

RENEWABLE ENERGY MARKETS ASIA 2024 PANEL DISCUSSION

MARKET SPOTLIGHT: VIETNAM



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Vietnam Low Emissions Energy Program II
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Monday, 29 April 2:30-3:00 PM



**Renewable Energy
Markets™ Asia 2024**

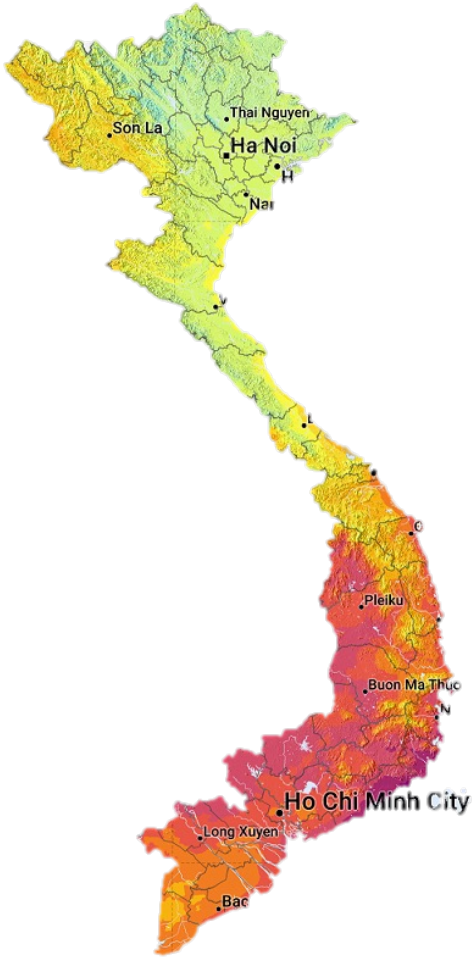


Market Spotlight: Vietnam

JENNIFER LEISCH, JLEISCH@DELOITTE.COM
RE MARKETS ASIA
APRIL 2024



Vietnam Power System - 2023



80.6 GW

Total installed capacity in 2023



26.9%

Non-hydro renewable energy capacity

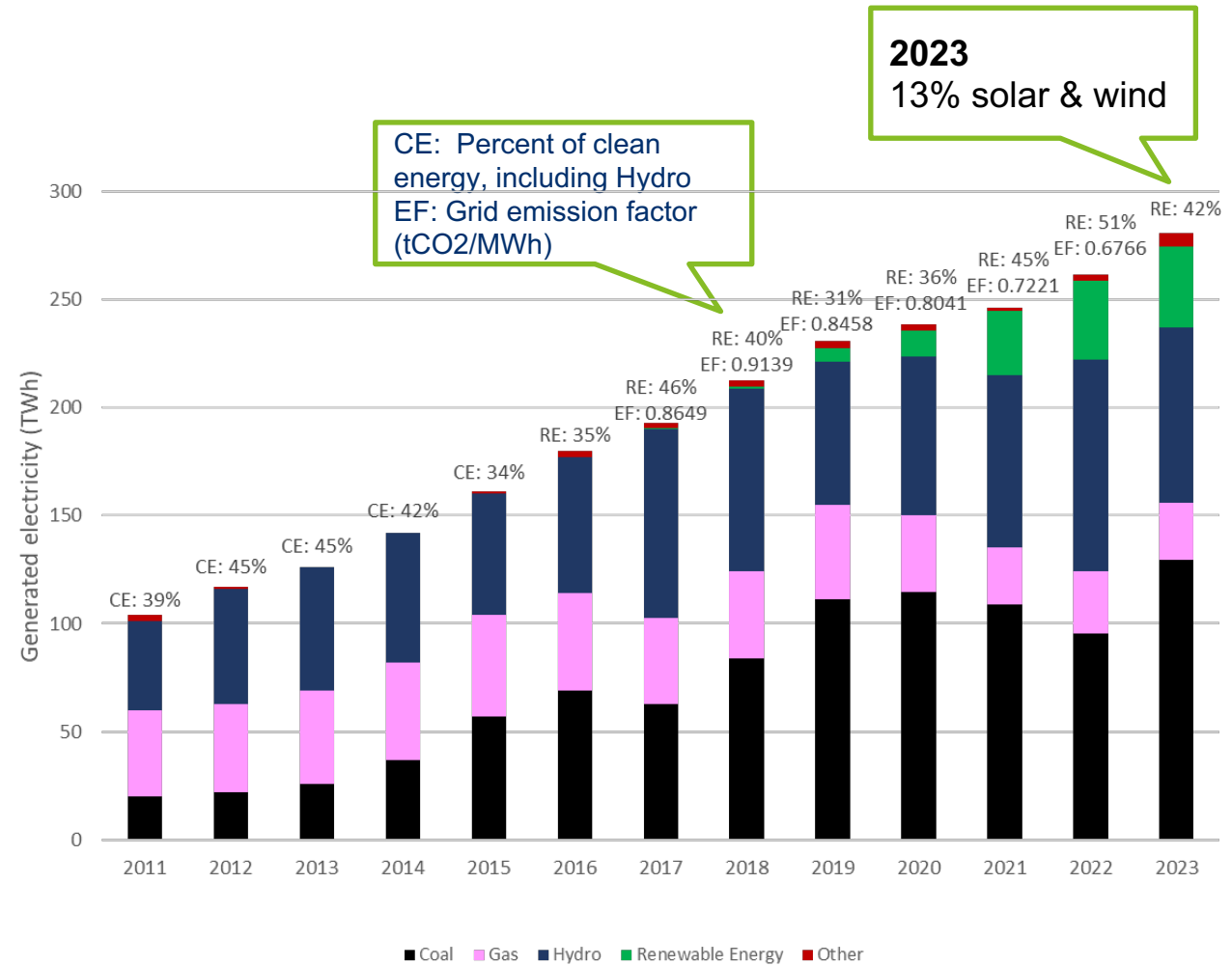
- 9 GW Utility Solar
- 7.7 GW Rooftop Solar
- 5 GW Wind Power



13%

Generation is non-hydro renewables

121 Million tCO₂ (2021)



Corporate Commitment for RE in Vietnam

Over 400 global companies endorse RE100 across worldwide operations. **More than 50 member companies** have operations in Vietnam



