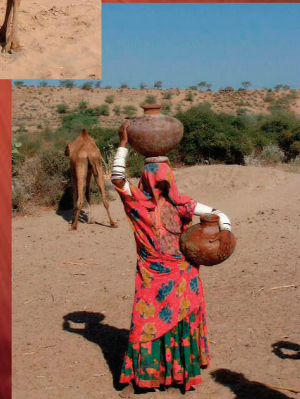
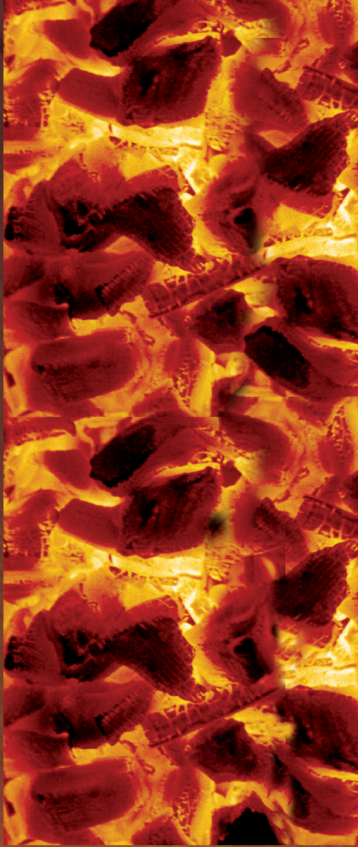


Pakistan's Thar Coal Power Generation Potential

July 2008



Private Power & Infrastructure Board

Foreword



Sindh province is blessed with abundant coal reserves. Over 90% of Pakistan's coal reserves are in Sindh. Exploitation of these coal resources for power generation to meet Pakistan's growing energy needs is a matter of national importance. Shaheed Mohtarma Benazir Bhutto made exploitation Pakistan's Coal resources for meeting power generation needs of the country a corner stone of PPP's manifesto for the 2008 elections. The present Federal and Provincial Governments of PPP are committed to realizing this vision.

Mohtarma Benzir Bhutto Shaheed in her second stint as Prime Minister of Pakistan invited the Independent Power Producers (IPPs) to facilitate private sector investment in power generation in the country, as she understood the growing needs of energy in the country.

The Thar lignite deposits were discovered in the early 1990's. The resource with its estimated total reserve of 175 billion tonnes is large by world standards, is reasonably close to the major population and load centres of Hyderabad and Karachi, and can be connected to the main Pakistan electricity and gas grids. Thar Coal reserves are spread over a single geographically contained area of 9000 sq. km.

Lignite coal similar to Thar Coal in quality and less calorific value and higher stripping ratios (i.e. overburden) has been exploited profitably in Germany, Poland, India, and other countries.

The Government has facilitated infrastructure development at Thar which includes: (i) ROAD

NETWORK: completed upto coalfield in Thar Nagarparkar Granite area and connecting all major towns of Thar including coal fields with Karachi (ii) ELECTRICITY: available upto coalfield, (iii) COMMUNICATION: optical fiber line available upto coalfield, provision of optical fiber network between Mithi Islamkot-Thario Halepota (Tharcoal Project site) is available, (iv) WATER SUPPLY: available upto coalfield, line from Mithi to Islamkot and to coal mine has been completed and water is available at Thario Halepota (Tharcoal Project site) (v) REVERSE OSMOSIS PLANTS: established near coalfield, (vi) AIRSTRIP: at design stage the location has been selected in between Bhope-jo-Tar and Sive-jo-Tar, (vii) ENVIRONMENT: EIA of coal mining and coal fired power generation to be initiated, (viii) RAILWAY LINE: to make Thar coalfield accessible for development and transportation, scheme for construction of railway line from Varvai-Islamkot Mithi Naukot Drigri-Mirpurkhas-Hyderabad has been approved.

In order to exploit Thar Coal resources on a fast track basis for power generation, in July 2008 the Federal Government of Pakistan and Provincial Government of Sindh have decided to work together; for this purpose, a Thar Coal & Energy Board (TCEB) has been established. Main purpose of TCEB is to function as one-stop organization and decision taking body to facilitate investment and development of Coal based power projects.

The development of the Thar resources would provide a certain degree of long-term energy security to Pakistan. The electricity generation potential of 100,000 MW based on estimated consumption of 536 million tones of coal per year, could be a significant fuel resource used for provision of coal base load capacity in the system supplementing gas based capacity. Further, use of Thar reserves for power generation would help in reducing excessive reliance on imported fuel thereby reducing the

pressure balance of payments of the country. The Thar lignite resource presents an opportunity for development into a sustainable fossil fuel reserve that has the capability of meeting a significant portion of the Pakistan's energy demand. It also presents an excellent opportunity for profitable investment for prospective investors, and GOP and GOS are committed facilitate prospective investors for expeditious development of

Thar Coal resources for meeting Pakistan's energy needs. Prospective investors are encouraged by GOP and GOS to come up with proposals focusing on maximum utilization of indigenous Coal resources.

Syed Qaim Ali Shah
Chief Minister
Government of Sindh

PAKISTAN

Coal Power Generation Potential

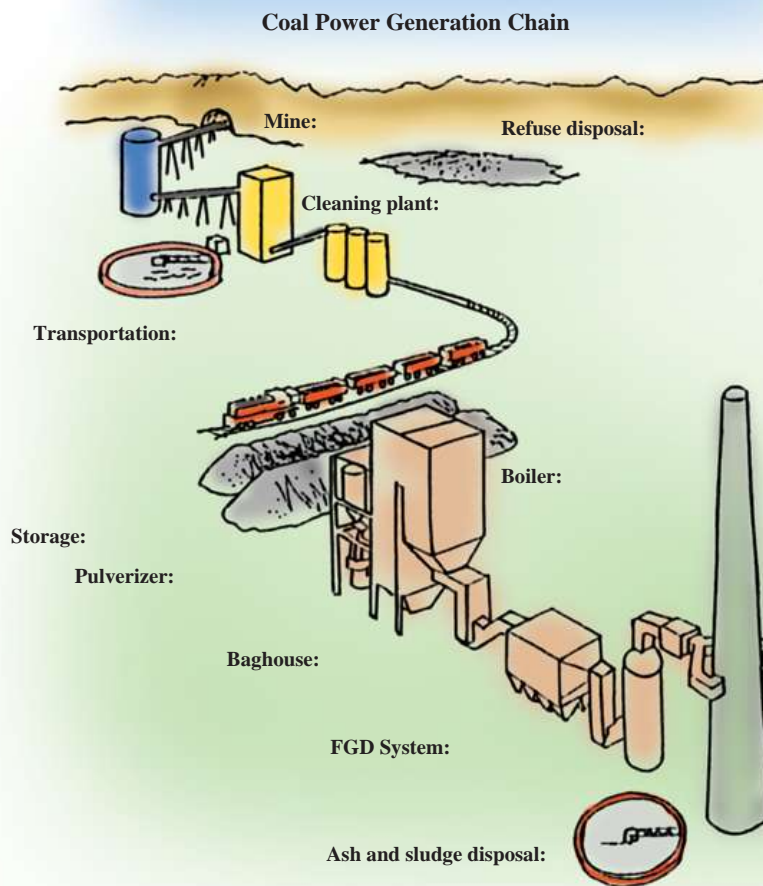


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ABBREVIATIONS

| | | | |
|--------|---|-----------------|--|
| AJK | Azad Jammu and Kashmir | LOS | Letter of Support |
| BDA | Balochistan Development Authority | MOU | Memorandum of Understanding |
| Btu/lb | British thermal unit per pound | MW | Mega Watt |
| BOO | Build, Own and Operate | NEPRA | National Electric Power Regulatory Authority |
| BOOT | Build, Own, Operate and Transfer | NO _x | Nitrogen Oxides |
| CFB | Circulating Fluidized Bed | NTDC | National Transmission and Despatch Company |
| CPP | Capacity Purchase Price | NWFP | North West Frontier Province |
| CSA | Coal Supply Agreement | P & D | Planning and Development |
| DIMD | Directorate of Industries & Mineral Development | PEPA | Pakistan Environmental Protection Agency |
| EPA | Environmental Protection Agency | PEPCO | Pakistan Electric Power Company |
| EPP | Energy Purchase Price | PG | Performance Guarantee |
| FBC | Fluidized Bed Combustion | POE | Panel of Experts |
| FC | Financial Closing | PPA | Power Purchase Agreement |
| FDI | Foreign Direct Investment | PPIB | Private Power and Infrastructure Board |
| FSA | Fuel Supply Agreement | ppm | Part per million |
| GENCOs | Generation Companies | RFP | Request for Proposal |
| GOP | Government of Pakistan | Rs | Pakistan Rupee |
| GSP | Geological Survey of Pakistan | SCA | Sindh Coal Authority |
| IA | Implementation Agreement | Sq. Km. | Square Kilometer |
| ICB | International Competitive Bidding | USAID | United States Agency for International Development |
| IM | Inspectorate of Mines | USGS | United States Geological Survey |
| IPP | Independent Power Producer | US\$ | United States Dollar |
| JICA | Japan International Cooperative Agency | WPPO | WAPDA Private Power Organization |
| kWh | Kilo Watt Hour | | |
| LOI | Letter of Interest | | |

INTRODUCTION



God has blessed Pakistan with immense coal resources of more than 185.5 billion tones (Thar alone 175 billion tones), and if half of these resources are exploited properly, it would be sufficient for generating 100,000 MW of electricity for 30 years. Energy contents of these resources are more than the energy contents of Saudi Arabia and Iran's joint oil resources.

