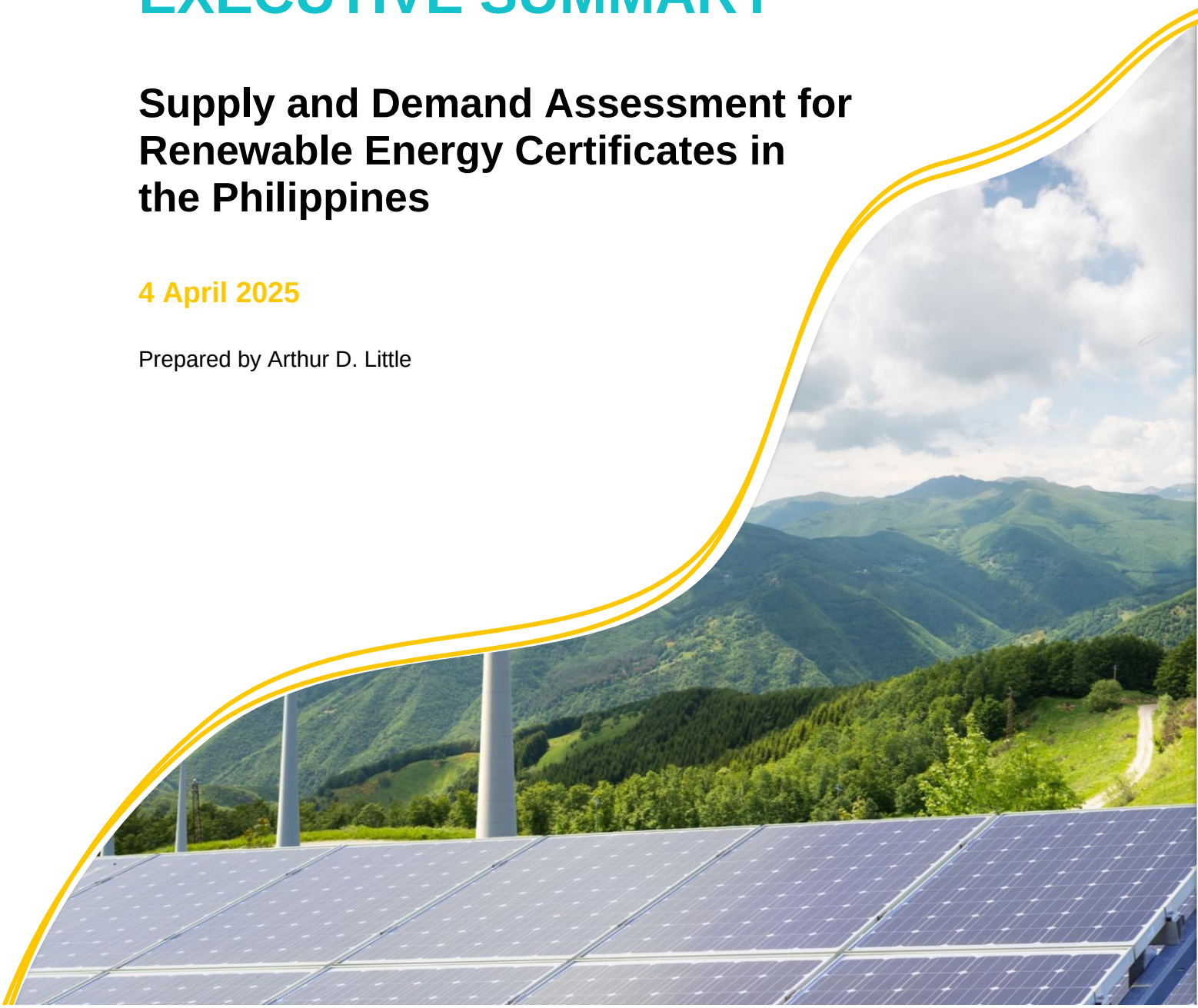
PRELIMINARY

EXECUTIVE SUMMARY

Supply and Demand Assessment for Renewable Energy Certificates in the Philippines

4 April 2025

Prepared by Arthur D. Little



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The Philippines is set to expand its REC market and potentially introduce a VREM, backed by a strong regulatory framework, scalable RE supply, and growing private sector demand.

