ENERGY TRANSITION PARTNERSHIP

REPORT

Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Power Sector Development Roadmap

EXECUTIVE SUMMARY

AUGUST 2023

Prepared by: aquatera environmental services and products

UNOPS AFD Federal Ministry for Economic Affairs and Climate Action Department for Energy Security & Net Zero Environment and Climate Change Canada / Environnement et Changement climatique Canada Australian Government Department of Climate Change, Energy, the Environment and Water CIFF CHILDREN'S INVESTMENT FUND FOUNDATION SEQUOIA CLIMATE FOUNDATION

Executive Summary

BARMM Power Sector Roadmap Towards Clean and Sustainable Energy Systems

This document provides a synopsis of the Bangsamoro Autonomous Region in Muslim Mindanao's power sector development through a low-carbon and sustainable pathway. The Bangsamoro region has experienced phenomenal economic growth since the National Government of the Republic of the Philippines granted its autonomy. However, the energy sector, particularly the power sector, must be strengthened with clear targets and responsive institutional framework, policies, and programs. To guide this process, a Power Sector Development Roadmap has been crafted based on five Strategic Objectives, namely, Sufficient and Reliable Electric Power Industry; Improved Electrification Level; Potential Energy Resources and Facilities Explored, Developed, and Utilized; Energy Institutions Established, Improved, and Harmonized; and Partnerships Established.

Socioeconomic background

The Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) in the Philippines was established following the ratification of the Bangsamoro Organic Law through a two-part legally binding plebiscite held on January 21 and February 6, 2019. The region encompasses three cities and 116 municipalities across the six provinces of Lanao del Sur, Maguindanao del Norte, Maguindanao del Sur, Basilan, Sulu, and Tawi-Tawi. It also includes the 63 barangays in North Cotabato, collectively called the Special Geographic Area (SGA), which voted to be part of BARMM.

BARMM's population, based on the 2020 Census, stands at approximately 4.9 million. This accounts for 18.84% of Mindanao's total population and 4.54% of the Philippines' total population.[1] Excluding the SGA, BARMM's population grew at 3% per annum between 2015 and 2020.[2]

Despite being affected by the COVID-19 pandemic, BARMM has shown laudable economic performance. Its gross regional domestic product (GRDP) contributed less than 2% of the Philippines' gross domestic product (GDP) per annum from 2019 to 2022 but has notably grown twice as fast as the country, at 8.6% compared to the national GDP growth rate of 4.1% in the same period. The agriculture, fisheries, and forestry sectors contributed 37% to BARMM's GRDP and grew 11.3% annually from 2019 to

[1] PhilAtlas, BARMM, 2023, Retrieved from https://www.philatlas.com/mindanao/barmm.html, date accessed 28 August 2023.
[2] PIDS, Economic and Social Databases, 2023. https://econdb.pids.gov.ph/tablelists/table/1370, date accessed 28 August 2023.

2022.[3] The services sector also contributed 37% to GRDP and grew 5.5 % in the same period. The industry sector contributed 26% but grew 9.9% annually during the pandemic.

With a poverty incidence rate of 37.2% as of 2021, BARMM remains one of the poorest regions in the country.[4] This, however, is a big improvement from 2018, when the poverty incidence rate was 61.8%, particularly considering that the national poverty incidence worsened from 16.7% to 18.1% during the same period, largely due to the pandemic. Per capita income also increased by 21% during this period, from P55,039 to P66,423, while the country registered only an 8.5% growth in per capita income.

Energy sector and Bangsamoro Government objectives

Table ES-1: Overview of the Bangsamoro Organic Law (BOL) and Bangsamoro Development Plan (BDP) 2023 - 2028

Bangsamoro Organic Law	Shall make sure that the objectives of power sector investments and public utility operations, which are among the powers of the BARMM government, are achieved in a sustainable manner. Shall promote low carbon and sustainable power generation. Shall aggressively promote distributed generation as part of the power development plan.
Bangsamoro Development Plan 2023-2028	Improve energy security through the exploration, development, and utilization of energy resources, and improvement of the investment climate for the energy sector to attract private investment and, in the process, generate more jobs, create more revenue sources, and develop human capital in the BARMM.

