



USAID CLEAN POWER ASIA

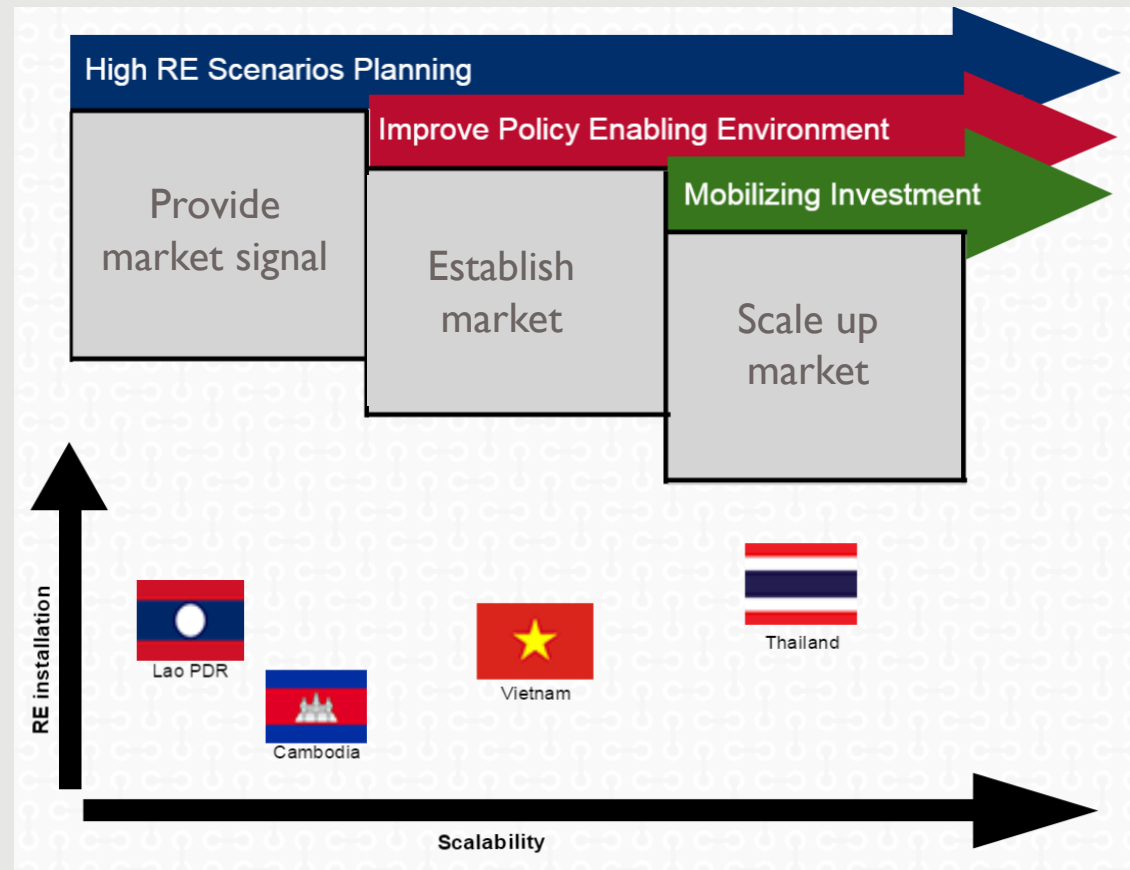
The Outlook for Wind Energy in Vietnam

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USAID Clean Power Asia aims to increase deployment in 'grid-connected' renewable energy in Asia

- ❑ 5 years: June 2016 – June 2021
- ❑ Regional clean energy program
- ❑ Focus on Cambodia, Laos, Thailand, and Vietnam
- ❑ Goals:
 - ❑ 15 laws/policies/regulations
 - ❑ \$750 M USD investment mobilization
 - ❑ 500 MW of installed RE
 - ❑ 3.5 M tCO₂e reduction
- ❑ Implemented by Abt Associates and partners
- ❑ Funded by USAID (United States Agency for International Development)



Supporting developers, investors, and lenders in RE project development and financing

Tools & Guidelines

Investment guidelines, templates for Power Purchase Agreements, standard financial models and other tools to support investment decision-making and project development

Capacity Building

Training to developers and lenders on project finance, cash flow analysis and evaluation of RE projects, with focus on utility-scale solar and wind