Since the enactment of the Renewable Energy Act of 2008 (RE Act), the country has laid the foundation for RE development and a mandatory REM. The RE Act also introduced the Renewable Portfolio Standard (RPS), requiring designated electricity suppliers to gradually increase their renewable energy share. To support RPS compliance, the concept of a mandatory REM was introduced, evolving through the issuance of REM Rules in 2019, interim operations in 2022, and the official launch of full market operations on December 26, 2024.

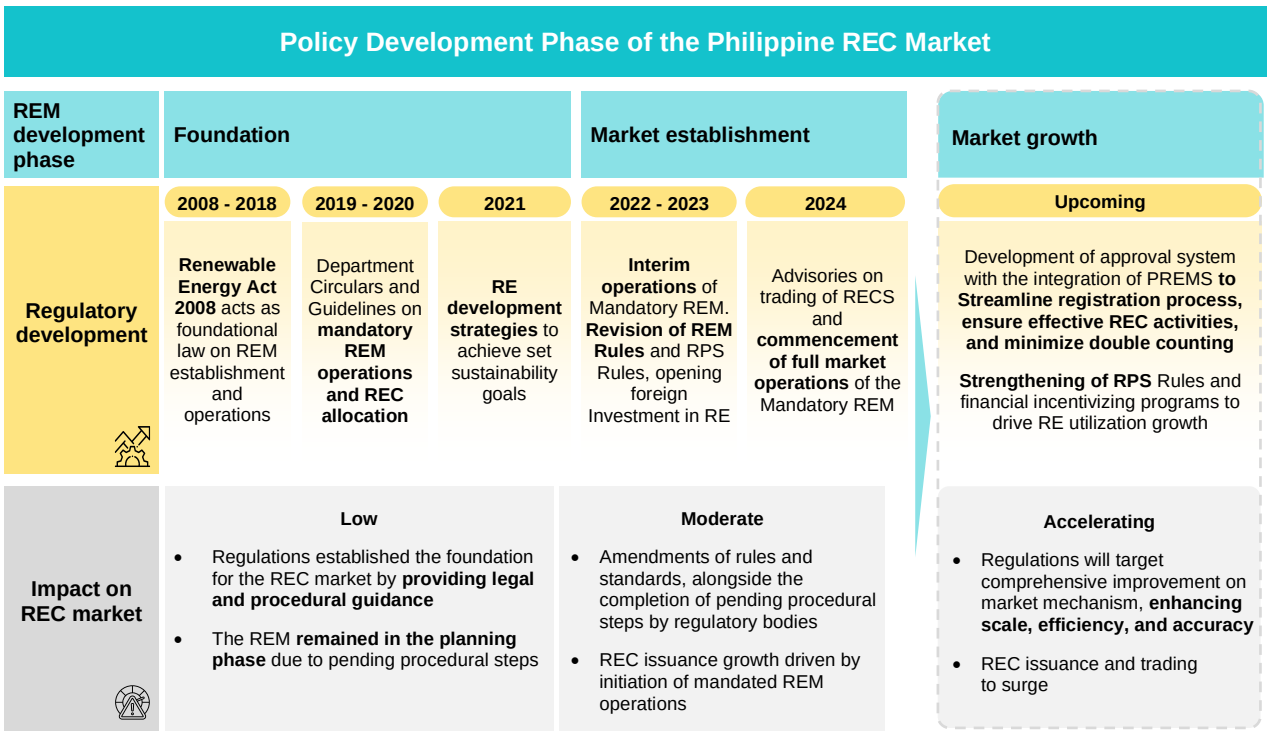


Figure 1 | Key Development Phases of the Philippine REC Market

The mandatory REM operates under a highly structured framework, with IEMOP managing a central registry through PREMS, overseen by the DOE, ERC, and PEMC. As of the full market launch, IEMOP has assumed the role of REM Registrar (RER) from PEMC, a transition that requires close monitoring to mitigate temporary market slowdowns caused by system and asset transfers, as well as personnel shifts. Within the mandatory REM, REM generators and mandated participants are required to participate to meet RPS obligations, with market engagement driven solely by compliance.

