some of the key policies that have faced implementation challenges are outlined below.

Existing Distributed and Renewable Energy Regulations

The Renewable Energy Act of 2008 (Republic Act No. 9513) promotes the development and utilization of renewable energy sources, including incentives for RE projects which can encompass DERs. Incentives within the 2008 REA include a regulatory net metering framework that allows residential and commercial consumers to generate their own electricity from renewable energy sources (like solar panels) and feed any surplus power back into the grid; a Green Energy Option Program (GEOP) that allows consumers to choose renewable energy as their source of power, promoting the use of renewable energy in the energy mix; and a Renewable Portfolio Standard (RPS) that mandates power distributors to source a certain percentage of their power supply from renewable energy sources.

Additionally, the Philippine Energy Regulatory Commission (ERC) released a Resolution Adopting the Rules Governing Distributed Energy Sources in 2022. The DER Rules established three tiers of DER installations: 1. RE DERs with a nameplate capacity of 100kW - 1 MW, meant for consumption and export, for end-user systems connected on-grid, 2. RE DERs with a nameplate capacity limited at 1 MW, meant for consumption and export, for off-grid end user systems, and 3. DERs of any energy type, for on- or off-grid users, and meant only for end-user consumption. The Rules capped export for Tiers 1 and 2 at 30% of generation capacity (Meralco, n.d.).

The Strategic Investment Priority Plan (SIPP), signed by President Duterte in 2022, puts high importance on the RE sector as part of a larger approach to stimulate the Philippine economy and strategically support industry. The SIPP offers corporate income tax holidays, enhanced deductions, and preferential tax rates for energy storage and renewable energy projects.

The Renewable Energy Act of 2008 vs. the ongoing use of coal

First and foremost, there was a call for stronger implementation of the Renewable Energy Act of 2008. The Act includes several provisions for net metering, feed-in tariffs, and Renewable Energy Portfolio Standards. This legislation was widely regarded among interviewees as the most comprehensive piece of RE policy in the Philippines. Still, its implementation has been slow at the local level. Being an early adopter of a provincial RE ordinance (along with Dumaguete, Negros), the city of Iloilo was able to very slowly transition to RE—yet many coal plants are still in operation there due to the slow pace of phasedown (Mercurio, 2022). Nationally, there are active loans remaining for coal power plants. Part of this difficulty arises from implementation loopholes in the Philippines’ coal moratorium (2020). The Philippine DOE had declared a moratorium on *new* coal in 2020, but did not address the 28 coal-fired power plants operating in the country or the 22 proposed plants with DOE approval (Chavez, 2020). Even when new permits or contracts are forbidden, projects still remain in the pipeline or merely expand “as a trick used by corporations,” in the words of one community advocate, to capitalize on the misleading details of the moratorium. Interviewees mentioned the need for finance for early retirement of these plants, but also asked: if we start decommissioning these young coal power plants, who would be responsible for paying back the remaining balance?

Net metering and its slow growth outside of Manila

The net metering program, a major component of the Renewable Energy Act, is now gaining participants in the populated central city of Manila for businesses and homes alike, according to one stakeholder. Yet, outside of Manila, it is not easily available. Out in the provinces, the adoption rate is slower, and among these deterred residents, each project’s return-on-investment (ROI) suffers. According to another stakeholder, completing a project without net metering can prolong its ROI (cost recovery) by two years. The normal ROI for a distributed solar project might be three years, or five without net metering. DOE representatives noted that this net metering rural bottleneck stems largely from awareness: customers do not realize that they can avail of such a program. Even for customers who do, the ERC’s Distribution Impact Study (DIS), comprising a series of technical studies to evaluate the possible expansion or modification of a project, is a further barrier, according to several government stakeholders. Though the Energy Regulatory Commission (ERC) has waived a fee associated with the study, it still poses a challenge to small (non-private) distribution utilities that might not know how to complete the study in the first place or lack the capacity to do the study, and thus fail to attract interested net metering customers.

Delay in RPS timeline

Renewable Portfolio Standards (RPS) set clean energy generation requirements that apply to both traditional distribution utilities and electric cooperatives. Based on generators' sales, they must have a minimum percentage come from renewables. Initially, the Philippine standards were based on an aspirational target of 35 percent of emissions by 2030, meaning an incremental increase of 1 percent per year (Greening the Grid, 2018). As that progress was delayed, DOE revised that increase to be 2.52 percent per year starting in 2023. The exact reasoning is unclear, though many stakeholders acknowledged that the overall complexity of the Philippine energy system poses a challenge.

Implementation issues in local ordinances, DER connections, and cash flows

While the Philippines has seen several renewable energy ordinances promulgated at the local level, they too remain paused in the implementation phase. The RE ordinance in Negros has been authored, signed, and passed, but currently lacks any implementing rules and regulations. Despite issuing the aforementioned DER rules in 2022, the DOE has not received any applications, according to an agency interviewee. The DOE needs to review the policy further to gauge what barriers have prevented them from receiving customer interest or applications on that policy.

Additionally, there have been delays in customer connection, as agencies have received complaints that some customers have to wait 1-3 months before getting connected. High processing times from electric utilities (>20 days, according to one stakeholder), and after-service issues from solar installers, constitute some of these complaints.

Finally, Filipino stakeholders raised the issue of cash flow in energy transition implementation. Even when a government offers subsidies, it often takes time before the government disburses the funding. Distribution utilities face this cash flow delay alongside their government's pressure to increase RE share.

Monitoring, permitting, and compliance issues

Part of the difficulty of DER policy implementation is rooted in compliance. A common theme among interviewees was some degree of corporate irresponsibility when it comes to monitoring traditional development. One community leader expressed that profit-driven corporations operate with too much impunity and negligence toward safety/precautionary measures, which are often either suspended, ignored, or irrelevant. Implementation instruments like Environmental Compliance Certificates (ECCs) are not functioning as they are supposed to, noted one stakeholder. Another commented that the

people who designed Environmental Impact Assessments and Social Impact Assessments did not actually go into the communities they would affect to seek input.

Meanwhile, compliance measures for DERs seem to be too strict. For example, the permitting process itself entails much more diligence for renewables than fossil-based projects, according to a consultant at a regional development bank. In renewable projects, for example, the requirements for big projects are the same as those for smaller projects. Based on stakeholder responses, this one-size-fits-all process, from the ERC particularly, shows a deficiency in understanding that smaller projects should be given more leeway to reflect their capacity. Others recommended an increased sensitivity toward the capacity (small size) of smaller electric cooperatives, and those operating in smaller communities, as opposed to big conglomerates. Capacity matters, especially from a legal perspective. One community member recalled a university that tried to solarize over 30 of its buildings but ultimately balked at the technicality of producing greater than 100kW and thus being classified as a generation company—and paying more taxes. Big solar players, on the other hand, typically think of the potential profit of large-scale solar farms and think less about rooftops, the kind of infrastructure best suited for islands.

Standardization

Overall, the research team observed a call for standardization in the permitting process, particularly for local government units (e.g. building permits, certificates of final inspection). Some DOE-DILG (Department of Interior and Local Government) efforts are underway to address this, according to a government-affiliated stakeholder.

Another area for standardization is quality control, meaning ensuring reliable equipment for solar (panels, inverters, mounting structures) where only certified products would be used. Similarly, a technical committee led by DOE and the Department of Trade and Industry was created to address this concern. Still, the after-sale service issue (i.e. what happens after panels are installed) persists. If the accreditation of solar panel installers were standardized to include baseline after-sale service expectations/guidance, installers could not just sell panels and leave, but offer more technical assistance in addressing any operations and maintenance issues that may arise.

Even for successfully-launched RE projects, there has been a failure to monitor electrification itself. The impact of community-based electrification projects is not adequately monitored—including in the government’s reporting of the Philippines’ overall electrification status, stakeholders say.

Bureaucratic Challenges

The benefits of working with local governments to deploy DER are accompanied by significant operational challenges within their bureaucracies. Ultimately, the local

government has the final say in energy infrastructure distributed renewables siting decisions. In the words of one interviewee, “If the local government doesn’t allow it, then it won’t happen.”

A handful of stakeholders specifically discussed the lack of continuity that poses a challenge to financing DER projects. Anytime a government administration shifts, a significant number of projects from the previous administration(s) might get steamrolled over, especially when they do not fit the new “brand” of the upcoming administration. This impedes the sustainability, and financial continuity, of projects. When working with “plantilla positions,” meaning permanent or long-term positions in the public sector, those actors sometimes lack on-the-ground implementing power; however, the implementation-driven cabinet members, undersecretaries, assistant secretaries, etc. in government agencies may refuse to pursue projects after an administration change. The Sustainable Finance Framework was developed closely with responsible agencies in spite of this, according to a strategy analyst interviewed.

Another stakeholder advised against working with the government altogether in the early stages of a project, unless as a last step, due to bureaucracy. If the political dynamics or bureaucratic networks in a location are unfavorable, philanthropists, development banks, and big banks might be helpful instead.

2. Lack of policy itself

Despite the significant efforts to regulate and encourage renewable energy and comprehensive electrification, some stakeholders perceive that the Philippines still lacks adequate laws on DERs. For these groups, there was a general acknowledgement that technology and even financing institutions exist, but policy is what is out-of-date. The absence of a comprehensive, government-issued off-grid distributed generation policy is one example of this policy gap.

Similarly, when asked about policy shortcomings, stakeholders discussed a lack of finance-specific initiatives for banks, governments, and the private sector to stop funding fossil fuels in favor of renewable DERs. In the current state of competition, banks still accept loans for fossil fuel projects. Thus, for governments, there is a need to be more discerning with subsidies. The National Power Corporation (NPC)’s diesel-power fuel is subsidized, and for the new private-sector power producers who take over large NPC areas, the subsidy landscape gives them no incentive to discontinue that generation. While discussions are underway in DOE, there is much to be done beyond the coal moratorium to improve Philippine market signaling.

Reforming governance structure itself was another common theme in study interviews. Since the RE sector is generally overseen by smaller units (assigned teams of 3-5 people) within overarching ministries, there is limited government capacity to demand new incoming renewable

projects. One way to address this broad lack of capacity is to pursue what one researcher called a “shock-therapy approach” for government reform, in which sudden, significant changes in governance can catalyze economic improvement. In the context of RE governance, this would entail establishing entirely new ministries and government units that would manage renewable energy specifically. Regional capacity building is equally essential, according to that stakeholder, since regional governments tend to be less familiar with the nuances of working with international investors.

3. Competing interests

At the heart of the Philippine energy transition is a series of tradeoffs across policy sectors, including land use decisions, cultural decisions surrounding Indigenous communities, competition with fossil fuels, and competition within international markets. The reality of the Philippine energy landscape is that, like much of Southeast Asia’s, it is still currently dominated by fossil fuels. In spite of its island geography, the Philippines relies heavily on big-ticket energy projects, meaning large-scale national power plants, with economies resting on imported coal and rapidly-depleting gas fields offshore. One financier explained that while it may seem as though RE is replacing fossil fuels, it is actually making up for increased energy consumption (demand) and compensating for that gap alone.

The “competitive selection process” is written into Philippine law (DOE Department Circular No. DC2018-02-0003), calling for distribution utilities to obtain energy from the lowest bidder. According to one interviewee, coal tends to draw a lower price in bidding, but can then corrupt the financing process by increasing its price after the bidding process concludes. Still, several interviewees pointed out that coal assets make sense economically in many areas, though people would choose a secure, affordable, and environmentally friendly alternative if it were available. “The first step is to cut the umbilical cord between the financial institutions and their addiction to fossil fuels,” said one Filipino NGO director. However, other interviewees contended that removing coal subsidies is a sensitive subject in ASEAN countries (particularly Indonesia), especially for their financing institutions. From financier interviews, there was a stronger focus on attracting capital for bankable RE projects and signaling to investors that the Philippines is ready to deploy DER facilities, rather than removing these fossil fuel subsidies.

At the local policy level, any decision to finance a solar array must contend with alternative land uses, such as agriculture; some Filipinos oppose solar panel installation in favor of farming. Interviewees mentioned water, ecosystem services, and industrial development as additional competing land uses. The designation of “critical” areas for DER development is complicated itself, as one community leader aptly identified that “any person can argue that any area is critical, right?”. On top of those concerns, developers mention Indigenous and ancestral rights as a crucial component of financing—or stopping—projects. According to one interviewee, an instance of 34 transmission lines slated to be built in “ancestral territory” were

met with a “Manifesto of Opposition” from Indigenous people when utility interests lobbied in favor of the expansion.

4. Misaligned policy priorities

Development priorities are misaligned across the international, national, regional/provincial, and local levels. At the international level, the general sentiment of interviewed stakeholders was that many countries are lagging behind on improving clean energy investment—it is not about shortage of capital, but rather the difficulty of attracting it to countries like the Philippines. In theory, the Philippines’ ambitious NDC of 75 percent emissions reduction and avoidance (compared to business-as-usual 2000-2030 pathway) should bring in comparably ambitious finance (NDC Partnership, 2024). Yet, projects are not always investor-ready, and even when they are, the NDC itself—like the language of many NDCs—implies that the Philippines will only supply a fraction of internal project financing and the rest will have to be funded by partners. One international energy transition specialist interviewee mentioned Philippine coverage of 2-2.5 percent, specifically, although the research team was unable to find this evidence in existing literature. While expecting a 90 percent or greater contribution from partners may seem unrealistic, the reality is that the Filipino workforce is still doing the bulk of project development and execution.