The energy sector is critical to BARMM's economic development while transitioning to full autonomy. Particularly, the primary sectors would need power requirements to enable their operations and sustain economic activities. The Bangsamoro Organic Law stipulates that energy security shall be pursued through a low-carbon development pathway. This is further strengthened in the Bangsamoro Development Plan 2023 - 2028.

[3]PIDS, Economic and Social Databases, 2023. https://econdb.pids.gov.ph/tablelists/table/1370, date accessed 28 August 2023.
[4]PIDS, Economic and Social Databases, 2023. https://econdb.pids.gov.ph/tablelists/table/1370, date accessed 28 August 2023.

Power sector situation and challenges

As part of the energy sector, the Bangsamoro Government has identified the power sector as a priority area for development. It needs to address the following sectoral challenges and take advantage of the growing regional economic performance of BARMM.

The electrification rate in BARMM is less than 50%.

Based on the available data from 2020, the energy demand in BARMM was 119 MW, which accounted for only 0.77% of the total demand in the Philippines and 5.93% of the total peak demand in Mindanao. BARMM's population is approximately 4% of the country's total and 17% of Mindanao's population. There is significant underserved and unserved demand for electricity services across its population. According to the Bangsamoro Development Plan (BDP) 2023-2028 and the Department of Energy (DOE), the household electrification level in BARMM is significantly lower than the national average of 94.5% and the lowest among the regions in the country. Excluding Cotabato City, which has an electrification level of 99%, the average electrification rate in BARMM provinces was only 43.7% as of December 2022.[5] This translates to more than 300,000 households still without access to grid electricity.

Poor-performing electric cooperatives serve BARMM.

Overall, BARMM is served by 11 power distribution utilities. This consists of a private distribution utility, seven electric cooperatives operating within the BARMM territory, and three (3) electric cooperatives operating outside BARMM but providing electricity to some municipalities and barangays within the region. These distribution utilities claim 100% coverage of all barangays in BARMM, including those in the SGA. However, all ECs operating within BARMM are categorized by the National Electrification Administration (NEA) as poor-performing ECs.[6] BASELCO, LASURECO, TAWELCO, and SULECO are declared "ailing" or "red" ECs.[7] On the other hand, MAGELCO, SIASELCO, and CASELCO are "yellow-2" ECs.[8] The low or poor performance of these ECs indicates their unfavorable financial conditions.

---

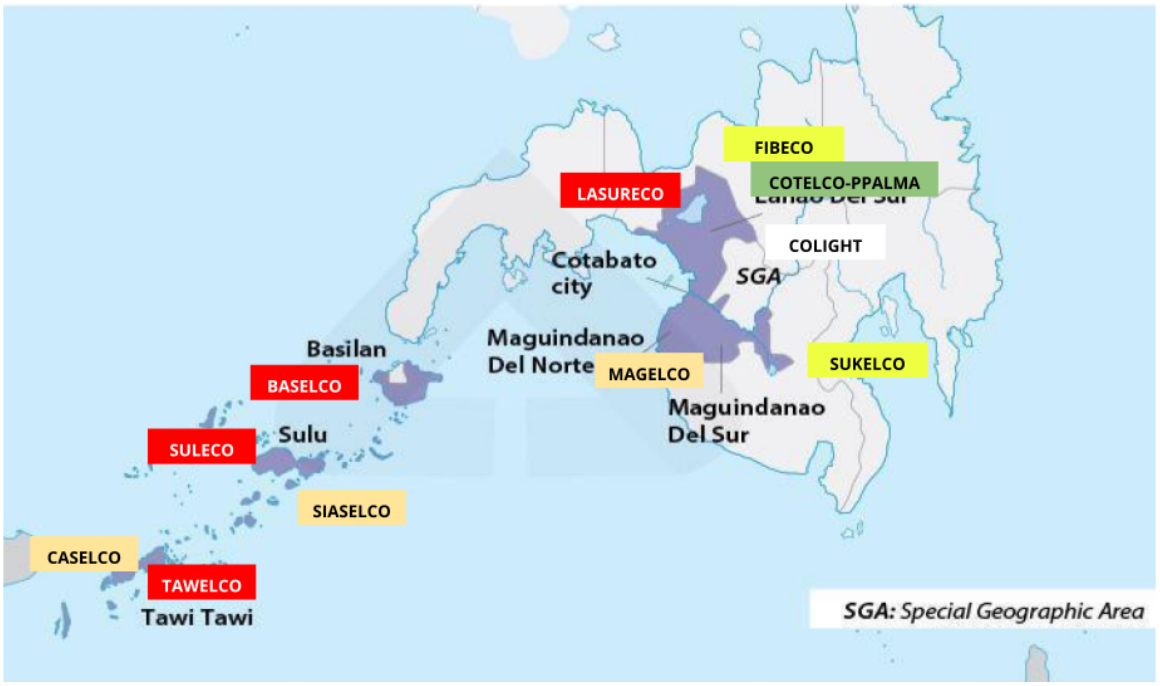
[5] This is based on the latest available data from the Department of Energy (DOE) and National Electrification Administration (NEA).

