Preface

Sindh is Pakistan’s second largest province in terms of population and home to one of the world’s oldest civilizations, the Indus Valley Civilization, which dates back to 2600 BC. From historic times, the River Indus (locally known as Sindhu), which runs through the province, has been a potent centripetal life source for community living and trade. Sindh was conquered by the Greeks under Alexander the Great, and then traded to Chandragupta Maurya in 305 BC. During Asoka’s rule, Buddhism spread to Sindh. After the end of the Mauryan rule, Sindh was ruled by Greeks once again who built an Indo-Greek kingdom. The province was later governed by Zoroastrians and then by Brahmans. Mohamed Bin Qasim invaded Sindh in 711 AD and brought the people into contact with Islam. The history of Sindh is steeped in religious diversity and its indigenous culture resonates of harmony, peace and tolerance.

Today Sindh is inhabited by 43 million people. Its 17 million youth are a most valuable resource and carry the mantle for the progress of this land. They study sciences, technology, art, literature, medicine, agriculture, business, commerce, and vocational skills in 500 large and small public sector colleges and training institutes. The people of Sindh have learnt at the altar of some of the greatest sufi saints who imbibed in them an idea of life and modernity, which presents itself today in the form of a people who value hard work, honesty and excellence. From the ancient shrines and temples in Tharparkar to the fishing villages off the coast of Karachi, heterogeneous communities co exist, cherishing tradition and celebrating modernization.

The distinctive resource offering in Sindh is undoubtedly its staggering abundance of natural resources which render an insurmountable competitive advantage for industrial development in the province. The 175 billion tons of coal in the fields of Tharparkar hold a potential of generating 100,000 megawatts of energy for the next 300 years. The wind corridor in Jhimpip can potentially generate 50,000 megawatts and over 25 projects with installed capacity of 2,796.4 megawatts have already been established. There is also a huge potential for solar energy (5.3 KWh/m2), and run-of-river hydel power (180 megawatts). The terrain in Sindh is rich and fertile, yielding some of the world’s best quality fruits, vegetables and cash crops. Over the decades, agriculture production has revolutionized and the industry stands to gain from planned modern technology input.
Preface

A quarter of the country’s industrial production is based in Sindh and economic activity in the province contributes thirty percent to national GDP and sixty nine percent of government revenue is collected from here. The government has constituted industrial zones, estates and special economic zones to nurture industry synergy and establish imperative industry clusters. The government of Sindh has the institutional framework to authorize and develop sector or region specific zones in accordance with demand from prospective interests. These special developments link up with the existing infrastructure network in Sindh. The province is connected to the rest of the country through a wide network of highways. There is one international and four domestic airports, several airstrips, and two sea ports linking Sindh to the region and the neighboring lucrative markets of Central Asia, Africa and the Gulf. The province through its unique geographical position carries an inherent strategic advantage making it a profitable hub for production and trade.

The Government of Sindh invites you to visit and invest in the province. It welcomes international investors to work and live in our communities and share the benefits of development and industry in the province.

The Government of Sindh solicits interest for investment in mining, energy, infrastructure, transportation, agriculture and education. This book contains proposals and briefs of planned projects which have been structured by provincial ministries, industrial and financial institutions, regulators and administrative bodies in the province. The government also welcomes ideas and is open to dialogue for any other specific interests from international businesses.

The political leadership and the government institutions in Sindh are committed to supporting and facilitating investments in the province, and invite interests from companies and international business leaders.
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Introduction to SBI

Sindh Board of Investment (SBI) is established with broad based responsibility of promotion of investment in all sectors of economy; facilitation of local and foreign investors for speedy materialization of their projects and to enhance Sindh’s international competitiveness and contribute to economic and social development.