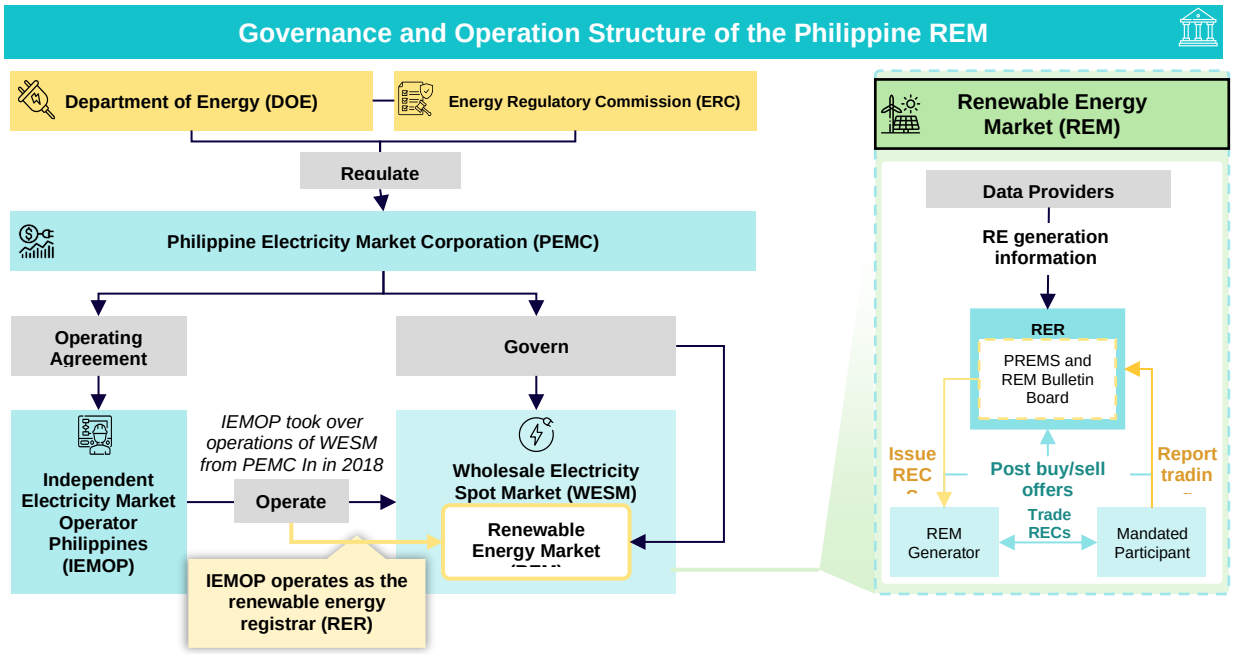


Figure 2 | Governance and Operation Structure of the Philippine REM

With a well-structured framework in place, enhancing REC eligibility, ownership, pricing, and tracking can drive the Philippine REC market toward voluntary and international participation. Key policy gaps have been identified, including optimizing the Philippine Renewable Energy Market System (PREMS) for voluntary adoption, exploring dynamic pricing mechanisms, setting clear criteria for VREM and non-RPS eligible participants, and aligning with international standards.

A high-level quantitative analysis of potential REC supply and demand from 2025 to 2034 assessed VREM growth under two Conservative scenarios (Conservative 1 and Conservative 2), a Base scenario, and an Aggressive scenario. The scenarios are mapped to reflect the Philippines' current developments and its growth outlined in the PEP2023-2050. VREM supply is primarily driven by the renewable energy generation from RPS-eligible facilities, non-RPS-eligible facilities, and voluntary facilities.

	RPS-Eligible				Non-RPS-Eligible	Voluntary	
	RE Generation (excluding GEAP)	**Include GEAP**	**RPS Compliance**	**% Surplus RE to VREM**	**% RE to VREM** (including international markets)	**RE generation**	**% RE to VREM**
Conservative Scenario 1	*Conservative*	*Conservative*	*Conservative*	*Conservative*	*Conservative*	*Conservative*	*Conservative*
Conservative Scenario 2	*Conservative*	*Base*	*Conservative*	*Conservative*	*Conservative*	*Conservative*	*Conservative*
Base Scenario	*Base*	*Base*	*Base*	*Base*	*Base*	*Base*	*Base*
Aggressive Scenario	*Aggressive*	*Aggressive*	*Aggressive*	*Aggressive*	*Aggressive*	*Aggressive*	*Aggressive*

Table 1 | Overview of Cases under Mapped Scenarios

Source: Arthur D. Little Analysis

VREM supply is expected to grow alongside RE generation of RPS-eligible and non-RPS-eligible facilities, with GEAP generation, surplus from mandatory REM consumption, and the percentage of this surplus allocated to the VREM as the main drivers. In the Base Scenario, VREM supply is projected to grow at a CAGR of 3% from 2025 to 2034, generating over 10 million RECs by 2034.

