

# Solar energy can meet the growing needs of Gulf states

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The Gulf is one of the world's largest consumers of energy and with ever increasing population and development work being carried out energy resources are coming under increased pressure. However, with the development of solar energy this problem can be mitigated to a large extent and can support the growth of the region, says a new report.

According to figures by AT Kearney in the report "Tapping the Sun: Solar Energy in the Middle East", power and fuel shortages are beginning to strain the region's economies. As demonstrated in Bahrain, the consumption of fossil fuels for domestic needs eats into potential revenues. Considering the opportunity costs of not selling electricity or oil on the market, or not producing petrochemicals or aluminum, the real cost of producing electricity is nearly seven times higher than the selling price of electricity, which is three cents per kilowatt.

In the UAE, the world's third largest per capita consumer of water, drinking water is derived from an expensive and energy intensive desalination process that relies heavily on gas-powered turbines. If the country were to pursue a renewable energy source to produce drinking water, it could better meet its projected demand – expected to increase another 44 per cent by 2025 – with limited pressure on electricity production, less impact on the environment and a return of revenues from the sale of carbon credits on the market.

These are staggering figures and development in the region puts further strain on the available sources of energy. "The government, worried about a shortage, has opened its power industry to foreign investors. In short, unless there is a rapid change in the way the GCC thinks about energy, the region's growth could be in serious jeopardy," the report cautions.

In this scenario, solar energy could be a great help as the region is blessed with sunshine for most of the year. "Turning the Middle East into an alternative energy leader may seem like an odd suggestion, considering the region houses more than half of the world's oil reserves. Yet with sunshine almost guaranteed for more than 300 days a year in most locations, the source for solar power is abundant. As the environmental and economic costs of using fossil fuels increase, the vast deserts of the Middle East are ripe for development," the report says.

According to Robert Ziegler, the author of the report, solar energy is more viable than any other conventional or non-conventional sources of energy in the region. "There is no clear answer to this. But let's take a look at other alternatives. Biomass and wind energy is not feasible here. On the other hand, in the Middle East's desert, with a reliably sunny climate, solar energy is the most natural alternative to fossil fuels. The viability also depends on when and what type of technology you are using. For example, not many could afford the first car. It was only when cars were industrialised that people could buy them. The same is the case with solar energy. This technology is being industrialised and costs are coming down," he told **Emirates Business**.

In light of rising fossil fuel prices on one hand and advances in solar technologies on the other, the price of solar energy is decreasing and becoming more attractive. And with abundant sun almost all year long, and a lot of desert space available, the Middle East could be as rich in solar energy tomorrow as it is in fossil fuels today.

In the long run, this region could export excess capacity in the winter, when the air-conditioning is turned off, or use the power for other energy intensive products, such as producing aluminum and petrochemical products, the author of the report maintains.

Solar energy can also help in addressing many environmental issues. According to the 2007 United Nations Development Programme's "The 21st Century Climate Challenge", Qatar, Kuwait and the

UAE have the three highest per capita rates of greenhouse gas emissions, roughly 15 tonnes higher than that of the United States.

So far, the majority of the Middle East's energy projects have focused on fossil fuels. There are new coal plants in Dubai and Oman and a "sour gas" project (using natural gas with high sulphur content) in Abu Dhabi. There is only one major solar energy project under construction, the sprawling Masdar Initiative in Abu Dhabi, which, at completion, will be a sustainable city powered completely by clean energy, mainly solar.

"We have very good indications from countries in the region as far as development of solar energy is concerned. Morocco and Abu Dhabi are already investing in it and other places like Dubai, Qatar, Ras Al Khaimah and Saudi have also spoken in its favour," Ziegler told this paper.

Despite the advances made, the report points out the need for further work to be done. These projects and a handful of others, however, barely scratch the surface of possibilities. International investors are eager to tap into the opportunity, primarily because among all forms of alternative energy, solar power is perhaps the most advanced in terms of technology and profitability. Compared to standard forms of electricity generation, such as natural gas and nuclear, solar power plants can be built faster. "Let's say a hundred megawatt solar plant costs around \$400 million (Dh1.4 billion). This is the initial investment and after that it is virtually free. There are some maintenance costs but the fuel is free. So, it's basically the upfront cost that is the most important," Ziegler explains.

"It is also faster to build solar plants than conventional ones. Getting a solar plant in place takes around one year to 18 months. On the other hand, for a nuclear power plant the time frame is between three and seven years," he adds.

According to the report, the framework for solar power expansion is already there, and the strategic and economic advantages are clear. The next step is to foster international collaboration and raise the necessary funds to implement a true solar power network.

Going forward, the report outlines three ways by which the Middle East could benefit from solar energy. In the first scenario, one country, city or project would take the lead as a central hub for innovation. The project could realise roughly 80 per cent of the potential economic benefits of solar energy and become an engine for similar projects throughout the region. The second scenario involves several governments supporting the move to renewable energy and encouraging their neighbours to join in a collaborative approach. "Driven by a network of countries, or an existing governmental organisation such as the GCC, and backed by strong private and public investment, we believe this scenario would be the most conducive to economic and environmental success."

In the third scenario, private and public investors would launch independent projects, all competing against the other in a "winner-take-all" battle. Some projects might overlap, while others would compete for partnerships with the leading foreign corporations. It would be survival of the fittest, with the resulting economic and environmental benefits much lower than desired. While something similar to the third scenario will bring the most short-term benefits to individual governments, the hope is that once the benefits of the second scenario are better understood, it will prevail, concludes the report.

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