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Tunisia: Derisking Renewable Energy Investment

Key Points for Decision-Makers (2018)¹

The objective of this study is to analyse the most cost-effective public derisking measures to promote private sector investment in large-scale wind energy and solar photovoltaic (PV) in Tunisia. The study performs a quantitative, investment-risk informed modelling analysis. Modelling data has been obtained from structured interviews with private sector investors and developers.

The study, which updates an earlier 2014 analysis, was prepared in coordination with the National Agency for Energy Conservation (ANME), part of the Ministry of Industry, Energy and Mines.

Context and Opportunity for Renewable Energy

Tunisia's power sector is characterized by rising power demand, the dominance of gas-powered generation (with imported gas), and the pre-eminent role of the state utility, STEG, the country's main energy producer and its distributor. Tunisia has 5,224 MW in installed generation capacity, with 91% of generation is from STEG, and 9% from IPPs. Renewable energy, in the form of STEG-operated wind plants, accounts for 4.9% of generation. Annual demand is projected to increase by between 2% and 5%. While there have been significant reforms, starting in 2014, power sector subsidies, both non-cost reflective tariffs and subsidised gas input prices, are substantial.

Renewable energy holds strong potential in Tunisia. This study uses 2030 investment targets of 940 MW and 835 MW of utility-scale wind energy and solar PV, respectively. These targets are based on the 2030 vision stated in the Tunisia's Solar Plan (TSP).

Blessed with good wind and solar resources, Tunisia is well positioned for investment in utility-scale renewable energy projects. Wind and solar PV provide the opportunity to improve Tunisia's energy security, to meet growing energy demand, and to create a future power-export industry for Tunisia. Wind and solar can also support Tunisia's contributions to climate change under the UNFCCC.

"Tunisia is well positioned for renewable energy investment, with good renewable energy resource endowments"

More on Tunisia: Derisking Renewable Energy Investment



The full results of this study, its financial models, and a methodology and assumptions document are available to download at: www.undp.org/DREI

This 'Key Points' document was first published in May 2018.

¹ This 'Key Points for Decision-Makers' summarises the findings of the study in succinct manner. As such literature references have not been included here, but are found in the more detailed 'Full Results' and 'Methodology and Assumptions' documents.

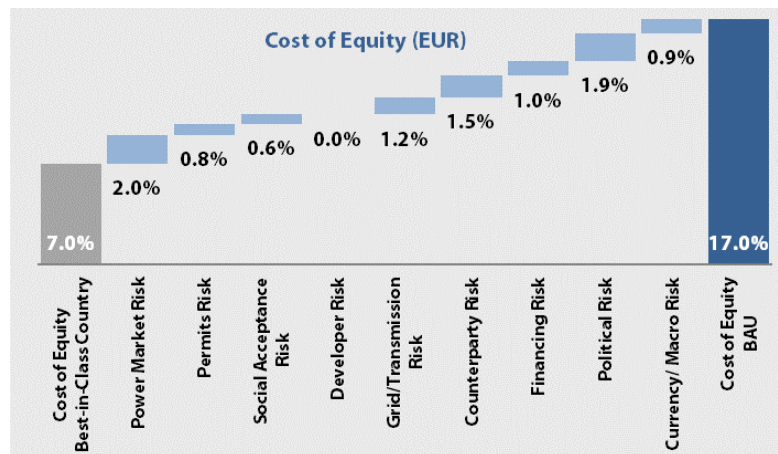
Financing Costs and Risk Environment

The modelling performs a detailed analysis of the financing costs and risk environment for wind energy and solar PV in Tunisia today.

- Financing costs (the cost of equity and the cost of debt) for wind energy and solar PV projects are high in Tunisia. For instance, the present study finds that the cost of equity² for large-scale wind energy and solar PV in Tunisia today is 17%, compared with 7.0% in Germany.
- These higher financing costs (Figure 1, below) reflect a range of investment risks for wind energy and solar PV in Tunisia. In particular, three risk categories were found to contribute strongly to higher financing costs: 1) “power market risk” that concerns power market regulation, such as the need for well-functioning, transparent mechanisms for the sale of electricity; 2) “counterparty risk” that concerns the reliability of the electricity buyer; and 3) “political risk” that concerns the overall stability and peace.