[6] NEA, 2022a, Memorandum: Calendar Year 2021 EC Overall Performance Assessment and Size Classification, 13 July 2022, Retrieved from https://nea.gov.ph/ao39/2022/Memo, date accessed 21 August 2023

[7] Ailing ECs fail to comply with all the criteria of key technical and financial performance standards and parameters, which include cash general fund, collection efficiency, payment obligations, result of financial operations, net worth, system loss, and system reliability.

[8] NEA 2022b, Compliance Report on the Performance of Electric Cooperatives 4th Quarter 2022. "Yellow-2 ECs fail to comply with four or more of the above-mentioned criteria", Retrieved from https://www.nea.gov.ph/ao39.pdf, date accessed 21 August 2023

Figure ES-1: Map of BARMM provinces and electric utilities serving the region



Mainland BARMM is connected to the Mindanao Grid, while the island provinces are off-grid.

BARMM comprises the province of Lanao del Sur, the two Maguindanao provinces, Cotabato City, and the SGA, which encompass more than 68% of the region's land area and more than 62% of its population. This is part of the Mindanao Grid that is now interconnected to the Luzon and Visayas Grids. The other part of BARMM, which comprises the island provinces of Basilan, Sulu, and Tawi-Tawi (BASULTA), represents about 32% of the region's total land area and about 38% of its population. This is off-grid or disconnected from the Mindanao grid and consists of hundreds of small, medium, and large islands. Electricity supply in BASULTA is available only in 11 island mini-grids classified from very large island grids to small island grids, nine of which are powered by the National Power Corporation Small Power Utilities Group (NPC-SPUG) diesel generator sets (gensets). The rest of the islands in BASULTA (as well as unserved areas in Lanao del Sur, Maguindanao del Norte, and Maguindanao del Sur) rely on solar lights or solar home systems to power lamps and small electrical appliances and private or family-owned diesel gensets or are without access to any electricity service.

