

PATHWAYS OF RENEWABLE GENERATION IN THE MENA REGION: OPPORTUNITIES FOR SCALING UP GREEN FINANCE

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Overview

In the MENA region, a remarkable development of new generation capacity from both traditional and renewable energy sources will be necessary to meet growing domestic consumption. Electricity demand is expected to increase by 84% in 2020 compared to 2010 demand levels, spurred by factors ranging from population growth, economic development, rising living standards as well as heavy energy consumption subsidies. Some estimates forecast around 135 GW of additional generating capacity will be needed by 2020, requiring infrastructure investment costs, for electricity alone, of about USD 450 billion. Furthermore, the need to move away from a business-as usual power market is evident from the carbon intensity of electricity generation, which currently constitutes the largest source of CO₂ emissions in the MENA region. The electricity sector was responsible for 42% of total carbon emissions in 2011, accounting for 943 million tonnes of CO₂ per year (MtCO₂/year) over a total of 2,228 MtCO₂/year. Decarbonizing electricity production with less carbon intensive alternatives will also contribute to the MENA region's social development, spur growth, create industrial opportunities and green jobs, as well as preserve the environment and the scarce water resources.

Methods

As MENA countries are highly heterogeneous in terms of both energy dependence and carbon intensity of electricity generation, the first aim of the paper is to provide an insight into the different trade-offs faced by the region's economies for scaling up their renewable energy potential. The trade-offs are disentangled through three dimensions: an analysis of the declining solar PV's levelized costs of electricity (LCOE); the economic and political implications of an oil price trend stably around USD 50-60/bbl; a set of country specific considerations, ranging from security of supply issues to the needed for fiscal reform. The latter constitutes a core element of the analysis given the price distortions generated by high energy subsidies. The paper sheds light on the fiscal incentives for energy subsidy reform taking into consideration the fiscal break-even oil price, the external losses caused by the downturn in the oil price and the energy subsidies' nominal and implied levels. In the second part of the paper, particular attention is given to the development of financial mechanisms that can lower the cost of renewable energy systems. Green investments are disadvantaged because of high interest rate conditions compared to brown investments. Therefore, further costs decreases, especially driven by more stable policies and lowered financing costs through investment de-risking is key. In this regard, the paper focuses on the role of Gulf Sovereign Wealth Funds (SWFs) in the provision of suitable long-term and affordable financing. First, a general overview of the characteristics as liability profile and the tolerance and propensity to risks and losses is presented, showing that SWFs are more appropriate as for long-term energy investment than other institutional investors such as pension funds and insurance companies. Secondly, an analysis of the differences within funds in terms of aims, investment strategy and capabilities is presented, with a particular attention to the three SWFs of the region which have already invested in renewable energy projects: the Qatari and Kuwaiti Investment Authorities and the Abu Dhabi Mubadala Development Company.

Results

A first result is that electricity generation offers significant opportunities to reduce the region's CO₂ emissions, and that utility-scale solar PV projects are among the most competitive renewable energy sources in the region, as decreasing global PV costs have been coupled with significant technological developments which made PV modules more durable and resistant to extreme conditions affecting the MENA region (such as high temperatures and dust and sand deposition). The total capacity under construction, the installed capacity per technology and the future targets adopted by each country of the MENA region show that in some countries this trend is clearly taking off (i.e., Morocco, Abu Dhabi and Jordan), while others are still lagging behind (i.e., Algeria, Qatar and Lebanon). The momentum which has begun in Jordan, Morocco, and the UAE's Northern Emirates is explained by the fact that oil importers see domestic renewable generation as a way to reduce the pressures on their fiscal budget and to increase their energy security. Morocco, in particular, is a pioneer as for renewable energy capacity, now accounting for 12% of its total energy mix. Other two energy importing countries in the region are Tunisia and Lebanon. Tunisia's renewable energy development is expected thanks to a target of 5 GW of renewable installation by 2030. Conversely, despite a change in the energy system is extremely urgent in Lebanon, the country's renewable energy target only commits to reach 165 MW of new renewable capacity by 2020. Yet, the share of oil-fuelled power generation in Lebanon is still overwhelmingly high (reaching 90% in 2013, compared to 60% in Jordan and 25% in Morocco). On the other hand, the economic and political implications for oil export-dependent economies are less straightforward than for importing nations, as