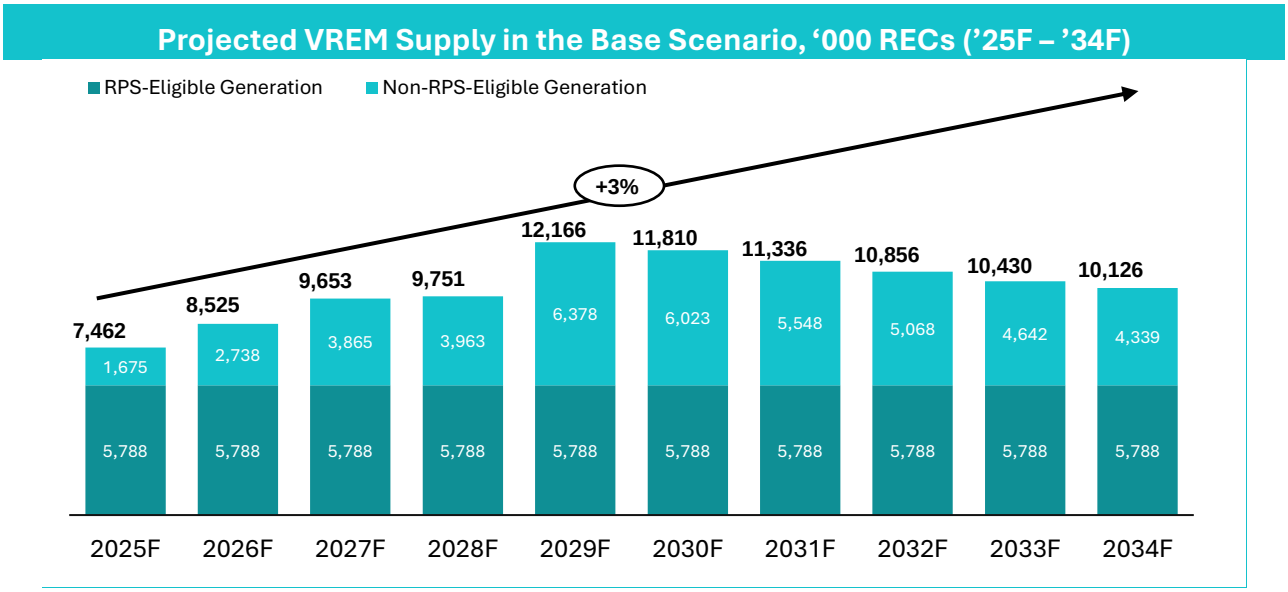


Figure 3 | Overview of REM and VREM Supply Projections, '000 RECs

Source: DOE, Arthur D. Little Analysis

VREM demand is primarily driven by the Commercial and Industrial Segment, specifically the Food, Beverage, and Tobacco (F&B and Tobacco), and Machinery sectors, expanding in line with their growing electricity consumption. The scale of VREM demand depends largely on REC adoption by RE100 and non-RE100 companies, making incentivizing participation crucial for market growth. To stimulate REC demand, the Philippines may consider proactive, personalized outreach to RE100 companies and large-scale non-RE100 companies with sustainability initiatives.