Energy Efficiency



Carbon Offsets



RECs



Green Tariffs



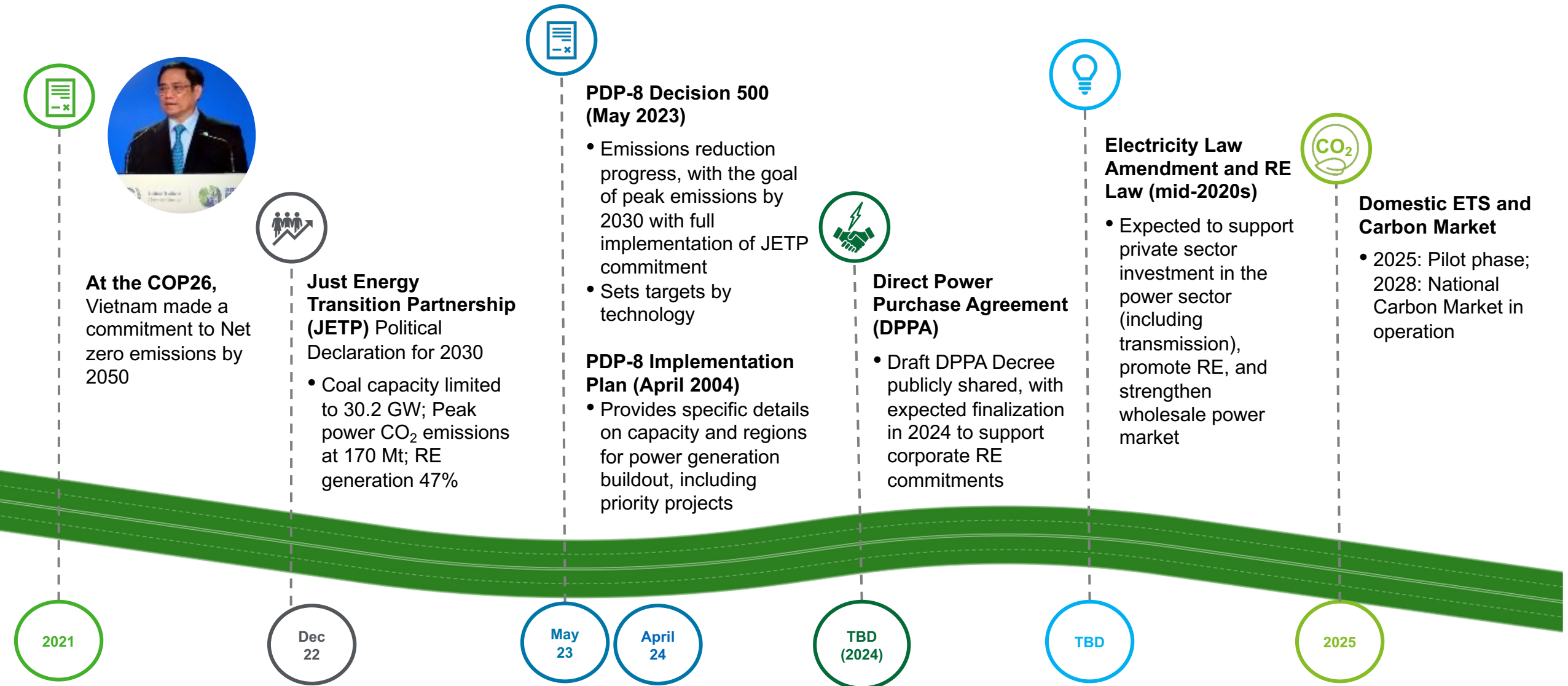
On-Site Generation



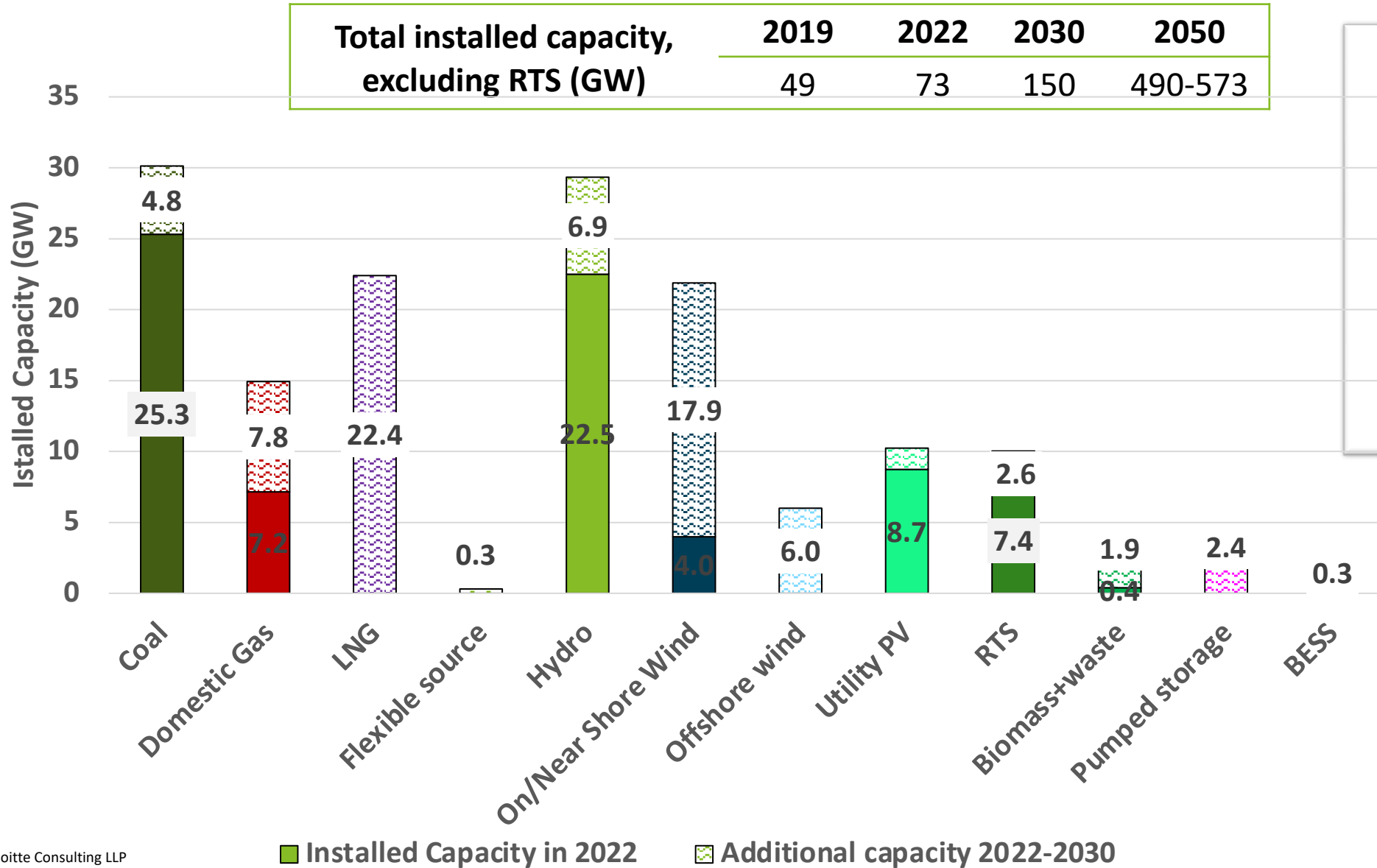
Direct Power Purchase



Vietnam's Path to Net Zero by 2050



PDP-8 Capacity Targets by 2030



PRIME MINISTER SOCIALIST REPUBLIC OF VIETNAM
 Independence - Freedom - Happiness
 Number: QĐ-TTg
 Hanoi, May 2023

