

Private Power Generation—Opportunities and Challenges

N. A. ZUBERI

POWER INDUSTRY DYNAMICS

The concept of modern world is imperfect without electricity. The development of modern gadgets in past two decades has made human living as reflection of a science fiction movie. The fiction like living's axis in fact is electricity and without electricity every thing comes to a grinding halt. Though this picture is portrait of the developed world, yet everyone would agree that wherever electricity has reached, it has transformed everything into power reliant. Whether it is Pakistan or any third world country, the industry; the commerce; the banking system; the methods of teaching in educational institutions; hospitals; control systems of civil aviation and civic traffic systems; and the domestic living, everything revolves around electricity. Whenever there is any break in electricity supply, output of every segment of society drops down to its lowest ebb. Many segments such as process industry and hospitals require highly reliable power supply systems. Truly, electricity is no more a luxury available to rich only; it has now become a basic need.

However, scientists have not yet fully succeed in overcoming the challenges posed by the dynamics of electricity. First of all their failure to store electricity on commercial scale has made it necessary to keep generating electricity all the time. However, managing the generation quantum to meet the varying intra-day and inter-day power demand at places which are hundreds of miles apart require dedicated and sophisticated transmission and distribution infrastructure. The problem accentuated in countries like Pakistan where the generation capacity reduces in winter due to lower availability of its hydro power plants and lower availability of gas for thermal generation plants.

The transmission cum distribution infrastructure as well as installation cum operations of power generating plants is very capital intensive. Hence it is very difficult for the governments and / or power utilities to develop the generation capacity and the transmission cum distribution network all by itself.

PRESENT POWER SCENARIO

Although Pakistan is an energy rich country but unfortunately the rich energy sources i.e. vast hydel potential, Thar coal resources, etc. have not been successfully exploited and only about 70 percent population has access to electricity. Due to increase in consumers, non realistic augmentation and lesser maintenance, high losses and constraints have become integral part of the national grid. Unreliable service and irrational tariff are the two hallmarks of our system. Sluggish pace of power sector

N. A. Zuberi is Executive Director, Private Power and Infrastructure Board, Government of Pakistan, Islamabad.

reforms and undue wait for privatisation of different distribution companies have halted the improvement processes therein. The staff has lost its motivation and many of the distribution companies are on the verge of bankruptcy. The NTDC has taken over the role of power purchaser replacing the vertically integrated WAPDA. Financially and otherwise NTDC appears a dwarf in comparison to gigantic WAPDA.

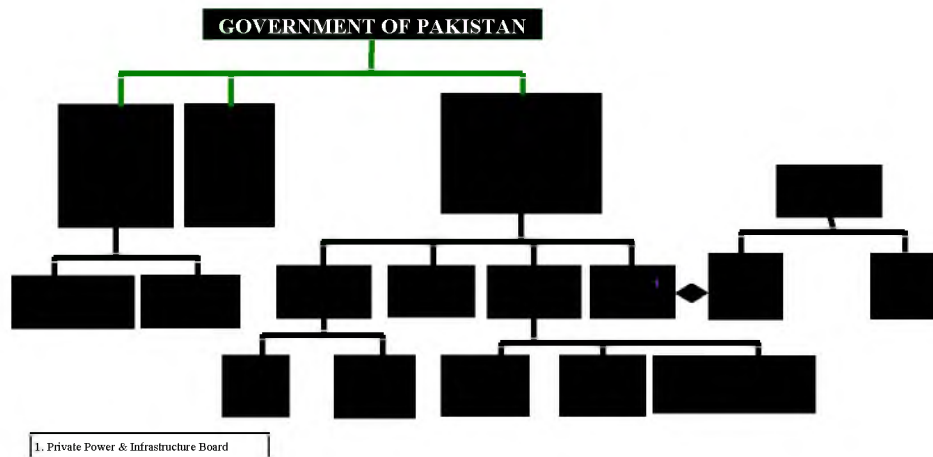
PLAYERS OF PAKISTAN'S POWER SECTOR

Before the advent of IPPs (commissioning started from 1997) power business in Pakistan used to rest in two vertically integrated public sector entities i.e. Pakistan Water and Power Development Authority ("WAPDA") and the Karachi Electricity Supply Corporation ("KESC"). WAPDA used to supply power to all of Pakistan, except the metropolitan city of Karachi and some of its surrounding areas which are still being supplied by KESC (though it has now been privatised). WAPDA was also supported by Atomic Energy Commission through two nuclear power plants in the country. Now WAPDA has been unbundled and today WAPDA is in entity in existence for looking after the public sector dams and power generated by those dams. The rest of the carved out portion of WAPDA has been converted into following corporatised entities;