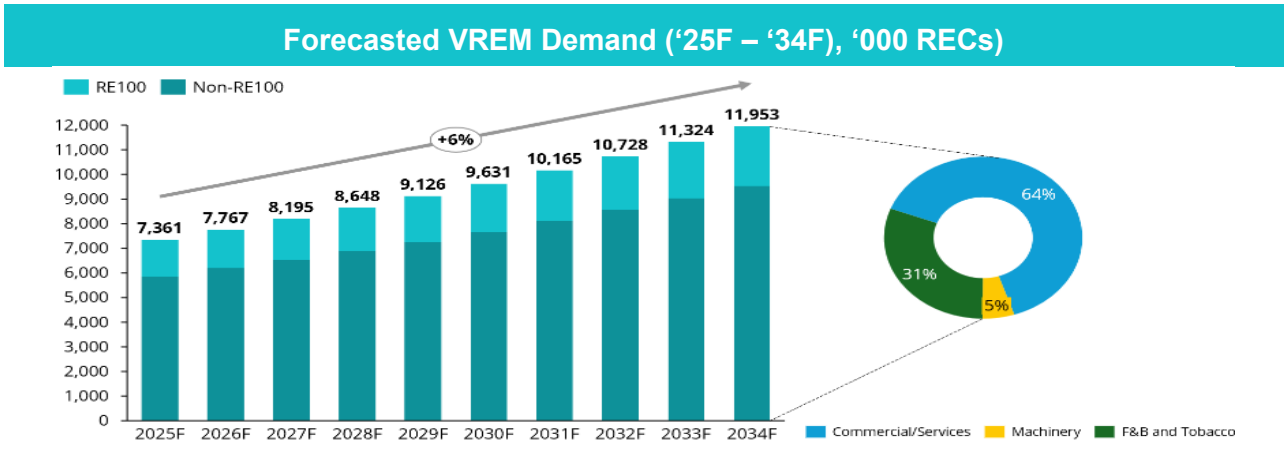


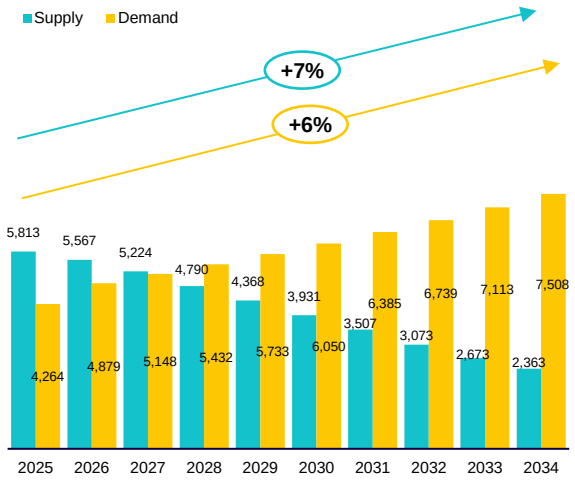
Figure 4 | Projected VREM Demand under Base Case ('25F - '34F)

Source: DOE, Arthur D. Little Analysis

The Philippines is expected to experience minimal VREM oversupply or undersupply in the Conservative 2, Base, and Aggressive scenarios, with supply driven by the supplement of GEAP generation and the scale of renewable energy to enter the VREM. In the case of an oversupply, beyond stimulating domestic participation, the country may consider supplying RECs internationally. Similarly, in the case of an undersupply, the Philippines may consider sourcing international supply, provided the right market structures are in place. Figure 4 illustrates the forecasted VREM supply and demand from 2025 to 2034.

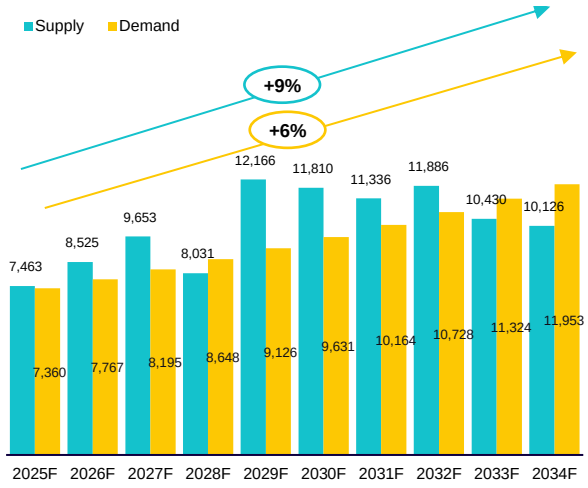
Forecasted VREM Supply vs. VREM Demand ('25F - '34F), '000 RECs

