Assessing the Viability of the Merchant Plant Model for Small and Medium Sized Renewable Energy Developers

Greening the Banks
Philippines Knowledge Product

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Introduction

The Philippines' target of achieving a 35% renewable energy (RE) share in its power mix by 2030 represents a significant investment opportunity of 1 trillion pesos (equivalent to USD $20.5 billion). To reach this objective, an estimated 46.9 terawatt-hours of new RE generation is required. The active and robust participation of various RE developers and financial institutions (FIs) is indispensable in realizing this goal.

FIs, particularly commercial banks, will play a pivotal role. Unlike many other ASEAN countries, sustainable financing in the Philippines is primarily provided by local private banks. The Asian Development Bank's (ADB) 2020 record of Green Infrastructure Investments in the Philippines surmised that over USD $3.4 billion (to date) worth of sustainable bonds had been issued in the country. In fact, 10.6% of local banks' loan portfolio in 2019 financed green and social projects.[1] However, gaps exist in the market when mobilizing financing for small-to-medium-sized RE developers (SMREDs), especially for merchant plants or other RE projects that commercial banks perceive as "high risk". Additionally, as conglomerates near market share limitations,[2] SMREDs will inevitably play an increasingly larger role in enabling the country's RE targets.

Identifying innovative and mutually beneficial approaches to connect developers with bank financing will be crucial in achieving the Philippines' 35% RE target. As a clean energy advisory firm with a focus on emerging technologies and markets, Allotrope Partners is working to help address the challenges that FIs and developers are facing through its Greening the Banks (GTB) initiative. This GTB knowledge product delves into the potential for merchant plant development and financing, examining both the advantages and disadvantages of this emerging business model, and sharing valuable insights from stakeholders in the country. GTB aims to expand its network through this research and enable developers and FIs to share their views

[1] Davidson, Kristiane, et al. *Green Infrastructure Investment Opportunities: Philippines 2020 Report*. November 2020. *Asian Development Bank*, Mandaluyong City, Asian Development Bank, http://dx.doi.org/10.22617/TCS200335-2. Accessed 2023.

[2] Department of Energy. *40th Electric Power Industry Reform Act (EPIRA) Implementation Status Report*. For the Report Period April 2022. April 2022. *Department of Energy*, Department of Energy, https://www.doe.gov.ph/sites/default/files/pdf/electric_power/40th-EPIRA-Status_Report-FINAL.pdf. Accessed 2023.

and generate discussions on how financial tools can more effectively align with developers' preferred business models. The following sections offer a snapshot of financial institutions' efforts geared towards RE development in the country.

FIs

Bank of the Philippine Islands (BPI)

BPI has set a target to divest from coal by 2032. Under its Sustainable Development Finance program, BPI supports developers from small-to-medium enterprises to conglomerates by providing loans for energy and energy efficiency projects. The program also offers complimentary financial evaluations of these projects. In addition, BPI recently launched a USD $300 million bond, with the intention of financing around USD $246 million (equivalent to 82%) of RE projects. Remarkably, BPI's energy portfolio is already 48% RE.[3] However, they do not publicly share their selection criteria for how they choose projects to finance.

Development Bank of the Philippines (DBP)

As a government-affiliated bank, DBP established the Financing Utilities for Sustainable Energy Development (FUSED) program.[4] This program provides financial assistance for distribution utilities (DUs) with energy generation, transmission, distribution, or power quality projects. It necessitates that DUs provide at least 10% of equity for their respective project and eligibility hinges upon the presence of an offtaker via a Power Supply Agreement. DBP also has the Solar Merchant Power Plant (SMPP) program. This program provides credit assistance to utility-scale solar merchant plant project developers who intend to sell their electricity generated to the Wholesale Electricity Spot Market (WESM).[5]

BDO Unibank, Inc. (BDO)

Launched in May 2022, BDO's Sustainable Finance Framework aims to finance eight projects across various sectors including RE, sustainability, water management, and green buildings with proceeds from bonds. Eligibility for RE projects alone include the "acquisition, development, operation, or maintenance of new and ongoing renewable energy generation or transmission projects supporting infrastructure". However, this fund appears to be highly competitive and may

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[3] Bank of the Philippine Islands. *Funding Sustainable Future*. Financing for Energy Projects. 13 December 2022. *Department of Energy*, Taguig City, Bank of the Philippine Islands, https://www.doe.gov.ph/sites/default/files/pdf/e_ipo/04_BPIFinancingforEnergy Projects.pdf. Accessed 2023. Powerpoint Presentation.

