

MULTI-OBJECTIVE AUCTIONS FOR UTILITY-SCALE SOLAR BATTERY SYSTEMS: LESSONS FOR ASEAN AND EAST ASIA

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Overview

Auctions are an increasingly popular means of competitively promoting and procuring renewable energy technologies to meet energy, social, and climate change objectives. To succeed, they must be designed to accommodate technological progress, declining costs, and increasing Environmental, Social and Governance (ESG) demand. This paper examines international experiences with large-scale solar photovoltaic (PV) and battery energy storage systems (BESS) auctions, which may be useful for East and Southeast Asia.

Methods

The paper revisits auctions' theoretical and conceptual frameworks while concentrating on the ESG aspect from the perspective of such key stakeholders as investors, government, bidders, and communities, regarding efficient allocations of risks, costs, and benefits. It then relates this framework to real-world practices and international evidence on solar PV with and without BESS.

Results

The analysis shows that integrating ESG in auction designs and business models is possible and can benefit business and sustainable development.

Conclusions

The paper offers the following conclusions. First, theoretically and empirically proved auction market design with low levels of complexity for bidders may facilitate bidding strategies intended to optimize outcomes, including ESG. A design strategy intended to improve realization rates might include high financial prequalification and adjusted physical prequalification relative to sunk costs, penalties covered by financial prequalification, and increased competition. Designs incorporating multiple select policy instruments rather than one policy instrument would enable said instruments to complement each other, e.g., power purchase agreements (PPAs) awarded through long-term contract auctions, wholesale markets, etc.

Second, ESG should be preconditions for bidding in renewable auctions, allowing awards based solely on price. Auction designs might be integrated within geospatial least-cost electrification roll-out plans, which could facilitate exploiting synergies between the energy sector and the broader economy to optimize the benefits of green transitions. Designs that integrate ESG and just and inclusive energy transitions may require policy support and grants whose recipients are competitively selected and adhere to monitoring, reporting, and verification (MRV) requirements.

Third, the transition to 24/7 clean energy may drive higher ESG scores, which might facilitate access to cheaper capital in financial markets eager to greenify investment portfolios. An initial step for enterprises in ASEAN and East Asia to build 24/7 clean energy would be allowing enterprises to trade renewable energy certificates (RECs) or equivalent, and building capacity for monitoring and reporting

types and amounts of energy used, would help such firms remain in global value chains and make themselves more competitive.

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