

A study on 'Energy Sector' in Dubai

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UAE is a major oil producing country, Nonetheless, there are serious moves towards reduction of energy utilization leading to carbon emission and development of alternatives to carbon-based fuels for power and cooling.

Dubai is vigorously advancing the principles of green buildings/communities. Currently, a tower designed to be totally powered by solar and wind energies is planned. Also, construction of nuclear power plants is being considered.

Already in the market are solar-powered equipment manufactured by companies operating in Dubai. Meanwhile, with oil resources dwindling, Dubai's role in the oil market is shifting to becoming energy trading centre.

Facts and figures, current situation

Recent reports concerning energy consumption in the UAE have stated that 25% of Gulf water has been consumed, with 1/5 of it being used for electrical energy. The reports also stated that the UAE would need \$10bn to satisfy energy demand for the next ten years, due to developments and projects on land that are increasing by 12% each year.

The UAE has one of the highest levels of energy consumption per capita in the world. Forecasts indicate that demand for utilities (electricity and water) in Dubai will rise by 12% and 14% per annum until 2010, fuelled by high population growth and high per capita income. To limit the pressure on natural resources that the rising demand poses, the Dubai Electricity and Water Authority (DEWA) has implemented a slab system of tariff for electricity and water, charging higher rates to larger users.

The system is aimed at encouraging the population to keep a close eye on their electricity and water consumption, a move that is expected to pave the way for a more responsible utilisation of natural resources. In addition, DEWA is undertaking an information campaign bringing awareness among users of the need to conserve power and water and pointers on how this can be done.

Availability of relatively much cheaper fuel in the UAE has made unattractive the pursuit of the use of renewable sources of energy as alternative or complementary sources to meet the demands of the population and business and industries. Nonetheless, DEWA has invested in studies exploring the use of renewable sources of energy. Current projects on reducing carbon emission from energy use have been limited to energy-saving building and communities and production of solar-powered tools and equipment. However, recent plans include building of nuclear power plants.

Although there has been significant decline in world price of oil recently due to economic slowdown, demand for oil is expected to remain substantial and to increase when the world economy emerges out of this crisis. Oil remains to be the major source of revenue for the region for the years to come. Dubai is taking advantage of this and of its geographical position and facilities in making a bid to become the energy trading centre of the oil-rich region.

To meet its energy requirement, Dubai is focusing on downstream operations, refining oil and producing by-products. Other projects in which Dubai is involved include the Dolphin Gas Project, which would supply its current natural gas requirement.

The Eco-Friendly Buildings and Communities

The Emirates Green Building Council (EmiratesGBC) was formed as a non-profit organization in 2006, with the goal of advancing green building principles for protecting the environment and ensuring sustainability in the UAE. This commitment to reduce the Carbon emissions in the country, through the use of innovative renewable energy and green technologies, is part of the Kyoto Protocol to which the UAE is a signatory.

Solar and Wind Power

The renewable energy sector in Dubai is in its infancy. To-date the applications of renewable energy are generally small, limited to parking meters, traffic lights, off shore buoys, water heating in some hotels, monitoring systems (water flows), oil rigs and telecommunications. However, the number of companies engaged in renewable energy has been growing over recent years.

In the pipeline, however, are two structures meant to harness solar and wind power to supply the energy requirements. Scheduled for completion at the Dubai Silicon Oasis in late 2009, the German Business Park, designed by Claus Fischer and his team of German specialist engineers and consultants, is an ecologically 'green building,' the design taking advantage of the abundant sunlight to power its climate control systems, converting the sun's heat into cool air.

This system is expected to be so efficient that it would produce a net gain in energy, which could be used to power some of the building's other features. The evaporative cooling technology is a high-tech product including state-of-the-art solar absorber materials and accessories that are being economically integrated into the building's superstructure and distinctive façade.

Enclosed within its unique German styled environment, the structure will provide German companies with a full complement of office space for sale, a business class hotel with adjunct serviced apartments, a luxury retail & restaurant area and underground parking for 1,700 cars. A part of the complex will also be the home of the German Centre Dubai, an exclusive business environment of offices, services and networks, firstly established by Landesbank Baden-Württemberg (LBBW), now operating in six other important cities world-wide (Beijing, Shanghai, Singapore, Yokohama, Jakarta and Mexico-City). The mission of the German Centre Dubai is to provide comprehensive support and dedicated office space to small and medium-sized German companies seeking to establish effective bases of operation in Dubai.

Also to rise in Dubai is Burj Al Taqa (Dubai Energy Tower), a 60-storey tower that is designed to be self-sufficient in power. The design combines traditional building ventilation techniques popular in the Middle Eastern countries with the ability to generate 100% of its energy needs using wind and solar power. With Eckhard Gerber as lead architect, the tower is designed by Gerber Architekten International GmbH, with environmental engineers DS-Plan, structural engineers Bollinger & Grohmann Ingenieure and fire engineers Buro Happold.

