

THE BOTTOM LINE

The need for greater efficiency and accountability in the power sector in the Middle East and North Africa has renewed pressure for reforms. A major new World Bank report, *Rethinking Power Sector Reform in the Developing World* (Foster and Rana 2020), examines how developing countries have attempted to reform their power sector and with what results. Some key lessons point the way forward.



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Rethinking Power Sector Reform: Positive Lessons for the Middle East and North Africa

Why does MENA's power sector need reform?

In most countries the power sector is burdened by large financial deficits and inefficient public utilities that are insufficiently accountable to consumers

If the objective of the power sector is to provide universal access to reliable electricity at an affordable cost, most of the MENA region achieved security of supply and social inclusion early on. Table 1 on the next page presents the sector outcomes on these dimensions, as well as on environment sustainability. Access in many countries is close to 100 percent, and, with a few exceptions in fragile or conflict-ridden areas, the grid provides reliable and affordable electricity.

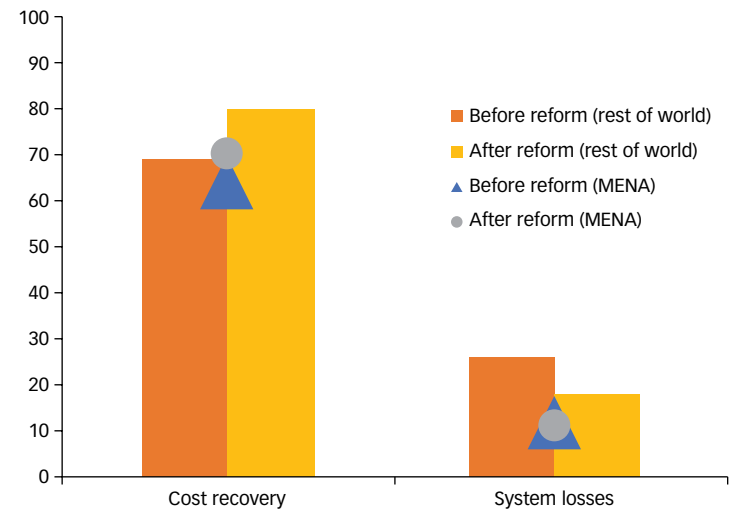
This achievement, however, came at a great cost. The sector in most countries is dominated by vertically integrated state-owned enterprises (SOEs) and burdened by large financial deficits that piled up as governments held tariffs below the cost-recovery level to avoid unpopular rate hikes. The quasi-fiscal deficit in the countries of the region ranges from –0.1 percent to 8.9 percent of their GDP (Camos and others 2017).

In the 1990s, the World Bank, together with other international partners, developed a set of prescriptions for power sector reforms that they urged client countries around the world to put into practice (World Bank 1993; Williams and Ghanadan 2006). The package comprised four structural reforms (Foster and others 2017): *regulation*, which requires an autonomous regulatory authority to enforce standards in the sector and hold utilities accountable; *restructuring*, which involves vertical and horizontal unbundling of power utilities; *private sector participation*, which brings private management and capital into the sector; and *competition*, which initially allows generators to

compete to supply a monopoly utility and later allows customers to negotiate their supply contracts directly with producers and traders.

Since the onset of reform in MENA, cost recovery has barely improved, managing only to reach the prereform levels in the rest of the world. System losses were low even before the reforms took hold, but utilities have struggled to reduce them further and to deal with the growing commercial losses caused by illegal connections, fraud, and nonpayment of bills (figure 1). With low hydropower potential, most MENA countries rely on fossil fuels for generation

Figure 1. MENA utilities struggle to recover costs even as system losses remain low



Source: Foster and Rana 2020.

Note: "System losses" are the share of electricity injected into the transmission system but not metered or billed.

Table 1. Sector performance of MENA and rest of the world, 2015

2015	Reform score	Security of supply			Social inclusion		Environment sustainability	
		Reliability (SAIFI)	Normalized capacity (MW/million)	Capacity diversification (fuel concentration index)	Electrification (% of population)	Affordability (% of GNI)	Carbon intensity (gCO ₂ /kwh)	Share of modern renewables in TFEC (%)
Yemen, Rep.	0	n.a.	57	n.a.	70	0.01	734	n.a.
Lebanon	1	n.a.	399	n.a.	100	0.03	702	0.83
Tunisia	8	2.3	446	n.a.	100	5.61	469	1.13
Iran, Islamic Rep.	15	5	919	n.a.	100	n.a.	551	0.62
Morocco	42	3	231	0.32	100	0.05	702	2.17
Egypt, Arab Rep.	47	0	415	0.62	100	0.00	472	2.56
Algeria	51	8.9	429	n.a.	99	0.02	535	0.05
Jordan	85	1.8	478	n.a.	100	0.10	588	3.04
Rest of the world ^a	44	47 ^b	361	n.a.	65	11	444	4.67
Observatory countries, excluding MENA	71	29.5	320	0.47	73	7.84	406	8.44

Source: Foster and Rana 2020.