Power sector development roadmap and opportunities for energy transition

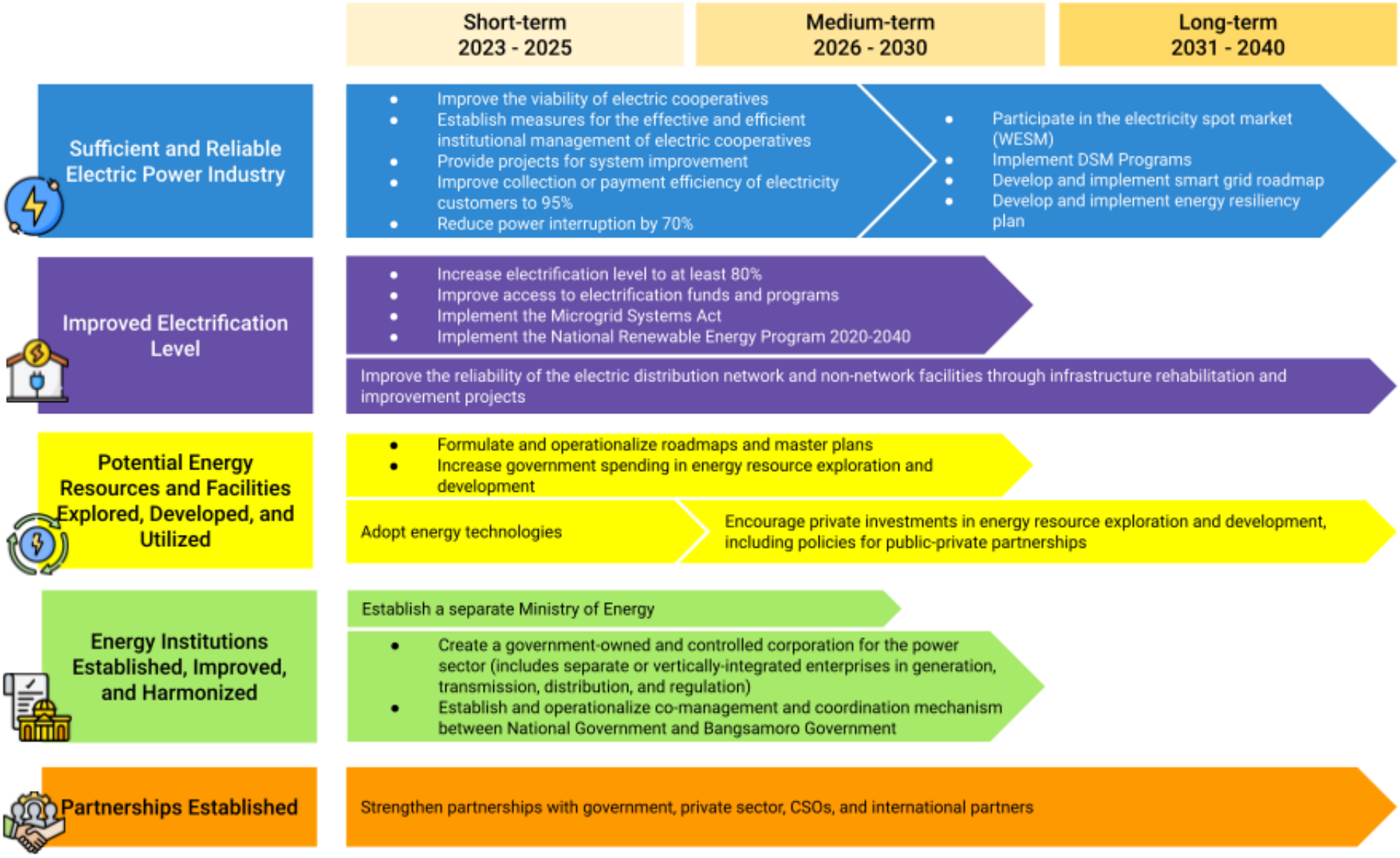
The BARMM Power Sector Development Roadmap aims to address the challenges in the power sector relative to electricity access and contribute to the overall objective of the

energy sector, which is improved energy security through a low-carbon and sustainable pathway.

The Roadmap features five (5) Strategic Objectives, namely: (1) Sufficient and Reliable Electric Power Industry; (2) Improved Electrification Level; (3) Energy Institutions Established, Improved and Harmonized; (4) Potential Energy Resources and Facilities, Explored, Developed, and Utilized; and (5) Partnerships Established. To achieve these Strategic Objectives, the Roadmap comprises corresponding Strategic Activities and Targets over the short term (2023-2025), medium term (2026-2030), and long term (2031-2040), as shown in Figure ES-2.