- Four (4) thermal power Generation Companies (GENCOs);
- Nine (9) Distribution Companies (DISCOs); and
- One (1) National Transmission & Power Dispatch Company (NTDC);

These corporatised entities will ultimately be privatised (except NTDC) and at present are being managed by Government of Pakistan exercised through Pakistan Electric Power Company (PEPCO).

For facilitation of IPPs there exist two organisations namely (a) Private Power and Infrastructure Board (PIIB) (who has the honor of bringing all commissioned IPPs in the country), and (b) Alternate Energy Development Board (which will facilitate renewable energy based IPPs) Besides, a power regulator—National Electric Power Regulatory Authority (NEPRA) is also operating in the country since 1997. Pakistan's power sector is very complex and has a number of stakeholders as shown in the diagram below:



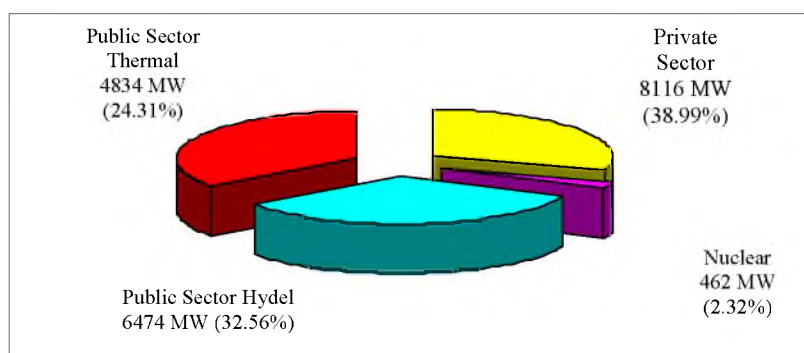
Besides, provinces/AJK also have some organisations working under their administrative control for developing power generating units. One such organisation is Thar Coal and Energy Board which has been established solely to help develop power generation based on vast Thar coal resources.

OVERVIEW OF PAKISTAN'S POWER SECTOR— GENERATION PATTERN

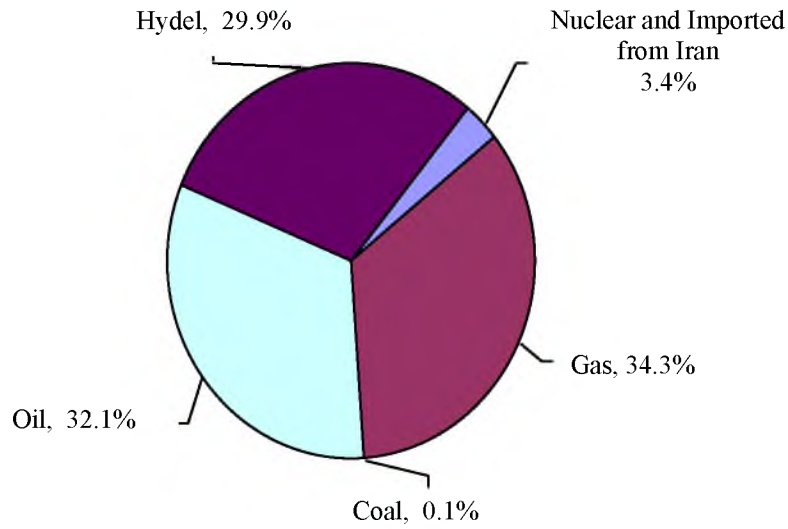
Pakistan's total installed power generation capacity is around 19886 MW. Out of which 8116 MW is from private sector and the rest is through hydel facilities of WAPDA, thermal generation units of GENCOs in PEPCO system and the two nuclear units.