[4] Development Bank of the Philippines. "Financing Utilities for Sustainable Energy Development (FUSED)." *Development Bank of the Philippines*, https://www.dbp.ph/developmental-banking/infrastructure-and-logistics/financing-utilities-for-sustainable-energy -development-fused/. Accessed 2023.

[5] Development Bank of the Philippines. *DBP Programs And Projects Supporting The Five Key Result Areas (KRAs) Under E.O. 43 S.2011 (as of 31 December 2021)*. Development Bank of the Philippines, 2022, pp. 9-13, https://www.dbp.ph/wp-content/uploads/2022/03/DBP-Programs_Projects-Supporting-the-Five-KRAs-Under-E.O.-43-s.-2011.pdf. Accessed 2023. Annex to Report.

present significant challenges for new capacity developments competing with existing projects already in their operation/maintenance phase.[6]

Land Bank of the Philippines (LBP)

In 2019, LBP issued a PHP ₱3 billion (USD $59 million) green bond to fund RE and other sustainable projects set to mature in 2024. LBP plans to utilize these funds to support projects aligned with the environmental objectives outlined in its Sustainable Finance Framework in addition to international sustainable finance principles.[7]

GTB's Findings

Previous GTB convenings led by Allotrope Partners underscored a gap between FIs and SMREDs limiting the latter's access to funding. The GTB initiative seeks to bridge this gap, by building green finance capacity among FIs and improving their understanding of the RE industry, while enhancing SMREDs' familiarity with financial tools. With this knowledge product, GTB aims to explore the RE merchant plant model and investigate its operational dynamics in the Philippine energy market. GTB also conducted a recent matchmaking event to directly connect FIs with RE developers, enabling them to identify opportunities for collaboration on future projects and gathering critical insights from market stakeholders that are reflected in this knowledge product.

Exploring the Merchant Plant Model

The merchant plant model is not reliant on contracted offtakers for power sales, instead it involves selling electricity on the Philippines' WESM. Though an emerging model for RE developers, fossil fuel plants have long sold their capacity on the WESM. Historically, RE developers availed feed-in tariffs (FIT), which are now being scaled-back. In lieu of the FIT, the Department Of Energy (DOE) established the Green Energy Auction Program (GEAP), a capacity auction held by the DOE where developers bid to build RE projects to meet a required megawatt capacity that utilities can procure from. In this auction, developers bid projects at a price pre-determined by the Energy Regulatory Commission (ERC).[8] This price may influence a developer's choice between a contracted offtaker, GEAP, or selling in WESM as a merchant.

The WESM trades uncontracted energy, with prices determined by a merit order (cheapest to most expensive) pricing model. To encourage merchant RE, the DOE enacted a must dispatch

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[6] BDO Unibank, Inc. *Sustainable Finance Framework*. May 2022. May 2022. *BDO*, https://www.bdo.com.ph/sites/default/files/pdf/BDO-Sustainable-Finance-Framework-May2022.pdf. Accessed 2023. Online Report.

[7] Landbank. "LANDBANK to issue P3-B Sustainability Bonds." *Landbank*, October 2020, https://www.landbank.com/news/landbank-to-issue-p3-b-sustainability-bonds. Accessed 2023.

[8] Department of Energy. *Department Circular No. DC 2021-11-0036*. PROVIDING THE REVISED GUIDELINES FOR THE GREEN ENERGY AUCTION PROGRAM IN THE PHILIPPINES. 2021, Energy Center, 34th St., Rizal Drive, Taguig City, Philippines. *Department of Energy*, https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2021-11-0036.PDF. Accessed 2023. Department Circular.