DECISION
 Approving the national electricity development plan for the period of 2021 - 2030, with a vision to 2050

PRIME MINISTER

Pursuant to the June 19, 2015 Law on Government Organization; The Law amending and supplementing a number of articles of the Law on Government Organization and the Law on Organization of Local Government dated November 22, 2019;

Pursuant to the November 24, 2017 Law on Planning;

Pursuant to the Electricity Law dated December 3, 2004; The Law amending and supplementing a number of articles of the Electricity Law dated November 26, 2012;

Pursuant to Resolution 61/2022/QH15 dated June 16, 2022 of the National Assembly on continuing to strengthen the effectiveness and efficiency of the implementation of policies and laws on planning and a number of solutions to remove difficulties and obstacles, accelerate the formulation and improve the quality of planning for the period 2021 - 2030;

Pursuant to Resolution No. 81/2023/QH15 dated January 9, 2023 of the National Assembly on the National Master Plan for the period 2021 - 2030, with a vision to 2050;

Pursuant to Decree No. 37/2019/ND-CP dated May 7, 2019 of the Government detailing the implementation of a number of articles of the Law on Planning;

Pursuant to the Government's Decree No. 137/2013/ND-CP dated October 21, 2013 detailing the implementation of a number of articles of the Electricity Law and the Law amending and supplementing a number of articles of the Electricity Law;

At the proposal of the Ministry of Industry and Trade in Report No. 2842/TT-BCT dated May 14, 2023 and Letter No. 2831/BCT-D dated May 15, 2023; Appraisal Report No. 62/BC-HDDQHD dated May 13, 2023 of the Appraisal Council of the National Electricity Development Planning for the period of 2021 - 2030, with a vision to 2050.

PDP-8 Implementation Plan (April 2024)



Lists priority energy investment projects through 2030



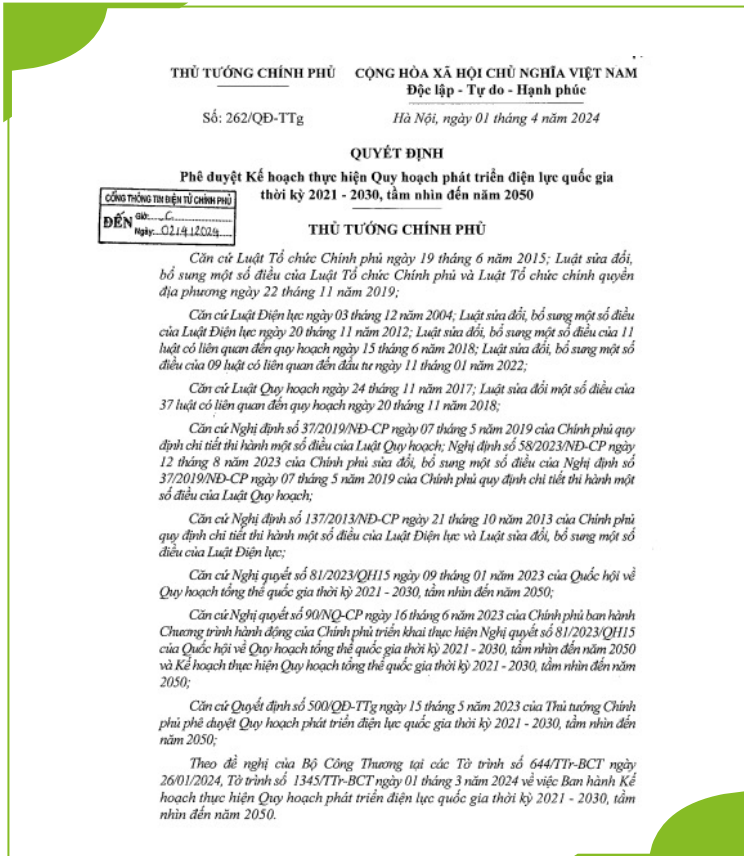
Allocation of capacity by region / province through 2030



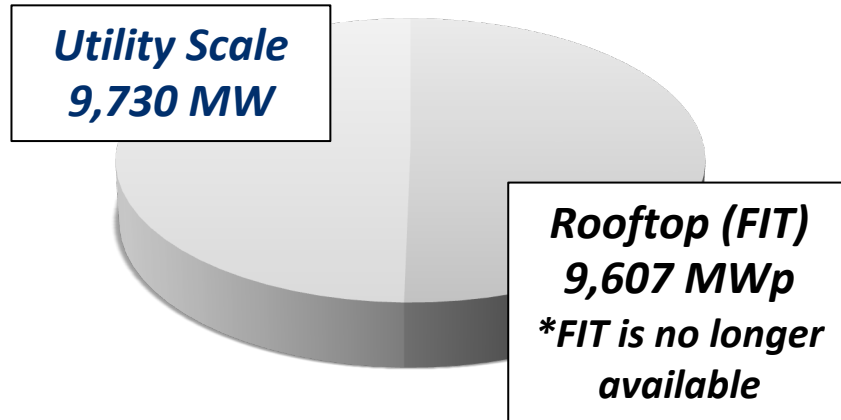
Lists priority transmission and grid interconnection projects