SBI assists companies and investors who intend to invest in Sindh as well as facilitates the implementation and operation of their projects. The wide range of services provided by SBI include providing information on the opportunities for investment and facilitating companies that are looking for joint venture partners. SBI acts as a focal point of contact for prospective investors, both domestic and foreign to provide all necessary information and assistance in coordinating with other Government Departments/Agencies.
Mineral Map of Pakistan

Major & Important Mineral discovered by GSP

- **Copper-Gold**: Saindak, Reko Diq, Chagai
- **Iron ore**: Chagai, Kalat, Chitral, Nizampur, Chiniot, Kalabagh
- **Lead Zinc**: Lasbela, Khuzdar
- **Barite**: Khuzdar, Kalat, Hazara
- **Onyx marble**: Chagai
- **Massive Sulphide**: Soap Dhoro & Anna Dhoro, Ninro Dhoro, Lasbela
- **Chromite**: Khuzdar, Muslibagh
- **Fluorite**: Kala, Khuzdar, Lasbela
- **Magnesite**: Khuzdar, Lasbela
- **Dolomite**: Mastung
- **Manganese**: Khuzdar, Lasbela
- **Coal**: Thar, Sonda - Thatta, Loralai, Quetta Bolan, Hangu & Cherat
- **Manganese**: Khuzdar, Lasbela
- **Coal**: Thar, Sonda - Thatta, Loralai, Quetta Bolan, Hangu & Cherat
- **Uranium**: D.G. Khan & Bagrian, Hazara
- **Soapstone**: Lasbela, Hazara
- **Emerald**: Swat
- **Topaz Katlang**: Mardan
- **Aquamarine**: Gilgit & Chitral
- **Peridot**: Kohistan
- **Celestine**: Thano Bula Khan-Sindh, Daud Khel-Punjab
- **Fire Clay**: Punjab
- **China Clay**: Sindh, Shahderai, Swat, Hazara, Mohmand Agency
- **Magnesite**: Hazara
- **Feldspar**: Hazara & Sawat

**Fuels**

- **Coal**:
- **Oil**
- **Gas**
- **Oil & Gas**
- **Uranium**:
Coal Deposits at Thar Coalfield

Background
Pakistan’s coal resource potential is estimated to be around 186 billion tons out of which 175 billion tons are found in Thar alone; one of the largest Lignite deposit in the world. Thar Coalfield is located 360 km from Karachi port in the south eastern arid zone region of Pakistan which is one of the most peaceful & harmonious area of the country. Thar Coal resources have an estimated potential of generating 100,000 MW of electricity for a period of 300 years; thus, providing an opportunity for large scale mining & power generation over a long period of time.

Objectives
The Government of Sindh aims to utilize the massive potential of Coal mining in Sindh, out of total reserves of Pakistan, Sindh’s estimated reserves are 185 bn tons, which is a great opportunity for power generation that’s why the project has been granted status of Project of National Security.

Project Site and Location
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.
The United States Geological Survey and the Geological Survey of Pakistan have jointly unearthed huge coal reserves of 175 Billion Tonnes, the seventh largest proven coal reserves in the world, spread over 9,100 Square KMs in the Thar region of Pakistan. These reserves are proven through hundreds of exploratory drill holes since 1995 undertaken by the Government. The credibility of the reserves is additionally corroborated by independent studies and drilling conducted by John T. Boyd of USA, RWE of Germany, M/s Shenhua of China, Sindh Engro Coal Mining Company (SECMC) and M/s Oracle PLC of UK. All studies confirm presence of huge coal reserves - technically and economically feasible.

Resource Potential

Quality of Coal at Thar

Thar lignite has a stripping ratio of 6:1, heating value of 11 - 12 MJ/Kg, Ash 7%, Moisture 45 - 47% & Sulphur 0.9 - 1.3 %. This lignite is suitable for Power Generation and other uses. The comparison of Thar Lignite with other lignite mines of the world, in terms of stripping ratio and heating value is summarized below:-

<table>
<thead>
<tr>
<th>Deposit</th>
<th>Stripping Ratio</th>
<th>Heating Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thar</td>
<td>6 : 1</td>
<td>11.6 (5000 Btu/lb)</td>
</tr>
<tr>
<td>Kosovo</td>
<td>1 : 1</td>
<td>7.8 (3350 Btu/lb)</td>
</tr>
<tr>
<td>Rhenish Area, Germany</td>
<td>4.9 : 1</td>
<td>8.9 (3830 Btu/lb)</td>
</tr>
<tr>
<td>Hambach, Germany</td>
<td>6.3 : 1</td>
<td>10.5 (4510 Btu/lb)</td>
</tr>
<tr>
<td>Hungary</td>
<td>9 : 1</td>
<td>7.1 (3050 Btu/lb)</td>
</tr>
<tr>
<td>Greece</td>
<td>10 : 1</td>
<td>5.02 (2159 Btu/lb)</td>
</tr>
</tbody>
</table>
○ **Feasibilities Studies**

The following feasibility studies have been carried out on Thar Coal reserves.