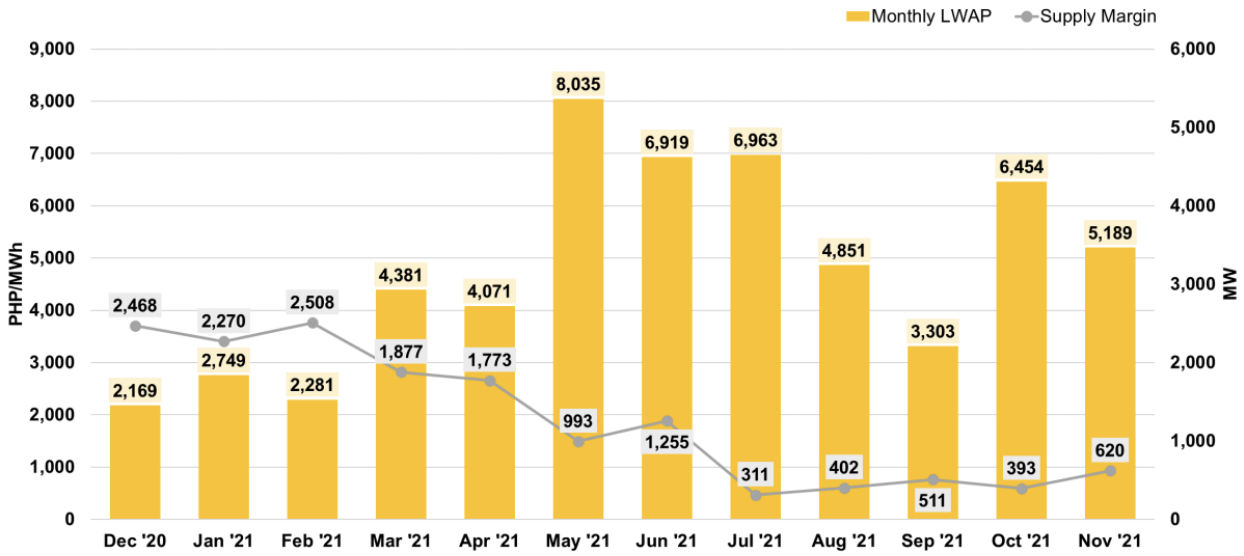
rule for RE developers, ensuring their electricity is first to be sold in the WESM by being first in the merit order, making RE merchants price takers, taking the price determined by the model. Despite these potential benefits, the merchant model is not without its challenges in the Philippines context.[9]

Gaps in the Market

Perception

The merchant plant model is particularly suited to SMREDs who may not have the capacity to secure contracts with offtakers due to their smaller outputs. While a prioritized dispatch in WESM ensures that their energy finds buyers, this inevitably ties SMREDs' profits to WESM price fluctuations. This is cause for concern for FIs like BDO who have noted that the merchant plant model "requires enhanced due diligence on the risks involved at project level, business model level, and the developer's creditworthiness level, among others".[10] SMREDs thus find financing merchant plants challenging due to the WESM's effect on a project's cash flow. This is evident in Figure 1 below, where WESM prices varied significantly throughout the year.

Figure 1. Daily system Load-Weighted Average Price (LWAP) and Hourly Supply Margin, 2020 to 2021[11]



In a study conducted by the University of Asia and the Pacific (UA&P), banks identified two risk mitigants needed to make RE projects more bankable: offtake agreements, and a "strong

[9] Landbank. October 2020

[10] Lopez, Elyssa. "Banks keep funding and profiting from fossil fuel." *Philippine Center for Investigative Journalism*, 23 March 2023, https://pcij.org/article/10042/banks-keep-funding-and-profiting-from-fossil-fuel. Accessed 26 September 2023.

[11] Philippine Electricity Market Corporation Market Assessment Group. *Market Surveillance Committee Annual Market Assessment Report*. 26 November 2020 to 25 November 2021. October 2022. *Philippine Electricity Market Corporation*, https://www.wesm.ph/market-outcomes/market-assessment-reports/annual-market-assessment-report. Accessed 2023.

principal sponsor".[12] Offtake agreements ensure a power plant's output is purchased and paid for at a predefined price, in contrast to the price fluctuations of the merchant plant model. Conversely, a strong principal sponsor refers to a technical or financial supporter with substantial resources or expertise that derisks a project by virtue of their own value. A developer we spoke to reaffirms this as the rates and terms they secured from FIs significantly improved upon partnering with a large conglomerate (acting as their principal sponsor), when compared to pursuing the project independently, with nearly a 2% rate difference. Unfortunately, these risk-mitigating factors are not readily available to all SMREDs.