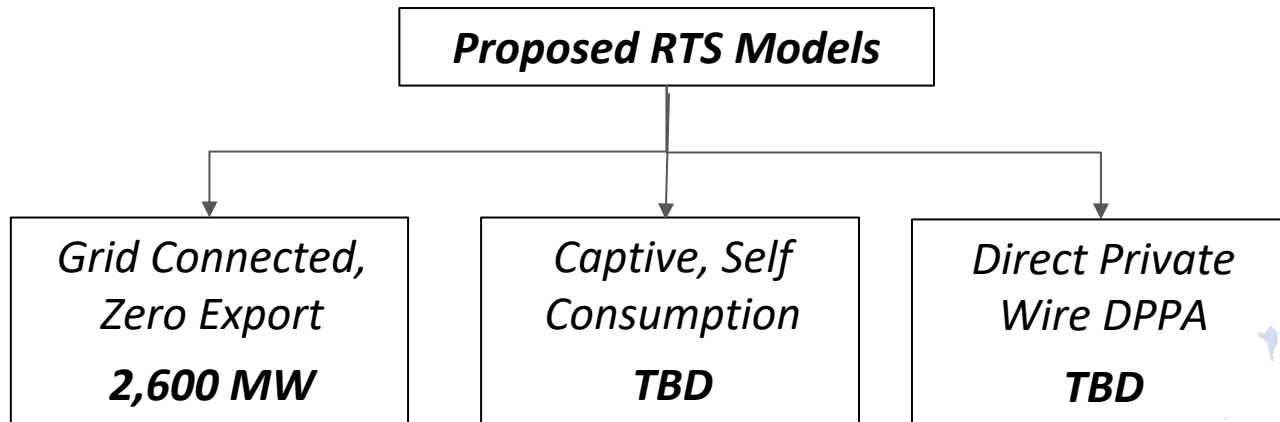
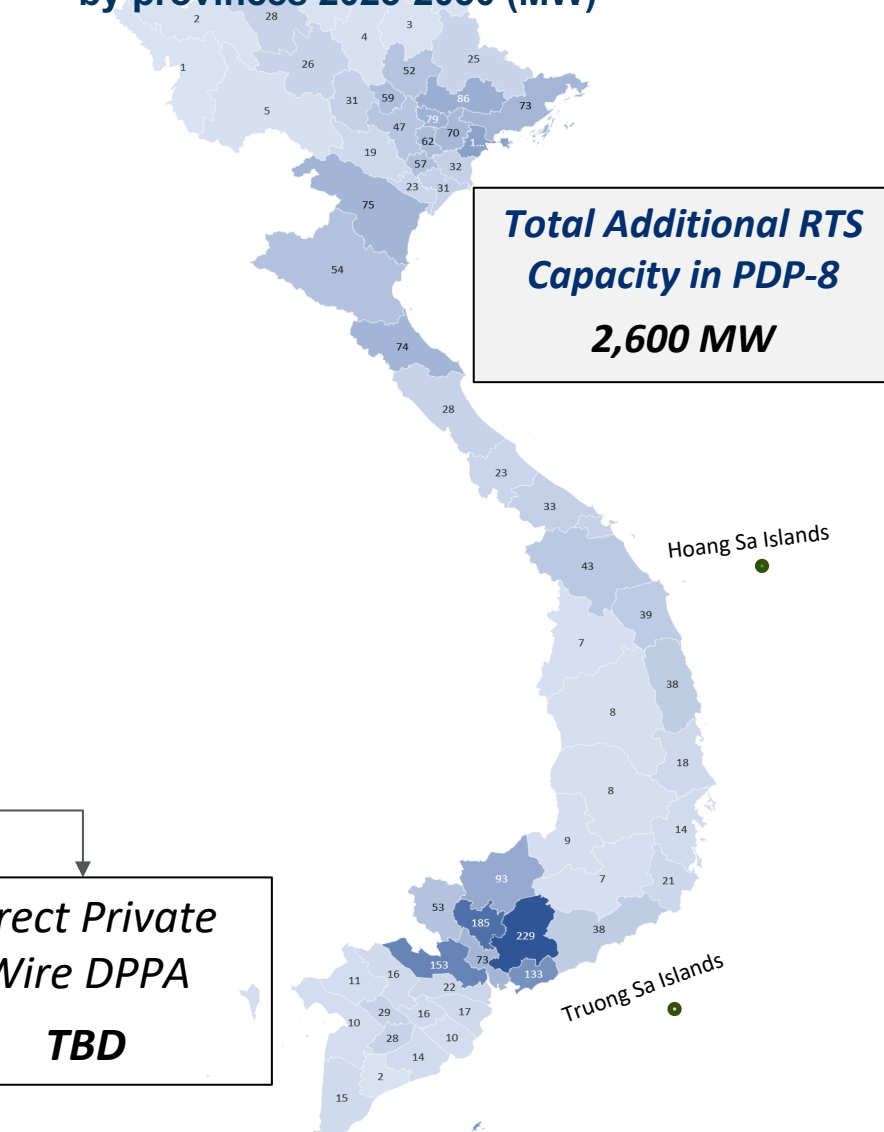
Can be updated or revised during the implementation period



Rooftop Solar (RTS) Market in Vietnam



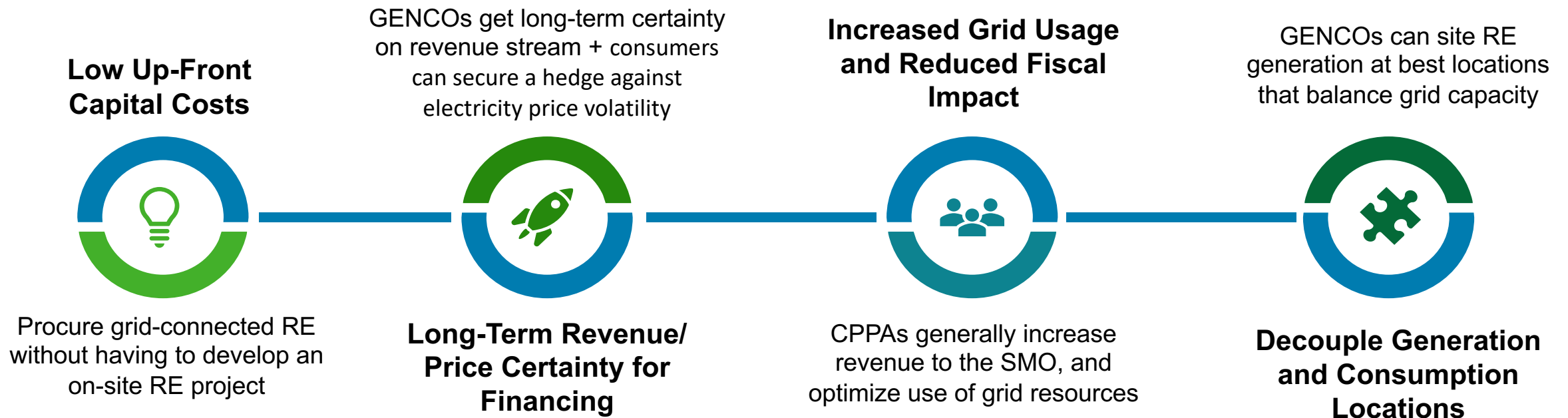
Additional installed capacity of RTS by provinces 2023-2030 (MW)