“Power market risk, transmission risk, counterparty risk, and political risk contribute most to higher financing costs”

Figure 1: Impact of risk categories on the cost of equity for wind energy and solar PV investment in Tunisia, business-as-usual scenario



Source: interviews with wind energy and solar PV investors and developers; modelling; best-in-class country is assumed to be Germany; see: ‘Methodology and Assumptions’ document for details.

Public Derisking Measures

For each of wind energy and solar PV, the modelling examines the selection and cost-effectiveness of public derisking measures to meet the 2030 investment targets. Public derisking measures can be understood as interventions by the government and its partners that address specific investment risks, in the form of policies, programmes or financial products. Table 1 below lists the recommended package of public measures identified from the modelling.

- For wind energy, (2030 investment target: 940 MW), the modelling identifies a targeted package of public derisking measures with an estimated cost of EUR 104 million until 2030. These derisking measures result in the following potential benefits:

² EUR-denominated cost of equity.

“Derisking creates savings for Tunisia of EUR 308m (wind), and EUR 149m (solar PV), over 20 years”

- Catalysing EUR 1.07 billion in private sector investment in wind energy
 - Lowering wind energy generation costs due to derisking from EUR 7.2 cents to EUR 5.8 cents per kWh
 - Creating economic savings related to derisking of wind energy of EUR 308 million over 20 years³
 - Reducing carbon emissions by 21.6 million tonnes of CO₂ over 20 years, relative to the baseline
- For solar PV, (2030 investment target: 835MW), the modelling identifies a targeted set of public derisking measures with an estimated cost of 54 million until 2030. When implemented, this results in the following benefits:
 - Catalysing EUR 0.53 billion in private sector investment in solar PV
 - Lowering solar PV generation costs due to derisking from EUR 7.1 cents to EUR 5.6 cents per kWh
 - Creating economic savings related to derisking of solar PV of EUR 149 million over 20 years
 - Reducing carbon emissions by 10.6 million tonnes of CO₂ over 20 years, relative to the baseline

Table 1: The selection of public measures to achieve the targets for wind energy and solar PV

Risk Category	Policy Derisking Instrument	Financial Derisking Instrument
Power Market Risk	<ul style="list-style-type: none"> ● Ongoing legislative reform to put in place effective policies/ revise them ● Well-designed standard PPA and tender process ● Independent regulator 	NA
Permits Risk	<ul style="list-style-type: none"> ● Streamlined process for permitting (e.g. dedicated one-stop shop for RE permits) ● Enforcement and recourse mechanism 	NA
Social Acceptance Risk	<ul style="list-style-type: none"> ● Awareness-raising campaigns ● Promote/ pilot community-based approaches 	NA
Developer Risk	<ul style="list-style-type: none"> ● Resource assessment (only for wind energy) ● Research and development into technology standards (Support to pilot projects on solar PV in desert environments) ● Technology support and O&M assistance 	NA
Grid/Transmission Risk	<ul style="list-style-type: none"> ● Transparent, up-to-date grid code ● Grid management/ planning (develop and update long-term national transmission/ grid plan to include intermittent RE) ● Capacity building for the supervision center to organize/ control dispatching 	<ul style="list-style-type: none"> ● Take-or-pay clause in PPA
Counterparty Risk	<ul style="list-style-type: none"> ● Strengthen the utility's management ● Implementing sustainable cost recovery policies 	<ul style="list-style-type: none"> ● Government (sovereign) guarantee
Financing Risk	<ul style="list-style-type: none"> ● Domestic financial sector reform 	NA
Currency/Macro-economic Risk	NA	<ul style="list-style-type: none"> ● Partial indexing
Political Risk	NA	NA

Source: Modelling. NA indicates "Not Applicable"

Conclusion

“Public derisking measures are an opportunity towards more reliable, affordable and clean power for Tunisian citizens”

Today’s investment environment for renewable energy in Tunisia has a number of investment risks that result in high financing costs. The report’s methodology systematically identifies public derisking measures to target these risks, thereby lowering financing costs and resulting in lower generation costs.

The modelling demonstrates how investing in public derisking measures creates significant economic savings in achieving the investment objectives in Tunisia’s Solar Plan. The modelling clearly shows that investing in public derisking measures should in every case be more cost-effective for Tunisia, compared to an alternative of paying higher generation costs. Therefore, implementing these public derisking measures is indeed an opportunity for policymakers in Tunisia. The end result can be more reliable, affordable and clean power for Tunisian citizens.