Interviewees identified the deprioritization of DER policy as an additional challenge toward equitable energy access. The DER market was frequently described as an aspirational or “pilot” initiative by interviewees and literature alike. This issue is exacerbated by the relatively miniscule “dent” a small solar array would make on carbon emissions, though one climate advisor qualified that it is still morally good for small communities.

Despite energy autonomy, resilience, and other promising outcomes of DER development, a significant number of stakeholders expressed that local governments in the Philippines remain relatively disconnected from even the most well-intentioned national policies. Energy is often perceived as a national, political issue covered in the Renewable Energy Act or overarching Sustainable Finance Framework. It is therefore more challenging to address the centralized nature of energy at the local level. Remote islands such as Pamilacan and Mindoro have brownouts every day for up to 2-3 hours and blame the leadership of LGUs in the province, one financier reported. According to an activist from Bataan, renewable energy (and thus renewable DERs) is simply not the priority of local governments right now: policymakers’ realities are different from the communities. For example, after one of the first local renewable energy ordinances was passed in Negros only to stagnate in its “IRR” (implementing rules and regulations) phase (Sorote, 2022), Dumaguete counselors remarked “it’s not one of their priorities.” Sometimes, the issue just comes down to awareness. Barangay captains, chieftains, or mayors may not be aware of the Sustainable Finance Framework and how it could otherwise guide their investments, noted a COP strategy analyst.

Finally, interviewed stakeholders expressed that there remains a communication gap between the public, private, and nonprofit sectors in the Philippines. The owner of one local bank cooperative cited a “lack of quality leadership,” and some echoed that it is the government’s job to set the tone of decarbonizing the energy sector. Others cited a lack of political will more broadly, though this conflicts with another narrative observed in interviews, which praises the progressive and comprehensive existing framework of national environmental policies in the Philippines. Nearly every stakeholder acknowledged that this issue of energy transition finance is as much political as it is business/financial. Ultimately, energy generators depend on policies implemented by the government, and there is currently a cacophony of both renewable and fossil fuel legislation circulating in government. As Liquid Natural Gas (LNG) is declared a transition energy, for instance, RE generators will face its competition, even with coexisting long-term RE targets. As of April 2024, there is a law pending in the Senate promoting the Philippine downstream natural gas industry (Senate Bill No. 2247)—alongside proposed bills accelerating RE (Senate Bill No. 157, House Bill No. 9535).

The misalignment of these priorities sometimes leads to tension and resentment in policy spaces. Civil society leaders interviewed cite “capitalist culture” from the private sector as a limitation to their group participation. Additional complexities lie in the language of DER itself. For example, the Philippine definition of DER would “open its arms to nuclear,” according to one stakeholder. This would cause tension among civil society groups over priorities. There is also a divisive perception that distributed generation (which includes DERs) is unaffordable in the Philippines. Several stakeholders disagree with this. Local companies and conglomerates have the money, they said, and it comes down to the guidance of LGUs. “I believe we can do this—it’s just a matter of doing business,” said one community director.

5. Access and accessibility

Energy access is at the root of the Philippine energy challenge. In the Philippines, over 2.5 million people still lack energy due to its inaccessibility and price as of 2021, even when significant energy is produced (World Bank, 2021). Connectivity and transmission play a role, but price is the factor that truly drives energy poverty in the Philippines. Six out of ten households earn less than 10,000 pesos [\$173 USD] per month, and nine out of ten earn less than 30,000 per month. Even those with electricity access have to learn to live with very little in their budget: keeping off refrigerators, fans, and lights whenever possible, and plugging in for special occasions.

“Household consumption is now the biggest source of demand for electricity today and yet, most of the households are poor.” – Scientific advisor in a Manila-based organization

For electric cooperatives (ECs), access to finance is also an issue. Whereas traditional distribution utilities are private, electric cooperatives are non-profits and operate at very small

profit margins. As nonprofits, ECs are underrepresented in the Philippine policy environment, according to a previous NEA employee, which is less conducive to ECs accessing available bank finance or even having a seat at that table. Even if an EC wishes to lower its energy prices, it must first pay off its large upfront capital investment. Because of and in spite of these challenges, many interviewed stakeholders mentioned ECs as an avenue for progress in DER deployment, which is covered later on in this report.

Consumer affordability

The cost of energy in the Philippines is among the highest in Southeast Asia, and DER affordability therefore suffers. There are several drivers of high energy prices in the Philippines. One is taxation. According to representatives in the power sector, while the Philippines' neighboring power sectors are being subsidized, the Philippines is being taxed—at three levels: generation, transmission, and distribution. Another issue mentioned only once was the expensiveness and volatility of wholesale spot market prices, which can surprise customers with high (doubled or tripled) utility bills. There are surprise costs embedded in even in net metering. The cost of a bidirectional line is accrued by the customer (by distance), and electrical posts can be very far away. Even when ECs or the government pay for the bidirectional line, the cost is passed onto consumers.

A common general theme found in interviews is the feeling that decision-makers are out of touch with the cost of electricity. The Philippine price of energy is so high that it is shrinking other industries, said one stakeholder. Sometimes, energy is so unstable that it takes out people's TVs and appliances due to voltage fluctuations, said another.

"We're open to a just transition as long as it doesn't really affect the price for electricity. It's a big issue for us, if it's going to increase our purchasing power or salaries. It could also lead to inflation and could collapse the economy." – National Government representative

When it comes to paying for wires, the cooperative/utility typically pays, except beyond a certain distance when the consumer takes over (or in-house connections). One phenomenon discovered in interviews, called "Octopus Connections," involves Filipino homeowners connecting neighboring households to one central, franchising household (source) using "octopus wires" to save money. There is more system loss with octopus connections—and they are illegal—but electric cooperatives are typically aware of this and tolerate it knowing that people cannot afford the energy. In poorer and more remote areas where families lack the money or identification to even *apply* to a distribution utility, a remaining option is to tap into it illegally.

The political, cultural, and financial power of families

“The political economy of energy in the Philippines is controlled by a few big companies, few big families, actually, some of which are linked to big corporate persons.” – Executive Director of a Philippine NGO

A handful of stakeholders in the finance and community sectors expressed that the local Philippine energy sector is dominated by 5-6 affluent families. Four of those families own generation, as well as banks, shopping malls, and industries. It is easy for these families to procure their own financing for DERs since they have access to “the ropes,” though as large-scale generators they do remain in competition with other businesses in distributed generation. At the same time, these families might have the “capital absorption capacity” that government bodies lack.

Representation and underrepresentation:

The groups stakeholders identified as *least* represented in the energy transition and DER field include electric cooperatives, civil society groups, rural banks, Indigenous people, and minorities. Because the traditional policy environment favors bigger distribution utilities (given that ECs are nonprofits, as explained earlier), some stakeholders identified the need for an enabling environment for ECs to be represented even if they cannot access bank finance. As for civil society groups, technical expertise was an issue. Usually, the consumer groups invited to speak are very knowledgeable and articulate. One nonprofit representative recalled being invited to speak often but sometimes told “this is too technical for you.” Civil society groups and community members can speak out in rural electric cooperatives’ annual general membership meetings or committees required by the NEA to get people involved; however, some interviewees are unsure that these committees really *work* for the membership or that EC representatives always represent consumer sentiment. Likewise, for Indigenous people, the Free, Prior and Informed Consent (FPIC) process is required for public participation, but in practice, is not always followed (unless there are strong objections for the government to deal with). In the development of the Philippine Energy Plan, for example, it is questionable to one interviewee how communities were actively engaged in discussion/consultation, particularly women, youth, Indigenous people, the labor sector, and the transport sector. A final component of accessibility is information awareness and capacity building. For some stakeholders, this means getting electric cooperatives and distribution utilities to determine when to undertake projects when information-level awareness is not always there. Others are more focused on end-user awareness of regulations. Technology transfer will be an important component of both, since stakeholders mentioned that the Philippines does not rely on domestic/local technologies so much as imported technologies from American, European, and Chinese companies.

“Most of our communities in the provinces are not even aware that there's a COP28, that there's loss and damage fund, that there's a Climate Action Fund. So in a way, the access to this information is very limited.” – Local bank cooperative owner.

6. Outdated grid (infrastructure, contracts, and overproduction)

The Philippines' outdated grid infrastructure poses a challenge and leads to situations in which community benefits are lost. An issue at the core of this is privatization. Unlike other countries like Indonesia, the Philippines' power sector is privately owned, not owned by the government. The grid is owned and operated by one company: the National Power Corporation (NPC). For distribution, the biggest single-buyer, Meralco, is the sole distribution company. Bottlenecks can be created in two ways. NPC takes a while to upgrade their systems, creating the first bottleneck. Secondly, there is a lot of red tape already in getting licenses to connect DG to distribution companies without being seen as a competitor to the utility's own PV systems (Lacey, 2014). Thus, amid market concentration, one challenge is getting permission from the distribution company to have the net metering/DG regulations in the first place.

Other issues include legacy infrastructure, overdue grid upgrades, transmission buildout, resiliency, contracts, and overproduction. The inability to transfer power in from another community is a major issue when it comes to grid resilience, if a substation stops working in a community, for instance. For distributed energy (or “embedded energy”), the transmission NGCP is as centralized as the NPC and Meralco. Transmission is top-down in the Philippines: all generation facilities typically feed into one of the main grids, instead of multi-grids or micro-grids. According to one interviewed stakeholder, part of why power outages are so frequent is that the rate and structure of development is very dependent on a single grid. Additionally, connections between islands over long distances of wires are also weaker, and gaps in the Philippine transmission system slow down investment compared to other countries. For example, at a solar farm in San Carlos, only 50 percent of its RE production capacity is being utilized due to problems with the transmission lines. Or, in Negros, lines were available but were incapable of integrating large projects, so only 50-60 percent of energy produced made it to the grid; the rest was curtailed. Big solar farms, such as one mentioned on Negros, were developed on farmland but ultimately output their harvested energy elsewhere – meaning there was no direct benefit to the community. Other DER infrastructure issues include rooftop quality gaps, past-due upgrades of facility and pipelines, and problems connecting retail-market, low-voltage distributed generation (as more and more renewables are brought online at the wholesale level, which can cause grid instability), according to an international energy financier.

Policy Opportunities

1. Let policy precede and facilitate finance access

While some actors argue to move toward finance immediately, the research team contends that the Philippines must refine its policy framework first, and finance will follow. This chicken-and-egg scenario rests on the reality that DER financing will depend on capacity-providing upgrades in transmission, storage, and grid modernization. Building government support means the national government must democratize NDCs development, adhere to norms in environmental law, call for greater corporate social responsibility in underserved/unviable areas, leverage SDGs to craft localized policies, collaborate more actively with technical experts such as the International Renewable Energy Agency (IRENA) toward capacity building, and pursue international accountability to governance standards across energy value chains. The Philippine National Government must do this with the support and consultation of LGUs and Regional Development Councils (RDCs), whose exclusion from policy development has been a major theme in this study's findings. This "policy first" recommendation comes from a mix of financiers, regulators, nonprofit directors, and renewables developers.

2. Build and strengthen network partnerships between actors across energy systems

Several undertapped partnerships exist across stakeholders in the energy transition finance sector and in impacted communities. For example, electric cooperatives could effectively partner with financing NGOs for assistance in implementing policies, and developers could increase finance-driven collaboration with local banks. NGOs that specialize in community engagement (civic society groups) could be partners to assist electric cooperatives in ground-truthing their policies, or in other initiatives like perfecting/reforming/enforcing the FPIC process (this includes unconventional partnerships, such as with the Church). Further partnerships can include developers and distribution utilities, public development banks, and LGUs. These collaborations were recommended by community leaders, local financiers, and policy representatives. A broad range of stakeholders would be affected by these partnerships.

Filipino policymakers, local and regional government officials, and international donor organizations can also strengthen policy processes, specifically through the Local Government Unit (LGU) Code and Regional Development Councils (RDCs), to enhance the representation of community-based groups and movements. Based on stakeholder mentions, these groups include NGOs, civil society organizations, local to regional government units, faith communities, youth and women's groups, displaced fossil fuel workers, and Indigenous communities. Local Government Units (LGUs) stand to benefit by crafting policies that are more in tune with community needs to avoid wasting resources. Meanwhile, the international donor community would obtain a clearer understanding of local challenges, facilitating the implementation of more effective and targeted solutions.

By engaging these diverse groups in partnership, from influencing communities for low-carbon setups to securing land and policy support, the approach facilitates comprehensive, inclusive planning and implementation of energy projects. Coordinating such a wide array of interests and ensuring equitable participation may present challenges, potentially slowing decision-making and development processes. Strengthened networks and partnerships offer the promise of enhanced community buy-in, diversified support for sustainable energy initiatives, and a more integrated approach to addressing energy needs and challenges.

3. Decentralize, solidify, and improve DER processes and policy

Philippine policymakers and government officials should utilize and revise existing policies to more rapidly deploy DERs. For example: policymakers might revise net metering guidelines to be more flexible toward small projects, hybridize existing diesel gensets and expand their service to 24/7, pursue Small Power Utilities Group (SPUG) generation mixing specifically, revisit the competitive selection process, and pursue a “shock-therapy” approach to creating new energy ministries with increased human capital.

Additionally, government leaders should create new policies to incentivize DER deployment. These could include tax holidays in local ordinances/RE codes, continuing to expand green energy auctions, opening the Green Energy Option Program to smaller-scale consumers, or offering concrete household electrification programs under ECs.