Conservative Scenario 1



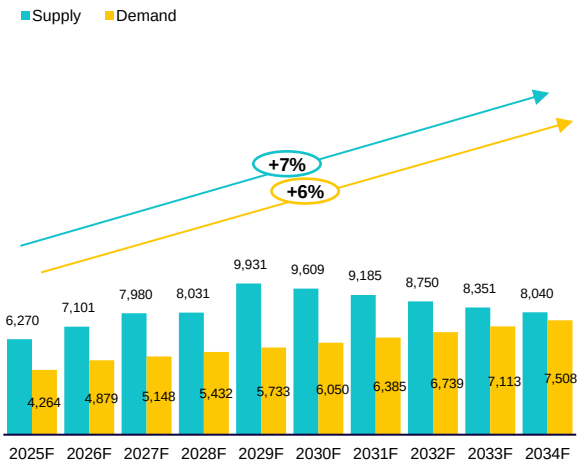
High Mandatory Consumption and low RE generation and % to VREM. Net -Metering included in RPS compliance.

Base Scenario



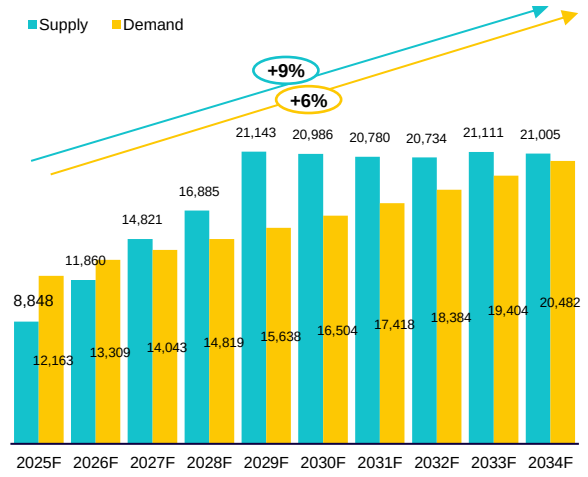
RPS-eligible generation with moderate growth, including existing GEAP with moderate RPS compliance. Net-Metering as voluntary facility.

Conservative Scenario 2



Conservative scenario but account for existing GEAP (GEA-1, GEA-2, and GEA-3).

Aggressive Scenario



High RE generation and high RPS compliance rate, high participation from non-RPS-eligible. Net-metering considered as voluntary facilities.

Figure 5 | Overview of VREM Market ('25F - '34F)

Source: Arthur D. Little Analysis

2. International Carbon Mechanism Interactions

To enhance the country's efforts in achieving its national sustainability targets, the Philippines may explore integration with carbon markets and international REC markets.

Philippine entities have already engaged in cross-border collaboration to develop emission reduction projects featuring renewable energy generation, such as the CDM, SDM, and JCM, as well as limited involvement in voluntary carbon markets, including the Verra Verified Carbon Standard (VCS) and the Gold Standard (GS). There have been observations of dual participation in carbon markets and the mandatory REM, as the majority of registered carbon market participants are also designated REM generators under the Philippine mandatory REM. RE generators registered in both mechanisms can be issued carbon credits for emissions reduction and RECs for renewable energy generation. Thus, double counting may occur if both instruments are issued for the same unit of generation. To mitigate this, the Philippines may establish clear eligibility criteria and explore cross-market tracking mechanisms.

The Philippines' participation in international voluntary REC markets, notably I-REC and TIGR, has been experiencing strong growth despite the deregistration of RPS-eligible facilities in 2021 and 2022. The international REC markets consist of non-RPS eligible facilities and corporations. Philippine RE generators have been participating in the I-REC market since 2017. In 2024, I-REC issued 4.7 million I-RECs to Philippine generators, more than doubling from the 1.8 million issued in 2022.