	MW	%
Public Sector		
PEPCO	4,834	24
WAPDA Hydel	6,474	33
NUCLEAR	462	2
Sub Total	11,770	59
Private Sector		
IPPs	6,005	30
KESC	1,756	9
Rental and SPP	355	2
Sub Total	8,116	41
Grand Total	19,886	100

Dependable Capacity Summer	17,897 MW
Dependable Capacity Winter	13,215 MW



In year 2007-08, 95860 GWh of electricity was generated primarily through thermal fuels i.e. gas 34.3 percent and oil 32.1 percent. Hydel percentage in total fuel was 29.9 percent. Unfortunately coal's percentage remained very low at 0.1 percent.



Transmission System

In Pakistan hydropower potential is in the North and coal/gas resources in the south so high voltage transmission lines run from North to South there are about 4000 Km of 500 KV Transmission Line, in addition there are 220 KV and 132 KV transmission lines.



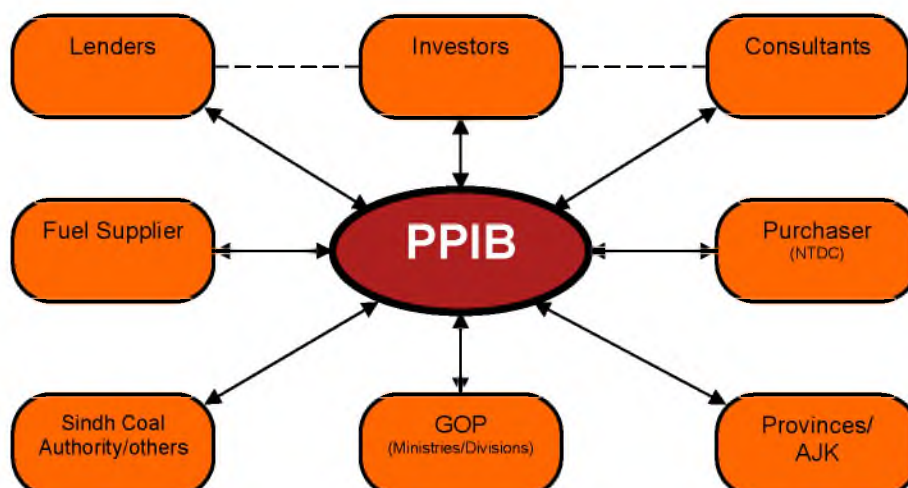
Challenges in Attracting Private Sector Investments in Power Generation

As earlier mentioned developing new power generation plants is very capital intensive. For simple gas based 5000 MW thermal based capacity, roughly US\$ 5 billion are required. As gas availability after year 2012 is very bleak (as per current projections), Pakistan will have to rely on hydel and Thar coal based power generation. The estimates for hydel is too high subject their location, topography and soil conditions. For Thar-coal-based thermal generation say 5000 MW we need to develop an open cast mine of 30 million ton / annum production capacity. Developing such huge mine *per se* is a big project requiring additional US\$ 4 to 5 billions. These estimates do not include the huge investments required to improve infrastructure (such as roads, communication channels etc.) in areas where hydel potential and Thar exist. Arranging such funds by public sector utilities (corporatised GENCOs) is difficult due to their poor financial health which is turning worse from bad due to less revenue recovery resulted from low purchasing power of consumers (besides other factors such as high losses etc.). Therefore instead of public sector projects reliance again has to be made on private sector. However, private sectors' investment is very difficult—if not impossible – for local investors. Hence there is need to attract foreign investors as well. The unavailability of trained human resources in sufficient numbers is also a barrier when investors start to think for investing in Pakistan's power generation sector.

Private Power and Infrastructure Board

In 1993, the then Government constituted an Energy Task Force to formulate comprehensive policy recommendations for the energy/power sector. In March 1994, the Government announced its Private Power Policy (the '1994 Policy'). The 1994 Policy was aimed at large-scale induction of the private sector in power development. In this policy framework, an internationally competitive package of incentives was devised to attract foreign and domestic entrepreneurs to invest in power generation projects. Procedures were simplified; steps were taken to eliminate delays in dealings between the Government and the investors; local currency investment requirements were reduced; and measures were adopted to create and encourage a domestic corporate debt security market.