While building out these regulatory codes, policymakers should aim to decentralize and institutionalize the planning, monitoring, and leadership of DER frameworks. When it comes to energy planning, the process should be institutionalized in LGUs themselves. The office of the mayor, for example, should be able to draw up a plan that integrates distributors, generators, communities, etc., in the style of existing Local Climate Change Action Plans (LCCAPs). The Energy Efficiency and Conservation Law, or the E&C Act, specifically allows local energy planning for communities’ governments. Local/Regional Development Councils could be at the helm of this, and civil society groups could spearhead in monitoring the protection of communities to avoid sacrifice zones. This idea came directly from a stakeholder in development banking, however due to various mentions of corruption in the Philippines, there may be challenges to successful implementation. Decentralization could potentially backfire, over time, in the sense that it would undermine national, private distribution utilities and power generators.

4. Invest strategically in electric cooperatives, microgrids, and transmission

Wind and solar located in remote regions often cannot be financed until sufficient transmission access is built out. Transmission buildout, however, often cannot happen until cost recovery is certain—or there is demonstrated need from solar or wind generation (Lee et al. 2020). The Philippines is eyeing partners such as USAID for buildout of Competitive Renewable Energy Zones (CREZ), of which there are currently 25, capable of producing an estimated 152

GW from solar and wind combined (ICSC, 2023). There is some discussion of floating PV, offshore wind, and tidal potential in those zones (Ibid).

Rather than infinitely extending the power lines of the existing grid—to reach remote areas where it might not make topographical or financial sense to have those wires in the first place—Filipino developers should invest in microgrids, as suggested by interviewees. Additionally, it is often more practical to have electric cooperatives do so than traditional utilities. This was recommended by a local bank cooperative owner and CEO. Utilities may balk at this recommendation out of fear of profit loss. Consumers, however, can rely on electric cooperatives rather than financially burdening themselves to upgrade to solar microgrids.

Overall, the Philippine policy landscape is a crossroads of both challenges and ample opportunities to set a strong trajectory towards distributed renewables in the country’s power sector. Doing so will require strategic coordination and engagement with communities to ensure start-to-finish implementation, the challenges of which are outlined below.

Community Engagement

The landscape of policy challenges in the Philippines underscores the role of substantive community engagement in ensuring effective and inclusive DER deployment. Integrating policy changes alongside community engagement strategies is crucial for enhancing the sustainability and acceptance of energy initiatives.

Community Engagement Challenges

The research team identified the following key community engagement challenges in the Philippine quest for a just energy transition: **1) lack of genuine community engagement and participation; 2) inadequate institutional structures; 3) monopolization of power and privatization issues; 4) top-down policy implementation; 5) communication and education gaps; 6) sacrifice zones risks.**

1. Lack of genuine community engagement and participation

“I think community empowerment is one of those things that we often say should be a key element when it comes to policy-making or decision-making in policy circles, but it’s often neglected and forgotten” – Executive Director of a Philippine energy NGO

The concept of community engagement, while often championed as a cornerstone of inclusive policy-making, remains largely under-implemented and superficial in many policy circles. As highlighted by interviewees, true community involvement requires substantial investment in time and genuine organizing efforts to be effective. This approach is crucial in

ensuring that the voices within the community, especially those from marginalized or Indigenous groups, are not just heard but are integral to the decision-making process.

Two community leaders interviewees who work closely with Indigenous populations underscore the recurrent issue where consultations are either tokenistic or entirely absent. One interviewee recounted an instance where development projects were pushed forward in Indigenous areas without any prior, meaningful discussions with the residents. This practice reduces community input to a mere formality—a checkbox exercise to acquire the needed signatures to move projects forward. Interviewees emphasized how this lack of genuine interaction leads to a disconnect between the actual needs of the communities and the priorities set by decision-makers. This misalignment not only hinders effective policy implementation but also squanders opportunities for meaningful community involvement that could lead to more sustainable and accepted outcomes.

The difficulties of community organizing are manifold, especially in contexts where it can pose significant personal risks:

“So community organizing is key. But of course, it's often very difficult, can be very time consuming, can be very frustrating, and can also be very fulfilling. In many developing country contexts, it can also be dangerous. And after your life, even in some developed country, contexts can also be dangerous as well. So but bottom fifth, there's no other way than to organize community. And the best way to organize a community is to help is to identify organic community leaders, meaning people who are from the community themselves, you cannot just parachute in. You have to be part of it” – International energy transition expert

This underscores the necessity of fostering local leadership and ensuring that initiatives are not imposed from the outside but rather grown from within the community itself.

The gap between organizations purporting to represent community interests and the actual communities they claim to speak for has been a recurring theme in interviews. One interviewee expressed frustration over this disconnect:

“There are so many organizations that represent the communities... Why do we need representation if we can speak for ourselves? ... with due respect to those organizations, but of course, they're not the community... let the [community] speak, because they can speak for themselves.” – Founder of local CSO

This sentiment strongly advocates for direct empowerment and engagement of community members in dialogues that impact them, ensuring that their genuine concerns and aspirations are woven into the fabric of policies and decisions that affect their lives.

This challenge makes a compelling case for rethinking how community engagement is approached in policy development. It stresses the importance of moving beyond superficial engagement and towards a model where community participation is deep, sustained, and genuinely impactful. This shift is essential for crafting policies that are not only effective but also equitable and supported by those they aim to serve.

2. Inadequate institutional structures

The intricacies of energy policy and project development demand robust and flexible institutional structures capable of fostering genuine dialogue among all stakeholders. Yet, interviewees noted the absence of these structured dialogues and defined operational modalities as a significant barrier to effective engagement. This gap particularly affects the interactions among government entities, major energy corporations, power distributors, and local communities, leading to a landscape where comprehensive community involvement is more an ideal than a reality. This critical need for more formalized communication channels was highlighted by one interviewee:

“I think what is missing is to have a maybe more structured dialogue, more structured way of having a conversation between the government, the big energy firms, the power distributors, and the local community, so that the local communities can then [provide] input into, okay, where exactly do we need the power energy? Why do we need the energy, for what? How much could we afford? Is there a way that could make energy prices socialized?” – International energy lawyer and community mobilizer

This perspective underlines the absence of mechanisms that facilitate meaningful exchanges between key players in the energy sector and the communities they serve. The lack of such dialogues not only impedes effective decision-making but also limits the capacity to address specific community needs and preferences regarding energy access and affordability.

The current institutional arrangements—or lack thereof—do not adequately accommodate the diversity in legal, political, and environmental contexts across different regions. In the Philippines, the National Renewable Energy Program (NREP) is an adaptive governance initiative, aiming to increase the share of renewable energy in the country’s energy mix by 2040. This program includes mechanisms to support localized energy planning and enhance community involvement in renewable energy projects, reflecting specific regional and local needs. This initiative is essential in addressing the diverse environmental and socio-economic conditions across different regions of the Philippines (World bank, 2023) .

Internationally, frameworks such as the Convention on Biological Diversity (CBD) and its protocols on Biosafety, Access, and Benefit-sharing, and Liability and Redress demonstrate efforts to manage global environmental issues, with specific national actions tailored to the Philippines’ unique biodiversity needs and challenges (Casis et al, 2017).

Furthermore, global agreements like the Paris Agreement on Climate Change signify an international commitment to address environmental challenges through cooperative climate action, binding various nations to common but differentiated responsibilities (ADB, 2020).

These arrangements, however, still face challenges in fully capturing the unique local contexts of different regions, potentially hindering the effectiveness of implemented policies and projects. While these structures are established both locally and globally, there is still a continuing demand for more nuanced and region-specific approaches to governance and policy-making (Casis et al, 2017). And this includes a refinement of institutional arrangements to better cater to diverse regional realities and ensure more effective and inclusive environmental governance.

3. Monopolization of power and issues of privatization

Interviewees raised critical concerns over the issues of power monopolization and the impacts of privatization, reflecting deep-seated problems in the energy sector that affect community engagement and equitable access to resources. The Philippine energy system is owned and operated by a small number of companies, many of which are owned by the country's wealthy and politically powerful families. This ownership structure presents significant challenges in terms of effective government oversight, and equity. While privatization has been promoted as a strategy to improve efficiency, the actual outcomes have often not aligned with these theoretical benefits.

This monopolization of power within the energy sector by dominant entities such as Manila Electric Company, commonly known as Meralco (Moss, 2015), San Miguel Corporation (SMC), the Aboitiz Group, and the First Generation Corporation often results in an inequitable distribution and utilization of energy resources (Saculsan et al, 2020) which can stifle competition, hinder innovation, and lead to price setting that disadvantages consumers, particularly in less affluent communities. Based on stakeholder interviews, interviewees argue that while the privatization of the wholesale electricity sector was intended to foster competition and lower prices, it has instead allowed private entities to dominate the market without regulatory oversight. For example, one international energy financier shared to the research team that the World Bank is advocating globally for the privatization and deregulation of markets. They argue that this strategy would allow governments to allocate their limited fiscal resources to vital sectors such as health and education instead of the power sector. In the Philippines, this approach has seen the deregulation of the wholesale electricity sector, leading to a market that is almost entirely privately owned. However, the perspective from the ground tells a different story. Interviews with community leaders reveal skepticism about these benefits:

"Privatization... I don't think that's the solution. They said, 'oh, we need to privatize it so that it will be more efficient. The services would be better quality, etc.' But we have examples, also, that it did not happen." – Religious community leader

This statement underscores the disconnect between the theoretical economic arguments for privatization and the lived experiences of communities, where privatization has not necessarily improved services. The emphasis on profit over public service by private entities can exacerbate existing disparities, failing to meet the needs of vulnerable populations..

4. Top-Down policy implementation

The top-down approach to policy-making and project implementation remains a significant challenge in fostering effective community engagement. Project interviewees have critiqued this method for its failure to meaningfully incorporate community input, which often leads to resistance and dissatisfaction among community members. This issue underscores the disconnect between policymakers and the communities they aim to serve, and highlights the need for a shift towards more participatory methods.

A top-down approach typically involves decisions being made by external authorities or higher levels of governance without adequate consultation with or input from those who will be most affected by the policies or projects. This method can lead to a lack of ownership and acceptance of the outcomes by the community, as they may not reflect the community's needs or preferences.

“If you do a top down approach, where decisions are just handed down from external authorities, you know, oftentimes you will then encounter resistance. Whereas if you adopt a participatory community based approach, where you have the community leaders and members being heard, and being able to shape the actual decisions, then that makes for a much more legitimate, credible, and ultimately and hopefully more sustainable approach to the use of energy resources.” – Community mobilizer & energy transition expert

This statement highlights the contrast between the two approaches and the superior outcomes generally achieved when communities are actively involved in the decision-making process.

5. Communication and education gaps

Project interviewees identified a significant gap in the general public's understanding of energy concepts and their implications, which impacts the level of engagement and support for renewable energy (RE) initiatives. This gap stems from a lack of targeted communication and educational strategies that make energy issues relevant and understandable to the average Filipino people.

“When you see big news items and even online platforms, you will only just see reporters talking about energy under a business frame, basically talking about kilowatt hours, gigawatt hours, but people don't really know how it will translate, like how many

households would that be? And even then, like how many electric fans would that be? How many washing machines would that be? And you also have the problem of consumerism in a way that you only see reports about energy when there are talks about a change in electricity price. People are also not educated on how to read their electricity bills. How can you actually think and talk about financing the just transition or financing the energy transition when the people don't know the basic facts?" – Filipino community organizer and journalist

Renewable energy and DER technology are new concepts to some populations in the Philippines. A common misconception that persists is the reliability of renewable energy sources, with some communities trusting and favoring coal in terms of reliability. It is believed to be intermittent, and this intermittent nature cannot be overcome. This stems largely from insufficient communication about how renewable energy works and its benefits.

However, the recent developments in renewable energy in the Philippines shows otherwise as it suggests fostering economic growth by creating jobs across its supply chain, and providing more affordable electricity by decentralizing power generation. This is particularly beneficial for remote rural areas, reducing the need for expensive transmission infrastructure (Espanada et al, 2021; Lectura, 2023)

The perception of RE as unreliable could be mitigated through better informational campaigns that explain its technological advancements and the role of RE and DER in a diverse and resilient energy portfolio.

The current educational curriculum in many schools in the Philippines does not adequately cover the intersections of climate change and energy. Project interviewees, including a journalist and community organizers, highlighted that there is a critical need to integrate energy education into school programs to provide students with a foundational understanding of energy sources, sustainability, and the impacts of energy use on the environment. This education should not only cover the technical aspects but also the practical implications of energy choices on everyday life.

Project interviewees also mentioned that there are instances where even those within the energy sector, such as employees at electric cooperatives, may not fully understand the codes and regulations set forth by energy regulatory commissions like the ERC. This lack of understanding hinders effective management and compliance with energy standards, affecting service delivery and regulatory adherence. Training and regular updates on energy regulations should be mandatory for those in such pivotal roles.

Overall, the lack of proper messaging and education regarding energy and its intersection with climate issues is a significant barrier to achieving broader support for and successful implementation of sustainable energy initiatives.

6. Sacrifice zones risks

“Development for whom, like, at what cost or who's who's sacrificing for that development, because we are being always tagged as anti development, but on whose development is it for if no benefits [on the community]” – Community organizer

The intersection of energy development and human rights presents significant challenges, particularly when it comes to the concept of "sacrifice zones." The research team defines a sacrifice zone as an area where residents are subjected to increased levels of pollution and hazardous materials, including low-income communities or communities of color living adjacent to heavily polluted industries. Project interviewees raised concerns about the adverse effects that energy projects can have on local communities, such as displacement, health issues, and a lack of tangible benefits for the residents most affected.