Note: The “reform score” reported in the second column is based on the Power Sector Reform Index constructed by Foster and Rana (2020). The index assigns each country a score of 0 to 100 on each dimension of power sector reform. The average of the four scores provides an overall summary of the extent of reform. The colors reflect performance against the benchmark. Green signifies good performance; yellow, moderate, and red, poor. These terms are explained in the addendum at the end of the text.

The “observatory countries” referenced in the bottom row are the 15 countries for which case studies were prepared in connection with Foster and Rana (2020): Colombia, Dominican Republic, Arab Republic of Egypt, India, Kenya, Morocco, Pakistan, Peru, Philippines, Senegal, Tajikistan, Tanzania, Uganda, Ukraine, and Vietnam.

GNI = gross national income; SAIFI = System Average Interruption Frequency Index; TFEC = Total Final Energy Consumption; n.a.: Not available.

a. The “rest of the world” consists of a sample of 88 countries in the Rethinking Power Sector Reform database (http://www.esmap.org/rethinking_power_sector_reform).

b. The rest of the world average drops to 20 if outlier countries are excluded: Afghanistan (250), Burundi (330), and South Sudan (800).

and score low on both capacity diversification and carbon intensity, despite some progress with renewable power.

The power sector is a major contributor to fiscal deficits, public debts, and, for fuel importing countries, current account deficits. Below-cost pricing encourages inefficient consumption. That, combined with population growth, an expanding middle class, and incoming refugees in some countries, has quickly inflated demand. Given their limited fiscal space, most governments have intended to meet the new demand through private sector participation, but weak sector governance and shaky financial viability has discouraged investment.

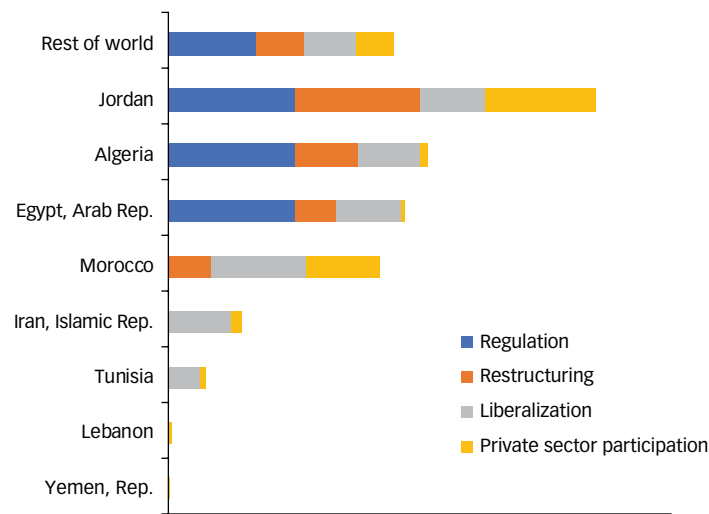
The Arab Spring that gathered speed in 2011 intensified the pressure for reforms—and particularly for a more efficient public sector, better customer service, and greater transparency and accountability. These features call for more contestability in the electricity market, enhanced efficiency (to reduce costs), cost-reflective tariffs (to encourage conservation), and demonstrated financial viability (to attract private investment). More recently, a looming macro fiscal crisis has further increased the impetus for reform.

Furthermore, because the sector is dominated by a state-owned monopoly in many countries, power sector reform is often treated as

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Reforms in MENA should focus on three key issues: private sector participation, utility governance, and the regulatory framework.

Figure 2. MENA countries have undertaken only limited reforms



Source: Foster and Rana 2020.

part of a larger agenda to reform subsidies and SOEs and to renew the social contract.

However, the sociopolitical dynamics in MENA are often too fragile for complex and comprehensive reforms as envisioned in the 1990s model. Local ownership, the presence of a reform champion, a market orientation, and political pluralism are all critical to drive the change process, but these factors are weak or absent throughout much of the region. In addition, without a tradition of stakeholder engagement to build broad social support, it is difficult to *sustain* reforms. Poor stakeholder engagement may deter political leaders from even undertaking reform—for fear of popular protests.