Financial Tools for Merchant Plants

While green funding in the Philippines has the potential to be abundant, it often does not target specific business models like the merchant model, nor technologies. Some of these programs are briefly outlined in Table 1.

The table demonstrates the breadth of applicability these financing tools allow, from asset acquisitions to new plants. By not targeting, these actually limit the diversity of projects funded and only benefits a certain category of projects. Banks favor low risk, hence maturer technologies like wind or solar are more likely to be considered, or energy efficiency projects which have minimal risk. Additionally, for development projects, banks lean towards those with stable cash flows, a feature only really offered by contracted offtaker models. These initiatives allow banks to support some green efforts, while having a narrow sustainability impact. There is a need to broaden funding programs by equitably targeting specific sustainability projects.

One notable exception identified is the DBP's programs. Not only do they create separate funding initiatives, they also have the SMPP program, the sole RE merchant-targeted fund. As a government bank, DBP is able to assume more risk by funding a merchant plant. Even then, this fund only provides loans for a maximum of 60% of the project cost if located in Luzon, and 50% for projects in Visayas, necessitating developer equity or a second investor.[13]

[12] Sunio, Varsolo, et al. "Does the greening of banks impact the logics of sustainable financing? The case of bank lending to merchant renewable energy projects in the Philippines." *Global Transitions*, vol. 3, no. 2021, 2021, pp. 109-118. *Science Direct*, Does the greening of banks impact the logics of sustainable financing? The case of bank lending to merchant renewable energy projects in the Philippines. Accessed 2023.

[13] Development Bank of the Philippines. "Solar Merchant Power Plant (SMPP) Financing Program." *Development Bank of the Philippines*, https://www.dbp.ph/developmental-banking/infrastructure-and-logistics/solar-merchant-power-plant-smpp-financing-program/. Accessed 27 September 2023.

Table 1. Examples of FIs and their green financing programs[14]

Stakeholder	Initiative	Description
Development Bank of the Philippines	The Green Financing Program (GFP)	The GFP provides financing and technical assistance primarily for LGUs to assist its green strategic sector projects. The program assists in adapting environmentally friendly processes and technologies and incorporating climate change adaptation and mitigation in their projects.[134] The program promotes investments for environmentally friendly processes and systems such as cleaner production, waste minimization, resource conservation, energy efficiency, pollution prevention and control.[135]
	Financing Utilities for Sustainable Energy Development (FUSED)	FUSED aims to contribute in increasing access to electricity services through financing in order to help achieve inclusive growth and poverty reduction.[136]
	Program Assistance to Support Alternative Driving Approaches (PASADA) Financing Program	PASADA aims to support the implementation of the national government's Public Utility Vehicle Modernization Program (PUVMP) including revitalizing the PUVs to comply with emission standards and improve alternative transport technologies such as solar or electric power.[137]
	Energy Efficiency Savings (E2SAVE) Financing Program	The E2SAVE program is designed to boost productivity of public and private institutions by improving their energy efficiency projects. E2SAVE provides credit assistance based on the level of energy savings, such as Energy Saving Companies to further promote the development of energy efficiency projects.[138]
Bank of the Philippine Islands	Sustainable Energy Finance (SEF) Program	Capital Expenditure Financing: This option is for financing fixed asset acquisition such as new plant or building construction, expansion or modernization of operations, acquisition of machinery and equipment.
		Working Capital Financing: This is for the short-term financing needs of manufacturers or traders of EE and RE products, e.g. purchase of raw materials.
		Leasing: To finance the use of an asset or equipment over a specified period of time. Any type of asset can be leased as long as it is durable, identifiable, insurable, and has a good secondary market and reliable after sales support.[139]
BDO Unibank	Sustainable Energy Finance Program (SEFP)	In partnership with the IFC, BDO Unibank began developing its SEFP in 2010. BDO Unibank provides finance and technical advisory services for renewable project owners. BDO Unibank has increased its renewable energy loan portfolio over time.
China Bank	Sustainability Financing and Green Bond Program.	Chinabank, in partnership with IFC, worked together in 2012 on a sustainable energy finance advisory project. In 2017, China Bank participated in the mobilization of PHP796bn in loans, bonds, and securities for projects and investments that contribute to the U.N. Sustainable Development Goals. In 2017, China Bank issued a green bond with a use-of-proceeds for climate-smart projects, including renewable energy, green buildings, energy efficiency and water conservation, in accordance with the Green Bond Principles.

