

## Solar power's prospects rise in the east

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The Arab world may be rich in oil and gas by international standards but even its hydrocarbon resources are finite. In some states, such as Bahrain, Jordan, Dubai and Oman, energy shortfalls are either evident or are looming.

Moreover, the countries of the Gulf Co-operation Council, because of a history of energy subsidies and price controls, amount to one of the world's most energy-intensive regions.

So consideration of the renewable alternatives to oil and gas (and nuclear, which is also being contemplated) is not a matter for idle speculation.

Last year, the United Arab Emirates committed itself to taking 7 per cent of its energy needs from renewable sources by 2020. That equates to about 1.5GW of energy - no small commitment - says Sami Khoreibi of Enviromena Power Systems. This privately held company has built a 10MW solar plant that is contributing to powering Abu Dhabi's Masdar City, the carbon-neutral, "green" technology centre.

In most of the world, hydropower is a main source of alternative energy. In the absence of large rivers and being surrounded by mostly calmer seas, this is not a runner in most of the Middle East. And wind power in the GCC is uneconomic because winds are not strong enough, NCB Capital says in Thinking Beyond Oil, a recent report.

It is solar energy that constitutes the main resource. And here, as with oil and gas, the Middle East is amply blessed. NCB Capital cites a study by Franz Trieb of the German Aerospace Centre, which states that Arabia's large desert regions receive annually average solar energy equivalent to 1.5m barrels of oil per sq km.

"That is a very theoretical number at the end of the day," says Mr Khoreibi. "[But] I think we can see ourselves going towards that number."

Nor is there a shortage of space available for solar farms. Of the total land area in the GCC, 98.3 per cent is non-arable and is not farmed on a regular basis, NCB Capital says.

These areas receive average daily sunshine of about nine hours and have little rainfall and cloud cover. "The GCC region's climatic conditions are highly conducive for developing solar power on a large scale," NCB Capital says.

Jarmo Kotilaine, the NCB report's author, says Abu Dhabi's Masdar initiative provides the most likely way forward.

The economics of solar power generation mean that as things stand, the private sector is unlikely to be attracted to large-scale research and investment. Instead, a government response is needed and in the case of Masdar, it is forthcoming.

Mr Kotilaine believes water desalination is likely to provide the leading application for which the development of solar power on a large scale can be used. This is because demand for water is so huge and so out of step with industrial and demographic trends, and also because positioning a solar energy project next to a desalination plant provides synergies.

A question mark over solar power in the Middle East arises from desert sand clogging, and thereby limiting, the effectiveness of photo-voltaic panels. But Enviromena has been using dry brushes to clean the panels regularly.

"What we are finding is that with a very simple maintenance programme, that does not impact the performance nearly to the degree that a lot of sceptics assumed it would," says Mr Khoreibi, who adds that his plant is performing as planned.

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