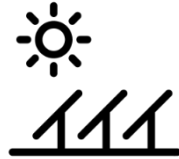
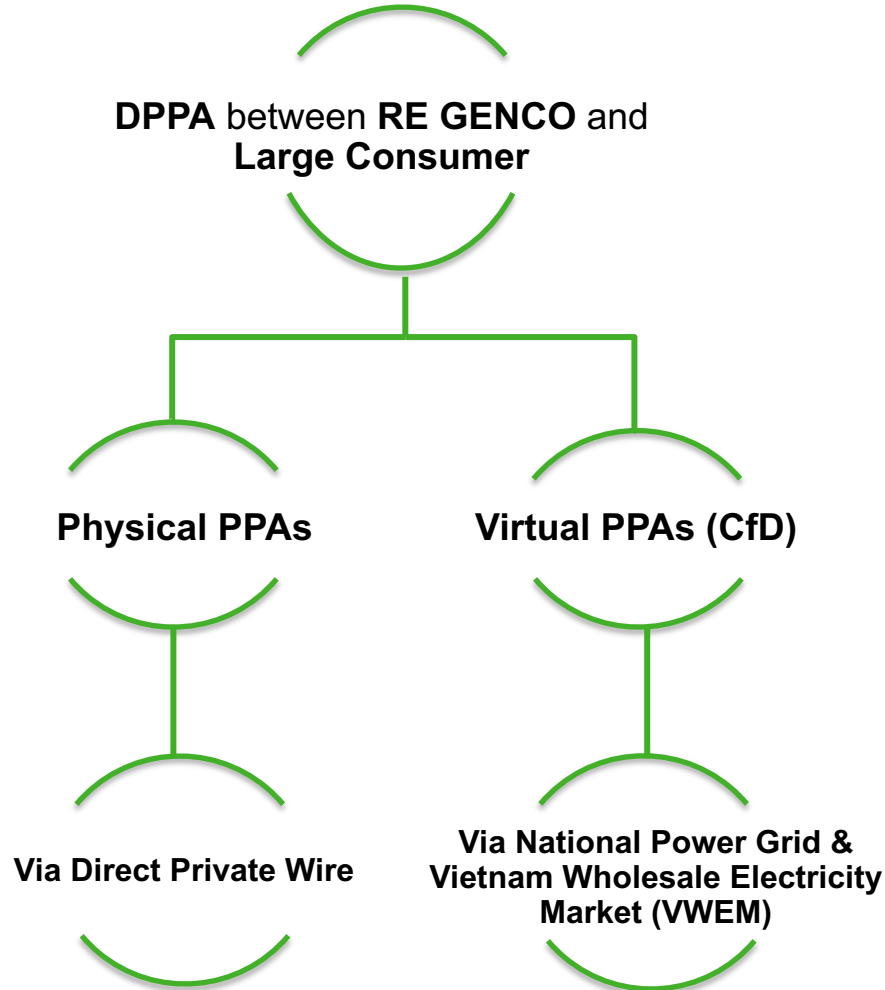
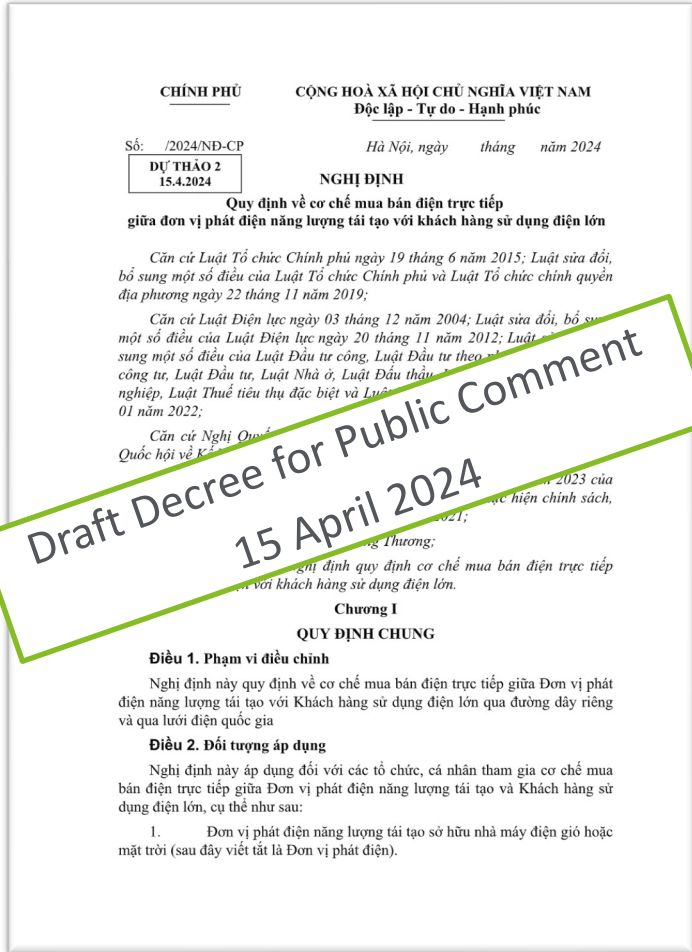
Direct Power Purchase Agreements

Corporate or Direct Power Purchase Agreements (CPPAs or DPPAs) are long-term contracts under which a consumer agrees to purchase electricity directly from an energy Generating Co. (GENCO)