- USGS and JT Boyd of USA confirmed the Thar Coal resources in 1995-6
- RWE of Germany prepared a feasibility for Thar Based mine
- Feasibilities by Oracle Coal fields, SECMC, and Sindh Resources of blocks confirm potential of open cast mining at Thar

○ **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 subsurface lithostratigraphic units have been identified. The units are Dune Sand (Recent), Alluvial Deposits (SubRecent), 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.

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.

○ **Climate**

The climate is essentially that of an arid to semi arid region with scorching hot summers and relatively cold winters. It is one of the most densely populated deserts of the world with over 91 thousand inhabitants. The livelihood of the population is dependent on agriculture and livestock.
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 up to 5 meters. Second aquifer lies within the coal zone at 120 meters depth and is of varying thickness up to 69 meters. The third aquifer is below the coal zone at 200 meters depth and is of varying thickness up to 47 meters. Table below shows the chemical analysis of underground water.

Salient Features

Infrastructure Development for Projects at Thar Coalfield

The Government of Pakistan and Sindh are working to provide enabling environment and robust infrastructure required for coal mining, coal-based power generation and for other uses of coal. The summary of efforts of the Government and current status of these infrastructure schemes, are given below:-

- **Drinking Water Storage at Thar**
- **RO Plants in Thar**

Road Network

70 tonnes load carrying capacity metalled road is available up to Coal field area.
Communication
Telephone & Internet communication through Optic fiber cable is available up to Thar Coalfield area.

Rescue Station
Rescue Station in coal mining area at Thar coal-field covering an area of 8,200 sq. ft. has been constructed.

Library
A Coal library containing documents having relevant information on Coal is situated at office of Sindh Coal Authority.

Thar Lodges
Four star Lodges at Islamkot with 20-bedded accommodation to facilitate foreign and local investors has been constructed.

Transmission Line
The NTDC is executing two schemes for power evacuation from Thar:
- Phase – I: Transmission Line from Thar Coalfield to Matiari
- Phase – II: Transmission Line from Matiari to Rahim Yar Khan

Airport
The Civil Aviation Authority is executing the work of construction of Thar Airport at a distance of 8-10 kms from Thar Coalfield which is expected to be operational by December 2015.
• **Provision of Heavy Duty Road**
  For improvement of Road Network following 2 Schemes are in pipeline:
  - From Seaport Karachi to Wango More via Thatta, Badin (200 km)
  - From Wango More to Thar Coalfield (135 km)

• **Effluent Disposal**
  The GoS is executing a scheme of constructing 50 cusecs mine water drainage channel from Thar Coalfield which will be completed by June, 2015.

• **Railway Link**
  PRACS has prepared feasibility for broad gauge rail link up to Islamkot which is 407 kms from Karachi.

• **Strategy of Government to Develop Thar Coal**
  The government has declared the projects at Thar Coalfield, as projects of strategic importance and considers development of Thar coal as a matter of national energy security. As the national energy crisis becomes critical, the Government of Pakistan/ Sindh considers the use of indigenous coal as the most viable and least cost option for power generation and resolving energy shortages. The Government of Sindh is developing the Thar coal reserves in a strategic and systematic manner and encourages projects of open-pit mining, coal based power generation, underground coal gasification, surface gasification, coal-to-liquid, briquetting etc. Government seeks to develop large-scale coal mining operations and supports and encourages domestic and foreign investment in the coal sector. Government supports International Competitive Bidding of coal resources to be implemented and managed at the Provincial level. Government supports the market-based evaluation of proposals, equitable distribution of revenues and transparent issuance of licenses, leases and project awards. In the development of the coal reserves, Government also seeks to protect its environment and its people.