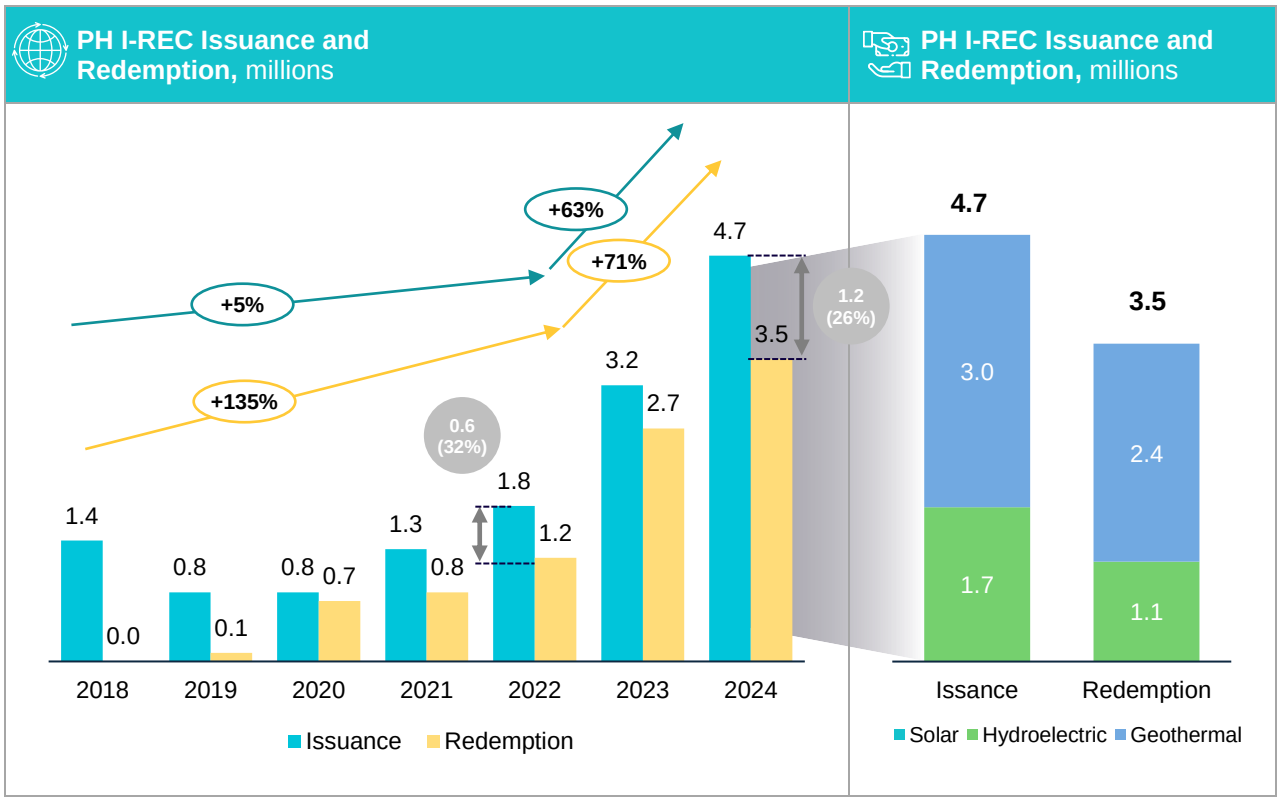


Figure 6 | Philippine I-REC Issuance and Redemption ('18 - '24), m RECs
Source: I-REC, Arthur D. Little Analysis

TIGR remains concentrated in Asia, with strong participation from Southeast Asian countries. The Philippines joined TIGR in 2016 and, by 2024, had issued 0.3 million TIGRs, making it the fourth-largest market after Indonesia, Singapore, and Vietnam.

Geothermal and hydropower have dominated RE generation in the Philippines, driven by the country's geographic characteristics and RPS eligibility requirements.