In order to exploit Pakistan's Thar coal resources for power generation, enormous investment is required for the development of coal mines and related infrastructure to ensure a sustainable and reliable coal supply for power generation plants. The main obstacle in establishing power plants based on domestic coal is its availability and long term reliable supply to the plants.

In view of the limitations and financial constraints of the public sector, the Government of Pakistan (GOP) announced a private power policy titled "Policy for Power Generation Projects 2002" (the Power Policy 2002) which focuses on the use of indigenous resources, especially coal, for power generation. The Power Policy 2002 is designed to attract international investment and facilitate tapping of the domestic capital market to raise local financing inter alia, for the development of indigenous coal-based power plants in the country. The objective of the Government is to facilitate investors in developing modern coal mines and coal power plant projects in Pakistan.

This report provides information about the Thar Coal resources of Pakistan, coal power policy and requirements for the development of projects of coal mining and coal power plants in Pakistan, availing various incentives provided in the Power Policy 2002.

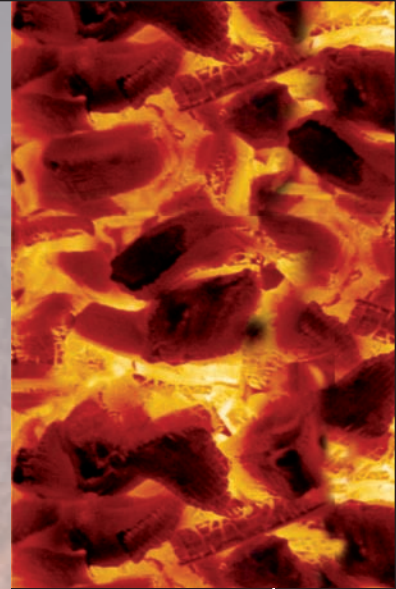
Pakistan today offers a secure, politically stable investment environment which is moving towards deregulation and open competitive market economy. Prospective investors are invited to come forward and invest in coal mine development and coal power projects in Pakistan. The Government of Pakistan assures them its fullest support in implementation of their projects.

Raja Pervez Ashraf
Federal Minister for Water & Power

PAKISTAN



Power Generation Potential Of Indigenous Coal Resources



The bulk of Pakistan's indigenous coal resources lie in Sindh. The largest reserve, 175 billion tonnes of lignite coal, is located in the Thar Desert of Sindh. Thar coal is yet to be developed for mining and power generation. Thar Coal presents an electricity generation potential of 100,000 MW, at estimated consumption of 536 million tonnes/year.

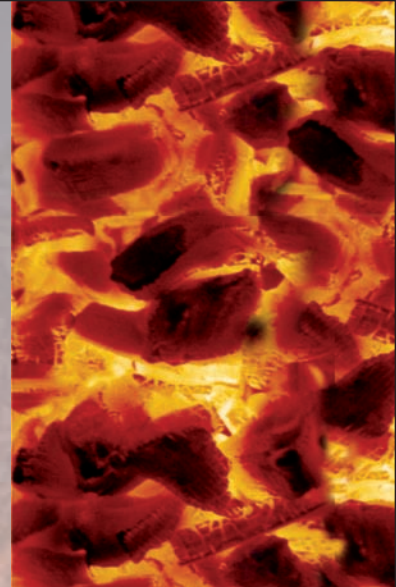
In addition to this, there are lignite coal reserves in Lakhra, Sonda, Indus East and other coalfields of Sindh. The Lakhra coal field is thoroughly investigated and developed. Several public and private mining companies are mining coal from Lakhra. It has been confirmed that Lakhra coal is suitable for power generation. A 150 MW FBC plant is currently being operated by WAPDA on Lakhra coal. The Sonda and other coal-fields of Sindh are yet to be investigated and developed.

In Balochistan and Punjab, coal has been continuously mined since before independence. Good quality Sub-bituminous coal is available in various coalfields of Balochistan and Punjab, which coalfields are considered suitable for power generation. Some small coal reserves are also located in NWFP and AJK, and are being mined on a small scale.

Why Invest In The Coal Power Generation Sector

- Pakistan is a coal rich country
- The total coal resource of Pakistan is more than 185 billion tonnes
- Coal deposits are located in all the Provinces of Pakistan and in AJK
- The coal reserves of Pakistan are considered suitable for power generation and comparable to other successfully exploited coals in the world
- Pakistan has a population of about 162 million, and only 60% people have access to electricity, resulting in a large and growing domestic power market
- To facilitate the entrepreneurs interested in developing coal based projects in province of Sindh, the Govt. of Sindh has completed the basic infra-structure of roads and water supply system.
- Government guarantees the performance of the power purchaser
- Government provides protection against political risks and change in law
- Concessionary duties and taxes regime announced by the GOP for the power sector
- One-Window facility provided at Federal level through PPIB, for power projects above 50 MW
- Efficient and cost-effective technical manpower available in coal mining and in the power sector
- Pakistan has successfully attracted four billion dollars from private sector in power

Coal Resources Of Pakistan



3.1 Thar Coal

The Thar coalfield is located in the south-eastern part of Sindh. The first indication of the presence of coal beneath the sands of the Thar Desert was reported while drilling water wells by the British Overseas Development Agency (ODA) in coordination with the Sindh Arid Zone Development Authority (SAZDA), in 1992. The Thar coalfield, with a resource potential of 175.5 million tonnes of coal, covers an area of 9000 sq. km. in the Tharparkar Desert. The coal-bearing area is covered by stable sand dunes. In order to establish the coal resources in the selected six blocks (map shown), a total of 239 holes were drilled at one kilometer spacing. Coal resources of the six blocks are estimated at 12,778 million tonnes, as in below Figure 1 and Thar Coal Field deposits are shown in Table 1.

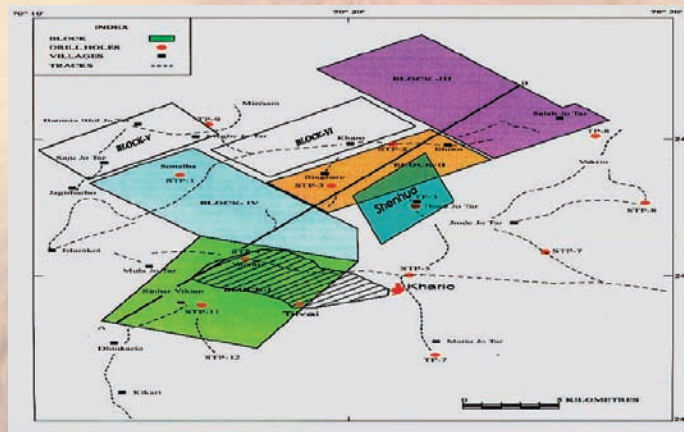


Figure 1: Thar Coal Field Blocks I-VI

| Blocks | Area (sq Km) | Drill holes | Seam Thickness (m) | Depth (m) | Deposits (Billion Tones) | | | |
|--------------|--------------|-------------|--------------------|-----------|--------------------------|--------------|--------------|---------------|
| | | | | | Measured | Indicated | Inferred | Total |
| BLOCK-I | 122.0 | 43 | 8-36 | 137-189 | 0.620 | 1.918 | 1.028 | 3.566 |
| BLOCK-II | 55.0 | 43 | 7.5-31 | 117-166 | 0.640 | 0.944 | — | 1.584 |
| BLOCK-III | 99.5 | 41 | 7.2-25 | 114-203 | 0.413 | 1.337 | 0.258 | 2.008 |
| BLOCK-IV | 82 | 42 | 10.7-33.45 | 117-166 | 0.684 | 1.711 | 0.076 | 2.471 |
| Block-V | 63.5 | 35 | 16.74-30.9 | 117-166 | 0.637 | 0.757 | — | 1.394 |
| Block-VI | 66.1 | 35 | 9-20.7 | 115 | 0.762 | 0.893 | — | 1.655 |
| TOTAL | 488.1 | 239 | | | 3.756 | 7.560 | 1.362 | 12.772 |