Beyond addressing the challenges of the power sector and contributing to energy security, the BARMM Power Sector Roadmap presents opportunities for energy transition and pursues the low-carbon development goals of the BOL.

Figure ES-2: BARMM Power Sector Development Roadmap 2023 - 2040



Sufficient and Reliable Electric Power Industry

The first Strategic Objective highlights five key areas of focus, specifically, (a) improving the viability of Electric Cooperatives (ECs), (b) putting measures for the effective and efficient institutional management of the ECs, (c) providing system improvement projects, (d) improving payment or collection efficiency of/for electricity consumers to 95% while limiting customer rate increases to 10% or less, and (e) reducing power interruptions by 70% in the medium term. Furthermore, in the medium to long term, BARMM aims for the electric utilities in the region to participate in the wholesale electricity market (WESM), implement demand side management (DSM) programs, and develop and implement smart grid roadmaps and energy resiliency plans. BARMM will work closely with the National Government, particularly DOE, through the Intergovernmental Energy Board (IEB) to develop and implement the corresponding policies. The implementation of these national power sector policies and programs will not only make the BARMM power sector sufficient and reliable but also efficient and resilient.

Improved Electrification Level

The second Strategic Objective aims to increase the electrification level to at least 80% by 2030. This Strategic Objective also intends to improve access to electrification funds and programs in the medium term and the reliability of the electric distribution network and non-network facilities through infrastructure rehabilitation and improvement over the long term. To improve electrification levels, particularly in off-grid areas or those not connected to the Mindanao grid, BARMM will explore applying and implementing the Microgrid Systems Act, which aims to address the electrification of unserved and underserved areas. Following the mandates of the BOL, BARMM will focus on developing distributed renewable energy systems or sustainable power generation options in implementing the Microgrid Systems Act. Integrating renewables in existing and new power systems will also reduce electricity costs and thus dependence on subsidies.

BARMM is teeming with economic potential, specifically with rising electricity demands across all sectors due to peace dividends and national and international attention and support the region receives. Access to clean and affordable energy will be pivotal for the inclusive and equitable growth and development of agriculture, commerce, communication, transportation, education, and healthcare.

Potential Energy Resources and Facilities Explored, Developed, and Utilized

BARMM will harness its abundant renewable energy resources, including solar, geothermal, biomass, ocean, and hydropower energy, to support the region's economic growth, improve social inclusion and long-term environmental sustainability. The third Strategic Objective aspires to formulate and operationalize roadmaps and master plans immediately and to rationalize an increase in government spending on energy resource exploration and medium-term development. This Strategic Objective also requires adopting renewable energy technologies in the short term. It encourages private investments in energy resources exploration and development, including policies for public-private partnerships in the medium to long term. The BARMM government is now working with local

governments to streamline business processes for issuing permits and clearances in renewable energy project development. Ensuring ease of doing business is expected to attract new capital in the region further. In addition, the BARMM government, together with local governments, will identify viable RE sites for development.

Electric cooperatives have roles to play in developing renewable energy resources and utilizing RE-based power systems, particularly through implementing policy instruments in the Renewable Energy Act, including net metering, renewable portfolio standards, green energy options, and the green energy auction program.

Energy Institutions Established, Improved, and Harmonized

The BARMM energy sector also aims to establish appropriate energy institutions to support the aims of the BARMM energy sector to explore, develop, and utilize potential (indigenous) energy resources and facilities. One urgent priority legislative measure is the creation of government-owned and controlled corporations (GOCCs) in the power sector (which includes separate or integrated enterprises in generation, transmission, distribution, and regulation). In this regard, the Bangsamoro Transition Authority (BTA) has also certified the creation of the Energy Development Corporation of the Bangsamoro (EDCB) as an urgent priority bill. Another priority legislative measure is the establishment of a separate Ministry of Energy (MOE) as certified by the BTA or the Bangsamoro Parliament under the Bangsamoro Organic Law (BOL). Among the main mandates of the proposed MOE is power sector development, including promoting the use of renewable energy for power generation to achieve sustainable development goals and low (carbon) sustainable power generation policies.

