



The Future of Electricity Markets?

CREATIVITY

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A growing, energy-hungry and increasingly prosperous population means the impressive growth in the trajectory of Saudi Arabian electricity demand might accelerate without a strong commitment to price reform and energy efficiency measures. Up to \$20 billion must be invested in the kingdom's power sector over the next five years to meet demand, detailed Apicorp. Aside from industrial demand, the United Nations (UN) said the population will climb by nearly 40% to 45 million by 2050. More people, more industry, more demand – and greater the need for creativity.

Reforming the electricity market is a key part of Saudi Arabia's economic transformation agenda, as set out in the Saudi Vision 2030 goals. Accordingly, new pricing models and tariffs are being proposed and set to be tested in order to be able to reflect true network costs, with the aim of sending the correct signals to network users and informing network investment decisions. And new business models are beginning to take shape with restructuring and privatization plans under consideration, including services that offer enhanced reliability, convenience and flexibility to better address consumer needs and preferences (see: *Speak Customers' Language*). The same applies to providing testbeds for trialling new business models (see: *Calling all Regulators*), as explored in one of KAPSARC's workshops on integrated approaches to decentralized systems in February this year.

Digital aid

Transformational technologies under the umbrella of the 4IR – advanced robotics, predictive analytics, automation, Industrial Internet of Things (IIoT) and many more – are rehaping the value chain. This encompasses more direct

and real-time feedback from customers, self-guided autonomous devices in remote inspection areas, maintenance in plants and greater energy efficiency in the distribution network. Many have already clocked the opportunities, with global investment in digital electricity infrastructure and software rising by more than 20% annually since 2014, reaching \$47 billion in 2016, according to the IEA. The 8th Saudi Arabia Smart Grid Conference (SASG 2018) held last December illustrates how this topic has long topped boardroom agendas in the kingdom, a country globally lauded for its digital expertise.

Transparency and ease of access to data is key. Lacking analytical expertise runs the risk of being blinded by the massive volume of data generated by the 4IR. Improving the level of digitally fluent talent in the kingdom, especially those who can decipher the key trends revealed by data, is pertinent. More dialogue between government, industry and academia is also imperative to creating a relevant workforce in the 2020s and beyond, therefore supporting the Saudi Vision 2030 to become a knowledge-based economy. One of the most recent examples of progress is Saudi Aramco's new 'Fourth industrial Revolution Center' to enhance technical skills. Easy digital access is also critical; again, huge progress is underway. Dawiyat Integrated Telecommunications & Information Technology Company, wholly-owned by SEC, now has more than 70,000km of fiber optics – nearly the distance of circumnavigating the globe twice – at more than 1,500 locations. The kingdom is home to aspirational and creative talent and a swathe of the latest technologies. Ensuring the positive trajectory of supply-meets-demand continues, means leveraging this intellectual and digital gold dust.

Calling All Regulators

Regulators worldwide must think innovatively rather than traditionally. Mindsets must keep changing in accordance with modern-day economic and environmental demands and technologies. For example, how best to install smart meters, use customers' personal digital technology for real-time

supply-demand reporting, create policies that incentivize a steady flow of funds in the 2020s, and so on. Regulators must also invest time and money to distinguish between the value of retrofitting existing infrastructure and building new infrastructure. On a more ambitious note, the GCC would benefit from

an interconnected, regional power grid. The complexities involved in realizing this aim are vast. It requires further price reform throughout the region, cross-border safety nets to prevent any black holes in supply, frequent reviews of regulation to reflect the region's ever changing energy dynamics and of course, cohesion between industry and government in all six countries. Is this possible? Yes.

Will it be hard-won? Yes, but the positive domino effect on the region's energy security – and reputational value as a template for collaboration worldwide – would be invaluable. As with any reform, lessons can be drawn from international experience to better inform policymakers and regulators in the kingdom about the best evolutionary pathways for the industry.

Speak Customers' Language



Customers, utilities and businesses in the value chain cannot operate in a vacuum of information. Clear and concise communication is essential. For example, a customers may find it more challenging to manage consumption if they are simply told their total KWh used and amount due. Instead, utilities could show retail customers their projected bills for the summer months and suggest ways to reduce those bills through improvements in air conditioner efficiency, thermostat settings, or other measures. This gives customers more accountability and the associated transparency enables utilities to better pin down supply-demand flows, therefore locking in greater efficiencies in generation. For example, up to 16% of electricity use in industry worldwide could have been saved in 2017 if countries had adopted the strongest electric motor standards, highlighted the IEA. Introducing an insurance model where a commercial customer has a package crafted to their preferences is another option i.e. they accept limited-duration power outages in return for lower rates. Matching the electricity service with customers' needs essentially turns a liability into a tailored choice and the acceptability of the potential outages significantly reduces customers' frustration. In order to achieve this, you need data and smarts – lots of numbers and the intelligence to decipher what the numbers mean. Identifying data trends more accurately can summarize consumption behaviors, thermal efficiency of buildings, the appliances most used and so on.