

February 2017



THE OXFORD
INSTITUTE
FOR ENERGY
STUDIES

Financing renewable energy in the resource-rich countries of the Middle East and North Africa: A review

Executive Summary

Joel Krupa & Rahmatallah Poudineh*

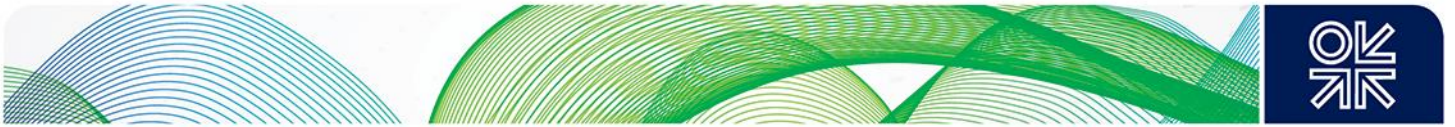
Countries around the world are seeking out opportunities to expand the contribution of renewable energy sources to their energy supply. The resource-rich countries of the Middle East and North Africa (MENA) are no exception, and for a variety of technical, economic, and environmental reasons, many of these nations are embarking on significant renewable energy procurement drives that have the potential to offer cost-effective and reliable energy generation. To date, a great deal of coverage in the academic and practitioner literatures has been extended to the policy, socio-political, environmental, and technological aspects of renewable electricity in the region. This expansive assortment of information, provided through numerous reports and articles, provides a solid basis for understanding key features of MENA renewable electricity futures.

In this in-depth review, we expand on these intellectual foundations and leverage the insights of dozens of semi-structured interviews with industry and academic experts from around the world to assess one of the most critical (but under-studied) hurdles to greater renewable energy integration: finance. Financing cost is one of the main components of renewable electricity's cost - not least because capital expenditure constitutes the largest share of total cost. This capital expenditure intensity means that capital spent at the inception needs to be paid back over time; given that money has a time value associated with it, the ultimate implication is that this capital is more expensive than if it were tapped more over the course of the operating life. In addition, presence of uncertainty in the investment return and/or payback period can increase the cost of capital.

More specifically, this paper assesses a pair of questions: what makes a project financeable, and what can the resource-rich nations of the region do to create vibrant clean electricity financing markets for renewables? To answer these questions, we use the GCC as the anchor of our analysis to draw out implications for resource rich countries of the MENA region as a whole. Renewable energy financing structures can take a variety of structures depending on the stage of the project (spanning venture capital to corporate finance); although our concepts touch on these issues, we focus especially closely on project finance.

To advance our argument, we develop an analytical framework based on an initial presentation of the factors that make a project financeable. We use the groupings of "business model adequacy", "grid connection and management", "risks and uncertainties", and "other factors". Specific sub-topics within these broad groupings are identified as especially important for consideration, ranging from the need for long-term power purchase agreements with creditworthy counter-parties to clarity and simplicity in documentation (e.g. transparent local sourcing requirements, competitive EPC and O&M agreements, and site lease accessibility).

In an effort to contextualize our conclusions, we offer three case studies for consideration: the recent series of renewable auctions in the United Arab Emirates, the Shams 1 concentrated solar thermal project (also in the United Arab Emirates), and the KACARE renewable procurement in Saudi Arabia. The first and second case study portray examples of best practices and moderate success in



implementation (respectively), while the final case study gives a case that could have been better executed. Our intent here is not to criticize or glorify, but rather to draw out lessons that are based on actual experiences (in a region with only a limited history in renewable energy production) and will help policy-makers and investors intent on implementing the optimal solution.

We conclude with a series of suggested measures to improve the financeability of renewable projects. The first recommendation is that the MENA states should maintain a focus on cost-effective auctions that serve to drive down procured power prices (especially when compared to more pre-determined electricity tariff models). Second, we emphasize that the current sense of urgency (spurred by a low oil price environment) could be translated into action for renewable power deployments. Third, we highlight that new sources of capital should be tapped; a logical starting point are the cash-rich local sovereign wealth funds capable of large-scale infrastructure direct investment. Finally, we offer a reminder on the importance of enhancing, stabilizing, and clarifying policy and regulatory frameworks; *investors crave stability and predictability, and this should be front of mind for decision-makers.*

**Joel Krupa*

OIES-Saudi Aramco Fellow, Oxford Institute for Energy Studies, Oxford, UK

Rahmatallah Poudineh

Lead Senior Research Fellow, Oxford Institute for Energy Studies, Oxford, UK