As a result, MENA lags behind the rest of the world in the uptake of reforms. On average, by 2015, MENA had undertaken only 28 percent of the standard reforms, compared with 37 percent in the developing world as a whole and 78 percent in OECD countries (figure 2).¹ Most of the uptake began around the world in the early

¹ Eight MENA countries are among the worldwide sample of 88 countries in the Rethinking Power Sector Reform database (http://www.esmap.org/rethinking_power_sector_reform).

1990s and was complete by 2002. Of the eight MENA countries covered in Foster and Rana's database, only three have a regulator (Egypt, Algeria, Jordan²), two have carried out partial unbundling (Algeria, Jordan), and six have introduced some competition and a version of a single-buyer model (Algeria, Egypt, Iran, Jordan, Morocco, Tunisia). Only two have substantial participation from the private sector (Morocco, Jordan). Jordan is the only country that implemented almost the entire standard reform package. In most cases, countries cherry-picked the reforms they were most comfortable with and implemented them without regard to the proper sequence.

What should reform look like?

Countries should pick reforms that are critical to improving sector fundamentals and adapt the format to their context

International experience provides a clear lesson: instead of following a predetermined model, reforms should be tailored to desired outcomes, reflect the circumstances of each country and its power sector, and be flexible enough to permit the sector to adapt to changing market conditions. Given the characteristics of the sector in MENA, as outlined above, reforms should focus on three key issues: private sector participation, utility governance, and the regulatory framework.

Financial viability and a sound investment climate are key conditions for private sector participation. Private sector participation has been limited in MENA. Only 21 percent of the generation capacity added in the region since 1990 is in private hands, compared with 47 percent in the rest of the world. Most of the limited private involvement in generation takes place through independent power producers holding long-term contracts procured competitively. Almost all of the private investment came from foreign sources (80 percent, compared with 55 percent globally), which can have implications for the political economy of privatization and exchange-rate risk.

Looking forward, there are significant opportunities for the private sector, particularly in new generation based on renewables.

² Morocco introduced legislation to establish a regulator in 2016. The regulator began functioning in 2019.

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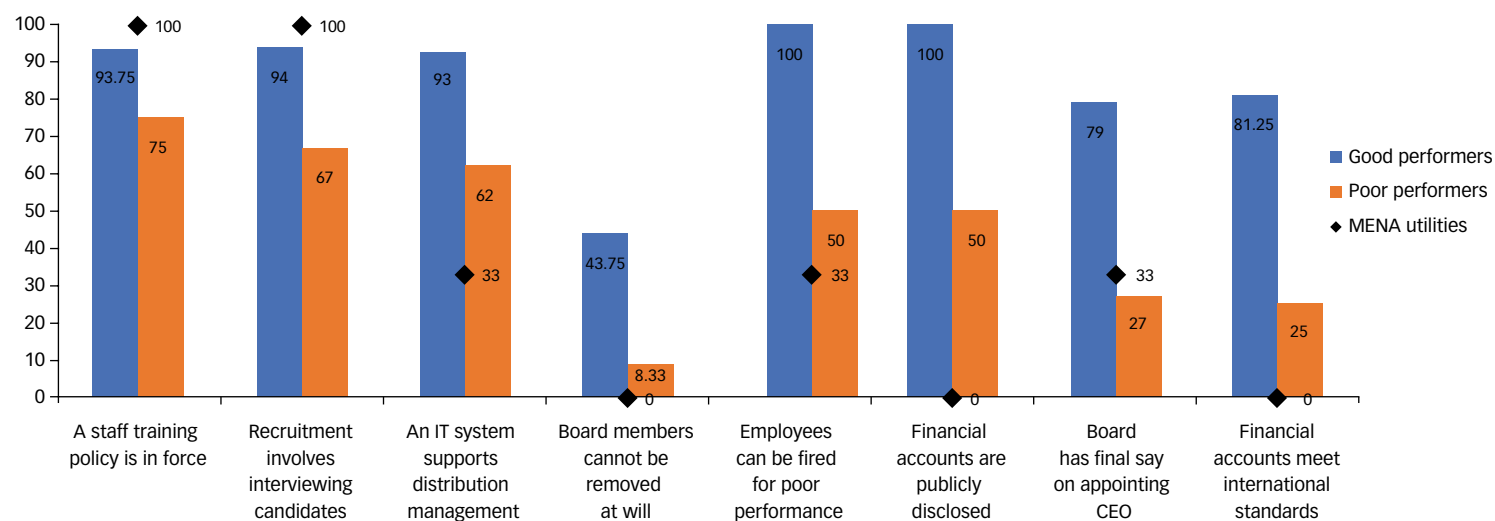
Many MENA countries have set ambitious targets to generate up to 30 percent of their electricity from renewables by 2030. To reach its target of 52 percent capacity from renewables by 2030, Morocco would require an estimated \$30 billion in investment, much of which would need to come from the private sector (IEA 2019). Recent auctions for solar and wind projects in Morocco, Tunisia, Egypt, and the United Arab Emirates have yielded competitive prices and revealed great potential for the private sector. Expanding renewables would help achieve multiple outcomes needed in the region: energy independence, capacity diversification, and reduced carbon intensity, as well as the possibility of lowering cost. A growing cast of new players will give momentum to reforms.

