

Emerging Renewable Energy Implementation in GCC

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Abstracts

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GCC region is shifting focus from its most prized asset, hydrocarbons. Oil and gas, though, still dominates the trade in and out of the GCC Region but it is looking to develop its renewable sources of energy as well. All the GCC countries have started to take the renewable energy way, contrary to their most important possession, non renewable (Hydrocarbons). The growing economy with growing population has affected a growth in the urbanization in these nations which has resulted in an increase in consumption of oil and gas. The GCC region is one region in the world that requires energy even for drinking water which is produced by desalination of sea water. Growing population means more demand of water requiring more energy. The increasing in house consumption of energy sources has the GCC region worried over the increasing share it has to divert domestically, leaving comparatively lesser for export.

The economy of the GCC region almost entirely depends on the export of oil and gas to the major markets in the world, Asia Pacific and Europe. With an increase in domestic consumption, as is being predicted, the quantity available for export will keep on reducing leading to a decrease in revenue, jolting the whole economy on the countries. The signs of decrease in the oil and gas exports have already begun to show reflecting in the decreased petro dollars from the commodities and the governments increasingly trying to diversify their industries. The nations have started realizing that they can't depend on oil and gas forever to produce electricity and water and have, thus, now started looking towards renewable sources of energy for power generation.

The financial capability of the GCC Region countries to support the advent of renewable energy in their power system is beyond a doubt. However, renewable energy initiatives still take a back seat in the energy agenda of these countries mainly because of it being the comparatively more expensive source of power than the subsidized fossil fuel power

generation and distribution. But the ample solar power availability and wind power in some regions are factors which when seen together with the need and the opportunities obtainable are big enough to attract attention of the industry majors.

Solar holds the key to renewable energy development in the GCC region as it is the single most abundant renewable source of energy available there. The solar potential of the GCC countries is supposed to be one of the highest in the world. GCC is a rainless region which experiences clear skies for 80% of the year, thus, continuous solar radiation for a major part of the year. The solar radiation that the GCC region receives is enough to encourage the photovoltaic and concentrating solar power industries in the region. This gives two options of generating electricity through the solar energy, ample amounts of which are available and can be exploited thoroughly. As the region is moving towards renewable energy, solar power is being deemed as the top renewable source which will be exploited for power production. The results of the solar radiation studies have encouraged more and more investment in the sector.

“Emerging Renewable Energy Implementation in GCC”: Report Highlights:

Emergence of Renewable Energy in GCC

Renewable Energy Resource Potential Analysis

Renewable Energy Development by Country

Renewable Energy Capacity Target by Country

Renewable Energy Policy Framework

Renewable Energy Sector Trends

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About

The GCC countries, due to their arid climatic conditions, enjoy a great deal of sunlight throughout the year. The solar potential of the GCC countries is supposed to be one of the highest in the world. GCC is a rainless region which experiences clear skies for xx % of the year, thus, continuous solar radiation for a major part of the year.

The following figure gives the solar radiation throughout the world. It clearly shows that the GCC region lies in the highest band of insolation like few other parts of the world experience. The total solar radiation is at 18 TWe and GCC forms a major part of this due to the expansive desert like topography. The solar radiation that the GCC region receives is enough to encourage the photovoltaic and concentrating solar power industries in the region. This gives two options of generating electricity through the solar energy, ample amounts of which are available and can be exploited thoroughly. As the region is moving towards renewable energy, solar power is being deemed as the top renewable source which will be exploited for power production. The results of the solar radiation studies have encouraged more and more investment in the sector.

The average solar radiation of the GCC countries is among the highest in the world. The region receives maximum solar energy from April to August before falling down. Even in the months preceding and succeeding these, the solar radiation is quite strong. In all, the GCC region receives considerable solar energy for eight months of a year, March through October. Kuwait's solar radiation is at the top peaking at above xx W hr/m². Kuwait, thus, has the largest potential for solar power generation and considering the size and power consumption of the country it will be a boon for the nation. Kuwait's domestic consumption and reliance on oil and gas for power consumption can significantly decrease with the development of solar energy in the country, given its huge solar potential. Its direct normal solar radiation is also the highest, making it highly potential for solar power generation.

Kuwait is followed by UAE which has the second highest solar radiation among the six countries. UAE gets an average of xx W hr/ m² of solar radiation and peaks out at a little above xx W hr/ m² during the summer month of May. UAE is a pioneer in solar energy development and is all set to capture the immense solar radiation to generate power from it. The Kingdom of Saudi Arabia ranks at third position in the list of solar radiation among the GCC countries. It peaks at near xx W hr/m² and for a larger part remains near xx to xx W hr/ m².

The potential of solar energy in Saudi Arabia is also quite encouraging and efforts are underway to realize this potential into electricity. Bahrain, Qatar and Oman receive comparatively less solar radiation than the other three countries but nonetheless enough to exploit it into solar power production. These three countries receive direct normal solar radiation equal to the others with the exception of Qatar.

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