As part of the Government's efforts to introduce major policy reforms and structural changes in the power development sector, the Private Power and Infrastructure Board (PPIB) was created in 1994. PPIB provides "One-Window" facility to investors in the private power sector by acting as a one stop organisation on behalf of all ministries, departments and agencies of the GOP in matters relating to the setting up of power projects in private sector. These matters include negotiation of Implementation Agreement (IA), Power Purchase Agreement (PPA), Fuel Supply Agreement (FSA), other related agreements, and liaison with the concerned local and international agencies for facilitating and expediting the progress of private sector projects. PPIB is a purpose built institution to cater for the specific needs of IPPs and has to interact with various stakeholders for timely development of various private power projects.



Pursuant to the 1994 Policy, PPIB issued thirty four (34) Letters of Support (LOS) totaling 8,430 MW of net capacity. Ultimately, with the active support of PPIB, nineteen (19) IPPs totaling 3,158 MW of net capacity achieved Financial Close. Out of these 19 projects, fourteen (14) reached to the successful commissioning. Besides these fourteen IPPs HUBCO and KAPCO are the other two private sector power generation plants in the country.

Punjab

Altern Energy Ltd., Attock	29	Jun 2001
Japan Power Generation, Lahore	126	Jan 2000
Kohinoor Energy Ltd., Lahore	131	Jun 1997
Southern Electric Co., Lahore	135	Jul 1999
Saba Power Company, Lahore	134	Dec 1999
AES Lalpir Ltd., Multan	362	Nov 1997
AES Pak Gen, Multan	365	Feb 1998
Fauji Kabirwala Co., Multan	157	Oct 1999
Rousch Power, Multan	450	Dec 1999
KAPCO, Muzaffargarh (privatised from public sector)	1638	Jun 1996

Balochistan

Hub Power Project, Hub	1292	Mar 1997
Uch Power Ltd., Uch	586	Oct 2000
Habibullah Coastal, Quetta	140	Sep 1999

Sindh

TNB Liberty Power Ltd., Dharki	235	Jun 2001
Tapal Energy Ltd., Karachi	135	Jun 1997
Gul Ahmed Energy Ltd., Karachi	136	Nov 1996

Given below is a summary of PPIB's multiple achievements made thus far:

- Successfully implemented the 1994 Power Policy resulting in foreign direct investment of about US\$ 4 billion within three years.
- Helped in overcoming load shedding in the country.
- Provided an effective and efficient interface between IPPs and GOP.
- Resolved various contentious IPP issues such as those pertaining to withholding tax, foreign exchange availability, sales tax, duties and taxes on spare parts, etc.
- Successfully negotiated, executed, and administered agreements with IPPs.
- PPIB being repository of IPP knowledge provides full support to Ministry of Water and Power on matters relating to power sector.
- Successfully handled arbitration and litigation cases with a number of companies non-seriously handling the projects.

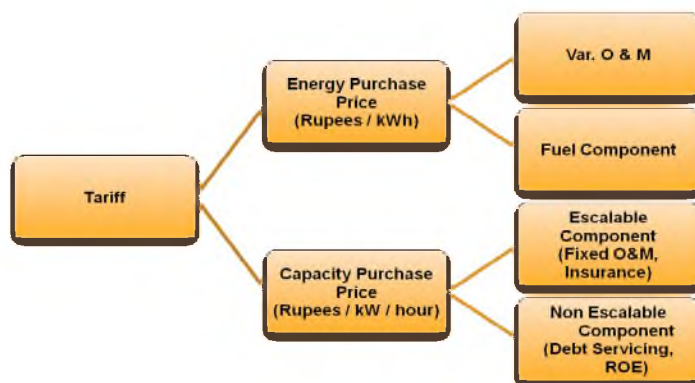
Power Generation Policy 2002

In late 2002 the Government of Pakistan launched a Power Generation Policy embodying an attractive set of incentives for the investors. The Policy provided a balanced regime spanning from concessionary duty of 5 percent on import of plant and equipment not locally made, to payment Guarantee in case of default by the power purchaser. Some other features of the Policy 2002 are given below:

- Exemption from corporate income tax, turn over tax and sales tax.
- Protection against Force Majeure, change in law, and change in duties and taxes
- Compensation in case of termination.
- Tariff adjustments for variation in currency exchange and fuel prices.
- Remitability of foreign exchange.
- Protection against hydrological Risk.