“We cannot just continue with development at the expense of a sector unless we can offer them an alternative.” — Community organizer and campaigner

The above statement emphasizes the necessity for mechanisms that not only monitor but actively mitigate the negative impacts of energy projects on communities. Still, renewable projects remain attractive in the shadow of fossil fuel projects' toxic pollution legacies:

“For the coal communities, they're having skin diseases. They're having lung problems. You'd see people with rashes and it's really hard for them. And then again, they're fishermen. They can't go near the waters. The cooling facilities of the coal plants warms the water so it also drives fish away from them.” — Energy transition expert

Community Engagement Opportunities

1. Increase community participation and awareness of RE projects

To foster sustainable development within the renewable energy sector, Philippine decision-makers must uphold the active involvement of various stakeholders including LGUs, NGOs, CBOs, and energy developers. Strategic interventions such as net-metering education, local governance engagement, diverse communication for public awareness, and immersive learning sessions are pivotal in boosting community participation and awareness. 17 percent of the project interviewees across multiple stakeholder groups indicated the preference for community-driven approaches.

Engaging communities through these comprehensive methods ensures they are well-informed and actively participating, which is crucial for the acceptance and success of renewable energy projects. This approach leverages local knowledge and resources, aligning project goals with community interests, which is vital for sustainable energy development. Establishing and maintaining meaningful relationships with local leaders and adhering to directed processes and empowering communities in their energy development endeavors.

2. Strengthen connections between key stakeholders for project efficacy and sustainability.

Strengthening connections between local government units (LGUs), non-government organizations (NGOs), energy developers, and local communities enhances project effectiveness and longevity through relationship building with local leaders through existing community structures such as parishes. This enables more inclusive energy planning and implementation through direct engagement such as face-to-face and casual conversations, and participatory rural appraisal activities which include evaluation and learning that focuses on enabling local communities to actively engage in understanding their living situations, challenges, and opportunities, with the aim of facilitating change in their circumstances (Chambers, 1992). This also includes localized awareness campaigns, and facilitated dialogue between key stakeholders such as LGUs, local power cooperatives, impacted communities, and the consumer base. These recommendations toward procedural inclusion come primarily from insights provided by community leaders, representatives of Philippine government agencies, international energy transition and development experts, and project implementers. This interviewee representation indicates a broad consensus among stakeholders on the importance of community empowerment to ensure project success and sustainability.

Project interviewees have mentioned that these strengthened relationships not only help in smoother project implementation but also in aligning the project more closely with community values and needs, promoting long-term sustainability.

3. Prioritize RE projects that align with the needs and conditions of communities

Tailor energy projects to align with the specific conditions, needs, and preferences of local communities to ensure their effective participation and benefit from these initiatives. The U.S. Department of Energy's Clean Energy to Communities (C2C) partnerships program serves as a prime example of a targeted approach to decarbonization. This program assists community teams in developing tailored strategies that are reflective of local conditions and needs through educational initiatives, securing funding and technical resources for RE project implementation (Department of Energy, 2023).

Moreover, the International Energy Agency (IEA) emphasizes that local energy communities are pivotal in deploying renewable technologies efficiently and equitably,

highlighting the successful integration of community-specific needs into energy planning (IEA, 2023). This is recommended by a spectrum of stakeholders, including a representative of a government agency, community leaders, and international energy experts. Positively impacted groups include underrepresented communities—such as fisherfolk, Indigenous peoples, and farmers—who gain a voice in energy decisions, promoting energy sufficiency and combating energy poverty.

Focusing on community-specific conditions, energy projects can better support the unique aspects of each community, fostering a sense of ownership and active participation. This approach not only enhances the effectiveness of the projects but also ensures that they are sustainable and meet the actual needs of the communities involved, thereby promoting energy democracy.

4. Directly engage financiers and developers to mitigate the creation of sacrifice zones

Direct engagement with financiers and developers is crucial to mitigate the creation of "sacrifice zones" in energy projects, ensuring that the impacts on local communities are addressed and minimized. International guidelines and case studies emphasize the importance of integrating community concerns in the planning and execution of renewable energy projects. The IUCN's guidelines for mitigating biodiversity impacts in energy projects stress the need for a mitigation hierarchy—avoid, minimize, restore, and offset—to manage environmental and social impacts (IUCN, 2021). Similarly, the International Energy Agency highlights the role of local energy communities in enhancing the social acceptance and sustainability of clean energy transitions (IEA, 2023). This recommendation comes from international energy experts and energy project implementers, who emphasize the importance of firsthand community engagement and the development of community-centric energy solutions.

By adopting these practices, energy developers can prevent negative outcomes such as environmental degradation and social displacement, which often accompany large-scale infrastructure projects. Engaging communities from the onset not only helps in identifying potential adverse effects but also in developing strategies that align with both environmental conservation and community well-being. This approach fosters trust and ensures that energy projects contribute positively to the areas they affect.

5. Harness existing international and national environmental policies to empower communities

Utilize existing environmental policies to strengthen community engagement and empowerment in renewable energy projects. Certain energy transition expert interviewees endorsed a strategy to harness existing policies, laws, and codes, on the international and national level, and apply them to developing and implementing inclusive policies on the local

level. This includes adapting the Free-Prior-Informed Consent (FPIC) principle when dealing with community members, which is essential for protecting community rights, particularly for Indigenous people, ensuring they are fully informed and consent to projects before they start (United Nations, n.d.). Additionally, SDG 7 aims to ensure access to sustainable and modern energy guiding inclusive energy policy development (United Nations, n.d.). Locally, examples like the Clean, Renewable Energy ordinance in Negros Oriental in 2022 demonstrate practical application by prohibiting new fossil fuel power plants, aligning local policy with broader environmental goals.

By integrating FPIC and SDG 7 into local policy frameworks, policy-makers can create a participatory environment where community members are not only informed but also actively involved. This approach not only respects the rights of communities but also aligns with global sustainability targets. Adopting these frameworks and principles also ensures that community engagement is not just a formality but a fundamental part of the energy development process.

6. Foster intergenerational justice and ensure a sustainable future through a paradigm shift

Intergenerational justice involves advocating for a paradigm shift towards sustainability that prioritizes the well-being of future generations. Intergenerational justice is crucial for sustainable development, emphasizing the equitable distribution of resources and opportunities between present and future generations. It involves implementing policies that do not compromise the needs of future generations (Spijkers, 2018). Examples include incorporating the principle of intergenerational equity in international treaties and advocating for legal frameworks that protect future interests, such as the Maastricht Principles on The Human Rights of Future Generations (Grantham Research Institute on Climate Change and the Environment, 2023). The target audience includes policymakers, educational institutions, youth organizations, and community leaders. Recommendations come from international energy experts, energy project developers, and implementers who emphasize the importance of shifting practices and maximizing digital engagement.

Integrating intergenerational justice into sustainability efforts ensures that current developments do not hinder the ability of future generations to meet their needs. This concept requires shifting societal and governmental approaches to value long-term outcomes over immediate gains, addressing both climate justice and broader environmental sustainability. It can also guide the development of sustainable policies and practices that honor and safeguard the rights of future generations.

7. Support livelihood generation for transitioning economies

Enhance livelihood generation through reskilling initiatives, fostering community-driven social enterprises, and building capacities tailored to leverage renewable energy solutions.

Research and practical initiatives underscore the significant socio-economic benefits of linking decentralized renewable energy solutions to livelihood enhancement. For instance, the integration of renewable energy technologies, such as solar power, with local enterprises has been shown to increase incomes and improve overall community well-being (IRENA, 2022). Additionally, rapid reskilling, especially in digital and technical skills, is essential in today's fast-evolving job markets and has been a critical component in adapting to new energy technologies and efficiency improvements (Hammer, 2022). Skills development programs tailored to the clean energy sector can facilitate smoother transitions for workers from traditional to renewable energy sectors, offering new job opportunities and enhancing community resilience (IEA, 2022)

It targets energy developers, CSOs, local government units, and community leaders for implementation, inspired by insights from international energy experts, energy project implementers, community leaders, and energy financiers/investors.

By investing in skills development and the creation of community-driven social enterprises that utilize renewable energy, communities can achieve greater economic independence and sustainability. This approach not only supports local development but also aligns with broader environmental objectives by promoting the use of clean energy. The focus on gender inclusivity and targeting underrepresented groups ensures that the benefits of renewable energy transitions are widely distributed, supporting equitable community development.

Ultimately, addressing the manifold challenges of community engagement in energy transition efforts in the Philippines requires a holistic and inclusive approach. This approach would not only align with democratic values but also enhance the effectiveness and legitimacy of energy policies and initiatives, many of which also depend on concrete financial mechanisms outlined in the next section.

Finance

Finance Challenges

In the Philippines, energy transition finance remains exclusive for some communities and ineffective at meeting the needs of clean or distributed energy buildout, despite ample policies enacted to mobilize funding and meet the country's emissions goals.

Recent literature has identified several challenges in the financing DERs in the Philippines, including the capital intensity of renewable DERs (La Viña et al.), attracting investors amid risk-averse financial attitudes (IEA, 2021), difficulties in lending to small-scale borrowers, higher cost of finance itself, limited capacity allocation and technical assistance for

operation & maintenance (Syaqui et al., 2021), project de-risking, perceptions of markets being too small (Mitigation Action Facility, n.d.), and complex permitting processes.

These challenges are in line with the research team's findings from the stakeholder interviews. Specifically, the challenges in lending to retail customers, project de-risking, higher cost of finance itself, and perceptions of markets being too small were indicated repeatedly by stakeholders of different categories.

In particular, some of the challenges frequently mentioned by interviewees fall into these categories: **1) access to financing and financial literacy, 2) non-inclusive financing & need for innovative financing, 3) ongoing fossil fuel financing, 4) energy market structure challenges, 5) difficulty attracting investments, and 6) outdated business and energy system paradigms.**

Eight (8) interviewees, 33 percent, identified “access to financing” as a challenge for financing DER in the Philippines. Moreover, 25 percent (6) of the interviewees mentioned “non-inclusive financing” as another challenge, particularly for low and middle-income households and small-scale developers. It is worth noting that the respondents who identified these two challenges represent an equal number from each interviewee category, except the government category. 17 percent of the interviewees, representing government bodies, community members, and energy transition experts, highlighted “existing fossil fuel financing” as a major barrier to energy transition and DER deployment in the Philippines.

1. Access to financing and financial literacy

The Philippines' financial system is dominated by the banking sector, representing 82.6 percent of the total financial resources as of the mid-year (BPS, 2023). Access to finance for individuals is notably limited, with only a third of adults holding bank accounts. (IMF, 2022). Moreover, local commercial banks continued their dominance in the banking sector in terms of their asset size (USD 400.5 billion), holding 94 percent of the sector's total assets. The remaining assets, accounting for six percent, are held by Thrift banks (USD 17.5 billion), Rural and Cooperative banks (USD 6.9 billion), and digital banks (USD 1.43 billion).

This statistic, particularly the fact that Rural and Cooperative Banks assets possess only 1.6 percent of the total asset, corroborates project findings about access to financing and non-inclusive financing challenges faced by rural communities. Given that Rural and Cooperative banks are the main credit resource for these rural communities.

Interviewees highlighted that access to financing is a challenge relevant to small-scale solar companies, Micro, Small, and Medium Enterprises (MSMEs), and rural low income households. There is a clear disparity in access to financing in the Philippines: large-scale DER developers and energy players, established businesses, urban households, and public

organizations have sufficient resources and access to financing as they meet the financing requirements. Additionally, some of the interviewees indicated that large private corporations have direct access to financing from non-financial corporations (NFCs) that are closely connected with commercial banks through conglomerate ownerships.

The two primary stakeholders in equitable energy systems who lack access to financing, according to interviewees, are marginalized populations and electric cooperatives.

Marginalized identities in the Philippines, identified by interviewees and literature, include Indigenous, poor people, and women. The marginalized population in rural areas and remote islands often lacks financial access and financial literacy. As of 2019, 51.5 million adults in the Philippines did not hold bank accounts, representing 71 percent of the total adult population. Lack of money was the top reason for not having bank accounts as reported by 45 percent of total adults who do not have bank accounts. (Financial Inclusion Survey, 2019).

“How can you talk about climate finance and financing something as a hybrid energy transition, if your population is not financially literate?” - Community leader

Furthermore, 18.1 percent of the population lives below the poverty line, accounting to 19.9 million individuals. (Philippine Statistics Authority, 2021). During stakeholder interviews, some participants introduced the term “energy poverty,” referring to those who lack access to modern energy or must dedicate an outsized portion of their income to pay for energy, whether or not they fall below the actual poverty line. In the Philippines, poor families who cannot afford energy in turn decrease their energy demand. This lower energy demand, in turn results in exclusion of these energy customers from expanded and updated grid services. The nation’s energy access rate is as high as 98 percent in its capital region, but lags in rural regions (Taniguchi, 2019). As of June 2023, only 79 percent of the 6.15 million total households in the Mindanao major island groups were electrified (DOE, 2023). Even when this number would decrease, there is a chance that some poor households might still have no access to energy due to their low energy consumption.