The rapid deployment of renewables will depend on certain institutional conditions being met. The right balance of risk between the public and private sectors is key to optimizing costs, and the private sector can accept more risk when the offtaker is creditworthy and the overall investment climate is sound. Pricing models need to be adapted to the zero marginal cost of renewables. Greater emphasis should be placed on least-cost generation planning and competitive procurement to ensure value for money. Developing

infrastructure and the institutional framework for renewable integration are both critical. In MENA, broad private sector development is also important in order to achieve a balance between domestic and foreign financing (Foster and Rana 2020).

Strengthened corporate governance and managerial practices are the foundation for utility reform. Utility performance is linked with good corporate practices, especially in the areas of human resources and financial discipline. MENA's public utilities have struggled to meet global standards for key governance practices. In the global sample compiled by the Rethinking Power Sector Reform initiative, 89 percent of the world's SOEs have their financial accounts externally audited, compared with 100 percent among private utilities; 42 percent of SOEs meet international practice standards, versus 90 percent of private firms. In the MENA sample, *none* of the utilities are externally audited, and *none* meet international standards for financial reporting (figure 3). Restrictions for hiring and firing (if employees are civil servants) also limit compliance with best practices in human resources. Globally, as well as in the region, SOEs lack autonomy to make investment decisions,

Figure 3. MENA utilities struggle to implement good practices in corporate governance



Source: Foster and Rana 2020.

Good sector conditions can be achieved by various regulatory models, as long as sufficient emphasis is placed on transparency and accountability.

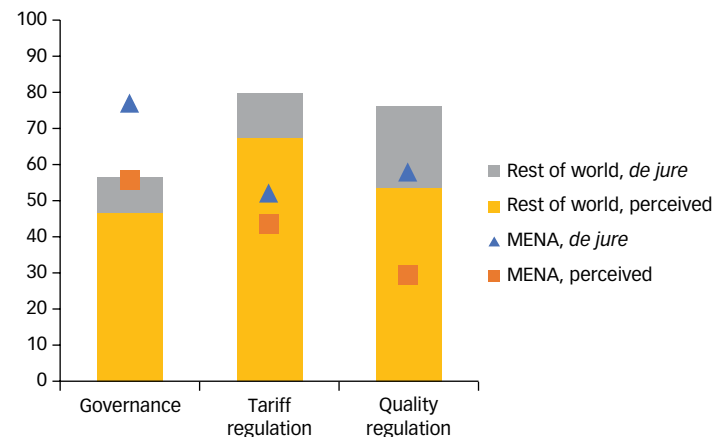
and, without cost recovery, lack the financial resources to make the investments needed to maintain and improve performance.

Where such fundamental financial and governance challenges persist, the immediate goal for MENA utilities should be to strengthen corporate governance and managerial practices. Corporatization is a critical measure that helps utilities strengthen commercial incentives and operational autonomy. This can helpfully be combined with performance contracts (ideally accompanied by independent external auditing), which can make a significant difference in improving results (e.g., Morocco's *Contrat Programme*). Measures such as obtaining a credit rating, issuing bonds, and entering the stock market to raise capital (e.g., Kenya Power) can also help utilities benefit from the pressure exerted by financial markets to improve transparency and commercial practices—even without changing ownership. More complex reforms, such as restructuring and privatization, require a certain level of institutional and financial maturity. In other words, the priority should be to build a foundation of good governance and financial viability, which, in turn, generate an enabling environment for more difficult reforms.

