

Energy Scenario in Pakistan

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ABSTRACT

The energy industry is among the vital industries for the development of global infrastructure. Therefore, regardless of the size of a country, the energy sector will always play a vital role for the development of each and every country of the world.

Consumption in the power system in Pakistan has grown steadily during the last decade by 4.3 per cent.

Generation capability of hydropower stations fluctuates with the seasonal variations in river flows, reservoir heads, and the closure of canals for maintenance. As a result of freezing snow, hydropower generation output drops by an average of 40 - 45 per cent of installed hydropower capacity during the period from mid-December to mid-February and then again during mid-May. The thermal generation capacity is not adequate to offset this deficit. Therefore, recently the emphasis has been laid to utilize the huge coal reservoirs of the country for power generation and Chinese help has been sought to exploit the huge coal reservoirs.

PROJECTED DEMAND AND SUPPLY -

The demand forecast for the 8th, 9th and 10th Five-Year Plans, developed by the Planning Division of the Government of Pakistan is based on the projected physical sector outputs, projected growth rates, and ever increasing expected number of consumers.

PRIVATE SECTOR PARTICIPATION -

Recognizing the inadequacy of public sector resources to meet the expansion in power generation, the Government of Pakistan pursued a restructuring and privatization program for the power sector. As a response to this invitation, the first project with the capacity of 1292MW was installed by Hub Power Company.

The 1992 approved a Strategic Plan for the power sector envisaged a gradual transformation of the power system from integrated, state owned utilities to a decentralized system with substantial private ownership and management thus reflecting a commercial and competitive operating environment.

The potential benefits of using renewable energy systems have also been realized. These resources fit well into a

modern environmentally sound and cost-competitive energy system.

On global scenario progress of the Kyoto Protocol is an important step towards securing environmentally clean energy industry, that could become helpful in providing a flexible long-term framework resulting liberalization of energy market in Pakistan. Environmental security for energy infrastructure can no longer be ignored and shall always remain crucial for future energy generation plans.

GEOOTHERMAL RESOURCES:

Generally, in the light of structural studies, Geologists agree that Pakistan is situated over the junctions of the tectonic plates of the sub-continents and is quite rich in geothermal resources. Three parts of Pakistan shown in the map i.e. Kashmir, NWFP and Balochistan are the potential zones where geothermal resources are located.

The country's North, South and South Western and coastal belts, where the igneous & metamorphic rocks are situated, are considered rich in hot reservoirs beneath ground. The nature's proof of such hot reservoirs is initiated through the presence of hot springs that are scattered in these regions.

Despite the efforts have been made to create awareness for exploring the geothermal resources of the country, so far, no official response seems to be in horizon by Governmental Sector, for the exploitation of these resources for power generation purpose. Therefore developing **MAGES** (Man-Made Geothermal Energy Systems) is expected to remain a dream for Geothermics of this country. A high government official responsible to develop Alternate Energy Resources had even passed the private remarks to the author of this paper that it may take 25 years to develop the Geothermal Energy in Pakistan.

As there is no development in the country to be presented in front of the Geothermal Congress 2005. This paper makes the call to the Pakistan government that:

- They should solve the problems of policy and perception on priority basis.
- They should identify technical issues as soon as possible to influence geothermal developments.