Energy Trading

Taking advantage of its geographical position and its facilities, Dubai is making a bid to become the energy trading centre of the oil-rich region. On 1 June 2007, the Dubai Mercantile Exchange (DME) launched the first and only physically delivered Oman Crude Oil Futures Contract.

In early 2008 it announced its intention to launch two new financially settled contracts, the Brent Crude Oil Financial Contract and Oman Crude Oil Financial Contract. The DME's Brent Crude Oil Financial contract will be cash-settled against ICE's Brent Crude Futures Contracts, while its new Oman contract will be cash-settled against the DME's benchmark Oman Crude Oil Futures Contract.

In addition to being cleared at the NYMEX Clearinghouse, the new contracts will also be available for block trading (recently introduced by the DME) as well as Exchange for Physical (EFP) and Exchange for Swap (EFS) trades, using NYMEX's ClearPort Clearing.

In addition to DME, the Dubai Multi Commodities Centre (DMCC) plans to introduce liquefied natural gas (LNG) futures contract. It has entered into a joint venture with LNG Impel for the LNG storage facility project to provide 40-65 bn cu of storage space and provide services for LNG quality blending and LNG loans

Future prospects

In spite of all the programs for the utilisation of renewable sources of energy, it is still recognized that oil is the largest resource of the Middle East, and this will remain so even in the long-term. Taking advantage of Dubai's location and facilities, Dubai Petroelum Establishment (DPE) is partnering with Petrofac to establish the Dubai Petroleum Training Centre (DPTC) to meet the safety and technical training needs of the oil and gas industry in the Middle East, as well as, servicing the other industries within the energy sector

Short to medium term expectations for use of renewables in Dubai remain low. In fact, only one per cent of the electricity produced are expected to come from renewables during the period.. This percentage, however, is expected to grow rapidly in the long-term due to the potentially higher competitiveness of renewable energy usage. The Department of Renewable Energy predicts that up to half the UAE's required energy will come from renewables by 2050 as the UAE wishes to maintain its position as a net exporter of energy.

DEWA is looking into building a carbon emission-free hydrogen-fired power station. It signed an MoU with US-based Sino Global International, Canada's Skyline Services Group and China's Samena Power & Energy for the conduct of a feasibility study for the project. If found viable, the 2000-MW power station would be the world's largest hydrogen-fired power station. However, there are serious objections to the project as building costs would be higher than for a conventional power station of similar output.

In January 2008, the UAE has signed a deal with President Nicholas Sarkozy of France, involving the building of two 160-MW nuclear reactors over the next decade by French firm Areva, Total and Suez. In collaboration with GCC, the UAE has approached the International Atomic Energy Agency for supervision of any potential civil nuclear activity. August 2008 reports cite the talks between the UAE and the General Electric, the world's biggest manufacturer of power plant equipment, over a proposed nuclear energy programme

Consistent with the UAE's plan for building nuclear reactors to complement the existing

sources of energy in the country, the Dubai government is also considering nuclear power to meet its long-term needs. Nonetheless, Dubai is not abandoning gas-fired power stations, which supply most of its current electricity needs. The UAE power grid is expected to lay down the cornerstone for future cooperation for inter-emirates power exchange, with surplus in one emirate being channelled to other emirates.

Also in the pipeline is the GCC grid that will link the electricity network of all GCC states. Overseen by the GCC Interconnection Authority, the \$1.95 bn project will avoid the cost of constructing more power generation plants and would allow UAE to import as total of 900 MW. Another option Dubai is looking into is the electricity link with Iran.

Opportunities for enhancing bilateral cooperation within the energy sector

Germany is a world leader in harnessing renewable sources of energy for domestic and industrial uses. Within the Kyoto Protocol, Germany can invest on a joint project in Dubai which would increase the use of renewable sources of energy and lead to reduction of carbon dioxide emission. This joint project would upgrade Dubai's technology and would earn for Germany an emissions reduction certificate for cutting down emissions abroad.

More promisingly, on a more micro level, construction in Dubai is a big business. Construction and real estate companies are already seeing that it is economically rational to integrate 'green' initiatives into the planning and building stages of Dubai's urban development. Dubai is engaged in building EnPark (a retail, housing and commercial environmental hub) and a few other buildings are incorporating energy saving systems into their build.

For the time being the most promising area for collaborative work between Hamburg and Dubai seems to be in the plethora of opportunity for business and trade in the transfer of know-how, trade of specialised materials and, ultimately, the development of 'green' buildings and zones.

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