

Invited Guest Speech on

Potential of Renewable Energy Solutions for Pakistan

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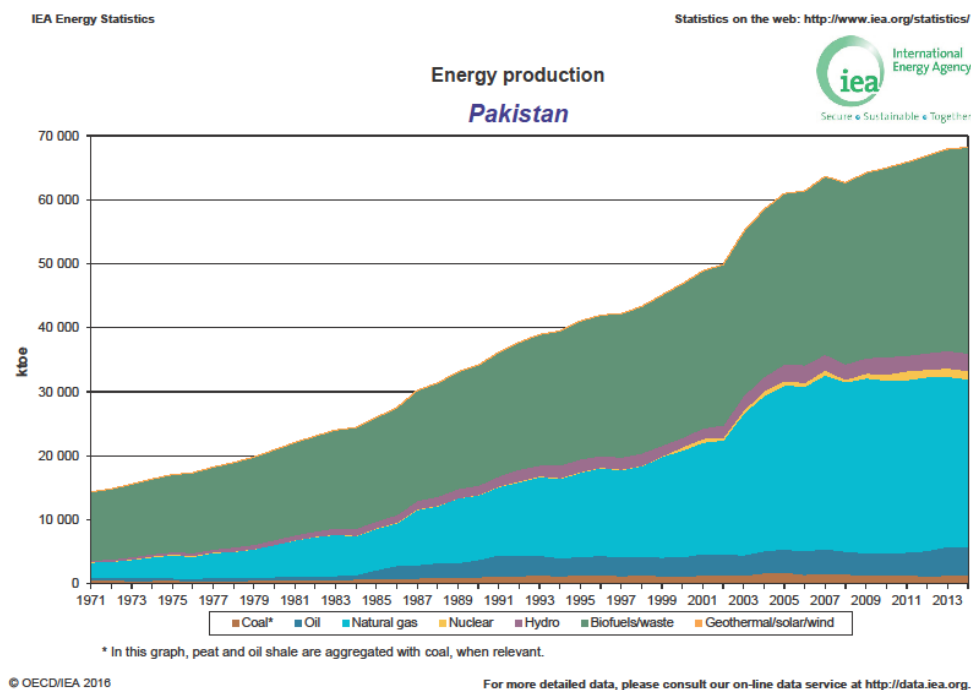
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Potentials of Renewable Energy in Pakistan

Most of the energy needs of Pakistani's are full filled by hydroelectricity; there has been lack of interest in the past in exploring and understanding the role of renewables in Pakistan. However, recently there are many initiatives public as well as private to produce electricity from renewables as the energy crises/power shortages continuing perhaps more in rural areas compared with urban cities. The following figure (IEA, PAKISTAN 2016) shows the production of energy in Pakistan and we can see how much we rely on oil and natural gas.



The following paragraph is a description of some initiatives, installations and the status which is repeated here from another presentation that will be delivered in Lahore Pakistan (IEEE ICECE 2017), original text is in IEA Pakistan 2016.

Pakistan on papers have lots of potential both in solar as well as wind and biomass, the average daily sun light is approximately 10 hours (09:30 hours to be more precise). Similarly, there are wind corridors in Sindh and Baluchistan, but it does not mean that Punjab & Khyber Pukhtoon Kha are behind, for example Swat has quite good wind conditions so as in Punjab. Government of Pakistan has taken some initiatives to facilitate and provide electricity for some big remote areas in Sindh and Baluchistan. Some of them are operational and others are under construction. In solar power, things are slightly better compared with wind energy, a number of solar power generation plants have been erected which are at various stages. Pakistan's first solar plant was commissioned in late 1981 but as I mentioned earlier things have improved a lot couple of solar power plants in different provinces for example at Khukhera (Lasbela), Ghakar (Attock), Malmari (Thatta) and Dittal Khan Leghari (Mirpurkhas). A huge solar park has been erected on 5000 acres in Cholistan under the name Quaid-e-Azam Solar Park. A solar power with 200 solar panels to support homes at Khuzdar in Baluchistan has been erected. Because of shortage in electricity, people just look for the bare minimum like air coming from a fan and may be one bulb. So may be keeping that thing in mind small plants to full fil such demands in rural areas could be possible and quick solution somewhat similar plant have been commissioned in Narian Khorian village near

Islamabad it is providing energy to 100 houses. Pakistan has tremendous potential in solid biomass as well from cotton, wheat stalks, rice husk, crop residues unfortunately; wheat stalk is used for cooking in rural areas, although it is also used for live stock. The potential of biomass is not being used for power-generation on a wider scale. It is much more advanced process for biomass in which gasification is being used in controlled conditions for better efficiency. As I mentioned there is big scope to produce energy from biomass a rough estimate is production of 1000 MW electricity from bagasse.

The following paragraphs provide information about various steps necessary for the development of renewable power generation, we will also compared these with Danish renewable power status. *Let us talk about the initiatives and efforts at the highest level; the following detail/ext are taken from IEA (Pakistan, 2016).* The Alternative Energy Development Board (AEDB) was created by the government of Pakistan in 2003.

The functions of the Board are to:

- 1. Develop national strategies, policies and plans for the utilization of alternative and renewable energy resources to achieve the targets approved by the Federal Government;*
- 2. To act as a forum for evaluating, monitoring and certifying alternative and renewable energy projects and products; to act as a coordinating agency for the commercial application of alternative and renewable technology;*
- 3. And to facilitate power generation through alternative and renewable energy resources.*
- 4. AEDB has provided a legal basis by Presidential Ordinances in 2005 and 2007. In 2010, the Parliament of Pakistan provided legislative foundations to AEDB through the AEDB Act.*

Also

- Alternative and Renewable Energy Policy, 2006 (Short term policy)*
- Alternative and Renewable Energy Policy, 2011 (Medium term policy)*
- Framework for Power Cogeneration 2013 Bagasse and Biomass*
- Policy Recommendations for Use of Biodiesel as an Alternative Fuel*
- Upfront Generation Tariff for Solar PV Power Plants*
- Scheme for Financing Renewable Projects - soft loans*
- Pakistan feed-in tariff for solar power*
- Pakistan net metering policy for solar PV and wind projects*
- Energy Efficiency Conservation Bill*

Pakistan is rich in resources but under developed and lack of interest at a higher level has brought us in this situation. Some other resources like; Geothermal, Tidal / wave; and Biofuels, Biodiesel and Ethanol have been ignored for the production of electricity. The renewable resources for production of green energy in Pakistan has significant potential. The presentation here will highlight this potential and some comparison between Denmark's potential and technology used to produce green electricity with very high number to full fills almost half of the electricity requirements will be presented.