---

### On-going Annual Development Plan Schemes of Government of Sindh to Develop Thar Coalfield

<table>
<thead>
<tr>
<th>Name of Scheme</th>
<th>Total Cost</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement and Widening of Road Network from Thatta to Thar Coalfield Area (335 KM)</td>
<td>Rs. 12.57 bn</td>
<td>Dec. 2015</td>
</tr>
<tr>
<td>Provision of water from LBOD to Thar Coalfield and treatment at Nabisar</td>
<td>Rs. 13 bn</td>
<td>Dec. 2015</td>
</tr>
<tr>
<td>Construction of 50 Cusecs Drainage and Wastage Effluent Channel from Thar Coalfield</td>
<td>Rs. 6.7 bn</td>
<td>Dec. 2015</td>
</tr>
<tr>
<td>Construction of Thar Airport at Islamkot (near Thar Coalfield)</td>
<td>Rs. 1.62 bn</td>
<td>Dec. 2015</td>
</tr>
<tr>
<td>Installation of 117 Reverse Osmosis Plants in Thar Coalfield and adjoining areas. 81 are already installed supplying 6.14 MGD capacity, 29 are being installed with 2.2 MGD Capacity.</td>
<td>Rs. 4.4 bn</td>
<td>Dec. 2015</td>
</tr>
<tr>
<td>Laying of Transmission Line connecting Thar</td>
<td>Rs. 22 bn</td>
<td>Three years</td>
</tr>
</tbody>
</table>
Efforts of the Government

In order to fast-track the development of coal, especially the largest coal resources of Thar, the Thar Coal and Energy Board (TCEB) has been established under the Chief Executive of the Sindh Province with representation from Federal and Provincial Governments as well. Thar Coal & Energy Board (TCEB) is a one-stop organization responsible undertaking all strategic decisions pertaining to Thar Coal development. TCEB facilitates and coordinates all the investors in seeking licenses, permits and expedites infrastructure development. Government of Sindh & Pakistan has prepared and implementing infrastructure projects that includes provision of water, effluent disposal mechanism, transmission network for evacuation of Power, and construction of rail & heavy duty road network for transportation of machinery up to Thar Coalfield.

Government ensures that social safeguards are in place for communities and citizens impacted by coal and related development. Government has established a predictable and enforceable legal and regulatory framework to support sector operations. Institutional arrangements that support power operations are federally administered while institutional arrangements that support Coal operations are provincially administered. Since, large-scale coal mining or related coal-fired power generation is new to this country, the Government of Pakistan and Government of Sindh have taken important measures to promote federal-provincial government synergies.

Risk Sharing in off take projects by GoS

GoS will provide all infrastructure facilities such as roads, airport, water and other amenities to develop the project.

Digital Maps of the project/specific location

Success Stories

Sindh Engro Coal Mining Company is a joint venture corporation between the Government of Sindh and Engro Corporation, which mines coal from Thar coalfield. Still under construction it will initially provide 660MW of power when completed in 2017. Its flagship project is based on 75:25 debt to equity ratio.
The company envisages raising $900 million from Chinese banks, $300 million from a Pakistani banking consortium and the remaining $400 million from sponsors.

It would in total produce 3,960MW of electricity, in six phases, from the Thar Coal in Block II. The first phase of 660MW would be completed within three and a half years, while a new unit of 660MW each would be added subsequently. A sum of $1.6 billion with $800 million component for the open pit mining and $800 million for the power plant have been invested in the project. The potential of coal in Thar can be realized from the fact that that Block II with its 2 billion tons of coal reserves, out of which 1.5 billion tons were economically recoverable, is just one per cent of the total coal deposits in Thar.

### Current Status and Collaboration with existing Project Developers

- **Existing Mature Mining, Under Coal Gasification (UCG) & Power Projects**

<table>
<thead>
<tr>
<th>Thar Block-I Mining &amp; Power Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Profile</strong></td>
</tr>
<tr>
<td>- Sino-Sindh Resources Ltd (SSRL).</td>
</tr>
<tr>
<td>- SSRL is 100% owned by Global Mining (China) Co. which is a BVI incorporated company formed for the purposes of investing in Thar Coalfields by its shareholders.</td>
</tr>
<tr>
<td>- The company has committed 6 million USD already to the project and has a surplus 4 million USD in contingency to fund any other need during development process.</td>
</tr>
<tr>
<td><strong>Project</strong></td>
</tr>
<tr>
<td>- 10 Million Tonnes per Annum coal mine and 900 MW Power Plant</td>
</tr>
<tr>
<td>- Feasibility Study has completed</td>
</tr>
<tr>
<td>- The mine will work for 2 different consumption models. Around 5 MTPA coal will be used by the Power Plant of 900 MWs gross capacity. The remaining coal will be sold to oil-based Power Plants being converted on coal in the country.</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>- According to preliminary estimates, the total investment requirement to develop a 10 Million Tonnes per Annum (MTPA) mine is around US$ 1.5 billion and 900 MW Power Plant is around US$ 1.7 bn.</td>
</tr>
</tbody>
</table>
### Thar Block-II Mining & Power Project