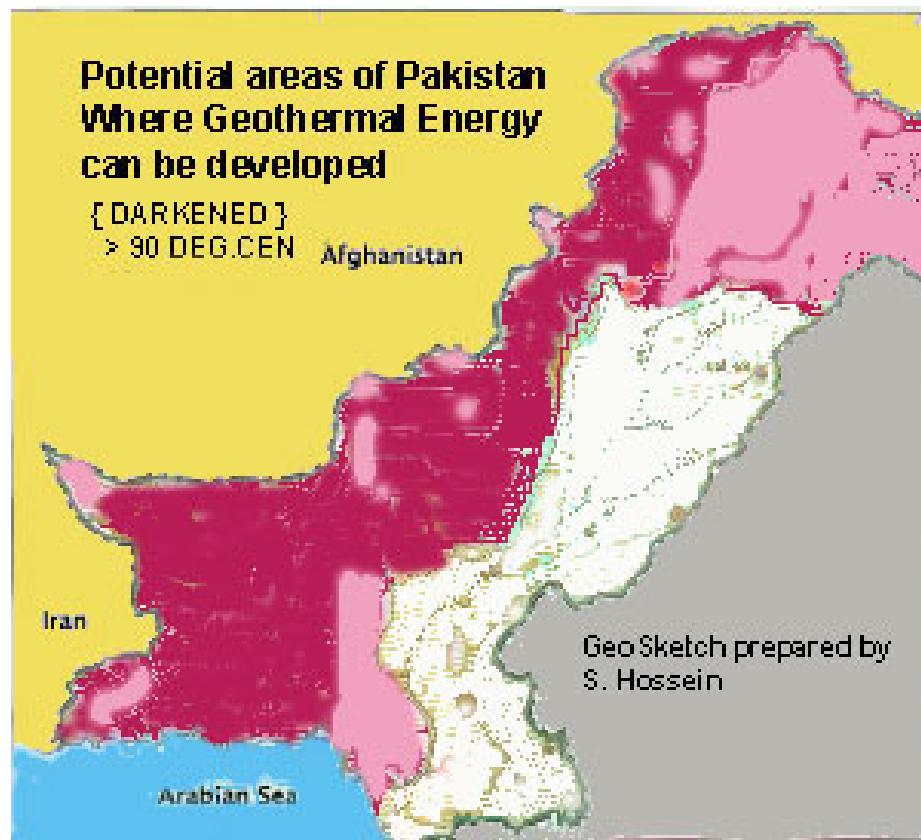


Figure 1

| GROWTH PATTERN OF INSTALLED CAPACITY IN PAKISTAN | | |
|--|---|---------------|
| Category | Power Station | Capacity (MW) |
| A-WAPDA | | |
| i) Hydropower: | Tarbela (1-14 Units) | 3,478 |
| | Mangla (1-10 Units) | 1,000 |
| | Warsak (1-6 Units) | 240 |
| | Malakand | 20 |
| | Dargai | 20 |
| | Rasul | 22 |
| | Small Hydropower Stations (5 Nos.) | 47 |
| | Hydropower Sub-Total | 4,827 |
| ii) Thermal/ Gas/ Combined-Cycle | GTPS Sarha | 85 |
| | SPS Faisalabad | 132 |
| | GTPS Faisalabad | 244 |
| | NGPS Multan | 260 |
| | TPS Muntan Cantt | 20 |
| | TPS Muzzafer Garh (1-6 Units) | 1,370 |
| | TPS Guddu (1-13 Units) | 1,655 |
| | TPS Sukkur | 50 |
| | GTPS Kotri | 174 |
| | TPS Jamshoro (1-4 Units) | 880 |
| | FBC Lakhra (1-3 Units) | 150 |
| | TPS Quetta | 94 |
| | TPS Pasni | 17 |
| | Thermal Sub-Total | 5,131 |
| iii) Thermal - Private (IPPs) | AES Lalpir | 362 |
| | AES Pak Gen | 365 |
| | HUBCO | 1,292 |
| | Kot Addu (KAPCO) | 1,466 |
| | Kohinoor Energy | 131 |
| | Southern Energy | 115 |
| | Japan Power | 120 |
| | Rousch Power | 412 |
| | Habibullah Coastal | 140 |
| | Uch Power (*) | 586 |
| | IPPs Sub-Total | 4,989 |
| iv) Nuclear Plant: | Chasma Power (CHASNUPP) | 300 |
| | Nuclear Sub-Power | 300 |
| | Total WAPDA's Installed Capacity (A) | 15,247 |
| B-KESC | | |
| i) Thermal/ Gas/ Combined-Cycle | Bin Qasim Thermal Station (Unit 1-5) | 1,260 |
| | Korangi Thermal Station | 250 |
| | SITE Gas Turbine | 100 |
| | Korangi Town Gas Turbine | 80 |
| | Thermal Sub-Total | 1,690 |
| ii) Thermal (Private) IPPs | Tapal Energy | 120 |
| | Gul Ahmed Energy | 125 |
| | IPPs Sub-Total | 245 |
| iii) Nuclear | KANUPP | 137 |
| | Nuclear Sub-Total | 137 |
| | <u>Total Installed Capacity of WAPDA & KESC (A+B)</u> | <u>17,319</u> |