Benefits of Corporate/Direct PPAs



(Draft) DPPA in Vietnam

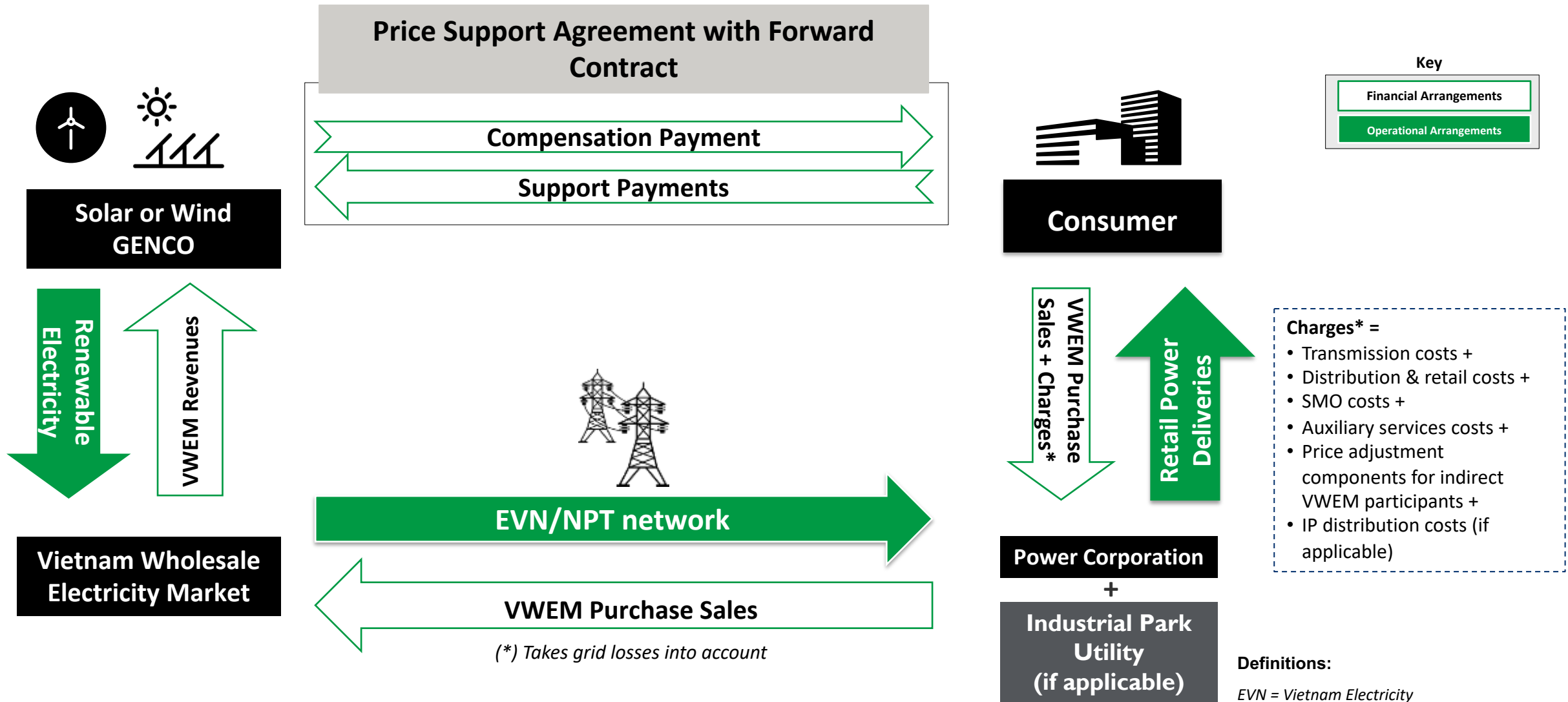


- RE GENCOs
(for Virtual DPPA)**
- Grid-connected Wind and Solar
 - Installed capacity > 10 MW
 - Participate in the VWEM
 - Later: expand to other technologies



- Large Consumer
(for Virtual DPPA)**
- Connected at 22 kV or higher
 - 500,000 kWh / month (average)
 - Initial stage: Manufacturing sector
 - Later: Other sectors

Proposed DPPA Model – Wheeling via national grid (Not Finalized)



(*) Takes grid losses into account

RECs in Vietnam



THE INTERNATIONAL
REC STANDARD

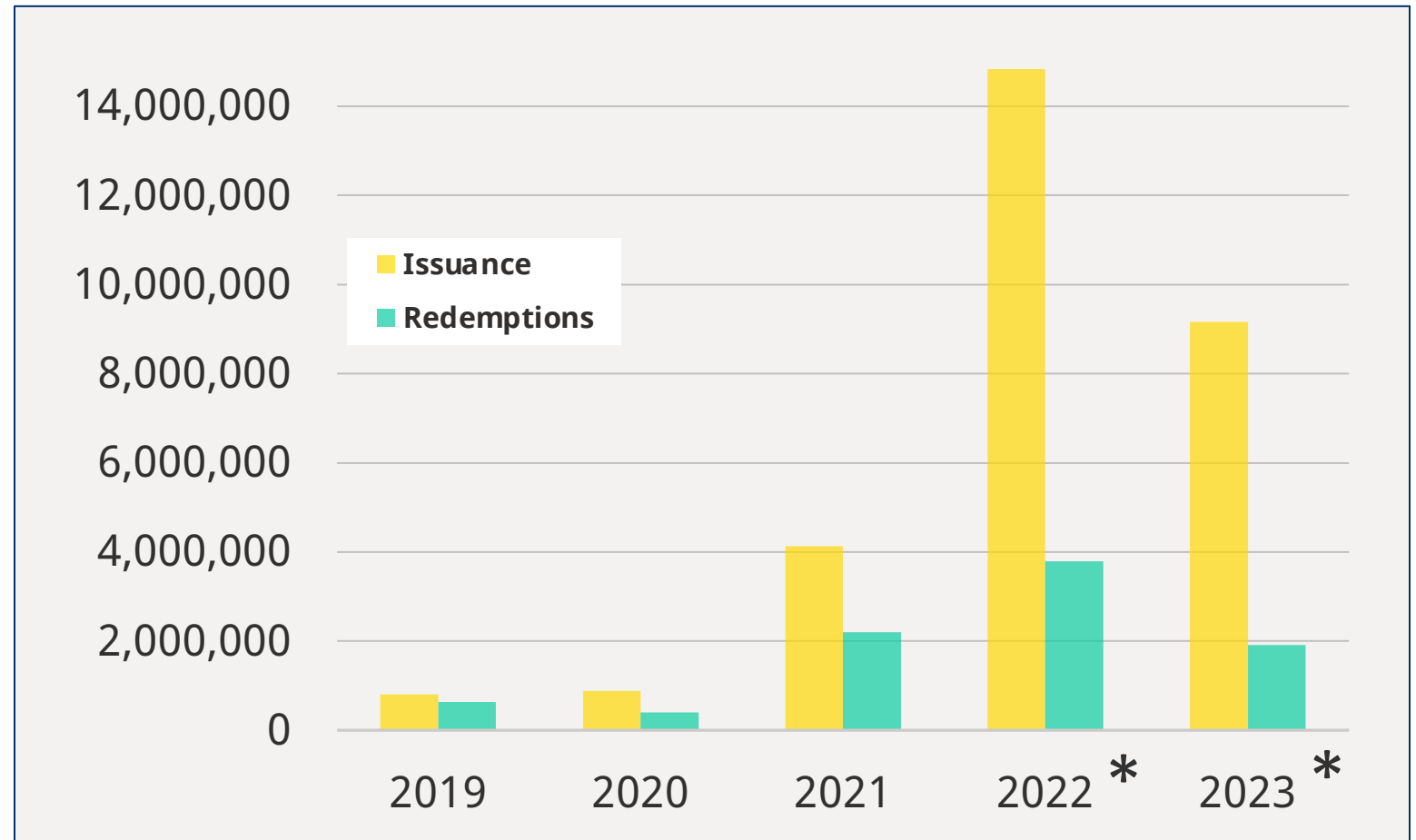
Empowering Electricity Purchasers

- 4300 MW Solar
- 3400 MW Hydropower
- 1000 MW Wind



- 540 MW Utility PV
- 80 MW Solar Serving On-Site Load
- 113 MW Wind
- 180 MW Hydro

I-REC Issuance and Redemption - VN



*Issuance and redemption is ongoing – data will change

Key Takeaways

- PDP-8 and the PDP-8 Implementation Plan set the targets and priorities for near term investment in the Vietnam power sector
- Utility Scale Wind and Rooftop Solar are near term opportunities for RE investment in Vietnam
- Procurement options for corporate purchasing are expected to increase with the DPPA
- Draft DPPA Decree, Draft RTS Regulations, Draft Wholesale Electricity Market Rule Updates, and the Draft Updated Electricity Law are under public review and commenting. These laws are intended to open up new RE development in Vietnam
- RECs and Carbon Offsets are available in Vietnam, with an evolving policy and regulatory environment



*Dami Floating Solar Farm in Binh Thuan Province, Vietnam
Photo credit: USAID V-LEEP II*



