

## **Sell the oil – use renewable energy to generate electricity**

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In 2013, according to the UAE census bureau, total annual electricity consumption was 105 billion kWh<sup>1</sup>.

Let's do a basic, "back of the napkin" exercise.

Assuming a daily consumption of 288 million kWh and 5 hours per day of solar generation, a solar plant of 57,000 MWp can generate 100% of UAE's electricity consumption (space required is a piece of land about 10 km x 10 km). With storage technology now available at grid scale, hypothetically, a PV solar plant with storage, would cost around \$85 – 90 billion.

In comparison, the cost of the 4 x 1400 MW nuclear plant being built in the UAE is stated at around US\$ 32 billion. This plant will produce about 35 - 40% of the energy of the above mentioned solar plant. The US\$ 32 billion<sup>2</sup>, of course, excludes operational costs, the time taken to build the plant (loss in revenue), accident risk (low but exists) etc.

My calculations, though rudimentary, demonstrate the increasing economic attractiveness of renewable energy compared to all other forms of power generation. This economic attractiveness increases much more, once the distributed aspect of renewable energy is factored in. Siting close to consumption reduces infrastructure costs, transmission and distribution losses, and enables a short, manageable, budgeting cycle. The latter can be a significant improvement in financing efficiency and traditional capital intensive structures of electric utilities, which ultimately leads to cheaper electricity for consumers.

Regionally, the case for renewable power is getting stronger.

We know that demand for power is increasing with growing populations and development. We also know that the primary source of power generation is oil. And finally, we also know that electricity prices are subsidized.

So if the existing strategy of oil powered electricity generation continues, then the regions usage of the oil it produces for its own consumption will become unsustainable, that will lead to a decline in the quality of life for its citizens and a reduction of its influence in the global oil markets.

The case for renewable energy couldn't be stronger. A strategy based on renewable power generation will enable the region to sell more oil at market prices (up to 25% for some countries), reduce the subsidies on electricity steadily because its costs will reduce over time, and generate employment as it transitions to a renewable based economy.

Transitioning to renewables does not necessarily have to be through massive solar projects tendered by the governments.

Renewable projects can be implemented quickly across a wide range of applications. As a first phase, replacing diesel generators powering remote locations will save billions in diesel costs and generator maintenance and operational costs. Secondly, all new property developments (residential communities, industrial and business parks, hospitals, universities, entertainment parks etc.) can be powered by localized community based microgrids operating on renewable plus storage sources. This will save all the costs associated with increasing generation, transmission and distribution infrastructure. Thirdly, locations where there is high grid congestion can be resolved by deploying storage, which will also save all the generation, transmission and distribution costs. And concurrently, governments can tender large renewable projects for grid feed-in deployments.

Contrary to popular opinion that a “smart grid” has to be built to accept large penetrations of solar or wind power, with storage, the percentage of renewable energy that can be fed into the grid can reach 50% today. Furthermore, with storage cost and control technology improving, net metering and grid feed-in regimes are no longer necessary, so investing in smart grids is not required.

There are many initiatives launched by regional governments in energy efficiency. These are excellent initiatives and will also help in greatly reducing the investment required in electricity infrastructure.

The region has the natural resources to transition very quickly to renewable energy. It will save money, generate additional revenue from the sale of oil, create employment in a fast growing global industry, generate foreign direct investment and most importantly, significantly reduce greenhouse gases and contribute to improving the living conditions of our future generations.

- 1 <https://www.eia.gov/beta/international/analysis.cfm?iso=ARE>
- 2 <http://world-nuclear.org/information-library/country-profiles/countries-t-z/united-arab-emirates.aspx>