Electricity policy rabat

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Morocco is facing major challenges in terms of its future energy supply and demand. Specifically, the country is confronted with rising electricity demand, which in turn will lead to higher fossil fuel import dependency and carbon emissions. Recognizing these challenges, Morocco has set ambitious targets for the deployment of renewable energy sources for electricity generation (RES-E). The realization of these targets will lead to a fundamental transition of the Moroccan electricity sector and requires substantial public and private investment. However, different risks constitute barriers for private RES-E investments and lead to high financing costs, which may eventually discourage capital-intensive RES-E projects.

While the existing literature has mainly focused on assessing the impact of financing costs on the economic competitiveness of individual technologies, the aim of this research is to assess the techno-economic feasibility of different electricity generation portfolios. To recognize the social dimension of the sustainable energy system transition, the electricity scenarios for Morocco have been jointly developed with stakeholders in a scenario building workshop in Rabat, employing a downscaled version of the open source electricity market model renpassG!S, augmented by a weighted average cost of capital (WACC) module.

In the stakeholder workshop, four different electricity scenarios for Morocco were co-developed. Each of these scenarios describes a consensual and technologically feasible future development path for the Moroccan energy system up to 2050, and comprises conventional fossil fuel-based technologies, as well as RES-E technologies in varying shares. Employing the downscaled renpassG!S model, we find that total system costs, as well as average levelized costs of electricity (LCOE) can be reduced substantially with low-cost financing.

Our results indicate that de-risking RES-E investments can lead to cost competitiveness of a 100% RES-E-based electricity system with mixed-technology scenarios at marked financing costs. Therefore, we

identify specific de-risking recommendations for Moroccan energy policymaking. In addition, we argue that participatory scenario modeling enables a better understanding of the risk perceptions of stakeholders, and can eventually contribute to increasing the political feasibility of sustainable energy transition pathways.

As a result, an ambitious target was set for further deployment of renewable energy sources in the electricity sector (RES-E). This target foresees high penetration rates of RES-E, namely 42% of total generation capacity by 2020, and 52% by 2030 [10]. As 1 of 40 member nations of the Climate Vulnerable Forum, Morocco jointly declared the goal of reaching 100% RES-E supply between 2030 and 2050 [11]. These targets will require an additional deployment of roughly 10 GW of RES-E capacities by 2030. From those, 4.6 GW is foreseen to come from solar, 4.2 GW from wind, and 1.1 GW from hydro.