Partnerships Established

This final Strategic Objective aims to establish new partnerships and improve existing ones among all stakeholders involved in improving energy security in BARMM. This relates to the short, medium, and long-term efforts needed to establish and/or strengthen the linkages, collaborations, and partnerships of the BARMM government with the private sector, civil society organizations (CSOs), and international firms and investors.

Next Steps

To help accomplish the Strategic Objectives, implement the Strategic Activities, and achieve Targets, BARMM will at the same time undertake enabling activities towards Roadmap implementation. There are the “Next Steps”, which include the following activities:

1. Building Understanding of the DU Electric Cooperative Model Among Consumers
2. Conducting Baseline Assessment of the Proposed Project Areas
3. Addressing Reliability and Stability Issues in Existing Infrastructure
4. Addressing Energy and Power Needs in a Just Fashion

5. Information, Education, and Communication Campaigns
6. Intergovernmental Coordination and Cooperation
7. Gaining Stakeholder Consensus for Energy Initiatives
8. Strengthening Financial Options and Viability
9. Improving Regulatory Mechanisms and Governing Institutions

These Next Steps are expected to enhance BARMM's low-carbon development and energy transition.

The MOE and EDCB will be the main agencies leading the BARMM Power Sector Development Roadmap implementation. The MOE and EDCB will also identify the other agencies in BARMM that will take part in implementing specific strategies and activities. As indicated above, the IEB and the electric utilities also have specific roles in implementing strategies and activities in the Power Sector Development Roadmap.

Energy transition opportunities beyond power sector development

The development of renewable energy resources will also open job opportunities and encourage the expansion of regional industries. For instance, using biomass resources can lead to job growth in the agriculture and forestry industries, and hydropower development can lead to job growth in the building and upkeep of power plants. Data from DOE shows that variable renewable energy technologies (RETs, solar and wind) generate more jobs per kW or MW of installed capacity than conventional RETs (hydropower and geothermal), particularly during construction.

BARMM will also work with the IEB and other appropriate national and regional agencies, including the Mindanao Development Agency (MinDA), to implement the policies and programs under the National Renewable Energy Program 2020-2040. The National Renewable Energy Program (NREP) 2020-2040 aims to contribute to consumer and community empowerment by increasing the adoption and application of renewable energy in rural areas. NREP aims not only to improve access to electricity but also to exploit its applications in delivering basic social and economic services, particularly in the agriculture, fisheries, health, and education sectors.

Thus, under NREP's RE for Agriculture and Fisheries Sector, BARMM will explore the application and development of RE technologies for the agri-fishery sector, a major economic sector in BARMM. The objective of the NREP program on Productive Uses of Renewable Energy (PURE) is to open livelihood opportunities through community-based enterprises, augment income, and build resilience, especially in off-grid areas. NREP, towards this end, has capacity-building programs for local governments to undertake local renewable energy planning.

The Energy Efficiency and Conservation (EE&C) Act 2019 provides specific opportunities for the BARMM regional and local governments to mainstream energy efficiency and conservation locally. The EE&C Act mandates LGUs to set up a Local Energy Efficiency and Conservation Office and prepare a

Local Energy Efficiency and Conservation Plan. The EE&C Act is also institutionalizing and providing strategic direction to the DOE flagship Government Energy Management Program (GEMP), which aims to reduce the electricity and fuel consumption of public sector entities.

Developing renewable energy systems and using energy-efficient technologies can help reduce the amount of harmful pollutants and greenhouse gas emissions that contribute to the problem of climate change and the country's Nationally Determined Contributions (NDC) commitment.[9]

Financing the BARMM power sector development and energy transition

The salient provisions of the BOL shall ensure the self-reliant, autonomous, and sustainable financing and resource mobilization of the BARMM plans, programs, and projects, including the power sector. Following Sections 15 and 18, Article XII of the BOL, the National Government shall provide an annual block grant which shall be the share of the BARMM in the national internal revenue tax collections of the Bureau of Internal Revenue and collections of the Bureau of Customs. Block grants are geared towards enhancing the local government's effectiveness as part of the broader decentralization goal of BOL.[10] Another factor for such block grants is primarily to control deficits and support the public service delivery of the BARMM government.