These small island communities need assistance on readiness for energy transition financing because debt financing options are not accessible and affordable due to poverty. Poverty rate remains higher in rural islands, reaching 30 percent of the population while the national poverty rate is 16.7 percent in 2018. (Overcoming Poverty and Inequality in the Philippines, World Bank 2022). Those living below the poverty line can be described as unable to meet their basic food needs. According to the 2019 Energizing Finance report by Sustainable Energy for All, more than 15 percent of all Philippines households are unable to afford a full Tier 1 solar home system at a cost of USD 7.5 per month. (Tier 1 solar home systems generate enough energy for two lanterns.) This report identified that stand-alone solar to address universal electricity access in the Philippines would in total require USD 864 million as of 2019, with an affordability gap of USD 32.8 million (Sustainable energy for all, 2019). On the other hand,

low-income households cannot meet the loan requirements since there is no way to track their income and cost, they are disconnected from the financial system as well.

“Electric cooperatives who would like to undertake renewable energy projects would have difficulty raising equity because they are nonprofit organizations. So they are not allowed to have profit, so no retained earnings that much and so they would have to source equity somewhere.” - Energy transition expert

Meanwhile, electric cooperatives largely serve these marginalized populations in rural areas and islands, which are typhoon-prone areas. As typhoons damage energy system infrastructure and assets, the need for financing increases in order to repair the damages. Due to NGO status of electric cooperatives, they do not have retained earnings. This would then result in having a barrier in securing financing because of their lack of assets, even when they want to finance DER projects. They do not have sufficient income and capital to secure bank loans. Secondly, to be eligible for bank financing, electric cooperatives must have a moderate rating from the National Electrification Administration, which is based on the assets, quality of service, financial indicators, and other metrics.

2. Non-inclusive financing & a need for innovative financing

The process of securing financing is not inclusive to all actors looking to participate in the clean energy transition in the Philippines. The banking sector is the main credit resource to the economy, providing 82.6 percent of the total resources of the Philippine financial system (BSP, 2023). According to the BSP (Bangko Sentral ng Pilipinas), the median of weighted average interest rates of commercial loans range from 6.7 to 9.9 percent per annum depending on the loan types. The lowest interest rate is applied for private corporations (6.9% annual), and agriculture (6.7% annual), while the highest interest rate is applied for individuals (9.9% annual), and micro-businesses (9.3% annual). This indicates that the financing for small businesses and individuals are more costly than well established businesses.

Furthermore, the majority of the new loan disbursements in the month of November 2023 was for private corporations with 65.4 percent of total disbursements, and then minority was for micro, small and medium enterprises with 4 percent in total. This minimal proportion of new disbursements allocated for financing MSMEs underscores the points raised by interviewees that existing financial products are not inclusive for MSMEs and low income individuals.

Project interviewees highlighted that the loan evaluation is not suitable for DER projects as they require much more investment upfront compared to fossil fuel projects. This factor needs to be accounted for in the loan evaluation process. Small and medium scale clean project developers face challenges in securing loans, namely meeting the debt-to-equity ratio set by commercial banks. As some interviewees described, large scale developers are the main client base of the banking sector and they do not have significant difficulties in meeting the loan

requirements. In November 2023, BSP reported that 65.4 percent of new loan disbursements were for private corporations. (BSP, 2023) Unfortunately, small players in the energy sector cannot meet the credit requirement of having bankable projects in terms of the project proposal development, feasibility studies, secured offtake and other required documents.

Additionally, some interviewees expressed dissatisfaction that bank loan requirements and processes are applied uniformly to clients. These standards need to be flexible and adjustable in terms of the size, and business operation of the borrowers.

Sufficient collateral—another loan requirement—is a barrier for most MSMEs and rooftop solar system installations. Interviewees revealed that for most MSME and consumption loans are backed up by collateral in securing loans. Most of the time, it will result in lower amounts of loans, higher amortization, or shorter periods for loan payback. Consumer loans are mostly backed by collateral, and financing rooftop solar would be a challenge because the panels themselves cannot be collateralized. Moreover, even when the housing loans can cover the cost of rooftop solar installation, this is only for new houses. But there is no financial product particularly for rooftop solar.

Within the category of innovative mechanisms toward inclusive finance, multiple interviewees (mainly community members), mentioned extending the loan payback period. Ideally, this could be extended to 8-10 years to reduce the burden of monthly loan payments for households and small businesses.

3. Ongoing fossil fuel financing

Ongoing financing for fossil fuel projects, from both domestic and international financial institutions, hampers RE project financing. Renewable projects face higher risk and lower profits than coal generation plants, due to fuel costs passed on to rate paying consumers. Interviewees expressed that financial institutions are accustomed to financing fossil fuel projects, and they are reluctant to shift to financing renewables, creating a bottleneck for the Philippines' shift to clean energy. A paradigm shift must happen within energy finance in the Philippines, especially on behalf of international financial institutions that fund energy projects.

Of equal challenge and significance, current financed coal power plants are relatively young, “average of 10-12 years of age,” with established Power Purchase Agreements (PPA) according to one interviewee. In other words, it is highly feasible to operate these heavy-emitting coal plants for another 20 years, and investors want to continue to generate the agreed-upon profits. Existing investment in fossil fuel plants slows down the process of shifting the financing to RE. These plants have a higher operating cost than RE, due to fuel costs, and therefore demand a higher consumer payment rate and deliver a better rate of return to investors.

“So when you have... in the country in those kinds of plants, it becomes incredibly difficult to adopt renewable energy because you see financing on existing energy generation plants, which is the coal plant. So if you're going to move from coal plants or from fossil fuels to renewable energy, lots of distributed generation, you have possible combos. Close down... and repay the interest and the principal on the particular financing.” – Energy transition expert

Some local commercial banks are publicly announcing their pledge to cease financing fossil fuel, for instance, in 2020 Rizal Commercial Banking Corporation (RCBC) declared its commitment to halt financing for coal-fired projects, and as of October, 2023, is on track to meet that goal (RCBC, n.d.) Similarly, the Bank of the Philippine Islands (BPI) announced to stop coal financing by 2033, despite coal representing 45 percent of its 2022 power generation portfolio (BPI, 2021). In 2022, Security Bank SB Capital Investment Corporation announced plans to end all coal-fired investment projects by 2033, and as of 2024, it no longer finances *new* coal plants (Camus, 2022). Few other local banks have announced their commitment to finance renewable projects. And, despite these laudable pledges, according to the Withdraw from Coal: End Fossil Fuels scorecard, Philippine banks funded over \$860 million US worth of fossil fuel projects from April 2022 to March 2023 (Gozum, 2023).

“It becomes incredibly difficult to adopt renewable energy because of financing on an existing energy generation plant, which is the coal plant. The challenge in the market is that nobody is going to decommission their coal plants, because it's an active coal plant. Decommissioning coal plants is economically and politically not feasible.” - Climate finance expert at international development organization

Multilateral Development Banks (MDBs) and NGOs who lend to projects need to consider this difference in financing RE as compared to fossil fuel energy development projects. One of the interviewees, an energy transition expert, commented that MDBs “should rethink their investment policy. They need to be more decisive in terms of shifting to RE financing.” This same interviewee pointed to loan terms and expecting rates of return that are too similar to those of private banks and lenders.

4. Energy market structure challenges

The current structure of the Philippine energy market creates a hurdle for transitioning investors to RE, and creates affordability challenges for consumers and producers alike. In 2006, the Philippine government introduced a pass-through provision as part of the Electric Power Industry Reform Act (EPIRA) to attract investments in the power sector. This provision shifts risks related to fluctuations in fuel price and foreign exchange rate from investors to consumers, resulting in an economic advantage for fuel-based power plants over renewable generation in the Philippines. Additionally, the significant upfront costs required by developers (Saculsan & Mori, 2022) render renewable energy projects less financially appealing compared to coal projects.

Some interviewees mentioned that there is a trend of favoring natural gas over RE, with a shift toward financing natural gas development.

“[Back in the 1990s,] we had power shortage issues. So for the government to attract investments in the country, we have actually introduced the pass-through provision... which, based on the name, automatically passes through from the generators to the consumers the risks of fluctuating prices of fuel and foreign exchange. So basically this removes the risk from the investors and then passes it to the consumer. So back then it was a way to attract investors. We didn't have a lot of coal back then, but because of it, it attracted a lot of technologies that are based on fuel again, because the pass-through provision protects, protects technologies that are fuel based because those are the prices that fluctuates. This means that the playing field for renewable energy that is not dependent on any fuel is at a disadvantage. So in the Philippines, the playing field is not leveled for technologies with fuel versus renewable energy technologies. So I think that the biggest [challenge to] financing energy transition in the Philippines is that... coal and other fuel based technologies makes more economic sense for [investors].” - Energy transition expert

Consumers and producers alike face the issue of affordability within current market structures. In particular, energy markets face the “utility death spiral,” cited by one financier in the study, when megawatt-hours are incrementally taken off the wires as local generation, such as rooftop solar, supplants that need. Green Tech Media defines the utility death spiral as a phenomenon during which grid maintenance costs increase and capital costs of renewable energy decreases, encouraging more customers to leave the centralized power grid. “In turn, that pushes grid costs even higher for the remainder of customers, who then have even more incentive to become self-sufficient. Meanwhile, utilities are stuck with a growing pile of stranded assets” (Lacey, 2014). Generally, the consumers who are encumbered with those higher tariffs are poor, residential customers who cannot leave the “spiral” (i.e. upgrade to rooftop solar). The utility death spiral is not unique to the Philippines but is a genuine threat to the utility companies like Meralco which will hemorrhage money without a concurrent increase in electricity prices.

Additionally, some respondents raised an issue of the uniform energy generation permitting application, which hinders the development of DER. Any size of project bears the same amount of fee, manpower, and time to complete a permitting application, whether the project has a capacity of 10 kW or 500 MW. Further, it makes small scale distributed energy projects financially not profitable.

More broadly, interviewees representing the energy transition financier category pointed out that DER projects are in opposition to the goals of large energy players in the Philippines. These large players have market concentration in industry, finance, and energy sectors, owning financial institutions and coal plants. Interviewees noted that market concentration players have

entrenched interest in the privatized and centralized energy sector, and an outsized role in controlling the direction of its development, with capacity to accelerate or hinder the DER deployment.

5. Difficulty attracting investments

Energy transition specialists and financiers noted in interviews that strong climate policy needs to be in place in the Philippines to attract investment in renewables and DER. While the existing coal moratorium and Renewable Energy Law are positive indicators, the absence of a Net Zero Framework sends a negative signal to investors. In comparison to regional competitors for international funding, the Philippines appears less serious about emissions reductions, and therefore a weak competitor compared to regional peers who develop frameworks, such as Vietnam, Malaysia, and Thailand. There is additional competition between sectors within the Philippines itself in funding, as development banks and NGOs are also focused in financing the areas of education, health, and climate resilience and conservation. With all of these competing interests for funding, financing DER in rural islands with low rates of return or the decommissioning of a lucrative coal plant powering households and industry, for instance, are not attractive options for many of these investors and donors.

Interviewees also mentioned the challenge of lack of absorption capacity and monitoring and evaluation of development funding.

“The issue of absorption capacity is quite crucial. But when it comes to the international organizations, that they don't have a system in place [...] when governments fail to have enough capacity. So they also acknowledged that this is beyond their area of operation, this is not where they can actually engage, because they also feel it's a bit sensitive to say to government directly that they basically failed to implement, say, 10 big projects over the last few years. Instead, they would rather say why don't we give you another project and then maybe you will try again, and maybe next time you will succeed.” - Energy transition expert

As mentioned above, lower electricity demand in rural areas and poor communities equates to lower usage when power is available, and therefore a lower return on investment for private funders of energy infrastructure. This low demand discourages investors looking for profit, and energy infrastructure remains underdeveloped.

7. Outdated business & energy system paradigms

The vast majority of interviewees in the study described the Philippines energy sector as distinctly “centralized” and “privatized,” terms which are structurally engrained in financing systems and in older policies that put RE and DERs at a disadvantage. The DOE has difficulty foregoing the idea of a Central Grid, in the words of one Filipino renewables expert. Part of what

makes this possibility of renewable DER deployment within a Central Grid difficult is the Philippines' old energy sector model in place; a 3-player "Thomas Edison" model of generators, transmitters, and distributors. To stakeholders, it does not make sense to solve problems so traditionally in an archipelagic country. The Philippines is divided into three major groups of islands (and three grids), with over 70 off-grid service areas (NARUC, 2013). The grids still use submarine cables, which is a 120-year-old technology. DER technology, and the idea of producing energy where one consumes it, is perceived as novel in comparison. Additionally, there is a wider financial perception that RE is not feasible for baseload. Evidently, the government's preferred route is still natural gas, due to its financial bolstering as a "transition fuel" valued in policy approaches.

Bribery and corruption are two final factors in financing and implementation of the energy sector. One stakeholder described this as the "biggest barrier" embedded within the system, and they are cited frequently. Whether in the form of overt lobbying personnel, legislator funding from rich businesses, or vested interests in the government favoring certain manufacturers, corruption is prevalent. When it comes to operational permits and licenses, "all your papers will move," an interviewee commented, depending on how big your bribe is. Companies have been known to back off from projects in some municipalities due to corruption, which can be a "standard operating procedure" for LGU officials at all levels. In a more overt example, consumers do not always speak up to oppose a board resolution at electric cooperatives' general assemblies—even if they disagree—because they might be excluded from a raffle at the meeting. According to one interviewee, the raffle functions as almost a bribe in those situations. Finally, some core decision-making happens in advance, such as Power Contract Agreements, which no longer go through ECs' general assemblies but are pre-approved before the assembly even happens—which can lead to the underrepresentation of member-consumer voices.