Financial Advisory

Tailored advice on business models, financial analysis, corporate energy procurement, financing structures, partnerships, contracts and potential sources of financing, both equity and debt



Solar



Wind



Biomass



Small Hydro

Opportunities and challenges for RE in Southeast Asia



Power markets dominated by state-owned utilities with a monopoly over power purchase and distribution



Opportunities for selling electricity to grid driven by specific support mechanisms, by technology, and typically of limited duration



Concerns about risk allocation to the private sector, such as the off-taker's ability to pay and the risk of curtailment, affecting returns



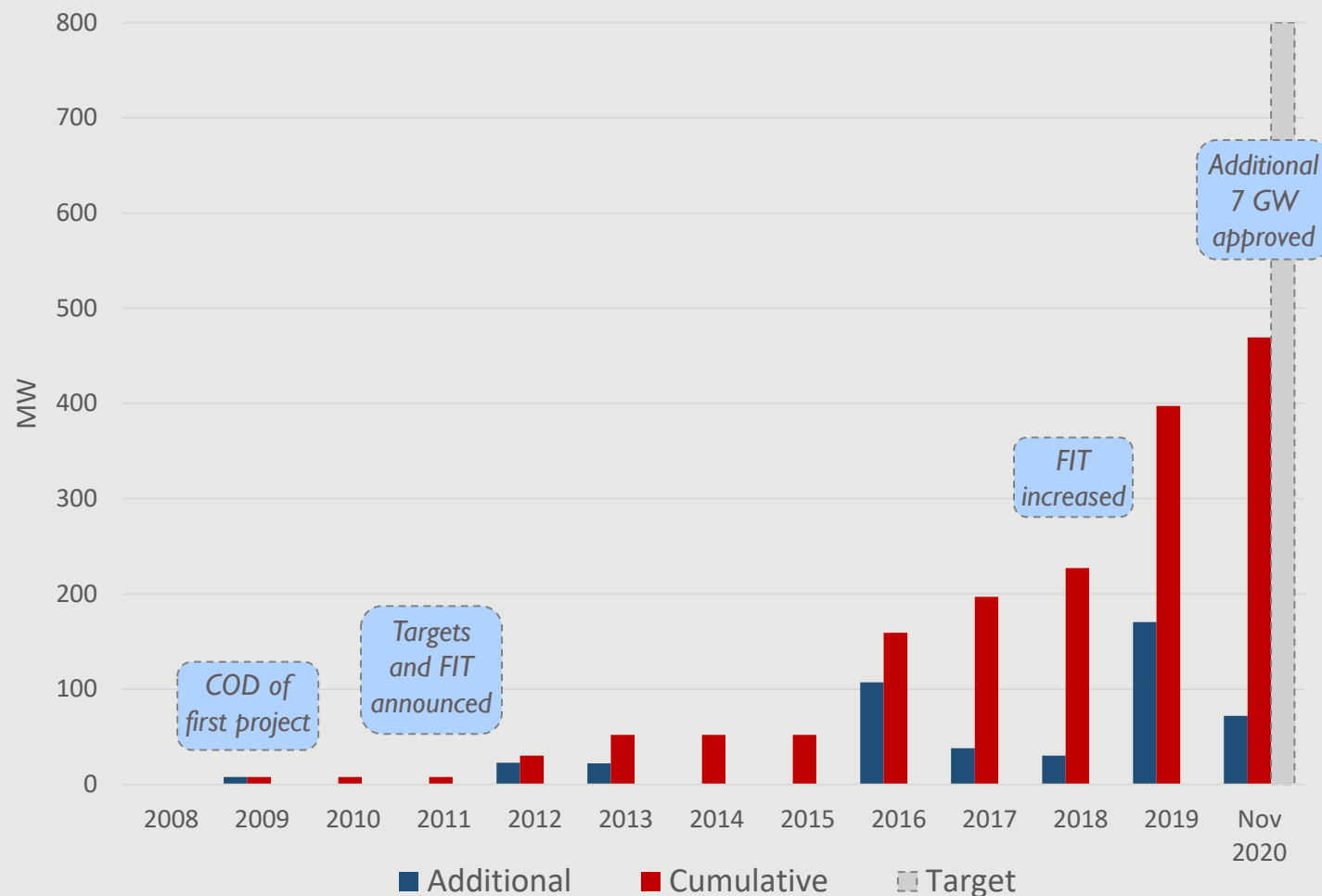
RE support mechanisms transitioning from feed-in tariffs (FIT) to reverse auctions



