Forbes Middle East

Investing In The New Oil

The world's largest oil producer is developing close to 700MW renewable energy projects as it aims to narrow the 10% GDP slice it pours into domestic fuel consumption—via roughly $60 billion in fuel-related subsidies.

Saudi Arabia could be leading the oil cartel OPEC but domestically the country is dealing with staggering energy consumption and wastage. The Kingdom's local fuel demand pulls 3.5 - 4 million barrels/day—or 30% of the national budget, according to Jeddah-based solar investor, Harith Bahareth.

While building renewable or other energy plants can feel more exciting, these new installations may continue to shoulder preventable losses.

"A key challenge for change in the energy sector in the GCC is around demand side management," says Dr. Afreen Siddiqi, Research Scientist, Massachusetts Institute of Technology (MIT) and Visiting Scholar, Belfer Center for Science and International Affairs, Harvard Kennedy School.

"The region remains one of the largest per capita consumers of energy in the domestic sector. Unless that starts to change, other measures, including solar park installations, will remain insufficient for addressing the unsustainable status and trajectory of energy use in the region."

But to reduce consumption, Dr. Siddiqi urges authorities to analyze where the energy is spent in an urban area: "We need to take a hard look at how to reduce energy consumption. In GCC countries, the largest fraction of domestic electricity use is in buildings, and up to 70% of annual energy consumption in buildings is for cooling. Most buildings in the GCC have insufficient thermal insulation."

Instilling a culture of conservatism coupled with simple technological changes alone will save up to SAR 11 billion annually, says Muhammad Kiani, Riyadh-based Energy Manager with a global management consultancy whose work entails precisely such long hard looks into energy utilization that Dr. Siddiqi called for. "For instance, regulating internal temperature for optimal energy usage alone can realize 30% cost savings," Kiani explains, drawing insights from his hands-on work with public entities in the Kingdom.
But, in a culture of abundance and opulent hospitality, calls to conservation can be construed as unsavory personal attacks—even though these savings needn't necessarily come with compromised comfort, Kiani notes. Therefore, movements canvassing energy efficiency or green building largely remain unfought battles, costing the nation billions in energy bleeding.

Electrifying Numbers

The rising energy consumption also comes as the use of renewables such as solar and wind become more mainstream. Adoption of solar energy is also helped by how affordable the technology has become. Georg Eitelhuber, CTO, No Water Mechanical Automated Dusting

Device (NOMADD) says that solar energy prices have dropped drastically. “Never before has the world seen energy this cheap.”

The Kingdom has had solar energy applications since 1960 and is now home to the world’s largest solar parking project. Located at the Saudi Aramco headquarters, Dhahran, the North Park Project has a 10 MW carport system.

Other projects such as the solar village project or the 500 kWp Farasan solar power plant dot the landscape too. None, remotely close in size to the utility-scale projects currently under tender by the Renewable Energy Project Development Office (REPDO), within the Ministry of Energy, Industry and Mineral Resources.

“The bids for the solar PV project received in October set new records for the price of utility-scale solar power generation,” says Turki Al Shehri, Head, REPDO, which issued both tenders completing the National Renewable Energy Program’s first round. The north-western Al Jouf region will be home to both projects, 300MW solar PV in Sakaka and 400MW wind in Dumat Al Jandal.

Globally, the lowest prices for concentrated solar power hovered around 12 cents/kWH, shared Dr. Steven Griffiths, Vice President for Research, Masdar Institute of Science and Technology. A few months ago, the lowest bid for a 700MW concentrated solar power with storage plant in the U.A.E. dropped to just above 7 c/kWH. The lowest bid for this Sakaka solar PV project, submitted by a GCC-led consortium, came in just under 1.8 c/kWH—an unambiguous indicator for how rapidly solar technologies are becoming cost effective.

Rising ROIs: The Winning Horse

Other encouraging news for both the demand and supply sides include net metering policy announcements as well as ongoing upward electricity tariff revisions. The costlier fossil-powered energy is, the shorter renewables’ payback periods would be.

Bahareth is confident the rise in tariffs will also drastically reduce energy waste at the end-user level. Residents have seen electricity bills quadruple over the past year—although no one is certain what precisely attributed to the higher utility bill. With gradual subsidy lifts, August 2017 saw revised tariffs announced: from 5 to 18 halala/KW for residential consumers under the 6,000KW line, and from 18 to 30 halala/KW for industrial users and residential users above the 6,000KW threshold. But these are not officially effective until 2018.

“It looks like we will see a step up in electricity rates every year,” says Gus Schellekens, Partner, Climate Change and Sustainability Services (CCaSS), Ernst & Young. Which means the returns will become friendlier-still to the way traditional investors crunch numbers.

Long-standing players have already ridden the solar profitability wave. In the 20 years that Bahareth has been investing in the American stock market, he says solar has always been “his winning horse”. To-date, he estimates 60% of his total profits came from solar investments.

Kuwait University’s director of Engineering Research Office, Dr. Haitham Lababidi’s concern is that more such technologies must emerge, and be owned, locally.

If not, “over 80% of the investment in such mega projects—and most energy projects are mega—are contributing to other countries’ GDPs,” points out Dr Lababidi. The 20% invested

in-country is often mandated by law he said, rarely generating meaningful jobs or a solid economic impact.

But some of these high-return technologies are being built at home. Dr. Rahim Munir just completed his PhD research at King Abdullah University of Science and Technology's Solar Center (KSC). He and his colleagues successfully tested a new class of solar cells: hybrid perovskite cells which "generate solar power even from the sunlight in your room—and out-perform silicone-based cells any day" he says. Instead of current commercial production methods that necessitate costly conditions such as vacuums and 1,000 degree celsius temperatures, these cells can simply be 'printed' by KSC's ink jet printers within 120 degree celsius. The sustainable cherry on top: the low-light friendly cells are made with earth-abundant resources, keeping raw material costs low too. Companies globally are working with this solution-based production at commercial scales, which is expected to be ready for the market by end of 2018.

Other innovative technologies to emerge out of the Kingdom include NOMADD, a company that spun off from work at KAUST - a place the company's CTO Georg Eitelhuber calls "the stuff of a king's dream". Already in commercial testing in four countries, the company successfully completed its second round of corporate funding from DSM ventures—KAUST its first investor and incubator. NOMADD plans to export its solar panel cleaning technology from the Kingdom, given how easy and economical some of these indigenous technologies are to manufacture.

He believes solar is the new oil of Saudi Arabia—and can "spearhead a whole new economic industry". But it does not mean the stakeholders in the community should shirk off the responsibility to conserve energy.

Individual citizens, the private sector and the state alike must commit to reining in inefficient patterns. "A paradigm shift away from largesse and towards efficiency must take place," says Faris Al Sulayman, Co-Founder, Haala Energy. The shift, he said, requires above all a deeper behavioral transition.

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