"Money talks—money decides." – Regional director of a climate NGO

"For me, the whole Philippines is a sacrifice zone of the rich polluters." – Anonymous stakeholder

Finance Opportunities

The stakeholder interviews identified specific innovative strategies and financial instruments that would facilitate the DER deployment and energy transition in the Philippines: **1) create a coal carbon credit mechanism, 2) integrate DER solutions into climate change adaptation initiatives, 3) innovate in microfinancing for off-grid solar solutions, 4) support financing for rooftop installations on public buildings, and 5) blend grant, debt, and non-financial instruments.**

1. Create a Coal Carbon Credit mechanism

Existing financing for coal power plants and relatively young age of plants were identified as main bottlenecks for energy transition and DER deployment in the Philippines. The coal carbon credit mechanism, a unique type of carbon credit mechanism, is particularly designed for incentivizing a transition from coal to renewable energy in developing countries. The methodologies for this mechanism are under development, reflecting its newly inception. The advantages of leveraging Coal Carbon Credit Mechanism are solving the problem of existing loans for young power plants, providing a financial incentive to phasing out the plants, and offering funding for transition financing.

This mechanism would be implemented in Public-Private Partnership with the help of External Advisory. In this context, the Global Energy Alliance for People and Planet (GEAPP) and Rockefeller Foundation are already working on the World's First 'Coal-To-Clean' Credit Program in Emerging Economies. This initiative is supported by Climate Policy Initiative (CPI), RMI, and South Pole, aiming to set a global benchmark for coal carbon credit mechanism. ADB has an energy transition mechanism in place. Therefore, the Government of the Philippines could explore the potential to work with the Rockefeller Foundation, GEAPP, and ADB energy transition mechanism, along with Coal Power Plant owners.

2. Integrate DER solutions into climate change adaptation initiatives

As highlighted by climate finance experts, the Philippines has better access to climate change adaptation funding compared to its peers due to its climate vulnerability to typhoons and flooding. The adaptation funds offer more grant financing and more concessional lending with a single digit to vulnerable countries. This presents a significant opportunity to leverage these funds for financing DER solutions in vulnerable communities.

As adaptation activities often focus on building resilience against climate events, DER solutions, such as rooftop solar panels or microgrids, can offer both mitigation (reducing greenhouse gas emissions) and adaptation/resilience benefits. In remote island communities with a high chance of not connecting to the grid (due to low viability or low consumption), grant financing and adaptation funds are ideal to assist the acceleration of DER installation. The logic of this integration is to leverage non-commercial adaptation projects with commercially viable mitigation projects.

3. Innovate in microfinancing for off-grid solar solutions

The research team recommends utilizing Wholesale Loan structure for Rural and Cooperative Banks, established community organizations or potentially electric cooperatives. Wholesale loans are larger loans provided by a lender (often a bank or development agency) to a micro-finance institution (MFI). The MFI then uses these funds to provide smaller loans to its

own clients. This allows MFIs to access larger amounts of capital compared to traditional microfinance deposits.

Broadly speaking, this recommendation focuses on improving access to financing for vulnerable populations, as determined by literature research and stakeholder interviews. There are certain communities which are excluded from energy access due to their low energy demand, geographical location, and unstable income. Instead, off-grid solutions, such as rooftop solar systems would be more suitable for this population. In spurring these solutions, micro-financing along with a grant component is ideal. Moreover, banking and established financial institutions are not suitable for intermediating these micro-financing because each transaction is too small for these institutions, imposing high operation cost, low profit for each transaction. Another issue is the reach out potential of these financial institutions to the remote islands and rural locations.

Furthermore, distributed generation renewables deployment could have higher penetration with the removal of financial barriers. While traditional diesel systems entail a moderate initial capital investment and moderate O&M costs, renewable systems incur a high initial investment and low O&M costs (Navarro, 1998). Given this, financial packages should be appropriately adapted to match a community's payment capacity (Ibid). Banks and leasing companies hesitate to offer reasonably-priced, reasonably-termed, and standardized financing products to borrowers, often due to perceived technological or economic risks, or the perception that the market is too small outside of the Metro Manila region (Mitigation Action Facility, n.d.). Renewable energy loans from NEA and development banks have proven helpful in disseminating PV systems to electric and people's cooperatives, especially as subsidies are phased out past the initiation stage of a project (Ibid). Funding entities such as NGOs and MDBs can look to these types of innovations to address low-demand electrification and community-scale renewable projects.

4. Support financing for rooftop installation on public buildings

The on-the-ground energy developers identified the rooftop solar systems on medium-sized commercial and institutional (C&I) users as the low hanging fruit in accelerating DER deployment. This segment includes schools, universities, hospitals, government buildings, and public spaces. These customers can benefit from on-site energy generation and pay back the system cost using their usual electricity payments.

Since most of these customers are government organizations, there can be government incentives such as providing a Guarantee for repayment of solar system on behalf of the public buildings. The benefit of having government guarantee in place is this would help Solar companies in getting debt financing from banking and financial institutions. It also helps to reduce the cost of financing due to the fact that government guarantee would reduce the project risk.

In the long term, this approach could offer several benefits. First, it would bolster the capacity of solar companies by improving their access to capital and increasing their sales. Second, increased deployment of solar on public buildings would raise market awareness of Distributed Energy Resources (DER) and their reliability. Project research suggests that skepticism regarding DER reliability is a current market barrier.

5. Blend grant, debt, and non-financial instruments

Representatives of the National Bank highlighted the importance of combining debt financing with grant capital to enhance financial inclusion for small and medium-sized enterprises (SMEs) and low- and middle-income (LMI) households. Grant funding can alleviate the burden of monthly repayments, potentially improving borrowers' ability to meet loan-to-capital ratio requirements. Additionally, incorporating non-financial instruments, such as guarantees and risk mitigation funds, can function as a safety net for investments, thereby attracting a wider pool of financiers in DER.

An overarching recommendation that follows is for the Philippine government to leverage funds from international and national organizations through innovative partnerships and financial instruments to support sustainable energy projects. This involves securing partial funding for specific initiatives, like the ADB's support for battery storage in Antique, and using intermediaries to connect finance with local governance for project development. Partnerships between various stakeholders, including farmers, bankers, and energy developers, along with the strategic use of cash and derivatives as financial support, aim to facilitate the deployment of renewable energy technologies.

Final Recommendations

Each of the aforementioned opportunities in Policy, Community Engagement, and Finance can operate as standalone recommendations. With that said, the following recommendations are designed to broadly encapsulate the transformations needed to enact and fund a transition to renewable DERs in the Philippines:

1. **Align national policies with local implementation strategies** through Local Government Units, Regional Development Councils, rural banks, electric cooperatives, NGOs, and communities. Prioritize grid upgrades and strategic transmission buildout in laying the groundwork for DER integration.
2. **Decentralize project planning, coordination, and monitoring** at a regional-local institutionalized level, with special attention to project sustainability and after-service.
3. **Pursue innovative, blended, micro-scale financing** for DER project development and leverage that finance in conjunction with Philippine energy payment mechanisms (loans, auctions, options, tariffs, new carbon credit systems, etc.).

4. **Maintain a favorable finance and policy environment for small-capacity projects** by streamlining permitting, increasing leeway for small projects, and enlisting NGOs with community knowledge for on-the-ground support. This may also entail hybridizing existing missionary electrification efforts with clean energy, and/or rolling out early distributed renewable projects on public infrastructure.
5. **Continue rolling out targeted local-level reforms and ordinances on RE and DER** in order to signal policy framework readiness to investors, decrease perceived risks, and attract international concessional finance.
6. **Facilitate collaboration between project developers** and civil society groups, distribution utilities, and electric cooperatives to maintain end-user awareness of project costs and opportunities.
7. **Utilize the list of 24 key stakeholders** identified to engage with key partners when working at the intersections of renewable energy development, finance, and community engagement in the Philippines.

Conclusion

Utility-scale renewable generation and the expansion of renewable distributed energy to reach widespread, isolated, and rural communities are substantial components of the Philippine energy transition, requiring significant investment. Concurrently, affected community members continue to be excluded from or tokenized within energy development implementation processes. Though challenges remain in policy misalignments, nascent financial landscapes, and low community engagement to inform implementation, there is abundant potential in the Philippine energy sector to localize the planning and de-risking of projects, ease the burdens of financing renewable energy, and meet the growing energy demand of the developing economy.

This project sought, on a high level, to provide context on the Philippine energy system and energy transition finance, as well as identify key challenges and potential opportunities within the themes of Policy, Community Engagement, and Finance.

The primary groups of stakeholders identified as actors in the Philippine energy transition system include 1. Government Employees, Policymakers, and Administrators, 2. Philippine Energy System Developers, Implementers, and NGOs, 3. Energy Transition Financiers 4. International Energy Transition Technical and Advisory Experts, and 5. Small Actors on the Ground, such as impacted communities, local community leaders, CSOs, small businesses, and activists. These actors can, and should, strengthen existing and develop new collaborations across these groups, and specifically target engagement with the 24 key stakeholders identified in project interviews. These stakeholders can utilize the challenges and recommendations identified to avoid and decrease the hurdles to improving energy system finance and implementation.

Amid the urgency of the global climate crisis and the high stakes of human development progress in the 21st century, the Philippines is poised to emerge as a leader in distributed

renewable energy solutions. The trajectory of the Philippine energy system is one that will inform the wider transition toward a more equitable, renewable, electrified global energy landscape. If properly funded and implemented, this transition has the potential to empower vulnerable communities through the power of inclusive energy access.

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Appendices

Appendix A: List of Acronyms

<i>Important Terms</i>	
ASEAN	Association of Southeast Asian Nations
C2C	Clean Energy to Communities
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
COP	Conference of Parties
CREZ	Competitive Renewable Energy Zones
CSO	Civil Society Organization
DER	Distributed Energy Resource
DES	Distributed Energy System
DG	Distributed Generation
DIS	Distribution Impact Study
EC	Electric Cooperative
ECC	Environmental Compliance Certificate
EPIRA	Electric Power Industry Reform Act
ETF	Energy Transition Finance
FIT	Feed-In Tariff
FPIC	Free Prior Informed Consent
GEOP	Green Energy Option Program
IRR	Implementing Rules and Regulations
JETP	Just Energy Transition Partnership
L&D	Loss and Damage
LCCAP	Local Climate Change Action Plan

LGU	Local Government Units
LGUOU	Local Government Unit-Owned Utilities
LMI	Low and Middle Income
LMIC	Low and Middle Income Countries
LNG	Liquid Natural Gas
MDB	Multilateral Development Bank
MFI	Micro-Finance Institutions
NDC	Nationally Determined Contribution
NFC	Non-Financial Corporations
NGO	Non-Government Organization
O&M	Operating and Maintenance
ODA	Official Development Assistance
PDP	Power Development Plan
PDU	Private Distribution Utilities
PIOU	Private Investor-Owned Utilities
PPA	Power Purchase Agreement
PV	Photovoltaic
RE	Renewable Energy
ROI	Return on Investment
RPS	Renewable Portfolio Standard
SAHS	Stand-Alone Home Systems
SDG	Sustainable Development Goal
SMSE	Small and Medium-Sized Enterprise
SPUG	Small Power Utilities Group
TEP	Total Electrification Project

<i>National and International Government Agencies and Organizations</i>	
DILG	Department of Interior and Local Government
DOE	Department of Energy
DOF	Department of Finance
ERC	Energy Regulatory Commission
IEA	International Energy Agency
IRENA	International Renewable Energy Agency
MEMR	Ministry of Energy and Mineral Resources (Indonesia)
NEA	National Electrification Administration
NEDA	National Economic Development Authority
NPC	National Power Corporation
RDC	Regional Development Council
UNFCCC	United Nations Framework Convention on Climate Change
DILG	Department of Interior and Local Government
<i>Non-Governmental Organizations (NGOs)</i>	
CEED	Center for Economic Empowerment and Development
CPI	Climate Policy Initiative
CPII	Center for Power Issues and Initiatives
ERIA	Economic Research Institute for ASEAN and East Asia
GEAPP	Global Energy Alliance for People and Planet
IEEFA	Institute for Energy Economics and Financial Analysis
IUCN	International Union for Conservation of Nature
Meralco	Manila Electric Company
NGCP	National Grid Corporation of the Philippines
RMI	Rocky Mountain Institute

ROMELCO	Romblon Electric Cooperative
SMC	San Miguel Corporation
<i>National and International Banks and Funding Groups</i>	
ADB	Asia Development Bank
BPI	Bank of the Philippine Islands
BSP	Bangko Sentral ng Pilipinas or Central Bank of the Philippines
IFC	International Finance Corporation
IMF	International Monetary Fund
RCBC	Rizal Commercial Banking Corporation
SB	Security Bank

Appendix B. Full Interview Guide

1. *Philippine Government [Agency] Employees*
2. *Philippine Developers, Implementers, and local NGOs*
3. *Energy Transition Financiers/Investors*
4. *International Energy Transition Specialists*
5. *Leaders in Communities Affected and Involved in Philippine Energy Transition*

Overarching universal interview question:

In your opinion based on your experience, research, or observations, what approaches can best be used to develop culturally-appropriate, community-based, and equitable energy transition policy in the Philippines and applied to other LMICs?