B2B transactions over the grid not yet allowed, but under consideration in some countries

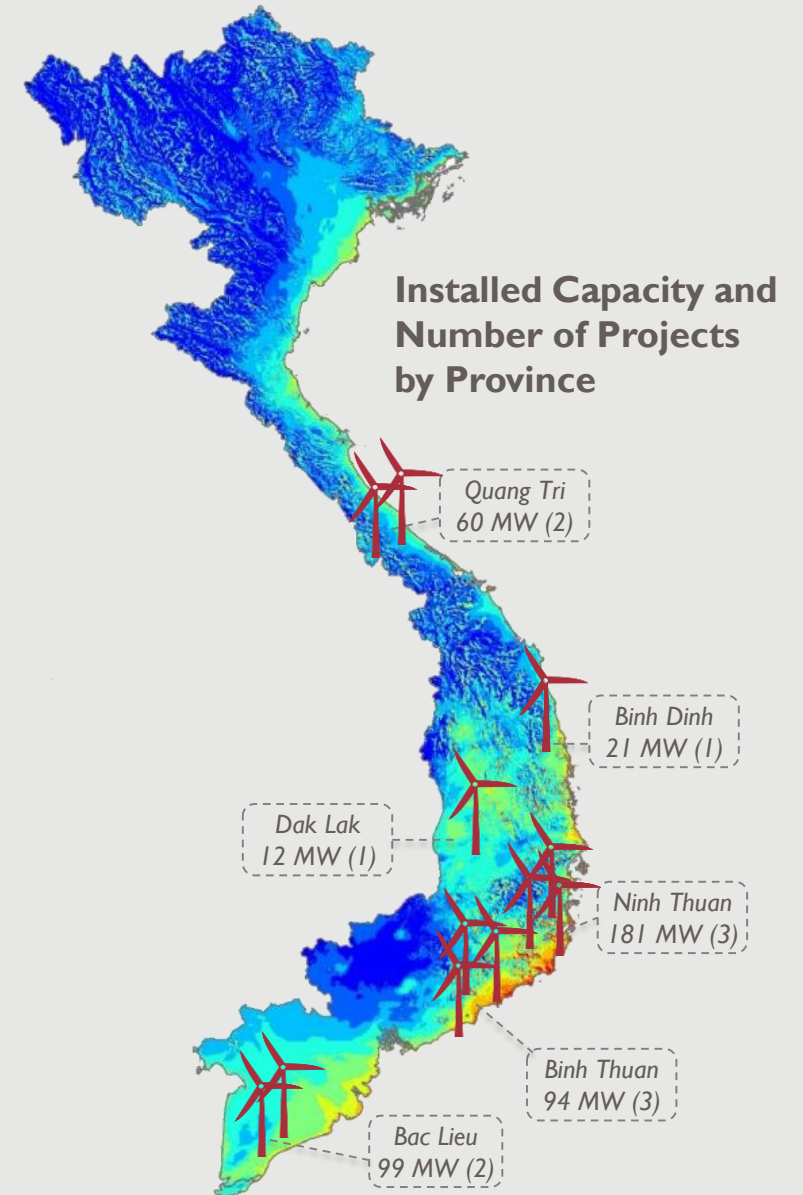
Overview of the Vietnam wind market

- Best wind resources in Southeast Asia, especially in offshore and onshore coastal regions in the south
- Currently 12 projects in operation, with total capacity of 470 MW
- More than 1,000 MW estimated to be under construction.
- No offshore wind farms operational yet, but offshore wind offers major potential



Challenges in the Vietnam wind market

- Policy: Project development driven by FIT mechanism with tight deadline (Nov 2021). Ministry of Industry and Trade (MOIT) proposed an extension of the FIT mechanism, but this is still under review.
- Finance: International lenders and investors consider the Power Purchase Agreement (PPA) as unbankable, so long-term, non-recourse debt financing is hardly available.
- Transmission: High increase in solar projects causing grid constraints. PPA allows for curtailment, also for wind projects, affecting revenues and profitability.
- Market: EVN is single buyer of electricity and holds a monopoly on transmission and distribution.



Prospects going forward

- Additional 91 wind projects with a total of 7 GW were approved in June 2020.
- Vietnam is faced with pending power shortages and government is keen to further promote RE.
- Government is planning further market liberalization and wholesale power market.
- Foreign investors can own up to 100% of power projects.
- Pilot for Direct Power Purchase Agreement (DPPA) to be launched
- Vietnam has most potential for further wind development in Southeast Asia.