Source: Mines & Minerals Development Department, Government of Sindh

Table 1: Block-wise deposits of Thar Coal Fields.

| S.No. | Area | As Received Values (%) | | | | | Heating Values (Btu/lb) | | | | Volatile Matter (%) |
|-------|-----------|------------------------|------|--------------------|-----------------|--------------|-------------------------|--------|--------------------|---------------------------------------|---------------------|
| | | Moi- sture | Ash | Volatile Matter | Fixed Carbon | Sulp- hur | As Received | Dry | Dry Ash Free | Mineral Matter Moisture Free | Dry Ash Free |
| 1. | Block-I | 43.13 | 6.53 | 30.11 | 20.11 | 0.92 | 6,398 | 10,461 | 11,605 | 6,841 | 60.00 |
| 2. | Block-II | 48.89 | 5.21 | 26.55 | 19.37 | 1.05 | 5,780 | 11,353 | 12,613 | 6,106 | 57.72 |
| 3. | Block-III | 45.41 | 6.14 | 28.51 | 19.56 | 1.12 | 5,875 | 10,880 | 11,789 | 6,268 | 59.76 |
| 4. | Block-IV | 43.24 | 6.56 | 29.04 | 21.13 | 1.20 | 5,971 | 10,723 | 12,111 | 6,413 | 57.67 |
| 5. | Block-V | 36.82 | 8.92 | 38.24 | 28.22 | 1.20 | 4,748 | | | | |
| 6. | Block-VI | 38.32 | 7.62 | 36.22 | 20.13 | 1.52 | 10,514 | | | | |

Source: Mines & Minerals Development Department, Government of Sindh

Table 2: Weighted Average Chemical Analyses of the Thar Coal Individual Blocks I-VI.

Thar Coal Seam

- The thickest coal bed called the “Thar Coal Seam” is persistent over most of the area in the six blocks.
- It is present between 115 and 203 meters depth.
- The seam attains a maximum thickness of 36 meters.
- The cumulative thickness in the blocks varies between 7.2 to 36 meters.
- The thickness of over burden varies from 114 to 137 meters.

3.2 Thar Coal Field

Thar Coalfield is located between latitudes 24-15' N and 25° 45' N and longitudes 69° 45' E and 70 45 E in south eastern part of Sindh province in the Survey of Pakistan toposheet No. 40-L/2 & 5. The approach to the Thar area is by metal road via Hyderabad, Mirpurkhas and Naukot. It is about 380 km from Karachi by road.

Geological Survey of Pakistan (GSP), discovered huge deposits of coal in 1992 at Thar during the research program assisted by United States Geological Survey (USGS). Coalfield is spread over an area of more than 9100 square kilometers with dimensions of 140 km (north-south) 65 km (east-west) with estimated reserves of 175.506 billion tones. The location map for the Thar coal field is at Figure 2.

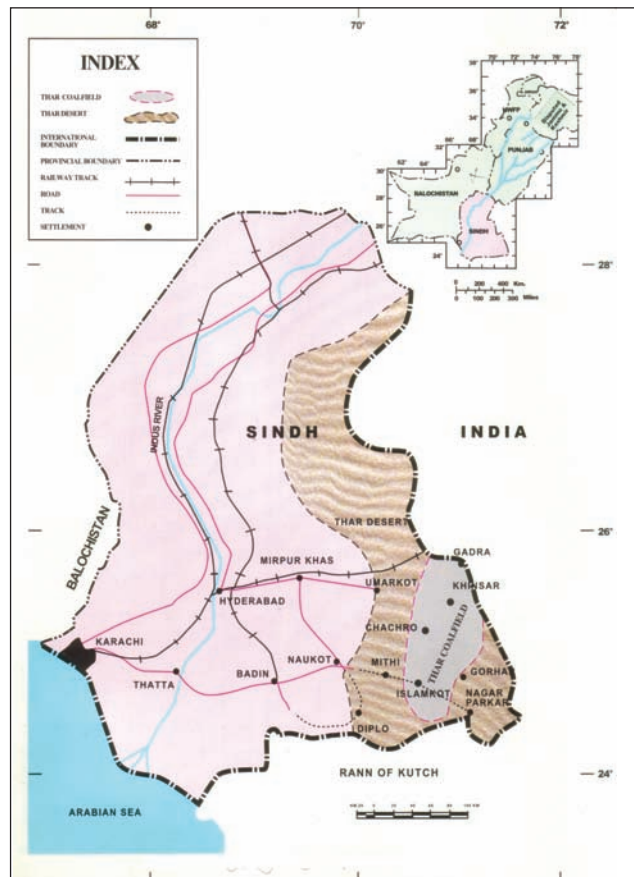


Figure 2: Location Map of Thar Coal Field, Sindh, Pakistan.

3.3 Thar Coal Field Geology

The studies conducted so far, show that the Thar coalfield rests directly on relatively shallow, rifted basement rocks of late Pre-Cambrian age. The area is completely covered by sand dunes. On the basis of drill hole data, four sub-surface lithostratigraphic units have been identified. The units are Dune Sand (Recent). Alluvial Deposits (Sub-Recent), Bara Formation (Paleocene) and Basement Complex (Pre-Cambrian).

The Dune Sand (50-90 metres thick) comprises sand, silt and clay.

Alluvial Deposits (11-127 metres thick) comprise sandstone, siltstone and claystone. The Bara Formation (50-125 metres thick) consists of claystone, shale, sandstone and coal, whereas, the Basement Complex comprises mainly of granitic rocks. The drilling data has indicated three aquifers (water-bearing zones) at an average depth of 50, 120 and more than 200 metres. The water quality is brackish to saline.

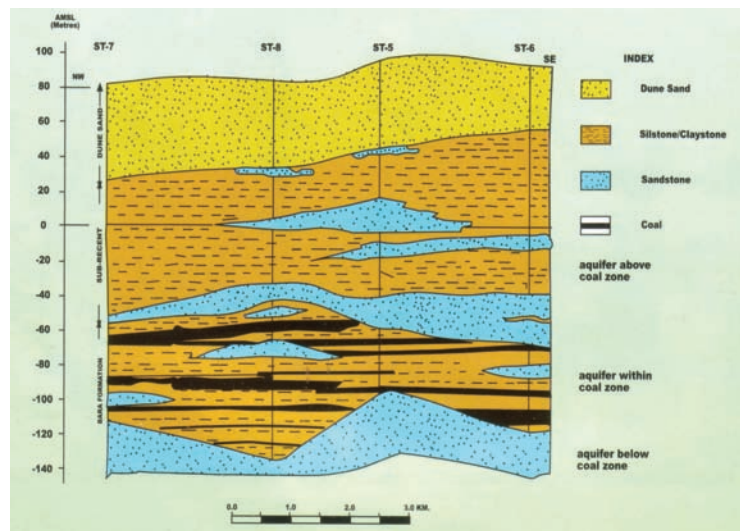


Figure 3: Cross-Section Showing Different Aquifers in Saleh Jo Tar, Block-III, Thar Coalfield Sindh, Pakistan

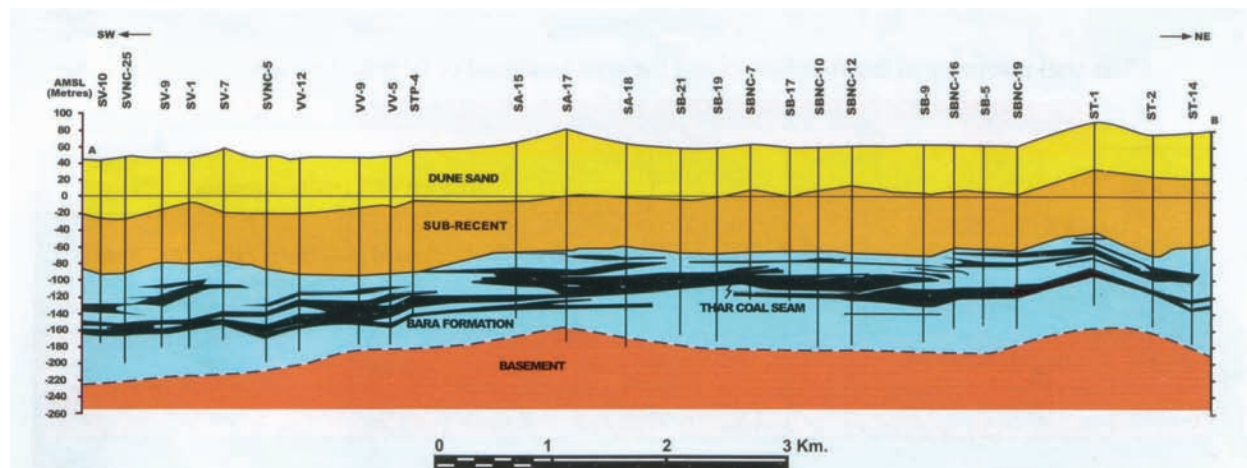


Figure 4: Generalised Corss-Section through blocks-I, IV, II and III Thar Coalfield, Sindh, Pakistan

The thickest coal bed called the “Thar Coal Seam” is persistent over most of the area in the six blocks. It is present between 114 and 203 metres depth. The seam attains a maximum thickness of 22.81 metres and has a thickness of around 20 metres in most of the area. The cumulative coal thickness in the blocks varies between 7.15 and 36.00 metres. The thickness of overburden varies from 114 to over 200 metres.