Finance Questions

- 1) What are the key challenges to financing energy transition and low carbon development in the Philippines? (1, 2, 3, 4)
- 2) What are the key challenges to financing *distributed generation* in the Philippines? (1, 2, 3, 4, 5)
- 3) What are the common financing instruments in place for energy transition projects and MSMEs, and distributed generation? (1, 2, 3, 4)
- 4) What are some innovative financial instruments that could be used to support the development of distributed generation in the Philippines? (3)
- 5) What are the generally utilized mechanisms for backing up loans in the Philippines financial system? (3)
- 6) How hard is it to secure funding for MSMEs compared to corporates or other developed sectors? What are the levels of financial literacy of MSMEs (maybe it is more relevant to micro and small businesses or individuals)? (2, 3)
- 7) What requirements for securing financing are the most hard to meet for MSMEs? What are the steps involved in securing funding for a project from your organization? What documentation is required to apply for funding? (3)
- 8) What sectors have the highest potential of low carbon development in the Philippines in your perspective? (1, 2, 3, 4, 5)
- 9) What are the key lessons learned from your experiences that could be applied to equitable low carbon development and expanding distributed generation in the Philippines, across finance, policy, and implementation? (1, 2, 3, 4, 5)

Community-Engagement Questions

- 1) How do you historically and presently empower or incorporate communities into planning for infrastructure development? (1, 2, 3, 4)

- 2) In what ways do you see participatory planning and community engagement as important in successful finance and policy toward low-carbon development, distributed generation, and energy access in the Philippines? (1, 2, 3, 4, 5)
- 3) Through what channels and methods do you currently source communities and underrepresented groups to engage in your energy transition work? (1, 2, 3, 4)
- 4) What do you see as the key factors for success implementing community-based distributed generation in the Philippines? (1, 2, 4, 5)
- 5) What does culturally appropriate workforce development in the energy transition look like in the Philippines? (1, 2, 3, 4, 5)

- 6) What groups within the Philippine government and society do you currently see represented in energy infrastructure development finance and policy? What groups do you see as underrepresented? (1, 2, 3, 4, 5)
- 7) In what ways is [organization they work with/for] working to include underrepresented groups in energy transition planning, financing, and policy? (1, 2, 3, 4, 5)
- 8) How do you suggest international financiers, Filipino policy makers, and energy transition implementers ensure that underrepresented groups, including women, are fully included in the energy transition? (1, 2, 3, 4, 5)
- 9) We define a “sacrifice zone” as *an area where residents are subjected to increased levels of pollution and hazardous materials*, including low-income communities or communities of color living adjacent to heavily polluted industries. What methods on behalf of policy makers, financiers, and energy practitioners do you see to avoid causing "sacrifice zones" in the Philippine energy transition? (1, 2, 3, 4, 5)
- 10) What are some examples of successful community-based low-carbon development or distributed generation initiatives that you are aware of *in the Philippines*? (1, 2, 3, 4, 5)
 - a) Or, what are some examples of successful community-based low-carbon development or distributed generation initiatives that you are aware of *in other LMICs*?
- 11) What barriers exist to creating an authentic connection between policy-makers, global financiers, and members of communities impact by the Philippine energy transition? (1, 2, 3, 4, 5)
- 12) How would you like policy makers to approach your community? (2, 5)
- 13) Where do you see a connection, or a disconnect, between your community and pools of international funding for climate and development projects? (2,5)
- 14) What is your and your community’s relationship with energy infrastructure like? What are your current frustrations or concerns? How is the current energy system working well or not working well for you? (5)

Policy Questions

- 1) What methods can be used by Filipino policy-makers to identify culturally-specific financial mechanisms they would like to attract from international financiers for energy transition finance and low-carbon development, and distributed generation opportunities? (1, 2, 3, 4, 5)
- 2) How can these methods of identification be applied to energy transition finance policy creation in other countries as JETPs scale across other international partnerships? (1, 2, 3, 4)
- 3) Do you know of any policies in LMICs that are working well to encourage distributed generation in line with energy transition funding?
- 4) How can the Philippines leverage international public and private finance to support its energy transition goals? (1, 3, 4)
- 5) What are the key lessons learned from these experiences that could be applied to the Philippines? (1, 3, 4)

Final Questions

- 1) Is there anyone else in your network that you think we should interview in our research?
- 2) Our research intent is to contribute to DER development in the Philippines and provide lessons for other LMICs by answering the question:

What financial approaches can best drive effective and equitable DER deployment in areas of the Philippines, with an emphasis on areas facing energy access and resiliency challenges?

With that said, how do you have any recommendations for how we shape our research and report so that it can add value to your work and/or the community-based just energy transition in the Philippines?

Appendix C: Full Stakeholder Matrix

Stakeholder	Variations	Count	Sector	Sub-Stakeholders (specific individuals, communities, etc.)
National Government - Agencies	regulator of the energy industry Climate Change Commission Department of Energy (DOE) (12) Energy Utilization Management Bureau of the DOE [for ESCOs] technical committee led by DOE and DTI National Renewable Energy Board [within DOE] Energy Secretary Raphael Lotilla Department of Environment and Natural Resources (DENR) of the Philippines (2) Risk Resiliency Program [within DENR] Department of Finance (DOF) (4) “green force” [within DOF] Department of Justice (2) Department of Interior and Local Government (DILG) (3) Department of Labor and Employment Department of Trade and Industry Energy Regulatory Commission (6) energy regulatory board ERC the DER Guidelines government like the ERC, which practice its core values which include integrity, transparency and accountability, excellence, teamwork and public service Renewable Energy Division of the Energy Regulatory Commission NCIP [National Commission on Indigenous Peoples]	57	Policymakers	Climate Change Commission Department of Energy (DOE) (12) Energy Utilization Management Bureau of the DOE [for ESCOs] technical committee led by DOE and DTI National Renewable Energy Board [within DOE] Energy Secretary Raphael Lotilla Department of Environment and Natural Resources (DENR) of the Philippines (2) Risk Resiliency Program [within DENR] Department of Finance (DOF) (4) “green force is is an informal groups of government institutions, that is a working group that works are developing to develop the sustainable finance framework.” [within DOF?] Department of Justice (2) Department of Interior and Local Government (DILG) (3) Department of Labor and Employment Department of Trade and Industry Energy Regulatory Commission (6) energy regulatory board ERC the DER Guidelines government like the ERC, which practice its core values which include integrity, transparency and accountability, excellence, teamwork and public service Renewable Energy Division of the Energy Regulatory

	<p>National Economic Development Authority (NEDA) (3)</p> <p>Economic Council</p> <p>National Electrification Administration (7)</p> <p>Technical Skills Development Academy</p> <p>existing traditional ministries of energy, for example, that assigned like small units with three five people to govern the *renewable* energy projects</p>			<p>Commission</p> <p>NCIP [National Commission on Indigenous Peoples]</p> <p>National Economic Development Authority (NEDA) (3)</p> <p>Economic Council</p> <p>National Electrification Administration (7)</p> <p>Technical Skills Development Academy</p> <p>existing traditional ministries of energy, for example, that assigned like small units with three five people to govern the *renewable* energy projects</p>
Development Finance/Banks	<p>Hive</p> <p>developing banks that are willing to invest in development and sustainable development</p> <p>MDBs (Multilateral Development Banks)</p> <p>V20</p> <p>Asian Development Bank (10)</p> <p>World Bank (8)</p> <p>IFC (World Bank) (6)</p> <p>Development Bank of the Philippines (3)</p>	28	Finance Actor	<p>Asian Development Bank (10)</p> <p>World Bank (8)</p> <p>IFC (World Bank) (6)</p> <p>Development Bank of the Philippines (3)</p>
Consumers / MCOs / Prosumers	<p>retail customer</p> <p>poor customers</p> <p>poor, residential customers</p> <p>villagers that are owners of the cooperatives</p> <p>distributed generators</p> <p>consumer groups</p> <p>MCOs [Member-Consumer-Owners] (4)</p> <p>end users (4)</p> <p>Consumers (2)</p> <p>people who have bad rooftops</p> <p>residential, smaller community based initiatives</p> <p>housing subdivisions</p> <p>the middle class or the lower income class</p> <p>residents and businesses</p> <p>residents and with businesses</p>	28	Small Actors on the Ground	

	residential and smaller scale businesses Residents (2) households (2) household representatives any customers who were interested to derive cost savings and interested in helping in the greening of the earth			
Electric Cooperatives	Cooperatives (3) the co-ops in Philippines electric cooperatives (7) electric cooperatives are not related to the government. They are their own entity. They are private nonprofit organizations operating in the community law general managers of electric cooperatives "mega- large". Those are big electric cooperatives. rural electric cooperatives coops cooperatives, small cooperatives	26	Energy System Players	Romelco / Romblon / GM of (5) Labor Union for a [Planned] Electric Cooperative, or [UPELCO]. [**cannot find reference to this online] ALECO [Albay Electric Cooperative] Association Of Off grid, isolated rural electric cooperatives general manager of the romantico and but he's also the president of this association of create isolated rural electrical cooperatives
Distribution Utility	Utilities Utility (2) Utilities (Technical-O&M) bigger distribution utilities distribution utilities (3) private distribution utilities distribution company distribution companies electric companies transmission Distribution Utility like MERALCO power distribution companies like Meralco big single buyer is Meralco. It's a private distribution company one distribution company	22	Energy System Players	MERALCO (5) National Grid Corporation of the Philippines (2) Small Power Utilities Group (1)
Communities: General / rural small	Community / communities (11) local communities (2) small communities (2) rural communities the public people in the communities local community leaders village the chieftains the chairman's of this barangays	20	Small Actors on the Ground	
Communities: Affected	frontline communities	20	Small Actors on the	

	<p>people who are actually on the ground the actual victims—who are actually suffering from climate change; from economical economic difficulties which result from climate change geographically isolated and depressed areas communities will be benefiting from the project concerned/ affected community environmentally sensitive area, or socially sensitive area the stakeholders, no, the community</p> <p>the host, the community communities where fossil fuel energies like coal fired power plants are operating right now several communities near the baton within the baton peninsula where a lot of coal power plants are in communities in Batangas with the diesel ports coal communities</p> <p>underserved and unserved communities sensitive communities, communities that are unserved, unrepresentative, underrepresented, vulnerable</p> <p>communities that do not have access to electricity people who are still who still do not have access to electricity off grid communities underserved and unviable areas those in the islands isolated islands</p>		Ground	
Private Sector (Big energy companie & Big families)	<p>big energy firms big energy corporations private corporations corporations who are proponents of fossil energies Corporations corporations private sector ventures focused on harnessing renewable energy sources representative of the companies, the big businesses private business Big companies very large companies private sector private sector</p>	18	Energy System Players	Families (3)

	<p>Big families in energy a few big companies and a few big families --> Manny Pangilinan, Razon, the Aboitiz family, Lopez family energy sector in the Philippines is essentially dominated by about five to six families four big groups for big families, Ayala, Aboitiz, Lopez and the third one is a missing one. [...]</p>			
Local Government	<p>LGUs [Local Government Units] (7) Local government(s) (6) Local Government Code Local Development Council municipal governments municipal planners regional development councils</p>	18	Policymakers	
Financier - generic	<p>financier funders (2) Partners partners who are willing to share their resources and integrate solar energy investors (7) an investor that that will share our vision that we don't also want to just end up you know, our shares going high a financier investor financial institutions (2) financial lending, institutions</p>	17	Finance Actor	
Community Orgs / CSOs	<p>CSOs or civil society organizations organizations that say or represent community civil society and NGOs NGOs have partnered communities Self-Help groups community centers organizations</p>	16	Small Actors on the Ground	<p>CREST [Center for Renewable Energy and Sustainable Technology] Center for Energy ecology and development W Laudato Si / WeGen Energy Laudato Si (2) CPII organization, the Center for Power Issues and Initiatives (3) Solar Cloudgrid Project [Light of Hope nonprofit, clean micro DER installers] CentRE [Cent-RE = 100 RE (toward 100% renewable energy).The Center for Empowerment, Innovation and Training on Renewable Energy (CentRE)] Cardenas Maurice de la Cruz. Cardenas, she's, She runs the Secretariat of CENTRE</p>
Marginalized people:	<p>indigenous peoples (10)</p>	16	Small Actors on the	

Indigenous	indigenous community (3) communities are indigenous peoples indigenous peoples or or a local community indigenous energy systems		Ground	
Developers	large developers smaller developers the solar our company, we are the implementer big developers developers solar installation company solar company developer	15	Energy System Players	ACEN [renewables developer] SP&E [is this SPNEC, SP New Energy Corporation? subsidiary of Solar Philippines, the largest solar energy provider in the Philippines] WeGen Laudato Si [renewable develope WEnergy [renewable developer, I think] One Renewable Energy [renewable development PPP] Energy Development Corporation [“alternative” energy (geothermal,/hydroelectric/wind) developer] ESCOS [An Energy Service Company is a business that develops, installs, and arranges financing for projects designed to improve the energy efficiency and maintenance costs]
Large NGOs with funding identity	development organizations planning to do work here in the Philippines organizations like the ones in in COP28. Philanthropists international organizations (2) investors and international organizations international donor community foundations of international organizations that are ready to invest in financing clean energy transition specific NGOs (7)	15	Finance Actor	New Energy Nexus Rockefeller Foundation (2) Bill Gates Foundation UNDP / UNDP DREAMS project Climate Fund [UNGCF?]
Communities: Island Provinces	communities in the provinces coastal provinces small island states Mindanao in the Cordillera island of Bohol Mindoro mostly island communities in the provinces of Cebu, Bohol and Surigao del Norte. Island provinces Negros Occidental Quezon Province Polillio island	13	Small Actors on the Ground	Mindanao in the Cordillera island of Bohol (2) Mindoro Cebu Bohol Surigao del Norte Negros Occidental Quezon Province Polillio island

	poor, um, provinces in the Philippines several islands that were affected by Typhoon Yolanda			
Private/Big banks	commercial banks (4) retail banks retail bankers private banks corporate banks or the bigger banks big banks (4)	12	Finance Actor	BPI (Bank of the Philippines)(2) BDO (Banco de Oro, largest bank in the Philippines)
Generic Government	the government (10) Government (policy) government side	12	Policymakers	
Youth	youth perspective youth movement on renewable energy youth orgs youth activists students, youth leaders, youth organizations youth groups the youth youth movements schools low hanging schools your generation school organizations for the young, who are already into environment protection	12	Small Actors on the Ground	
Politicians / Officials / Policymakers	Mayors leadership of the local government units and the province government official policymakers (4) decision makers policy developers, policy creators, It can't be just ministers, it can't be just higher ups, it can't be just executives—they are policymakers out of this many number of policymakers not many are women	11	Policymakers	
National Government	national government (2) central government central level governance Congress (2)	11	Policymakers	Duterte government of Noynoy Aquino