exporters can choose between using cheap fossil fuels for domestic consumption or preserving such resources for export. Saudi Arabia for instance values the oil it consumes for electricity generation at its extraction costs, as low as USD 5/bbl, making oil by far the cheapest source in the power sector. A true cost comparison should be based on the opportunity cost of domestic consumption, rather than on generation costs: if this was the case, the trade-off would then depend on oil prices on the global markets. Nevertheless, the recent oil price development might suggest that the incentive to save resources for increasing export might have faded away. The paper highlights that even in a low price scenario the incentives for solar generation scale up appear stable: recent cost estimates report that solar energy in the region is cheaper than building a new conventional oil fired plant at an oil price above USD 20-30/bbl, while a level at USD 45/bbl is needed for making PV competitive with a half depreciated oil-fired power plant, and more than USD 60/bbl to replace a fully depreciated one. Moreover, the paper argues that cost considerations should be recognized together with the distortions created by the consumer-side energy subsidies, having relevant direct impacts on renewables' profitability in the MENA region. In an effort to limit domestic consumption, net importers put forward the most ambitious subsidy reform programs: Tunisia aims to phase out subsidies in all sectors within seven years starting from 2014, Jordan plans substantial subsidy decreases in the industrial and commercial sector by 2017 and the Egyptian government commits to a complete phase out of subsidies for electricity by 2019 and for all fossil fuels by 2024. Nevertheless, budget constraints driven by low oil prices provide strong incentives for fiscal reform even in the richest oil exporting economies. Action is mostly needed in Gulf Cooperation Countries: in the UAE, Saudi Arabia, Dubai, Qatar, Bahrain and Oman where, despite some reform steps, the average price of electricity still remains well below its actual production cost. In Saudi Arabia and the UAE, PV systems would have already reached grid parity if actual costs were at their undistorted level (USD 0.07- 0.08 kWh).

In the second part of the paper, regional investments coming from the Gulf's SWFs are considered. Taken all together these funds manage assets for a total value of over USD 2,000 billion. Yet, investments in the energy sector by the Gulf's SWFs have often focused on lower investment risk in transmission projects or mature generation technologies. The heterogeneity that exists among these funds' aims, as well as their peculiar investment horizon, size and expected returns, means that the actions these investors can take are multiple. The paper identifies a series of different investment approaches that could lower the financial risk of the renewable energy project: Provide affordable long-term capital and complement available private credit; Provide risk insurance or guarantees for risk of breach of a Power Purchase Agreement; Complement commercial banks in funding the initial stage of the project cycle, providing project development grants or loans and backing public commitment to take "first-loss" equity position; Gather support of fixed income investors by supporting a green bond market, in a way to catalyze investments from those funds facing liquidity and size constraints; Facilitate large domestic stabilization funds that can channel part of their reserves to help the government assume the currency risk. The paper concludes that, as SWFs have a greater unexploited potential, a pivotal role should be played by national governments which aim at removing barriers in the investment environment.

Conclusions

Significant opportunities exist in the MENA region to reduce CO₂ emissions from the decarbonization of the power sector. This can be achieved first of all by improving the balance between fossil fuels in the current energy mix. With gas taking over dirtier fuels the region could achieve as high as 30% less carbon emissions. Most importantly, the region will have to deploy its huge renewable energies resources, as estimates find that additional CO₂ emission reductions could total up to 120 million tonnes only thanks to solar PV capacity scale-up by 2050. The paper provides an outline of the key drivers affecting generation costs considerations as well as broader financial incentives. Energy importers, as Morocco and Jordan, have been the most active in harvesting the opportunity to develop new cost effective solar-powered projects. For energy exporters, low hydrocarbon prices are reducing the opportunity cost of an already very cheap oil-based domestic consumption. Nevertheless, sharp cost decrease of renewable technologies such as photovoltaics, and a shift in the political priorities favouring energy security and economic diversification, will likely have a bigger impact on renewable energies expansion in the near future. Yet, despite such incentives, MENA's solar potential will be scaled up only if an energy subsidy reform is brought forward, by increasing electricity prices in a way to allow market competition between fossil and renewable generation. At the same time, policy and financial de-risking of utility-scale projects, achieved for instance by establishing Public Private Partnerships (PPPs), will be necessary to leverage the much needed private investments. Providing a de-risked framework is a necessary condition for enabling Gulf's Sovereign Wealth Funds (SWFs) to step in.