Tariff Structure for IPPs

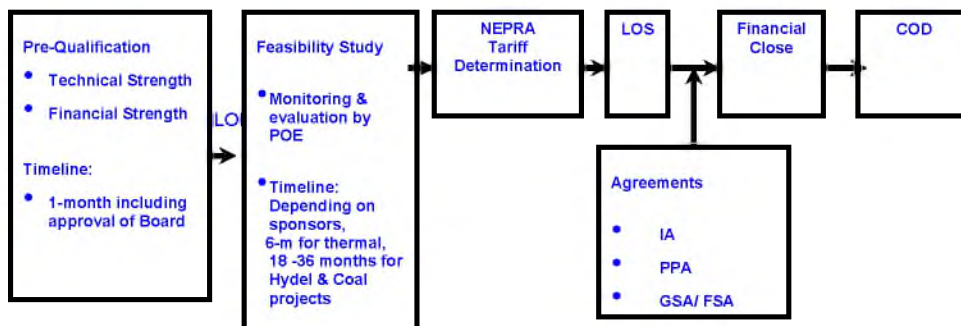
The Policy provided a well defined mechanism of two part tariff i.e. Energy Purchase Price (in Rs / kWh and linked with dispatch of the plant) and Capacity Purchase Price (in Rs. /kW/ hour linked with hourly availability of plant). NEPRA—the power regulator—also clarified some aspects of tariff during the initial tariff determinations under Policy 2002.



Process Pursuant to Policy 2002

Pursuant to Policy 2002 there are two distinct options for investors. One is the Unsolicited Proposal option and the other is Bidding Process. The initial response to Policy 2002 was that of the unsolicited one; which in fact was the manifestation of its success. The investors without being called for a specific project, kept approaching PPIB for investment in projects based on all sorts of fuels i.e. oil, gas, hydel, coal and bagasse. Recently PPIB has started relying only on projects based on bidding.

The step wise process for unsolicited projects include pre-qualification, issuance of letter of interest after receipt of performance guarantee @ US\$ 1000 / MW, conduct of feasibility study by sponsors and monitoring thereof by PPIB through a panel of experts, tariff determination by NEPRA, issuance of Letter of Support (LOS) after receipt of Performance Guarantee @ US\$5000 / MW, signing of agreements, financial close by the project company duly formed the sponsors, construction, and testing and certification by independent engineers for commissioning.



The bidding process on the other hand is different from the unsolicited up to the stage of LOS issuance. In solicited LOS issuance precedes the selection of successful bidder; for which the process starts by issuance of Request of Proposals, receipt and evaluation through a two envelope method and tariff confirmation by NEPRA.

PPIB's Efforts for Attracting Investors

PPIB disseminated Power Policy by aggressive marketing through seminars, workshops, personnel visits to identified prospective investors, arranging road shows abroad and last but not the least by publishing different reports such as Hydel Potential report and Coal brochures.

PPIB's Project Portfolio / Initiatives of PPIB

In response to its vigorous efforts investors responded very positively and PPIB has embarked upon new fast track initiatives besides the normal track unsolicited projects. PPIB's portfolio now consists of the following projects/initiatives:

Projects

- Unsolicited Projects (Oil / Gas).
- Fast Track Projects.

- Imported / Local Coal Projects.
- Hydro Power Projects.
- International Competitive Bidding for
 - IPPs.
 - Rentals (limited period say 3–5 years projects).

Initiatives

- Feasibility Studies for
 - Hydro Projects.
 - Isolated Gas Fields not connected with system of SNGPL/SSGC.

Response / Status

There is tremendous response from private sector. In all PPIB is processing following forty seven projects with cumulative capacity of 12426 MW. From these PPIB issued LOIs to thirty six for 10 183 MW cumulative capacity. Out of these thirty-six projects, fourteen projects (with cumulative capacity of 2,831 MW) have advanced to the stage of LOS. Twelve amongst them (cumulative capacity 2539 MW) have also achieved financial close and Attock project at Morgah Rawalpindi has achieved Commercial Operation on 17th March 2009.

Years	No. of Projects	Capacity (MW)
2009	12	2479
2010	7	1314
2011	7	1409
2012	4	450
2013	5	2813
Total	35	8465

CONCLUSION

As the power demand is continually growing and the huge quantum of investments required would continue to grow into mammoth—creating continuous investment opportunities for investors—PPIB will continue its efforts to arrange demanded power in the country by providing best facilitation to prospective investors through its team of highly trained and experienced professionals.