3.4 Thar Coal Field Underground Water

The underground water at Thar is saline. There are three water aquifers at an average depth of 50m, 120m and more than 200m. The first aquifer is above the coal zone and its thickness is upto 5 meters. Second aquifer lies within the coal zone at 120 meters depth and is of varying thickness upto 69 meters. The third aquifer is below the coal zone at 200 meters depth and is of varying thickness up to 47 meters. Table 3 shows the chemical analysis of underground water.

| Parameters | | Base Aquifer | | | Top Aquifer | | | | | | |
|------------------------|------------------------------------|--------------|------------|-------------|-------------|----------|----------|----------|----------|----------|--------------------|
| | | RE 51 well | RE 52 well | Khario well | Varvai 1 | Varvai 2 | Tilvai 1 | Tilvai 2 | Khario 3 | Khario 4 | Indus Water Naukot |
| pH value | | 7.21 | 7.20 | 7.51 | 8.50 | 8.30 | 8.32 | 8.17 | 8.13 | 8.22 | 8.06 |
| Conductivity | µS/cm | 10,930 | 10,860 | 14,750 | 6,180 | 6,840 | 15,700 | 21200 | 11,990 | 7,680 | 450 |
| Total Dissolved solids | T,DS | 7660 | 7500 | 10200 | 4220 | 4790 | 11114 | 14800 | 8390 | 4464 | 310 |
| Total hardness | CaCO ₃ | 860 | 820 | 1640 | 180.0 | 228 | 344 | 506 | 740 | 175 | 130 |
| Calcium | Ca ⁺⁺ mg/L | 152 | 174 | 206 | 8.0 | 14.00 | 40 | 60 | 88 | 10 | 26 |
| Magnesium | Mg ⁺⁺ mg/L | 138 | 112 | 350 | 32.0 | 68.00 | 75 | 104 | 151 | 40 | 16 |
| Sodium | Na ⁺ mg/L | 1620 | 1702 | 2182 | 1012 | 1440 | 2620 | 3520 | 1785 | 1284 | 26 |
| Pottassium | K ⁺ mg/L | 26 | 27 | 80 | 40 | 60 | 40 | 70 | 40 | 53 | 6 |
| Iron soluble | Fe ⁺⁺ mg/L | 0.5 | 0.06 | 0.16 | 0.1 | 0.05 | 0.04 | 0.04 | 0.02 | 0.07 | 0.14 |
| Manganese | Mn ⁺⁺ mg/L | 0.35 | Traces | 0.25 | 0.38 | Traces | 0.65 | 1.28 | 0.12 | Traces | 0.02 |
| Chloride | CL ⁻ mg/L | 2760 | 2680 | 3380 | 1580 | 2162 | 3380 | 4680 | 2620 | 2190 | 18 |
| Bicarbonates | HCO ₃ ⁻ mg/L | 240 | 250 | 348 | 456 | 480 | 580 | 768 | 216 | 444 | 120 |
| Nitrate | NO ₃ ⁻ mg/L | 44 | 54 | 178 | 52 | 52 | 20 | 35 | 155 | 58 | 4.00 |
| Sulphate | SO ₄ ²⁻ mg/L | 210 | 180 | 450 | 180 | 278 | 488 | 608 | 430 | 240 | 40 |

Table 3: Chemical analysis of underground water at Thar coal filed.

3.5 Thar Coal Field Road and Rail Network

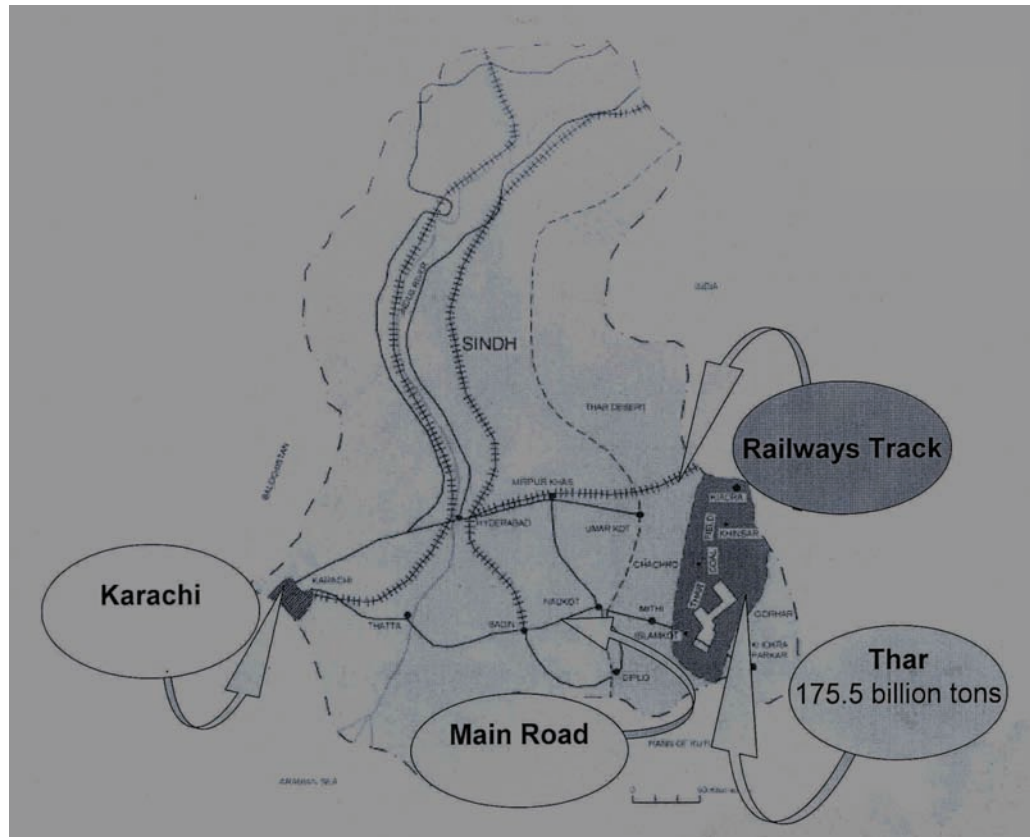


Figure 5: Road network connecting Thar Coal Fields.

3.6 Thar Lignite Similarity with other countries

Coal mining at Thar is not a big challenge. The stripping ratio of 6:1 is comparable to several other lignite coal fields in the world. The overburden of 150m at Thar is also not uncommon. In the world coal with 200m is being mined. The overburden comprises of loose material like sand, clay and 0.2 m thick sand stone layers. Removal of this type of overburden is achievable by excavators and no specialized machinery is required. The harsh climate in summers and looseness of soil do present a challenge in transportation and ability of machinery to operate in high temperature dusty environment.

Stripping Ratio, Heating Value & Generation Comparison for Similar Lignite in other countries

- **India: Neyvelli lignite 7:1**
Heating value = 5200 Btu/lb
Total generation = 2740 MW
- **Germany: Rhineland lignite 4.9:1 (m3:t)**
Heating value = 4,514 to 11054 Btu / lb
Total generation = 10,289 MW
- **Hungary: Lignite 9:1 (m3:t)**
Heating value = 3,035 Btu / lb
Total generation = 1852 MW
- **Thar: lignite 6:1**
6200 ~ 11,000 Btu/lb
Total generation = 0 MW

3.7 Thar Coal cost - effectiveness and various studies

There are benefits of having several projects in close proximity at Thar. Grid facilities could be shared by the different projects. The usage of ground water by several projects will lower the water table in the region making coal mining more easy and cost effective. The possibility

of using one mine service facility for all mines and power plants and common location/facilities for all power plants in the complex. The concentration toward one big open cast mine by Bucket Wheel Technology (BWE) will benefit all mining companies and cost of lignite will be reduced considerably an illustrative comparison is shown in Table 4 & 5:

| Description | Shovel & truck | BWE |
|---------------------------------------|-------------------|-------------------|
| Coal price per ton as per feasibility | US \$ 36.50 / ton | US\$ 42.5 / ton |
| Total Sales revenues (year 6 to 32) | US\$ 7300 million | US\$ 8697 million |
| Total expenditures (Year 6 to 32) | US\$ 4314 million | US\$ 4200 million |
| Total Profit (year 6 to 32) | US\$ 2986 million | US\$ 4497 million |
| Total Coal Production (Year 6 to 32) | 186750000 tons | 186750000 tons |
| Cost of Coal per ton | US \$ 23.1 / ton | US \$ 22.49 / ton |
| Actual Profit / ton | US \$ 15.99 / ton | US \$ 24.08 / ton |
| Profit / ton as per feasibility | US \$ 13.40 / ton | US \$ 20.01 /ton |