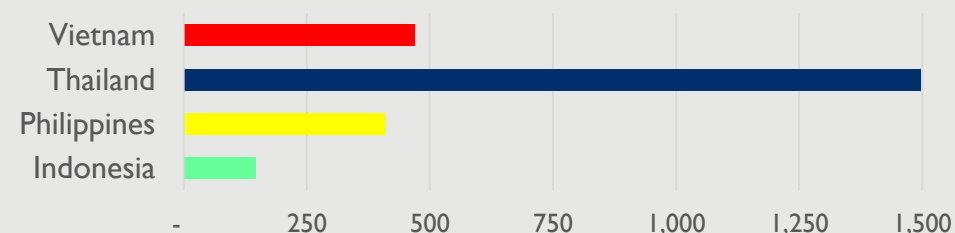
Targets for Wind Power

	2020	2025	2030
Installed capacity (MW)	800	2,000	6,000
Share of total electricity generation	0.7%	1.0%	2.1%

Feed-in Tariffs for Wind Power (US\$ cents/kWh)

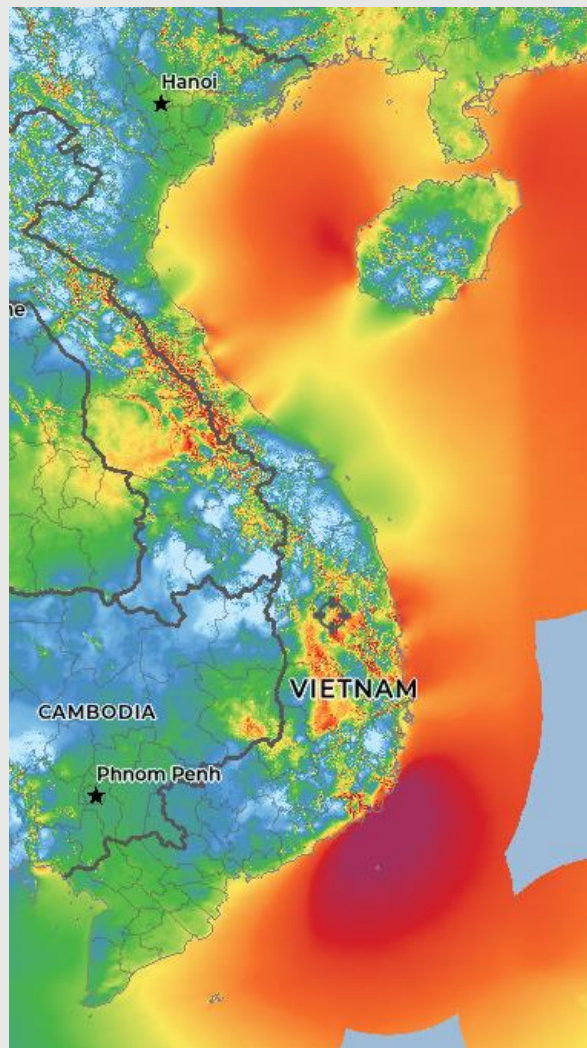
	Onshore	Offshore	Note
2011	7.8		
2018	8.5	9.8	COD before Nov 2021
2020	7.02	8.47	COD before 2023
(proposed)	6.81	8.21	COD before 2024

Installed Wind Capacity in Southeast Asia (MW)



Potential for offshore wind in Vietnam

- Technical potential of 160 GW, based on evaluation of 24 bottom fixed and floating sites within 5-100 km
- Danish Energy Agency and World Bank estimate 10 GW could be in operation by 2030.
- South-West region has the lowest cost of generation, but higher cost of connection because it is already a hotspot for RE development and faced with transmission congestion.



Source: Global Wind Atlas

Major projects

Enterprize Energy	3.4 GW Thang Long
Mainstream Renewable Power	1.4 GW Phu Cuong
GEC and Gulf Energy Development	310 MW Binh Dai
Copenhagen Infrastructure Partners	3.5 GW La Gan

Recommendations for Offshore Wind Development in Vietnam

- Long-term and progressive targets
- Sound legal framework and bankable PPA
- Single point of contact for permitting
- Large-scale demonstration projects

Source: Inputs to Roadmap for Offshore Wind Development in Vietnam, DEA 2020

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