

Widening the net

A shortage of roof space in urban parts of the Middle East is one impediment to the rollout of distributed PV



Credit: Richy_B/Getty Images

Distributed PV | The first substantial barriers to rooftop solar in the Middle East are being eroded but a host of other challenges remain. Many are familiar, some are unique to the region.

John Parnell reports

What's wrong with this picture? Dubai is a modern city-state within a wealthy nation-state. It has first-class infrastructure, from telecoms to the power grid to transport. Yet in the main image of this story, the sun is beating down on concrete rooftops, satellite dishes, air conditioners, pools and helipads. But there isn't a solar panel in sight.

Dubai has taken action to address this with an ambitious goal to have solar on every rooftop by 2030 and the introduction of the 'Shams' net-metering programme by the state monopoly utility, the Dubai Electricity and Water Authority (DEWA). Neighbouring Abu Dhabi is holding a consultation on its own scheme and the Jordanian programme was enabled by regulations passed in 2012. Plans are also afoot in Oman, Kuwait and Qatar.

Previously there have been a number of substantial obstacles to the take up of rooftop solar. While some of these remain, major hurdles have been removed.

Policy

With the Middle East dominated by state-owned monopoly utilities, there was no

legal framework for individual businesses or consumers to be compensated for solar power generated on their roof. Jordan cleared that hurdle with its 2012 policy package. Dubai followed suit and others will inevitably follow.

The subsidisation of conventional energy in oil and gas producing countries kept the price of electricity artificially low. With the price of a barrel of oil well below US\$70 for the last two years several Gulf countries have eased up on those subsidies, sending consumer's bills upwards.

"The old economics of retail energy cost were a huge barrier to the rollout of distributed solar," says Sami Khoreibi, CEO of UAE-based developer and EPC Enviromena. "Very simply, traditional prices were heavily subsidised and there were no such subsidies implemented for renewable technology. Under previous frameworks it was virtually impossible to make an economic case for solar to the end user. They had to be making a green statement, or want to know how it would behave on the grid," he explains.

These are the circumstances under which Enviromena built 16 rooftop systems in the Emirates outside of any support scheme.

"The DEWA programme is just over a year old in terms of being allowed to connect to the grid in the net metering fashion. The programme started with a couple of dozen projects that have already occurred. Typically what we are seeing are some government buildings as well as a few commercial and industry rooftops, and some residential systems. Usually it is the owner of the building that is taking the initiative to have a solar power system," explains Khoreibi. "This is one of the fundamental bottlenecks right now, it's not a very challenging bottleneck but nonetheless, in the UAE the tenant is rarely the owner. It has been a bit of a challenge to find people who have lease terms long enough to justify the installation of a solar power system that will typically have a payback period of seven to nine years."

Khoreibi is right to describe this as a surmountable bottleneck. Many markets have had to deal with the tenant-landlord issue within their own legal framework. The transient nature of the population in the Gulf can exaggerate this problem, particularly when looking at the residential sector.

“Enviromena alongside some industry partners have started developing some standardised rooftop leases. We need to understand the underlying legality of who owns the roof and the underlying framework from both property law and a banking perspective, to getting everyone comfortable that a solar power system, even if a new tenant comes in, will continue to be valuable as a source of power saving,” he adds.

“A lot of the slowdowns we have felt in the past 12 months in terms of the rollout of rooftop solar have been a function of a lack of standardisation. It’s a nascent industry. So we’re working on a lot of the administrative and legal side of it today in order to hit the ground running,” he said.

Prices

With utility solar pricing in the region garnering plenty of attention, it could be easy to presume that the economic argument for rooftop solar is a no-brainer. The numbers are already favourable and there are changes that could be made to promote solar further, beyond the removal of fossil fuel subsidies.

“The new reality is that solar continues

to be unsubsidised,” says Khoreibi, “but subsidies have been lifted for conventional energy in terms of power generation so now we are comparing apples to apples. If you take a look at the average cost of baseload electricity production in the UAE, it is around 6-8 cents for conventional sources. Solar is at the lower end of that and it has gone as low as 2.42 cents. Rooftop solar could go to 5-6 cents and it will be way below retail cost.”

“So with net metering people can pay off their system in less than 10 years and in many, many cases less than seven. The underlying economics are quite compelling for the end user and also for an owner selling power to an end user,” he adds.

The Abu Dhabi utility-scale tender that solicited a 2.42 cents per kWh bid, includes a 60% premium for power generated in the summer months, when it is desperately needed to cope with peaks generated by air conditioning use.