Table 4 : Illustrative cost comparison

| Compny | Annual Production (million tones) | Estimated realization (US \$) |
|---|--|---|
| John T. Boyd USA (1994) | 2.5 | 88 per ton |
| | 3.5 | 68.50 |
| | 7.0 | 40.60 |
| RWE Germany (2003) | 6 million tones with shovel/truck | 36.50 (specific value 6.90 US cents/kwh) |
| | With Bucket Wheel Excavator | 42.50 (specific value 7.18 US cents/kwh) |
| Shenhua Group China (2004) | 3.5 million tones | From 6.2 to 5.75 US cents levelized tariff for 25 years (govt. 5.34 cents) |
| In October 2006 on basis of 2004 study | Economical mine of 15 million tones annually | 6.5 US cents levelized tentative tariff for 25 years. |
| Hassan Associates Pvt. Ltd. | 6.0 million tones LOI for 1000 MW | US \$ 65/ton by using BWE (Sp. Value 11.1 cents/kwh) |
| NEPRA indicative upfront tariff 2008 | Thar Coal | 7.8055 US Cents/kwh without water usage charges and misc. charges |

Table 5: The Cost Effectiveness of Indigenous Coal is provided in the table below through the various Thar Coal studies conducted to date.

3.7.1 Extract from Shenhua Study

Extract from comprehensive statement on Thar Project prepared by Shenhua Group Corporation Ltd., China, Aug 2004.

| | | | |
|----|---------------------------------------|------------------------------------|-----------|
| | | | |
| 1. | Construction Scale | Coal Mine (million tons / year) | 3.5 |
| | | Power Plant (MW) | 600 |
| 2. | Total cost of construction | million (RMB) | 9,105.32 |
| | Cost of power plant | million (RMB) | 5,340.27 |
| | Cost of coal mine | million (RMB) | 3,765.5 |
| 3. | Unit investment | Coal mine (RMB/ton) | 1,075.73 |
| | | Power plant (RMB/kW) | 8,900.45 |
| 4. | Operating funds | Million (RMB) | 39.25 |
| 5. | Internal rate of return (own fund) | % | 12% |
| 6. | Present value (own fund) | RMB 1,000 | 4,285,760 |
| 7. | Investment recovery period (own fund) | Yrs. | 10.93 |
| 8. | Average grid electricity tariff | US cent/kWh | 5.41 |

Table 6: Various economic benefits indexes of this project.

Note: Exchange rate is one US Dollar for RMB 8.28 Yuan.

Note: 1) The project is an integration of coalmine and power plant.

3.7.2 Extract from RWE Study

| Equipment variants | Total Sales Revenues and Expenditures (year -6 to 32) in Million US\$ | |
|-------------------------|---|------------|
| | BWE - PP | S/T - PP |
| Sales Revenue | 14,077 | 13,528 |
| Interest | 707 | 615 |
| <u>Equity</u> | <u>512</u> | <u>440</u> |
| Total Revenue | 15,296 | 14,583 |
| Investment; Replacement | 1,796 | 1,969 |
| Operating Cost | 2,737 | 3,173 |
| Insurance Fees | 385 | 391 |
| <u>Royalties</u> | <u>215</u> | <u>215</u> |
| Operating Expenses | 3,337 | 3,779 |
| Loan Interest | 1,338 | 1,061 |
| Dividend | 1,755 | 1,457 |
| <u>Bank Fees</u> | <u>32</u> | <u>28</u> |
| Financing Cost | 3,125 | 2,546 |
| Total Expenditure | 8,258 | 8,294 |

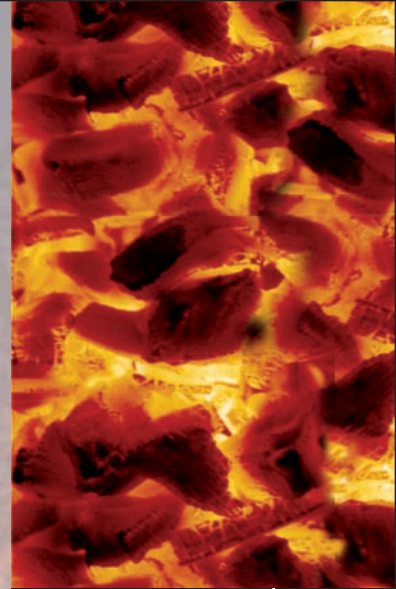
Table 7: Extract from comprehensive statement on Thar Project prepared by RWE Germany Dec 2004

Table: Total Revenues and Expenditures of the two integrated project variants including the cost of financing (Not Escalated, constant exchange rate).

The cash flow analysis carried out for the mine and power plant together results in a starting price for the first year of production which will be kept constant for the lifetime of the mine and power plant:

| Power-Price | 2004 Price Basis | |
|-------------|------------------|-------------|
| | US \$/ MWh | US Cent/kWh |
| BWE-PP | 71.80 | 7.18 |
| S/T-PP | 69.00 | 6.90 |

Role of Stake holders in the Coal Development & its Utilization In Coal Power Generation of Pakistan



According to the Constitution of Pakistan, “Minerals” constitute a “Provincial subject”. Coal, being a mineral, therefore, falls within the Provincial domain. On the other hand, being an energy resource, it is utilized for power generation. Ownership of coal, leasing of mining rights and receipt of royalties are a prerogative of Provincial Governments, however, in order to facilitate investment in large-scale coal mining and/or coal gasification at Thar and other areas of Sindh province, especially for use in power generation, the Government of Pakistan has constituted a federal level entity, the “Thar Coal & Energy Board” (TCEB). The function and responsibilities of TCEB and other government agencies that are engaged in exploration, development, production and utilization of coal in Pakistan, are briefly described here below.

4.1 Thar Coal & Energy Board (TCEB)

The Thar Coal & Energy Board has been constituted in July 2008. The purview and main functions of TCEB is elaborated below:

- TCEB shall act as a one-stop organization on behalf of all the Ministries, Departments and agencies of the Government of Pakistan (GOP) and those of the Government of Sindh (GOS) in the matters relating to development and leasing/subleasing at Thar (on behalf of the GOS), Mining, development of Clean Coal technologies, R&D activities, and other allied matters including but not limited to Gasification, Briquetting on Thar Coal;
- To attract investment for coal mining and/or coal gasification at Thar and other areas of Sindh province, to be used for power generation or other purposes, by creating a conducive environment through conducting bankable feasibility and other relevant studies, resolving issue of cooling and drinking water, improving infrastructure and law & order, and carrying out aggressive marketing;
- To negotiate, finalize and execute agreements;
- To assist investors in obtaining necessary consents;
- To liaise and collaborate with the Private Power and Infrastructure Board (PPIB) for further processing of Private sector Integrated Coal Mining/Coal Gasification power generation

projects after approval by the Thar Coal & Energy Board, i.e., issuance of Letter of Interest (LOI), negotiation/execution of agreements relating to power generation, etc;

- To assist GOP and the GOS in formulating. Policy guidelines for coal development and mining, respectively, and to implement their. approved policy guidelines;
- To take all necessary measures including but not limited to formulation of rules and regulations for early and effective implementation of the above.

Contact Address:

Managing Director,
Thar Coal & Energy Board,
50, Nazimuddin Road, F-7/4, Islamabad
Tel: (92-51) 9205421-2 Fax: (92-51) 9217735, 9215723

4.1.1 Status of other Agencies

Agencies, organizations, entities in whatever form or name including Thar Coal Mining Company and Sindh Coal Authority that were specifically created for Thar Development stand abolished. All other agencies which are not Thar specific but are also working on Thar Coal Development have had their mandate truncated to the extent of Thar Coal. They however, continue doing their other normal businesses.

4.2 Private Power & Infrastructure Board (PPIB)

PPIB was created in 1994 as part of the GOP's efforts to introduce major policy reforms, facilitate private investment and structural changes in development of the power sector. PPIB provides a 'one window' facility to investors in the private sector by functioning as a one-stop organization on behalf of all ministries, departments and agencies of the GOP in matters relating to the setting-up of power projects in the private sector. These matters include negotiation of Implementation Agreements (IAs), Power Purchase Agreements (PPAs), Fuel Supply

Agreements (FSAs), other related agreements, and liaison with the local and international agencies for facilitating and expediting the progress of private sector power projects. In addition, with the prior approval of the GOP, PPIB is also responsible for formulating, reviewing and updating policies and procedures relating to private sector investments in power generation and allied infrastructures.