[14] Davidson, Kristiane, et al. November 2020

Pros vs. Cons

Despite these challenges, the merchant model remains a consideration amongst SMREDs. Table 2 outlines some potential benefits and caveats that GTB has uncovered through research and stakeholder engagement regarding this model.

Table 2. Potential Pros and Cons of the RE Merchant Plant Model in the Philippines

PROS	CONS
Merchant plant models offer a fast route to increasing RE capacity as contracting with offtakers is removed from the process.	Deregulated markets that introduced merchant plants witnessed “excess entry”. “Excess entry” drives prices down to unsustainable levels due to over-capacity, which can be unmanageable for SMREDs and other developers.[15]
Merchant RE plants usually have minimal fuel and operational cost, allowing them to maintain their cost of generation during adverse fuel industry conditions.[16] In the event that RE merchants become price setters, RE would allow market prices to normalize.	If RE merchants become price setters, there is potential for price cannibalization.This is a phenomenon wherein due to excess RE capacity, RE merchants become price setters. As they compete, they may capture prices below the technology’s Levelized Cost of Electricity (LCOE), preventing profits for smaller developers.[17]
WESM prices have seen spikes in recent years, allowing Merchant RE to recoup investment and reduce their payback period. Further, Green Energy Auction Reserve (GEAR) Prices appear to be too low, making selling to WESM a more appealing option for RE developers.[18]	WESM spikes however also lead to highly variable cash flows. Banks fear that merchant plants thus have unreliable cash flows and fear the occasional non-repayment.
Predominant RE resources (solar, wind) typically coincide with daytime demand peaks,[19] allowing	Recent weather phenomena have been unpredictable[20] and higher RE market penetration

[15] Nelson, James, and Paul Simhauser. “Is the Merchant Power Producer a broken model?” *Energy Policy*, vol. 53, no. February, 2013, pp. 298-310. *Science Direct*, https://www.sciencedirect.com/science/article/pii/S2589791821000177. Accessed 2023.

[16] Gifford, Raymond L., et al. *The Breakdown of the Merchant Generation Business Model*. A clear-eyed view of risks and realities facing merchants. June 2017. *Wilkinson Barker Knauer LLP*, https://www.wbklaw.com/uploads/file/Articles-%20News/2017%20articles%20publications/WBK-PRG%20Merchant%20Generation%20White%20Paper.pdf. Accessed 2023.

[17] Jones, Matthew, and Florian Rothenberg. *The Renewable Cannibalisation Problem*. Why Full Merchant Risk Will Become Increasingly Challenging. RELX SDG Resource Tracker, October 2019, https://sdgresources.relx.com/sites/default/files/renewable-cannibalisation-white-paper.pdf. Accessed 2023.

[18] Mercurio, Richmond. “'Unfeasible' prices cause low turnout at green energy auction.” *Philippine Star*, 8 July 2023, https://www.philstar.com/business/2023/07/08/2279416/unfeasible-prices-cause-low-turnout-green-energy-auction. Accessed 26 Sept. 2023.

[19] Dalusung III, Alberto, et al. *Towards an Affordable and Reliable Grid with Energy Transition (TARGET)*. An Evidence-based Comparative Assessment of Baseload Coal and Variable Renewable Generating Technologies. December 2021, Diliman, Quezon City, Metro Manila, Philippines. *Department of Energy*, https://www.doe.gov.ph/sites/default/files/pdf/announcements/CASE%20TARGET%20-%20Technical%20Report.pdf. Accessed 2023.

[20] Garthwaite, Josie. “Why warming makes weather less predictable | Stanford News.” *Stanford News*, 14 December 2021, https://news.stanford.edu/2021/12/14/warming-makes-weather-less-predictable/. Accessed 12 October 2023.

merchant RE to capture higher market prices.	will require more advanced weather forecasts.[21]

It is clear the merchant model is demanding especially for RE. Increased RE penetration in the market would mean larger merchants have the potential to cannibalize profit margins from smaller merchants due to the technologies' current reliance on scale to reduce cost. Additionally, FIs don't view the model favorably as it is affected by the market itself and the resource's variance. The survivability of this model necessitates a paradigm shift from FIs and advances in the tools developers use to fine tune their cash flow.