These same peaks also drive up the cost of generation. Khoreibi points out that Saudi Arabia relies on diesel and fuel oil peaker plants in the summer months at a cost of nearly 20 cents per kWh.



“Legislation which allows individuals or businesses to offset their power production with solar would be a tremendous opportunity”

Net metering

Dubai has had the benefit of Europe’s experience, and mistakes, when it comes to encouraging the take-up of rooftop solar. It was no surprise to see it go

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Credit: Enviromena

down the net metering route. There are currently no grid charges as the utility also operates the network. This has been a bone of contention in the US. Jeremy Crane is CEO of distributed solar developer Yellow Door. The company is part of private equity investor Adenium Energy Capital which has already funded 57MW in Jordan and has another 10MW in construction.

“At this point it is really simple. There is no compensation to the utility company. You just dial it in. You produce something, you consume something and you net it out. The utility is somewhat on the hook for managing that but at the scale of production will be positive as it will help to meet peak demand,” says Crane.

He believes that the implementation of time of day billing, which is widely mooted, could be a boon to distributed solar. “I would assume time of day billing would be structured so that daytime prices would be higher and therefore if the price goes up and solar becomes more competitive. I think that would be very positive but who knows if that will happen next year or four years from now,” he says.

The Jordanian programme has been widely praised and has one distinct advantage over others in the region, the so-called wheeling provision.

“Wheeling is the ability to generate in one spot and consume it somewhere else, so to leverage someone else’s, usually the grid company’s, transmission lines to move power for you,” explains Crane. “The Jordanian legislation only allows you to generate for yourself. So you generate outside the city on some cheap open land, you pay the grid company to move the power. The fee structure is 1 cent per kWh then you forfeit 6% of the power as losses. Between those two items you can gener-

ate somewhere and use it somewhere else. This opens the opportunity for a collective with 100 homes taking a small share but so far, we’re seeing telcos, banks, hospitals and hotels,” says Crane, who believes Yellow Door to be the largest provider of third-party funded distributed solar in Jordan.

Enviromena’s Khoreibi says the lack of wheeling option in Dubai restricts the scope of the programme as there is only so much solar Dubai’s roofs can support. Rooftops are typically home to a number of building services, particularly air conditioning units. This, the dense nature of the city and the penchant for tall buildings reduce the potential for a building to house enough solar to substantially offset the demand it creates.

“Today what we see is a number of systems are limited due to a lack of available space,” says Khoreibi. “In the UAE we have an abundance of what you would call cheaper land in the desert, which has relatively close access to grid infrastructure. Given the opportunity, or if legislation takes place which allows for individuals or businesses to offset their power production utilising offsite systems, there would be a tremendous opportunity and we think it would create a massive influx of additional solar being installed on to the grid.”

Ubiquitous rooftop solar

Issues with rooftop space, the absence of a wheeling provision and standardisation of contracts are still creating obstacles in Dubai but these are being addressed. Between the efforts of the industry and the continuing position of governments in the region to reduce their independence on oil and reduce costly subsidies on fossil fuels, solar is well-placed.

Achieving some of the authorities’

Rooftop PV is starting to be deployed in parts of the Middle East such as Abu Dhabi

loftier ambitions could prove difficult.

“The goal of the government of Dubai, the very ambitious goal, is to have solar on 100% of rooftops by 2030. That is an incredibly ambitious goal and probably a very challenging one to achieve but even if we get half way there, or 20% of the way there, that is a huge market opportunity for solar companies. It is also a huge challenge to ensure some of the lessons from other markets are not repeated here. Truth be told, our expectation is that the delivered cost of electricity in the UAE won’t go lower than solar power production costs.”

Looking at the alternative options for generation – new nuclear, increased gas imports – it is difficult to see such a scenario emerging. On the off chance that it does, Khoreibi would like to see a mechanism in place to ensure that those tied to solar contracts at a price point above a notional rock bottom price are insulated from that risk.

“It’s a scenario I have difficulty explaining because the reality is that as we see a continued decline in the cost of solar, it is difficult to see the delivered cost of electricity to the consumer being cheaper than that in the next ten years.”

Developing a rooftop market from scratch when there is no appetite for feed-in tariffs and far lower electricity prices than other net metering-dominated markets like the US and others seems challenging. The fundamentals in the Middle East are in place: nicely matched demand and solar generation profiles, growing demand for power and rising prices. Early movers in the region developing workable contract structures, financing and laying the groundwork for O&M support could find themselves well placed to take advantage as more governments open the door to net metering. ■