PPIB facilitates implementation of projects above 50 MW capacity, whereas projects up to 50 MW are implemented through one-window facilities available at the provincial level. PPIB also handles various project-related time-bound activities as specified in the security package agreements. These activities are of analytical nature and relate mainly to obligations to sponsors. In addition, PPIB provides all possible support, e.g. technical, legal and financial inputs to Provincial Governments whenever required. PPIB is also assisting the Government of Sindh in its efforts to develop and utilize Sindh's coal resources for power generation.

For Projects above 50 MW PPIB will issue LOI, LOS, and sign implementation agreement with the sponsors.

Contact Address:

Managing Director,
PPIB, M/o Water and Power, Government of Pakistan
50, Nazimuddin Road, F-7/4, Islamabad
Tel: (92-51) 9205421-2 Fax: (92-51) 9217735, 9215723
Website: www.ppib.gov.pk, E-mail: ppib@ppib.gov.pk

4.3 WAPDA Private Power Organization (WPPO)

WPPO, previously established with WAPDA, is now placed within PEPCO/NTDC to negotiate and sign Power Purchase Agreements (PPAs), with sponsors of private power projects.

Contact Address:

General Manager, WAPDA Private Power Organization,
WAPDA House, Lahore
Tel: (92-42) 9202111 Fax: (92-42) 9202292

4.4 National Electric Power Regulatory Authority (NEPRA)

NEPRA will issue the Generation License to project companies and would determine the power tariff at which the power will be sold by IPP to Power Purchaser.

Contact Address:

Chairman, NEPRA, 2nd Floor, OPF Building, G-5/2, Islamabad

Tel: 9220902, 9207200, and 9207093 Fax: 9210215

E-mail: office@nepra.isb.sdnpk.org Website:

www.nepa.org

4.5 Ministry of Petroleum & Natural Resources

A mineral development wing has been established in the Ministry of Petroleum and Natural Resources. This organization is responsible for mineral and coal development in Pakistan. The Mineral Wing makes policies for the rapid development of minerals, including coal, in Pakistan. It collects data/information regarding Pakistan's coal/mineral resources, which it provides to prospective investors for development and utilization.

Contact Address:

Director General (Minerals), M/O Petroleum & Natural Resources, 21-E, Huma Plaza, Blue Area, Islamabad, Tel: 9202337

4.6 Pakistan Environmental Protection Agency (PEPA)

Pakistan Environmental Protection Agency (PEPA) has been established at the Federal level, to formulate environmental protection laws and policies for a pollution-free atmosphere in Pakistan. PEPA is also responsible for implementation of environmental protection laws in the country.

Contact Address:

Director General, Pakistan Environmental Protection Agency

44-E, Office Tower, 3rd & 4th Floor, Blue Area, Islamabad

Tel: 9217882, 9205234, Fax: 9206343, 9201074

4.7 Provincial Agencies

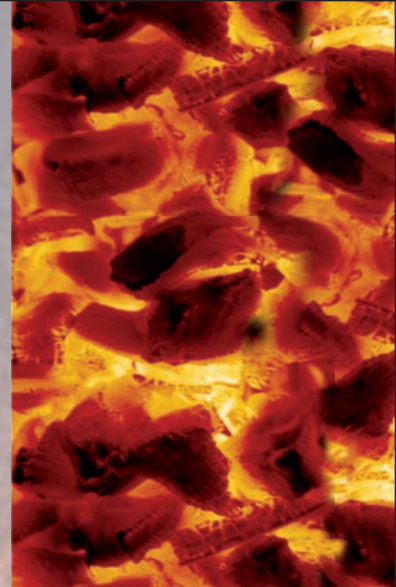
According to the Constitution of Pakistan, coal/minerals are a "Provincial subject". Therefore, development of coal is a responsibility of the Provinces. Hence, at Provincial level, various agencies are working for the development of coal and its efficient use in the industry. These agencies and their responsibilities are described here below:

4.8 Directorate of Industries and Mineral Development (DIMDs)

The Directorate of Industries and Mineral Development (DIMD) has been established in all of Pakistan's provinces and AJK, for the development of coal and minerals. The Provincial DIMDs are responsible for issuing prospecting license for the development of coal and minerals and granting mining leases for the production of coal and minerals in the Provinces.

In Sindh, a separate Directorate of Mineral Development has been created with a view to improve regulatory arrangements for exploration, development and mining of coal/minerals. A separate Mineral Development Ministry has also been created in Sindh, for effective coordination and formulation of policies. As and when required to attract foreign investment, the Mining Concession Rules would be amended without compromising on the constitutional limits and rights of the Province.

Salient Features and Incentives For Prospective Sponsors of Coal Power Generation Projects under Power Policy 2002



5.1 Salient Features of Power Policy 2002

- Main emphasis has been given on the development of power projects based on indigenous fuel resources including coal.
- Unsolicited coal proposals on raw-sites can only be considered if respective provincial governments have already signed an MOU with the prospective investors.
- On identification of a raw site by the provincial authorities, PPIB would advertise coal raw sites for seeking proposals from investors.
- PPIB may also carry out International Competitive Bidding (ICB).
- The GOP will guarantee the terms and conditions of executed agreements, i.e. IA, PPA, including payment terms, are maintained for the duration of the Agreements for projects.
- The coal power generating companies will be allowed to import plant, equipment and machinery not manufactured locally, at concessionary rates. The power companies will also be completely exempted from the payment of income tax and withholding tax on imports.

5.2 Incentives for Setting-up Indigenous Coal Based Power Plant

Fiscal Incentives

- Customs duty at the rate of 5% on the Import of plant and equipment not manufactured locally.
- No levy of sales tax on plant, machinery and equipment.
- Exemption from Income Tax including Turnover Rate Tax and Withholding Tax on import.
- Repatriation of equity along with dividends is allowed.
- Permission to set-up integrated coal-mining and power projects
- Maximum indigenization as per GOP policies is allowed
- Secured return on investment for dedicated coal resource developed for Power generation
- Investment made in integrated projects of coal- mining and coal power plant to be recovered from Tariff

- Exemption from payment of Zakat on the dividends for Non-Muslims and non-residents.

Financial Incentives

- Permission to issue corporate registered bonds
- Permission to issue shares at discounted rate
- Raising of local/foreign finance allowed as per applicable rules
- Permission to foreign banks to underwrite the issue of shares and bonds
- Non-residents are allowed to purchase securities issued by Pakistani companies
- Abolition of the 5% limit on investment of equity

Security

- The GOP will guarantee the contractual obligation of NTDC and Provincial/AJK Governments
- Protection against political risks
- Protection against changes in taxes and duties regime
- Protection against risk associated with convertibility/remittability of currency.

Other Features

- One-window support through PPIB for coal power projects above 50 MW
- One-window support through Private Power Cells and SCA to establish for coal power projects below 50 MW in the Provinces / AJK
- Long-term agreements, such as IA, PPA and FSA/CSA, are available on BOOT and BOO models
- BOOT projects are allowed to be transferred to the Government of Pakistan after concession period
- Solicited proposals with feasibility study processed through ICB
- Unsolicited proposals without feasibility study for raw sites invited through advertisement

5.3 Additional Concessions/Amendments in Power Policy 2002

Indexation of Foreign O&M Cost (variable and fixed) with US CPI

- The foreign component of O&M Cost (variable and fixed) would be indexed with US CPI, effective from the month of application by the IPP to NEPRA for tariff determination, if it is demonstrated by the IPP to NEPRA that the inflation indexation is not already covered in the O&M contract.

EPC Cost Escalation

- IPPs are expected to apply for tariff to NEPRA on the basis of reasonable assurance of 'fixed price EPC contract', while taking into account all timelines and milestones up to the Financial Closing. However, any legitimate cost escalation between the date of application to NEPRA (for tariff determination) and the Financial Closing, would be accounted for in the NEPRA-determined tariff by taking into consideration the period in which prices of EPC contract are fixed, and the timelines and milestones up to the Financial Closing (which are known to both the IPP & NEPRA at that time). These timelines and milestones would be recorded in the tariff determination. If any delay in meeting the milestones can be legitimately attributed to the Government, then justifiable escalation in tariff would be allowed by NEPRA.

GOP Guarantee for up to 50 MW Projects

- The Guarantee being extended to projects above 50 MW will also be provided to projects up to 50 MW provided that the Power Purchaser is a Federal entity and the tariff is approved by the National Electric Power Regulatory Authority (NEPRA).

