



Changing face of energy security

With policy support, renewable energy could meet 80% of world's demand by mid-century

THE ENERGY security is witnessing a changing face with renewable energy expected to play an important role to address future energy requirements. Close to 80 per cent of the world's energy supply could be met by renewable by mid-century if backed by the right enabling public policies. With consistent climate and energy policy support, renewable energy sources can contribute substantially to human well-being by sustainably supplying energy and stabilising the climate. It is not the availability of the resource, but the public policies that will either expand or constrain renewable energy development over the coming decades. Developing countries have an important stake in this future — this is where most of the 1.4 billion people without access to electricity live yet also where some of the best conditions exist for renewable energy deployment.

Some of the major renewable technologies include bio-energy, solar energy, geothermal energy, hydropower and wind power. Bio-energy technologies can generate electricity, heat and fuels from a range of 'feedstocks'. Most current bio-energy systems, including liquid biofuels, result in greenhouse gas emissions reductions, concludes the summary for policymakers.

Bio-energy is mainly for traditional cooking and heating in developing countries and currently represents over 10 per cent of global energy supply direct solar energy, including photovoltaic's and concentrating solar power. Currently, direct solar contributes only a fraction of one per cent to total global energy supply. Geothermal energy, based on heat extraction from the earth's interior represents less than one per cent of total global energy supply. Hydropower, including run-of-river, in-stream or dam projects with reservoirs.

The installed capacity contributed 16 per cent of worldwide energy supply, making hydropower the largest renewable energy source in the electricity sector. The



An Emirati passes by a 10 megawatts photovoltaic plant at Masdar City in Abu Dhabi. The \$19 billion Masdar City project is already six years into production and has set a completion date of between 2020 and 2025. It will be the world's first zero-carbon and zero-waste city. — AP

close to two per cent of worldwide energy supply. The GCC countries have enough solar and wind potential to generate electricity that could meet all their needs without using the oil and gas wealth. If the GCC countries allocate 0.5 per cent of their 2.5 million square kilometres area for the generations of electricity from solar energy and assuming their equipment have a conversion rate of 20 per cent, they can generate enough energy for the year. As for wind energy, the average wind velocity in the Gulf is around seven metres per second at 80 metres high. This speed is very suitable to operate windmills economically. As a result, a windmill with a 10-metre diameter and 35 per cent efficiency rate can produce around 24KW of electricity in the region. The global warming issue and the expected depletion of the conventional energy source such as oil and gas is pushing the GCC countries to search for subsidiary energy sources. The new energy

16%
energy is being produced by hydropower

CO2 in the GCC countries is the highest in the world.

Saudi Aramco and the Japanese refining company Showa Shell are to develop a pilot solar power plant that will have a capacity of 10MW and is due to come on stream in 2011. The plant will have a capacity of 900 megawatts a year. Kuwait is planning a solar power project. The project will help produce one megawatt of power, which will be used to power lights and other utilities that do not include the air conditioning

system. The ambitious \$19 billion Masdar City is already six years into production and has been set a completion date of between 2020 and 2025. It will be the world's first zero-carbon and zero-waste city, developed by Abu Dhabi, the Mubadala Development Company and the British architectural firm Foster and Partners. Masdar and Spain's Sener plans to invest up to \$5 billion to construct concentrated solar power plants (CSP) in Spain, the United States and the Middle East. Bahrain was set to build two new 'hybrid' power plants for solar and wind energy at a cost of around \$8 million which will produce five megawatts of energy. Oman's first large-scale grid-connected solar power project with capacity between 100MW-200MW.

The GCC states would invest close to \$100 billion for infrastructure development and explore new ways to ensure uninterrupted supply of drinking water to its residents in the next five years. The region

doesn't have any natural source of fresh water supply, the member states have to bear huge costs in the desalination of water. The consumption of electricity at the global level has doubled since 1980 and at the prevailing rate there is every reason to believe the consumption would double from the present levels by 2030. The growth in consumption levels could be even higher in countries such as Qatar.

Qatar — the host nation of the 2022 FIFA World Cup — has proposed to develop and implement artificial cloud technology as a way of creating shade from the intense rays of the sun. This cloud development would be supported by collaboration between Qatar University and Qatar's Science and Technology Park (QSTP) the German solar-panel maker will own 29 per cent of Qatar Solar Technologies while the Qatar Foundation will control a 70 per cent stake, the Bonn-based company Total investment will be \$500 million.

In March 2011 Qatar holdings bought stakes 6.2 per cent interest in the Spanish mega-utility Iberdrola for €2 billion in April 2011 the US Department of Energy (DOE) and the Qatar Science and Technology Park (QSTP) have signed a MOU for clean energy technologies. Qatar-based Green Gulf will install solar panels in at least four schools in the country in an initiative labelled as 'Solar Schools'. Chevron launches Chevron's Centre for Sustainable Energy Efficiency (CSEE) at Qatar Science and Technology Park as a part of research on latest energy efficiency and solar technologies. The renewable energy will play a critical role in future energy requirements and GCC is working on many initiatives taking into consideration the changing face of energy security.

The writer is the Group CEO at Doha Bank. Views expressed by the author are his own and do not reflect the newspaper's policy.