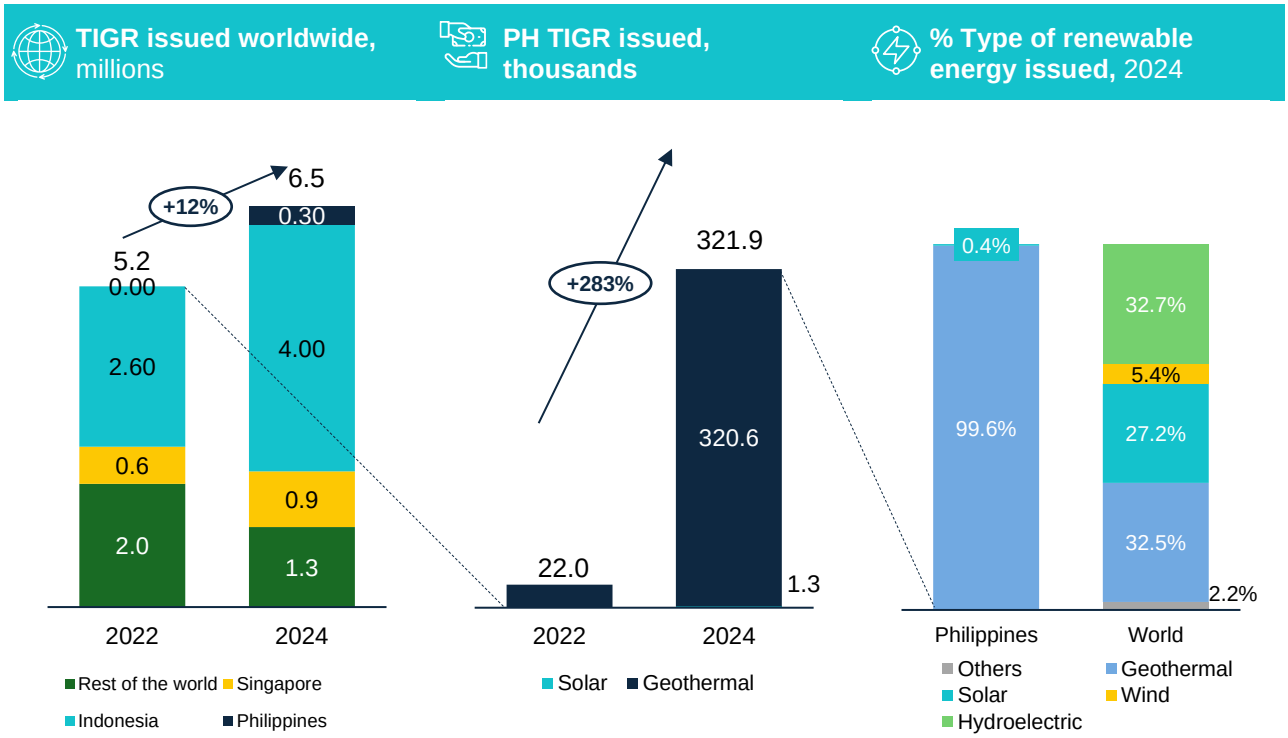


Figure 7 | TIGR Issuance ('22 - '24)
Source: TIGR, Arthur D. Little Analysis

Moving forward, the Philippines may explore integration with international REC mechanisms such as I-REC and TIGR to enhance participation and scalability. Key aspects such as pricing, supply and demand stability under an integrated market need to be further evaluated to ensure a robust VREM for the Philippines.

3. Impact of VREM on the Philippines' Energy Development

The introduction of a VREM is expected to enhance synergies within climate markets, expand renewable energy participation, and improve energy security, accelerating the Philippines' energy transition. Lessons from other jurisdictions provide valuable models for its implementation and integration into the country's energy roadmap.

A VREM is expected to broaden market participation and enhance stability in the Philippine climate markets. By complementing the mandatory REM, it provides an additional avenue for sourcing RE and fulfilling sustainability commitments, creating a more dynamic carbon abatement system. Attracting sustainability-focused businesses will further drive REC demand and improve market dynamics. Additionally, the VREM presents an opportunity to integrate with carbon credit trading, as demonstrated by Singapore's GoNetZero initiative, which has expanded access to carbon abatement solutions for businesses and consumers. Such integration could enhance scalability and efficiency, supporting the growth of the Philippine carbon and REC markets.

The VREM is also expected to spur renewable energy development by attracting both domestic and foreign investments in infrastructure and expanding the pool of RE suppliers. Increased demand will incentivize private sector financing for RE projects, boosting capacity. Moreover, the VREM could encourage decentralized RE production through small-scale projects, diversifying generation sources and strengthening the country's energy infrastructure.

By reducing dependence on imported energy and centralized facilities, the VREM plays a crucial role in enhancing the Philippines' energy security. Expanding voluntary REC adoption and RE generation can lower reliance on coal and gas imports, mitigating exposure to global market volatility. Furthermore, decentralized RE sources help stabilize the grid, ensuring a more secure and resilient energy supply.

In conclusion, a VREM serves as a transformative platform for engaging diverse stakeholders in the Philippines' energy transition while positioning the country as a competitive player in the global renewable energy market. By leveraging its existing regulatory framework and abundant RE potential, the Philippines can strengthen energy resilience and accelerate its shift to clean energy.

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