5.4 New Amendments in Power Policy 2002

Currency Exchange Rate:

1. To enable maximum competition from Suppliers and Contractors, the IPPs should not be exposed to impact of exchange rate variation between US dollars, Euros, Pounds Sterling and Japanese Yen upto Commercial Operation Date (COD). Consequences of this variation, whether resulting in increase or decrease in tariff, should be reflected in final tariff to be fixed at COD. EPC contracts denominated in these four currencies besides rupees should thus be accepted by NEPRA.
2. At the COD, the capital cost be fixed in US dollars based on actual currencies of EPC Contract accepted by NEPRA at the time of tariff determination, sources of financing, payments and actual exchange rates against rupee for the four currencies (US dollars, Euro, Pound Sterling and Japanese Yen) on the relevant dates. Towards this end IPPs should establish the relevant cost details to NEPRA with actual documents and proofs regarding EPC contract, sourcing of equipment and finances.
3. To broaden the access for debt financing, debt can be obtained by IPP in US Dollar, Pound Sterling, Euro and Yen. This should receive the same treatment as currently available for US dollar denominated debt.
4. As O&M costs are incurred subsequent to COD, O&M Cost Adjustment should continue to be based on exchange rate variations between Pak Rupee and US dollars.
5. NEPRA should stop the practice of accepting EPC costs on the basis of quotations etc. Instead, they should base their determination on firm (non-reopenable) competitive price duly initialed/signed by the IPP/EPC contractors.

6. The Performance Guarantees to PPIB/GOP and Letter of Credits in favour of Power Purchaser may be accepted in Euro, Pound Sterling and Yen in addition to US\$.

Return on Equity:

The Return on Equity should be allowed in one currency i.e. US dollars. All Return on Equity (for foreign exchange and rupee based equity) be converted to equivalent US dollars amount at reference exchange rate (as noted in NEPRA's determination) and adjusted for variations in US\$/Rs rates as presently being done for return on foreign component of equity.

Processing of Integrated Coal Mining Cum Power Generation Project

6.1 Procedures for coal mining portion

Thar Coal & Energy Board (TCEB) will process all coal related expressions of interest, bidding or other necessary procedures. It will have the mandate to act as a one-stop organization on behalf of all the Ministries, Departments and agencies of the Government of Pakistan (GOP) and those of the Government of Sindh (GOS) in the matters relating to development and leasing/subleasing at Thar (on behalf of the GOS), Mining, development of Clean Coal technologies, R&D activities, and other allied matters including but not limited to Gasification, Briquetting on Thar Coal. Responsibilities of TCEB include, inter alia, attract investment for coal mining and/or gasification by creating conducive environment through conduction bankable feasibility studies, resolving issue of cooling and drinking water; negotiate, finalize and execute agreements; and liaise and collaborate with PPIB for further processing of integrated coal mining/gasification power generation projects.

6.2 Processing at PPIB¹ (under Policy for Power Generation Projects 2002)

- Sponsors to approach PPIB with their proposal
- PPIB Board to examine the proposal of sponsors
- If approved by PPIB Board, Registration with PPIB after payment of USD 100/- (US Dollars one hundred only) in favor of PPIB.
- Purchase of Pre-Qualification Document (PQD) from PPIB
- Submission of Statement of Qualification (SOQ) to PPIB
- Subject to SOQ approval by PPIB Board, request by PPIB to the project company to furnish Performance Guarantee (PG) at USD 1,000/MW (US Dollars one thousand per MW)
- Subject to issuance of Letter of Interest (LOI) by PPIB, the project company shall conduct a bankable Feasibility Study to ascertain economic, financial and technical viability of the power project. The Feasibility Study is usually monitored by a Panel of Experts (POE) appointed by PPIB.
- Subsequent to approval of Feasibility Study by the POE/PPIB, the sponsors are advised by PPIB to approach National Electric Power Regulatory Authority (NEPRA) for their tariff determination.

1. These are the current processes prescribed in Policy 2002 which will soon be reviewed in order to harmonize TCEB and PPIB working for integrated projects, and to remove ambiguities/overlapping procedures.

- Upon successful determination of tariff by NEPRA, and submission of Performance Guarantee (PG) at USD 5,000/MW (US Dollars five thousand per MW) and a non-refundable processing fee of USD 100,000 by the project company in favor of PPIB; PPIB will a Letter of Support (LOS) to the project company for starting construction activities, financial closure, signing of project agreements, and subsequently thereafter the commencement of Commercial Operations

6.3 Requests for Proposal (RFP)²

The Request for Proposal (RFP) for an indigenous coal-fired project with capacity above 50 MW will be for an integrated coal mining and/or power generation plant complex. A typical RFP is likely to specify the followings for each project offered for ICB:

- 1) Type of project (indigenous coal based)
- 2) Coal supply details (quality and quantity of coal, proven coal reserves, mineable reserves, availability of reserves for 30 years etc.)
- 3) Mining details (mine plan, mining method, mining machinery, production schedule, coal transportation details, mine safety, environmental concerns etc)
- 4) Power plant details (plant foundation, cooling water and make-up water, machinery/equipment, boiler details, coal storage/reclaiming, coal/ash handling, environmental concerns etc.)
- 5) Net capacity (MW)
- 6) Reference annual plant factor (%)
- 7) Transmission arrangements including the point of delivery to the power purchaser
- 8) Terms of PPA
- 9) Specific allowances for scheduled maintenance and excused forced outages
- 10) Cooperation arrangements/agreement with local engineering companies
- 11) Evaluation criteria
- 12) Tariff, including: Limitations on “front-end loading”, limitations on proportion of capacity charge to overall tariff, reference date(s) for indexation which would

be 30 days prior to bid submission dead lines unless specified otherwise, Fuel price and indexation mechanism(s) if required, matching of debt-related capacity charge stream with loan repayment stream, sum of energy charge and non-debt-related capacity charge to be 'constant' or 'increasing' during the term.

The following documents will also be included in the RFP: -

- a) Instructions to bidders
- b) General provisions for bidders
- c) Minimum technical standards
- d) Standardized forms for NEPRA's tariff determination
- e) Feasibility study of the integrated coal mining and/or power generation complex
- f) Coal information data and hydrological data, if available
- g) Copies of relevant standard security package agreements and documents (i.e. LOS, IA, PPA, CSA etc.)
- h) Environmental laws, rules and regulations, procedure and guidelines of the GOP for both mine and power plant

If necessary, pre-bid conferences will be held to facilitate exchange of information with bidders in a transparent manner, giving equal and adequate opportunity to all prospective bidders. The RFP for an indigenous coal-fired power project with capacity above 50 MW will be for an integrated coal-mining and power generation complex.

6.4 Feasibility Study

The scope of the feasibility study would depend on whether the project is an integrated coal-mine and power generation plant or a stand-alone power generation plant. For integrated-coal-mine and power generation plants, the feasibility study will cover all aspects of coal mining and power generation, including, but not limited to, coal reserves, mine ability, risks involved in mining, legal aspects of mining and etc, besides storage/transportation

2. See previous footnote for this article as well as other subsequent articles in this chapter

of coal to the power plant, operations of the power plant on coal, necessary details about the power generation plant itself and, above all, the commercial viability of the project. The feasibility study may or may not suggest a 'Coal Supply Agreement (CSA)' in such case. For a stand-alone coal-based power generation plant, the mining section would not be covered in detail. However, availability of a sufficient and reliable coal supply for power generation would be considered, besides other necessary aspects. The feasibility study may require a CSA even if the coal supplier is sister concern of the power generator.

Generally, feasibility study may identify the basic parameters of the project, such as geological condition, optimum net capacity, estimated annual plant factor, transmission line requirement etc. necessary to allow firm bids for development of the identified project. The feasibility study for indigenous coal based power projects will determine the basic mining parameters such as quality, quantity and mine ability of coal deposits, hydrogeology and ground water condition, mine design, coal production and coal supply schedule, coal transportation and storage, capital and production cost, environmental aspects etc. Similarly, the study will determine plant site conditions, cooling water requirements and availability, ash disposal, coal stocking and reclaiming, environmental concerns etc. The feasibility study will be carried out in accordance with internationally acceptable standards. The GOP will not guarantee its content or conclusions. The bidders will have the right, at their own cost, to examine, evaluate, and form their own conclusion on, any or all aspects of the feasibility study and carryout any additional studies and investigations to make their own assessment about feasibility and validity of the project.

6.5 Evaluation of Bids

- Bids will be opened on the prescribed date in the presence of bidders representative who choose to attend the bid opening
- The detail evaluation criteria will be provided in the RFP
- The bid with the lowest evaluated levelized tariff will be ranked No. 1

PPIB will reserve the right to reject any or all bids without assigning reason therefore, and will not assume any liabilities or claims for compensation in connection therewith. Once the bid is accepted and tariff approved by PPIB, the successful bidder will be issued an LOS by PPIB against delivery of a Performance Guarantee (PG) in favor of PPIB, in the required amount valid up to three months beyond the Financial Closing date specified in the LOS and upon payment of the cost of the feasibility study to PPIB. Under normal circumstances, no extension in achieving Financial Closing will be granted. However, on the sponsor's request, if the committee under the chairmanship of the Secretary, Water & Power and comprising representatives of PPIB, WAPDA, KESC, P&D Division, the concerned Provincial Department is satisfied that delays are due to factors beyond the reasonable control of the sponsors and Financial Closing will be achieved shortly, a one-time extension of up to a maximum period of six months will be given against extending the validity period of the PG and increasing the guarantee amount by 100%.