Thank You

Jennifer Leisch, jleisch@deloitte.com

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SUSTAINABILITY



Market Spotlight: Vietnam – Corporate Approach to Renewable Energy

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Associate Director, Global Environmental Commodities Operations
Renewable Energy & Carbon Advisory Division - Schneider Electric Sustainability Business

April 29th, 2024

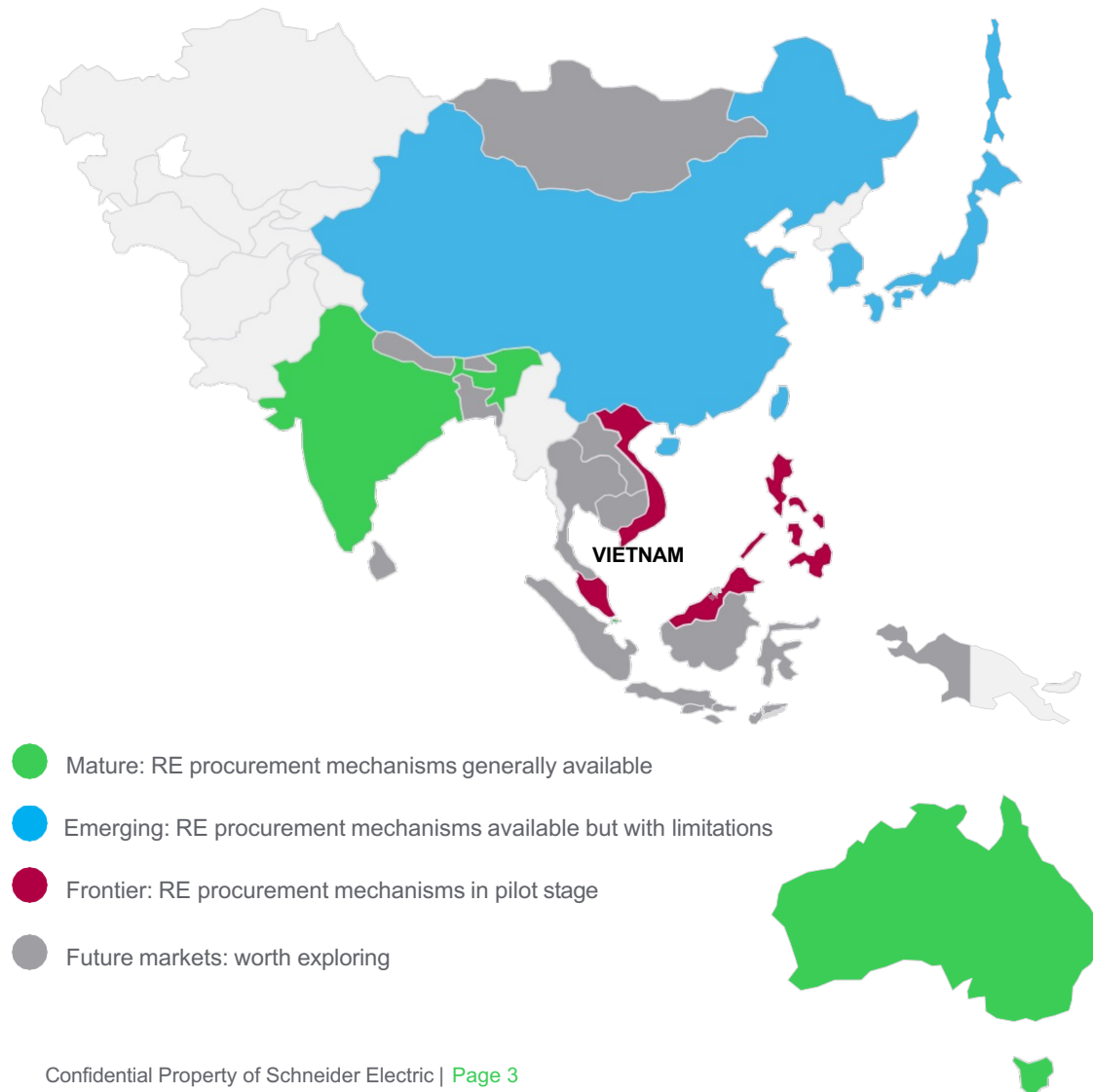
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Agenda

- Pilot projects are paving the way to new market rules
- Country Overview
 - Challenges
 - Opportunities
- Summary of Vietnam's Opportunity Matrix
- Why Organizations Source Renewable Energy
- What are corporate companies doing in Vietnam to meet their scope 2 goals?
- Overview of Vietnam's Unbundled EAC Market

Vietnam - Pilot projects are paving the way to new market rules



- APAC is a significant scope 2 and 3 emissions region for corporates and there is strong demand to mitigate their scope 2 and 3 in this region
- APAC is currently under served and it's a high challenging due to overlapping of scope 2 and 3
- Vietnam still does not offer many deal opportunities in terms of PPA and RE procurement mechanisms are still in pilot stage
- Corporate companies are keen on Vietnam's Pilot DPPA Pilot Scheme as it will provide better scalability, flexibility and it will allow greater private sector participation over time
- Corporate sector investment and aligned action to drive renewable energy procurement and industrial decarbonization will be critical to guiding economic growth and supporting clean energy transition in Vietnam

Country Overview - Challenges

- Slow policy changes (e.g. Pilot Offsite DPPA mechanism under development for over six years)
- Centralized monopolistic power market
- Grid transmission and distribution challenges – exposure to grid curtailment (blackouts and major power outages)
- Policy and regulatory barriers - local renewable energy sector faces policy and regulatory risks that limit the economic viability of current projects and constrain the country's potential to meet its emission reduction and net zero goals
- Project approval and permits issue - policy gaps that include permitting challenges as well as:
 - lack of a net-metering mechanism for on-site solar (physical PPA)
 - lack of implementable off-site renewable energy procurement options (off-site DPPA)
 - lack of clarity for battery energy storage and emerging solutions
- Lack of clarity on pricing
- Lack of a clear long-term vision
- Landlord-tenant barriers
- Bankability troubles

Country Overview - Opportunities

- Growing and dynamic economy
- Renewable energy resource - high potential for wind and solar
- Local government established emissions reduction goals and power development - net zero scenario goal by 2050 and a pledge for no new coal power plants after 2030 & plans-to scale its energy generation capacity
- Local centralized energy market is in the process of being liberalized, it will allow greater private sector participation over time
- Comprehensive ecosystem of renewable energy project developers
- High electricity demand from corporate sector - 10% to 12% expected growth per year over the next decade
- Financial PPA (VPPA) regulation in progress
- Financial PPA (VPPA) Market will be open in 2024
- By 2030, 13 GW of RE must come from solar and 28 GW from wind

Summary of Vietnam's Opportunity Matrix



Option	Availability	Indicative Pricing	Indicative Savings / Cost	Scope 2 Emissions Avoided	Recommendation
Onsite Solar (Physical PPA)	High	Depends on project specifics	Short/Medium payback period expected	Typically, 5-20% of a site's emissions.	Potentially Recommended - Feasibility study/ RFP required
Offsite PPA (DPPA)	Low	N/A	N/A	N/A	Not Recommended – not available outside of pilot program. Monitor this market.
EACs	High	\$0.50-1.20	Each EAC purchased comes at a cost	Up to 100% may be possible	Highly Recommended – the cheapest option in the market
Green Tariff	N/A	N/A	N/A	N/A	Not Recommended – Not Available



Past performance is not indicative of future results. Hypothetical performance results have many inherent limitations. No representation is being made that any program will or is likely to achieve profits or losses similar to those shown. Swaps, futures and options trading involve significant risk of loss and may not be suitable for everyone. Therefore, carefully consider whether such trading is suitable for you in light of your financial condition.