	Senate Legislators Specific presidents (2) specific legislator who used to run a an electric cooperative			
Marginlized People: the Poor	the poor (4) low income / poor families (2) urban poor people poor region, in a poor community poor communities poor underprivileged off grid communities the energy poor	11	Small Actors on the Ground	
Workforce: Agriculture/Aquaculture	small farmer Farmers Farmers farmers farmers agricultural workers oyster farmers Fisher Folks fishing community cooperatives or farmer organizations	10	Small Actors on the Ground	
Foreign Governmental/Intergovernmental Organizations	organizations like the ones in in COP28 International Renewable Energy Agency IRENA environmental and social group at the World Bank development organizations US orgs (4) German government-funded NGO	10	Tech-Advisory Experts	powering past coal Alliance International Renewable Energy Agency IRENA environmental and social group at the World Bank EIA [US Energy Information Administration] USAID National Renewable Energy Laboratory (USA) CNCS [Is this domestic-oriented US Corporation for National and Community Service?] Friedrich Ebert Stiftung [German government-funded NGO]
Foreign governments	donor countries (2) [specific] government donor money from countries [foreign countries] "diplomatic missions"	9	Finance Actor	Australia (2) Canada Denmark Europe / EU (2) Finland Germany Holland Japan

				Norway USA (2) / USAID
Generation	generating facilities solar farms big solar farms DERs, distributed energy resources, they are essentially enterprises owned by the community generation Central, central generating, generating companies, you know, GENCOS rooftops of large industrial companies	8	Energy System Players	Mount Apo geothermal plant
Banks - General / Generic	the bankers Banks (6) the bank	8	Finance Actor	
Workforce (rural, displaced)	engineers if it's a rural community workers to other industries coal was an important industry, gave employment to a lot of people shortage of skilled workforce individuals who, whose job had been displaced staff who are working in coal mines Laborers Most of the workers in the energy sector are men	8	Small Actors on the Ground	
Think-tanks / Advisory NGOs	Climate and Energy Research Group NUPI CPA Freedom from Debt Coalition RMI (2) WRI Adaptation finance accountability initiative [WRI] Worldwide Fund for Nature, WWF	8	Tech-Advisory Experts	Climate and Energy Research Group at the Norwegian Institute of International Affairs (foreign policy think tank in Norway) CPA Freedom from Debt Coalition RMI (2) WRI Adaptation finance accountability initiative [WRI] Worldwide Fund for Nature, WWF
Marginalized People: Women	women (5) women in the community women's organization in that island	7	Small Actors on the Ground	
Government banks	government banks (2) domestic bank BSP (Bangko Sentral ng Pilipinas)	6	Finance Actor	Bangko Sentral ng Pilipinas (2) FDIC [Philippine Deposit Insurance Corporation - protects small investors]

	the regulators, especially Bangko Sentral ng Pilipinas FDIC [Philippine Deposit Insurance Corporation - protects small investors]			
Private companies	financial corporations who invest in fossil fuel energies Private sector (investment) private public partnerships large corporate financing commercial lenders four big groups/families	6	Finance Actor	
Activists/Advocates - General	activist groups, environmental advocates, and people who work with the community renewable energy advocates climate warriors, but advocates of sustainability and development Renewable Energy advocates in the Philippines	6	Small Actors on the Ground	Bishop Alminaza
Other / Unclear	There was a family who is rooted in island – made good \$, own international school in Philippines, want to give back to community The men non Indigenous peoples who owns the property the bigger businesses—the wealthier constituents The San Miguel Corporation [multinational conglomerate] --> finance? Offtaker?	6	Small Actors on the Ground	
Foreign investors	foreign investors climate investors Foreign investors interested in owning renewable energy projects in the Philippines without any ownership limitations international financiers Moody's	5	Finance Actor	
Political Influencers	lobbyists from from the corporations rich players, rich companies, rich businesses CEO or the decision makers neighboring countries or other peers partnerships	5	Policymakers	
Local banks	rural banks (2) local banks CDFIs community banks	4	Finance Actor	

Communities: Cities	cities medium sized city big cities people in the city centers	4	Small Actors on the Ground	
Communities of faith	small communities like in the context of the church Ecclesia communities Partnership of the community and the church communities of faith	4	Small Actors on the Ground	
Large Domestic NGOs	Center for Energy ecology and development (CEED) (2) Manila Observatory Institute for Climate and Sustainable Cities (ICSC)	4	Tech-Advisory Experts	Center for Energy ecology and development (CEED) Center for Energy and Equality [can we assume they mean CEED?] Manila Observatory Institute for Climate and Sustainable Cities (ICSC)
Fossil fuel companies / projects	oil companies coal companies coal projects, diesel projects in the Philippines that has promised a lot to different communities	3	Energy System Players	
Workforce (technical)	technicians installers engineers if it's a rural community	3	Energy System Players	
Land banks	land bank (3)	3	Finance Actor	
Cooperatives	multipurpose cooperatives credit cooperative facilities multipurpose cooperatives	3	Finance Actor	
International Governance	Energy Transition Council Secretariat of the green force Aarhus Convention (UNECE)	3	Policymakers	
MSMEs	micro small and medium enterprises are intrapreneurs. small MSMEs smaller MSMEs	3	Small Actors on the Ground	
Marginlized People: General / Other	underrepresented groups and individuals those that are already marginalized persons with disabilities	3	Small Actors on the Ground	
Universities	University of the Philippines, the State University University of San Carlos in Cebu	3	Tech-Advisory Experts	University of the Philippines, the State University University of San Carlos in Cebu

	Duke			Duke
Technical experts	experts from like the US or these countries or just even the capital, Metro Manila [experts to conduct] stakeholder consultations Chinese company to an American company, European company	3	Tech-Advisory Experts	
Energy Market	deregulated wholesale market WESM - wholesale electricity market of Philippines	2	Energy System Players	WESM
Transportation sector	transportation sector transportation, both public transportation, so electric, powered transportation, public transportation, subways, trains, buses, even motorcycles, and even private, acceleration of substitution of EV electric vehicles	2	Energy System Players	
Investors	local financiers domestic financiers	2	Finance Actor	
Unclear / unsure of how to categorize	PAG-IBIG CEO or the decision makers	2	Finance Actor	
Unclear	ECC [OSD/DOSD/USD/USAID] and [Picard/BCorp?]	2	Policymakers	
Networks	networks that we speak to investors network like a large network or like an intermediary network where you can bring those two parties together	2	Tech-Advisory Experts	
Unclear	JB Gamboa LLC has forwarded this alternative mining build	2	Tech-Advisory Experts	

Appendix D: Full Codebook

Parent codes	Child codes	Definition	Inclusion criteria	Exclusion criteria
Finance	Challenges	Challenges or barriers related to finance	Can include shortcomings, failed/discontinued projects, abandoned efforts, poor case studies, and criticisms that primarily relate to finance (at any scale).	Should not fit primarily into the "community engagement" or "policy/implementation" categories. For example, if the barrier stems from a policy or from a community dynamic, code for that instead.
	Opportunities	Opportunities or facilitators related to finance	Can include successes, case studies, recommendations, anecdotes that primarily relate to finance (at any scale).	Should not fit primarily into the "community engagement" or "policy/implementation" categories
	Compelling Quotes	Compelling quotes that are primarily about Finance and are worthy of being extracted and bolded in our report	Should be short, pithy, novel/insightful, eloquent, and related to our research question. Should also be coded as a Challenge or Opportunity.	Should not be vague, boring, repetitive/redundant, lengthy, or confidential.
Community Engagement	Challenges	Challenges or barriers related to community engagement.	Can include shortcomings, failed/discontinued projects, abandoned efforts, poor case studies, and criticisms that primarily relate to community engagement, such as communication, organizing/advocacy, rural residents, cultural insights, etc.	Should not fit primarily into the "finance" or "policy/implementation" categories
	Opportunities	Opportunities or facilitators related to community engagement	Can include successes, case studies, recommendations, anecdotes that primarily relate to community engagement.	Should not fit primarily into the "finance" or "policy/implementation" categories
	Compelling Quotes	Compelling quotes that are primarily about Community Engagement and are worthy of being extracted and bolded in our report	Should be short, pithy, novel/insightful, eloquent, and related to our research question. Should also be coded as a Challenge or Opportunity.	Should not be vague, boring, repetitive/redundant, lengthy, or confidential.
Policy/Implementation	Challenges	Challenges or barriers related to	Can include shortcomings,	Should not fit primarily into the

		policy, government, or governance (at any level: regional, national, international).	failed/discontinued projects, abandoned efforts, poor case studies, and criticisms that primarily relate to Policy (at any scale) and Policy Implementation.	"finance" or "community engagement" categories
	Opportunities	Opportunities or facilitators related to policy, government, or governance (at any level: regional, national, or international).	Can include successes, case studies, recommendations, anecdotes that primarily relate to Policy (at any scale) and Policy Implementation.	Should not fit primarily into the "finance" or "community engagement" categories
	Compelling Quotes	Compelling quotes that are primarily about Policy/Implementation and are worthy of being extracted and bolded in our report	Should be short, pithy, novel/insightful, eloquent, and related to our research question. Should also be coded as a Challenge or Opportunity.	Should not be vague, boring, repetitive/redundant, lengthy, or confidential.
Stakeholders	Energy System Players	Electric Coops, Utilities, Project Developers, NGOs active in development		
	Finance Actors	Multilateral Development Banks, Commercial Banks, Local Banks, Grant Financing, Climate Funds, Large NGOs with funding identity		
	Policymakers & Administrators	Global, Domestic, Provincial, Local		
	Small Actors on the Ground	Communities, Community Representatives, Small Businesses, Small-Scale Advocacy NGOs/CBOs/CSOs		
	Technical and Advisory Expert	Large Think Tanks, NGOs, Consultants, etc., including foreign, international, and domestic		
Project Recommendations		Any recommendations from the interviewee directly to the research team on framing the MP and resulting product.		

Appendix E: Case Studies

The research team has compiled a series of case studies based on interviews with project stakeholders. These narratives illuminate the technical, financial, and social dimensions of various renewable energy initiatives. They underscore the significant role of community engagement, adapting solutions to local contexts and needs, and resilience in driving the success of these projects.

1. Solar Power Initiative in Negros Churches

In an initiative to advance renewable energy adoption, parishes throughout Negros have initiated a significant project to install solar panels on church rooftops. This project, designed to generate over 300 megawatts of solar energy, aims to demonstrate to San Miguel Corporation and other major energy consumers the cost-effectiveness and environmental advantages of transitioning to solar power. The process involves a thorough assessment and selection of appropriate rooftops, alongside the deployment of comprehensive financial models. This initiative not only showcases potential cost savings but also lays the foundation for a sustainable energy future, encouraging other communities nationwide to follow suit, thus reinforcing the influential role of religious communities in environmental leadership.

2. Offshore Wind Potential by a development expert and community organizer

A development expert and community organizer has identified significant possibilities for offshore wind energy in the Philippines, leveraging the nation's abundant coastal resources. The strategy includes detailed planning and active community involvement to harness this untapped resource for the benefit of coastal populations while protecting the marine ecosystems. Efforts include extensive environmental impact assessments and open discussions with local residents to ensure that wind farm development aligns with both economic and ecological community goals. This initiative is anticipated to boost local energy self-sufficiency and act as a model for sustainable development in other coastal areas.

3. Biomass Power Generation in Polilio Island

Polilio Island, predominantly supported by coconut production, is exploring innovative renewable energy solutions. Under the leadership of a development expert, who was part of the project interviewees, and with the backing of the local community, the island aims to convert its copious coconut waste into a viable energy resource through a biomass power plant. The integration of an oil mill facilitates efficient feedstock processing, exemplifying a circular economy. This project not only addresses waste management and energy shortages but also stimulates economic growth, offering a scalable model for other similar regions globally.

4. Hydropower Resilience in Iloilo

A community-led hydropower project in the challenging landscapes of Iloilo exemplifies resilience and determination. Initially established with Finnish government funding, the project faced setbacks from a devastating typhoon but was later restored through the united efforts of the local populace, with additional backing from the Department of Energy. The community's involvement in both labor and material provision was crucial to the reconstruction of the infrastructure, which they now manage with minimal external support. This 30-kilowatt system not only provides continuous electricity to two barangays but also symbolizes the community's strong commitment to sustainable practices and resilience in the face of adversity.

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