6.6 Submission of Proposals

Proposals on raw sites for indigenous coal-based power projects with capacity above 50 MW will be submitted to PPIB, and must include the following:

- a) Project Name/Identification
- b) Project Location
- c) Proposed Capacity and Plant Factor
- d) Basic Outline of Structure and Plant
- e) Mine Plan, indicating mining method, coal reserves, quality of coal, production and coal supply schedule
- f) Feasibility Study, indicating specific milestones and completion date
- g) Pre-qualification details of the proposed sponsor
- h) Previous history of the project/proposal.

Proposals on raw sites will be examined by PPIB Board. Proposals approved by the Board will be further processed by PPIB for issuance of the LOI.

6.7 Letter of Interest (LOI)

The sponsors of approved Projects will be issued their LOIs by PPIB, provided they post in each case, in favor of PPIB, a bank guarantee of the value of US\$1,000 per MW for a period not less than six months in excess of the then validity of the LOI. The initial validity of the LOI will be between 12 to 24 months, and will depend on the size of the project. In case the 'Panel of Experts' (POE) is satisfied that the sponsor's progress during conduct of the feasibility study is satisfactory and the feasibility study is likely to be completed shortly, a one time extension may be granted by the committee up to a maximum period of 180 days. Submission of the bank guarantee in the double the original amount and valid beyond six months of the extended LOI period, will be mandatory to qualify for extension in validity of the LOI.

The LOI will require the sponsors to conduct a complete feasibility study monitored by the POE appointed by PPIB. The sponsors will have to meet the standards and milestones stipulated in the LOI. In case the POE confirms that the sponsors have failed to meet the relevant milestones/standards, PPIB will terminate the LOI and encash the bank guarantee. The sponsors will have no claim for compensation against the GOP. In case the POE approves, the sponsors will file an application with NEPRA for tariff approval. If NEPRA approves the tariff, PPIB will issue an LOS on the sponsor's depositing a processing fee of US\$ 100,000 and the Performance Guarantee (PG) of the value of US\$ 5,000 per MW in favor of PPIB, valid up to three months beyond the Financial Closing date specified in the LOS.

| Fee Structure | US\$ |
|---|---------|
| Registration | 100 |
| Purchase of Pre-qualification Documents | 1,000 |
| Purchase of RFP Documents | 2,000 |
| Evaluation Fee: | |
| 51-100 MW | 20,000 |
| 101-400 MW | 30,000 |
| 401-600 MW | 50,000 |
| Above 600 MW | 75,000 |
| Processing Fee | 100,000 |

6.8 Bid Bonds/Letter of Support/Performance Guarantee/Processing Fee

- Each bidder will submit a bid bond of US\$ 1,000 per MW at the time of submission of bid
- The bid bond of all other bidders will be returned after declaration of the successful bidder
- The successful bidder will be required to furnish a non-refundable Processing Fee of US\$ 100,000 and post a PG in the sum of US\$ 5,000 per MW in favor of PPIB, valid initially for a period of three months in excess of validity of the LOS
- After submission of the PG by the successful bidders, the bid bond will be returned
- The PG will secure the successful bidder's obligation to execute the IA, PPA, CSA and other relevant agreements and achieve Financial Closing (FC) within the specified period
- The LOS will normally be issued for a period of 15-18 months, as specified in the Request for Proposal (RFP), by which date the sponsors / project company must achieve Financial Closing for the project specified in the LOS

- The PG will be in the form of an irrevocable direct pay letter of credit in favor of PPIB issued by an internationally recognized bank acceptable to the GOP. The PG must always remain valid for a period not less than three months in excess of the then-prevailing Financial Closing deadline
- The sponsors will have an option to terminate the LOS and any of the project agreements executed at any time before the required date for Financial Closing, as per terms and conditions of the LOS. The termination option may be exercised by foregoing a portion of the PG equal to the face value of the PG multiplied by the number of months since the issuance of the LOS (rounded to the nearest whole number) divided by the total number of months allowed in the LOS to achieve Financial Closing
- The PG will be encashable on call by PPIB. Neither the sponsors nor the project company shall have any claim against the GOP or any of its components/organization/provinces/institutions on any ground whatsoever
- Until Financial Closing, the LOS will govern the project and supersede all documents and agreements; thereafter the security agreements will supersede the LOS
- If the LOS expires, the IA, PPA, and CSA and all other agreements with any governmental entity, will automatically terminate

6.9 Project Implementation

Successful bidders will submit to PPIB on a format, specified by PPIB, a mutually acceptable implementation schedule with specific milestones for progress monitoring. PPIB and the power purchaser will require successful

bidders to submit periodic progress reports regarding the status of the contractual obligations, Consents, financial and physical progress report and a summary table showing progress towards achievements of such milestones. Delays in achieving Financial Closing due to events beyond control of the sponsor / project company will be accommodated through a day-to-day extension allowed under the IA. Similarly, delays in the Commercial Operation Date (as specified in the PPA) of the Power Complex, will incur liquidated damages as specified in PPA. Equitable compensation against parties concerned, may be specified in the IA/PPA, for not meeting specified milestones under the security agreements.

6.10 Power Tariff

- The development of a coalmine, establishment of coal-fired power plant and transportation facilities to supply reliable coal for the integrated project of power plant and mine, require substantial investment. These expenses are to be accounted for in the power tariff in the form of capacity and energy charges. However, in a stand alone coal based power generation complex, the EPP component of tariff will include the reference fuel price reflecting the coal prices governed by the provincial authorities and reflected in CSA.
- The tariff will be denominated in Pakistan Rupees
- Bidders will be asked to quote their tariff in two parts: (1) Energy Purchase Price (EPP) and (2) Capacity Purchase Price (CPP)
- The RFP may specify the maximum percentage of overall tariff for the capacity component
- The CPP will be paid provided the plant is available for dispatched to standards specified in the PPA. The EPP will be paid upon the amount of kWh of energy dispatched

- In order to ensure sustained interest of the sponsor during the entire life of the project, the sum of the EPP and non-debt related CPP (computed on a kWh basis at the reference plant factor specified in the RFP) will remain constant or increase over time. The debt-related CPP stream may match the loan repayment stream

6.11 Environment

All requirements of the Pakistan Environment Protection Agency (PEPA) Act 1997, relating to environmental protection impacts and social soundness assessment shall have to be met.

PAKISTAN – THE BASIC FACTS

| | |
|---------------------------------------|--|
| Official Name | Islamic Republic of Pakistan |
| Capital | Islamabad |
| Area | 796,095 sq. kilometers |
| Location | South Asia |
| Geographic Coordinate | 30 00 N, 70 00 E |
| Climate | Hot & humid summer, dry & cold winter |
| Population | 162 millions |
| Literacy Rate | 53% |
| Population growth rate | 3.1% |
| Religion | Islam (Muslims 95%) |
| Languages | English/Urdu |
| Currency | Rupee (US\$ 1 = 60.6: January 21, 2008) |
| Sea ports | Karachi, Port-Qasim, Gawadar & Pasni |
| Dry ports | Lahore, Rawalpindi, Sialkot, Faisalabad, Peshawar and Quetta |
| International airports | Karachi, Lahore, Islamabad, Peshawar and Quetta |
| Inflation | 6.5% |
| Per capita income | US\$ 736 |
| Growth rate of GDP | 7.4% |
| Growth rate of manufacturing | 17.1% |
| Labor force | 45.05 million |
| Labor force in mining & manufacturing | 11.25% |
| Unemployment rate | 8.27% |
| Number of companies incorporated | 43,000 |
| Listed companies | 700+ |
| Foreign firms | 600+ |
| Export | US\$ 10 billion Import US\$ 12 billion |
| FDI | US\$ 5.12 billion |
| Cargo handled at Karachi port | 26.7 million tones |
| Cargo handled at Port Qasim | 13.2 million tonnes |
| Roads | 257,683 kilometers |
| Motor vehicle registered | 786,907 |
| Railway tracks | 7,791 kilometers |
| Railway Stations | 781 |
| Telephone Connections | 5.05 million |
| Mobile Connections | 10.5 million |
| Number of Post Offices | 12,234 |
| Number of Telegraph Offices | 362 |
| Internet Connection | 1.7 million |

**WE
WELCOME
PRIVATE INVESTORS
TO JOIN HANDS WITH US
TO DEVELOP PAKISTAN'S COAL
AND POWER SECTOR FOR
MUTUAL BENEFIT**



Private Power and Infrastructure Board
Ministry of Water & Power
Government of Pakistan