Insights on Merchant Plants

Information Availability

Though research revealed the pros vs. cons of the merchant model, there was a noticeable lack of information available on merchant RE specifically in the Philippines. Essential metrics, like the total number of merchant RE projects/developers, the latest composition of the Philippine electricity portfolio, and organized WESM price data, are notably absent. This lack of information poses significant risk as it may lead to policies that do not align with the situation on the ground. Further, without access to data like these, it becomes challenging for targeted initiatives to be developed. These challenges limited the GTB team's ability to examine current RE merchants' motivations and experience. Therefore, GTB looked towards the industry's perceptions of the model through the GTB matchmaking event, to identify potential ways forward for the merchant model in the Philippines.

Through the FIs' Lens

FIs view the RE merchant plant model to be challenging, in particular due to its inconsistent cash flow. That is not to say that the model itself is not profitable as banks have financed several fossil fuel merchant plants in the past. Fossil fuel plants typically have lower technology risk and may offer more reliable cash flows compared to certain RE merchants, which are subject to weather-related variability and the market's price determination. The key issue now revolves around the profit margins in WESM as RE historically relied on FITs to ensure profit, now this safeguard is no more. Fossil fuel merchants meanwhile are aided by well-developed hedging mechanisms and hence able to reliably forecast their cash flow. FIs meanwhile cannot rely on WESM price forecasts due to the market's inherent volatility. To mitigate this risk, several FIs suggest that SMREDs supplement their cash flows with another income stream or partner with a larger entity, mirroring the UA&P's findings. At the moment, some FIs don't have

[21] *Advanced Forecasting Of Variable Renewable Power Generation*. July 2020. *IRENA International Renewable Energy Agency*, IRENA International Renewable Energy Agency, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jul/IRENA_Advanced_weather_forecasting_2020.pdf?la=en&hash=8384431B56569C0D8786C9A4FDD56864443D10AF. Accessed 2023.

merchant RE clients at all, and some only have one. This may be indicative of the FIs' comfort level with the model and the disparity between their current criteria and the RE merchant model.

Developers' Views

A significant portion of the SMREDs that GTB has engaged have an extensive history and preference for the power purchase agreement (PPA) structure. They favor it due to its relative ease of securing funding and the assurance of guaranteed returns. However, this view is slowly changing as WESM prices surge well beyond RE LCOEs. Developers see this as an opportunity to shorten the IRR period and improve their companies' financials.

Another driving force behind this shift is the Green Energy Auction Program, the FIT's primary successor. The ERC sets a GEAR price for each technology that developers must meet or beat in order to win the auctioned capacity. Unfortunately, many developers found these rates far too low, eroding or significantly limiting profit margins for most. Furthermore, these prices will likely be referenced as a benchmark by PPA offtakers. The GEAR prices set by the ERC have already led to a failed GEAP 2 auction, procuring only 3.6 gigawatts of the 11.1 gigawatt capacity offered.[22] This could pave the way for price cannibalization if the DOE does not address this area of concern, as advised by several institutions.

Conclusion

The RE merchant plant model is challenging in a Philippines context, as Philippine FIs exhibit hesitancy in financing these types of projects. Such, there is a need to adjust the model to increase its viability. One approach suggested by stakeholders involves splitting up a project's offtake between the merchant market and a contracted buyer, while another suggests FIs should develop specialized financial tools tailored to merchant plants, akin to what the DBP has done. GTB is eager to partner with relevant stakeholders to address these issues and further explore potential solutions in this area.

Nonetheless, the merchant plant is a model that will continue to have relevance, as not all developers, especially SMREDs, have the capacity to engage in contractual agreements. Some developers prefer the occasional WESM price peaks to supplement their cash flows. While others turn towards the WESM instead of GEAP or PPAs as it offers higher profit potential. As SMREDs take up market share to meet the country's RE targets, these motivations show we are likely to see more RE merchants. Hence, FIs are leaving out significant opportunities by excluding this model from their portfolio. Traditional financing practices aimed at conglomerates will have to shift to meet the needs of SMREDs if FIs are to pursue scaled green financing. Unfortunately, SMREDs have had limited support in the power sector to date, and GTB is eager to assist these market stakeholders in addressing these challenges in support of the Philippines' clean energy transition.

[22] Mercurio, Richmond. July 2023