Why Organizations Source Renewable Energy

ECONOMICS

Make/save money while achieving environmental goals, tax advantages of incentives & subsidies

PUBLIC COMMITMENTS

Stated public goals related to sustainability and/or renewable energy including (but not limited to); Carbon Neutrality, SBTi, NetZero, RE100, % targets, etc.

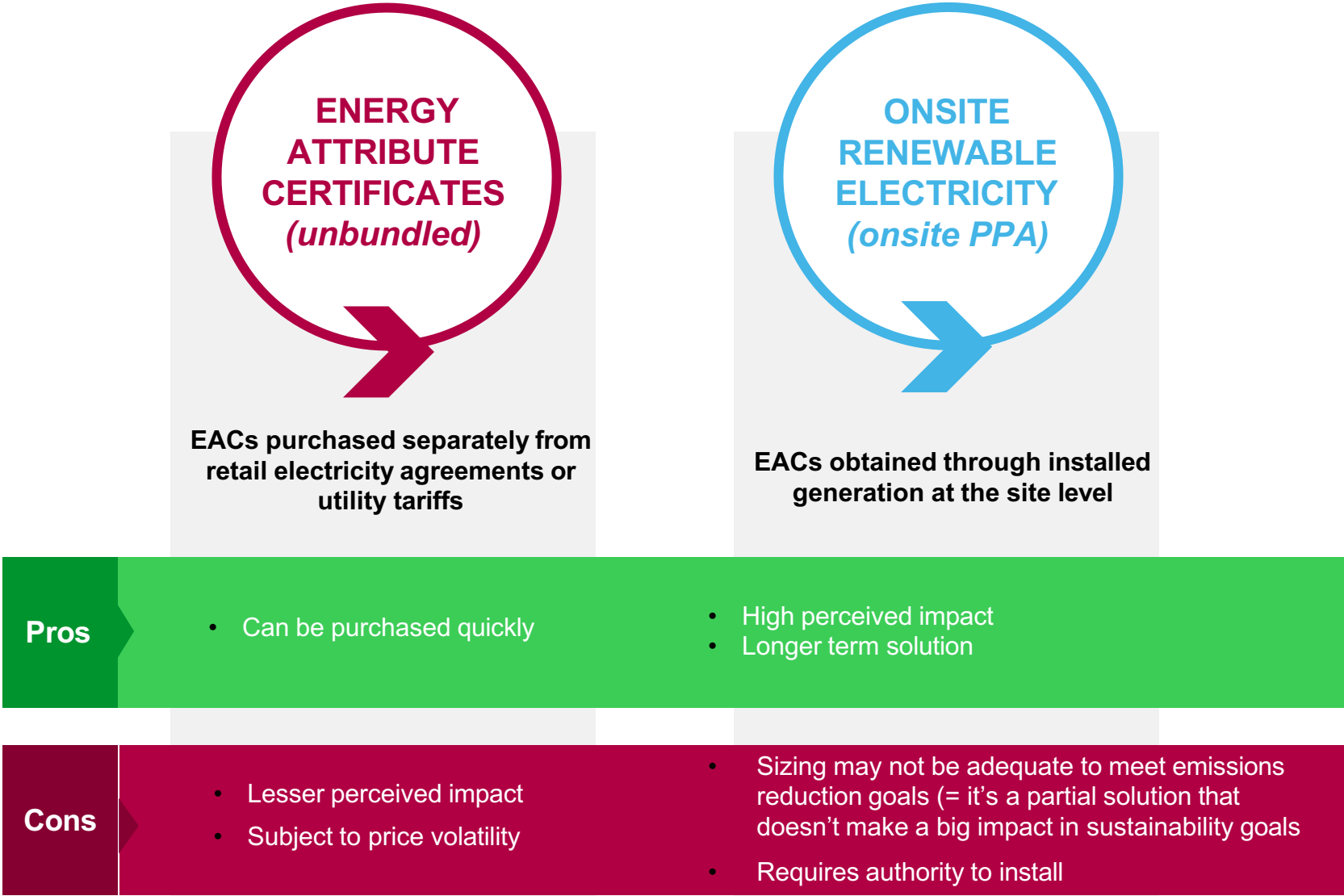
MANAGE POWER/REC PRICES

Hedge existing short position, secure fixed price at a discount, mitigate risk of future electricity and EAC/REC cost increases

ENVIRONMENTAL REPUTATION

Increasing stakeholder pressures: customers, investors, value chain partners, employees, competitors. Reduce impact & climate risk, stated environmental goals

What are corporate companies doing in Vietnam to meet their scope 2 goals?



Overview of Vietnam's Unbundled EAC Market

Available EAC type	I-REC and TIGR, with I-RECs being more common
Profile of RE plants	Commissioning Date of the plants from where the unbundled EACs are coming from is 2009 or later, which aligns with corporations following RE100 best practices and that report to CDP
Predominant technology types	<ol style="list-style-type: none"> 1) Solar 2) Large hydro 3) Small hydro 4) Wind
EAC supply availability	Expected to rise with the country's RE plan to generate more power from renewable sources
National EAC system	Current no legislation regulating the EAC market or local national system, but Vietnam issues I-RECs and TIGRs
Most issued EAC tech	According to I-REC Track Foundation's 2023 Statistics Report, solar is the most issued technology followed by hydro
Price range	<p>approx. 0.50-1.20 USD/MWh for calendar 2024</p> <p><i>(note: prices vary according to generation period, technology and volume)</i></p>

EACs (I-RECs and TIGRs in Vietnam's case) are practical tools used by companies to meet their sustainability goals in relation to emissions reduction. Key benefits for businesses using I-RECs or TIGRs:

- Reduces company's Scope 2 emissions with an established, accepted and cost-effective initiative
- Enables companies to choose to use RE, and which specific renewable energy power plant to support
- Achieves sustainability goals, in compliance with different frameworks and NGOs – e.g. RE100, CDP, SBTi, GHG Protocol etc

Questions & Answers

Reach Out



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