The regulatory framework is key. Regulation is critical to ensure sector transparency and accountability, but it can assume different forms depending on the readiness of the sector. To date, regulatory effectiveness has been relatively weak in MENA. Setting up a regulatory entity is popular, but building an effective regulatory system has proven difficult. The central functions of regulators often include setting tariffs, monitoring service quality, and regulating market entry. In most of the MENA region, tariffs are below cost and remain controlled by governments. Quality regulation suffers because the regulator is often less powerful than the utility, and SOEs do not respond to regulatory incentives unless the utility is already operating in accord with strong commercial principles. MENA countries, therefore, score lower than the rest of the world both on paper (*de jure*) and in practice (perceived)³ across these three key regulatory functions, which is consistent with the finding that, when

³ The regulatory index created by Foster and Rana (2020) measures the performance of sector regulation from two standpoints. First, an evaluation is made of performance on paper (the *de jure* performance) by comparing the laws, rules, and regulations in force in the country with what would be desirable in an ideal system. Second, an evaluation of actual (*de facto*) performance is based on implementation of these rules and regulations as perceived by sector experts in the countries.

Figure 4. MENA countries have had a hard time implementing tariff and quality regulation



Source: Foster and Rana 2020.

Note: *De jure* and perceived are explained in footnote 3.

it comes to regulation, implementation tends to fall short of design wherever the sector remains under state ownership (figure 4).

Good sector conditions can be achieved by various regulatory models, as long as sufficient emphasis is placed on transparency and accountability. With or without an independent regulator, it is critical for the government to take regulating seriously, thereby safeguarding the utility's revenue requirements, quality of service, and market contestability. This can be done through a combination of (i) a rule-based mechanism for tariff setting (involving the finance ministry, because it determines the subsidy budget), (ii) published performance indicators with rewards and penalties to hold utilities accountable, and (iii) implementation of laws to permit independent power producers and a competitive procurement framework. In the MENA context, regulation can provide a valuable means of increasing transparency and promoting stakeholder participation in sector processes. The role of an independent regulatory agency becomes increasingly relevant as political interference declines and private participation expands.

The penetration of “distributed energy resources” may challenge the monopoly of the utility, as consumers become involved in generation.

And the role of technology?

Disruptive technologies bring both opportunities and challenges, so reforms will need to be even more flexible to adapt to changing technological conditions

If well utilized, technologies could help MENA countries achieve critical outcomes faster. For example, smart grids can detect fraud while enabling more sophisticated price regulation that aids cost recovery. Similarly, digitalized networks provide utilities with real-time data for better management practices. However, technologies also introduce more actors. The penetration of “distributed energy resources” may challenge the monopoly of the utility, as consumers become

involved in generation. Price regulation will need to be overhauled to adapt to decentralized providers, while generating a sufficient volume of access fees to enable the utility, as owner of transmission and distribution networks, to maintain its financial viability. Although digital technology (including artificial intelligence) can facilitate more efficient dispatch, it can also make dispatch more complex. Overall, technological innovations may not change the vision of reforms, but they will change how the sector functions and is regulated.

The bottom line is that countries should not wait for the next crisis before initiating their reforms; they should start now and be ready to adjust their model along the way.

Addendum

An explanation of good, moderate, and poor performance on the indicators reported in table 1

- **SAIFI:** Anything less than 12 is considered good (green cells in the table); between 13 and 53 is considered moderate (yellow cells); and greater than 52 is poor (red cells).
- **Normalized capacity:** A country with capacity greater than 200 MW per million of population is considered good and anything less is considered poor.
- **Capacity diversification:** A fuel concentration index of less than 0.33 is considered good; between 0.34 to 0.66, moderate; over 0.66, poor.
- **Electrification:** If 80 percent of the population has access to electricity, the country’s performance is deemed good; 60–80 percent, moderate; below 60 percent, poor.
- **Affordability:** If the bottom 40 percent of households spend less than 5 percent of their average monthly income on average consumption, the country’s performance is considered good; 5–10 percent, moderate; more than 10 percent, poor.
- **Carbon intensity:** If the carbon intensity of electricity production is less than 250 gCO₂/kwh, the country’s performance is considered good; 250–500 gCO₂/kwh, moderate; higher, poor.
- **Share of modern renewables in total final energy consumption:** More than 10 percent is considered good; 5–10 percent, moderate; less than 5 percent, poor.

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