

# **[LIGHTING THE PATH: *CHALLENGES AND OPPORTUNITIES IN MENA POWER SECTORS*]**

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## **Overview**

This paper provides a comprehensive review of the current state of the electricity sector across six countries in the Middle East and North Africa (MENA) region, specifically Saudi Arabia, Oman, Lebanon, Jordan, Egypt and Morocco. The paper highlights the major challenges facing electricity utilities including the unsustainable growth in power demand, the significant losses and fiscal deficit, the growing dependence on natural gas, the limited grid status, the detrimental effect of subsidies, and the impact of climate change and rising temperatures on the sector's performance.

Despite the wide disparities across the region and the expanding gap in the capacity to reform and invest in the power sector, these challenges are common trends at various extent levels within these six countries. The paper analyses the power sector status from an energy security and climate change lense while reflecting on the sector's prospects under the business-as-usual scenario.

The analysis show that there is some progress in the majority of the countries in addressing these challenges at diverse scales and effectiveness, but that reforms are not linear and are dependent on a series of factors including governance, institutional strength and ability to attract investments. The paper finally suggests that opportunities are present to enhance the power sector's performance, climate resilience and energy security through energy conservation and storage, renewable energy deployment, and connectivity.

## **Methods**

In this paper we study extensively the power sectors of Saudi Arabia, Oman, Lebanon, Jordan, Egypt and Morocco to compare different metrics and changes across time in electricity demand, installed and available capacity, fuel source for power generation, cost of generation and recovery, tariff subsidies, fiscal performance, technical and non-technical losses, and System Average Interruption Duration Index. The six countries are selected to reflect different categories of MENA countries, through: 1) regional segregation into Gulf states, Levant and North African countries, and 2) economic segregation into high, middle and low-income countries, and petroleum-producers and net-energy importers.

The research is evaluated and supplemented with official and publicly available documents and conversations and extensive discussions with experts in the field in the studied countries. The methodology therefore involves analysing various sources and interpreting the metrics through a thorough comparison to draw results and conclusions for more sustainable power sectors.

## **Results**

The power sectors are recording unsustainable growth in demand driven by the fuel and electricity subsidies, growing population and economic activity, climate change impact on cooling and water needs, electrification of sectors such as transport, and digitization.

The growth however has witnessed a downward trajectory in certain countries such as Saudi Arabia and Egypt in the last five years compared to a decade earlier. Egypt's annual growth averages slightly less than 4%. Saudi Arabia has seen its electricity demand growth exceeding 4% in 2021, after a couple of years of decline.

This growth has been driving a race for additional power generation capacity in the region, and this capacity is increasingly reliant on natural gas, which most countries do not produce at all or do not produce enough of to meet the growing demand. Gas is currently the source for 52% of power generation in Saudi Arabia. In Lebanon, gas is still not part of the energy mix, but is required to decrease the cost of electricity recovery.

Fossil fuel subsidies have been detrimental to the performance of the power sector. Despite the many plans to phase them out, the implementation of price restructures has lagged and is becoming increasingly difficult with the volatile price of oil, for socio-economic and political reasons.

Even though there are disparities across countries, planned power sector projects in the region top the energy sector's investments. The bulk of investments however targets the generation sector, and only a minor share is allocated for transmission and distribution networks.

Climate change and extreme weather events increasingly impact all components of the power systems. They also affect the availability of primary energy sources. The impact of climate change is witnessed in the increase of cooling and water demand leading to record peak demand in mid-summer heat.

Most of these countries have implemented reforms in the power sector, mainly in tariff restructure. But economic and political changes have led to a non-linear path of reforms.

Key factors in mitigating the power sector challenges are sectoral governance, institutional strength and ability to attract investments.

The way forward requires doubling-down efforts in energy efficiency measures implementation and solid action plans and investments for renewable energy plus storage.

Further action is needed to integrate and optimize the three separate grid interconnections in the region to mitigate the race for additional power generation capacity and better integrate renewables.

## **Conclusions**

The growth in power demand is unsustainable driving an unhealthy race to additional power generation. The power sectors also suffer from unhealthy financial performance impacting the utilities' ability to invest, especially in non-attractive sectors such as transmission and distribution. Energy security is compromised and further aggravated by the impact of climate change.

Decision makers should account for all these factors in developing electricity policies and projects, and should consider strengthening climate resilience as an integral part of the power systems.

Chartering a sustainable and energy secure path requires going back to basics and doubling-down efforts in energy conservation, integrating clean and storage systems, and building an efficient electricity exchange market.