Another source of funds for BARMM is the Special Development Fund, which allocates P5 billion per year for the next 10 years from the enactment of the BOL in 2019. This fund is intended for rebuilding, rehabilitation, and development of conflict-affected communities per Article XIV of the BOL.

To support the development efforts of BARMM, the enactment of the Republic Act No. 11439, or the Islamic Banking Act in 2019, has instituted the policy framework for the organization and regulation of Islamic banks in the country. Republic Act No. 6848, or the Charter of the Al-Amanah Islamic Investment Bank, was also aimed to promote and accelerate the region's socioeconomic development by performing banking, financing, and investment operations, in agriculture, commercial and industrial ventures. The Bank's role is pivotal in financing the low-carbon transition investments in the region, including how to make the region dynamic and an integral part of the national economy.

Due to the (still) limited financing and investment space in the region, the BARMM government will also rely on Official Development Assistance (ODA) from various international and local development partners. The bulk of the ODA in BARMM comes largely from the UN and the EU.[11] The Bangsamoro Planning and Development Authority (BPDA) has crafted the Official Development Assistance (ODA) handbook that will serve as the basis for coordinating, monitoring, evaluating, and reporting all proposed foreign-assisted programs and projects implemented in the BARMM.[12]

---

[9] Through the NDC, the Philippines commits to a projected GHG emissions reduction and avoidance of 75%, of which 2.71% is unconditional and 72.29% is conditional, representing the country's ambition for GHG mitigation for the period 2020 to 2030 for the sectors of agriculture, wastes, industry, transport, and energy. (REPUBLIC OF THE PHILIPPINES Nationally Determined Contribution Communicated to the UNFCCC on 15 April 2021 https://www4.unfccc.int/sites/ndcstaging.pdf, date accessed 28 August 2023

[10] Mendoza, R. & Yusingco, M.H., 2019. Dissecting the BARMM Block Grant. ASOG Working Paper 19-011. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?, date accessed 14 August 2023

[11] COA, 2019, 2020, 2021.

[12] BPDA, 2020.

In addition, as indicated in the Roadmap, the BARMM encourages private investments, including through public-private partnerships, towards developing the power sector in the region and achieving its goal of improved energy security.

Acknowledgements

The Southeast Asia Energy Transition Partnership (ETP) brings together governments and philanthropies to work with partner countries in the region to accelerate the energy transition. ETP supports the transition towards modern energy systems that simultaneously ensure economic growth, energy security, and environmental sustainability. Enabling the transition toward greener energy systems will greatly contribute to achieving the UN's Sustainable Development Goals (SDGs) and the Paris Climate Agreement objectives.

ETP has engaged Aquatera to develop a Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Power Sector Development Roadmap to support the Ministry of Environment, Natural Resources and Energy, Energy Management and Development Services (MENRE EMDS) team lead by Director Nasiri Abas with team members including Chief Al-Montazer Mandong and the rest of the EMDS Team in shaping the region's power sector policies towards clean and sustainable energy.

The Aquatera team has also engaged national experts to support the delivery of this work: Jessie Todoc (Technical Lead), Dr Michael Lochinvar Abundo and Dr Lloyd Bautista, Marianne Eleanor Catanyag and Anna Dominique Ortiz; and the research assistants: Leonard Edward Travis, Nerissa Gatdula, Janine Bragais, Jefferson Manrique, Christine Marie Tecson, Bryan Escoto, Xavier Julian Fernandez, and Jean Rose Baylon. The Aquatera Project Management Team includes Ian Hutchison and Dr Mary Ann Joy Franco.

The team also acknowledges all the participants of our Key Informant Interviews and Focus Group Discussions and their valuable contribution to shaping this Report.