<table>
<thead>
<tr>
<th>Company Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sindh Engro Coal Mining Company, a JV between Govt. of Sindh &amp; Engro Group of Pakistan.</td>
</tr>
<tr>
<td>• Engro was founded in 1964 as Joint Venture between Esso and Government of Pakistan to setup a first Urea plant in Pakistan.</td>
</tr>
<tr>
<td>• Engro is one of the largest group in Pakistan, working in the fields of fertilizer, chemical, PVC, foods, commodity trade etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bankable Feasibility Study for Coal Mining Project (6.5 mtpa coal mine) has been completed by internationally renowned Consultants such as RWE-Germany, SRK-UK, Sinocoal-China in compliance with International Standards.</td>
</tr>
<tr>
<td>• Total Lignite reserve in Thar Block II - 2 B tons; Exploitable Reserve - 1.57 B tons which can support 5,000 MW for 50 years. Additionally, Thar lignite can also replace imported coal (~4Mt/a) after briquetting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Project Cost for Mining (3.8 mtpa) and Power (660 MW) Projects is - USD 1.6 Billion (Phase-I).</td>
</tr>
</tbody>
</table>

### Thar Block V Underground Coal Gasification & Power Project

<table>
<thead>
<tr>
<th>Company Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Planning Commission, Government of Pakistan has approved this R&amp;D Project and engaged Pakistan’s renowned scientist Dr. Samar Mubarakmand to develop a local technology and execute the Pilot Project.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Project is for production of Syngas from Thar and establishment of UCG based Power Plant of 100 MW and has following components:-</td>
</tr>
<tr>
<td>• Creation of New Processing facilities (for handling and purification of coal gas produced by underground coal gasification)</td>
</tr>
<tr>
<td>• Creation of New Processing facilities (for production of coal gas by underground coal gasification)</td>
</tr>
<tr>
<td>• 2X50 MW Power Plant (IGCC)</td>
</tr>
<tr>
<td>• Test Burn was ignited on 11th December, 2011</td>
</tr>
<tr>
<td>• Presently, Power Plant of 8-10 MW is being established.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Presently, Power Plant of 8-10 MW is being established, at the cost of PKR 1.8 bn. Government of Pakistan has already released PKR 900 for this scheme.</td>
</tr>
<tr>
<td>• Investors may collaborate with UCG Project in establishing Power Plant or Coal-to-Liquid plant.</td>
</tr>
</tbody>
</table>
Investment Options & Projects Available

Strategy of Investment

The investors may propose collaboration/ Joint Venture with existing Project Developers or may opt for acquiring new Blocks for Coal Mining, Power Generation and/or other uses of coal like briquetting, coal to liquids, coal water slurry, gasification etc.

Available Blocks for New Coal Mining Projects

- The Investors may also opt for acquiring new Blocks for Coal Mining and Power Generation and other uses of coal like briquetting, coal to liquids, gasification etc.
- Presently following Blocks at Thar Coalfield are available for allocation, as per procedure, the concessions will be awarded through bidding process:

<table>
<thead>
<tr>
<th>Block</th>
<th>Area (sq. km)</th>
<th>Total Reserves bn ton</th>
<th>Moisture (%)</th>
<th>Ash (%)</th>
<th>Vol. Matter %</th>
<th>Sulphur (%)</th>
<th>Heating Value (As Received) Btu/lb.</th>
<th>Fixed Carbon %</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII</td>
<td>100</td>
<td>3.036</td>
<td>48.23</td>
<td>7.9</td>
<td>23.2</td>
<td>1.24</td>
<td>5338</td>
<td>16.45</td>
<td>Available</td>
</tr>
<tr>
<td>XI</td>
<td>101</td>
<td>1.61</td>
<td>49.97</td>
<td>8.08</td>
<td>24.16</td>
<td>1.61</td>
<td>5228</td>
<td>17.26</td>
<td>Available</td>
</tr>
<tr>
<td>XII</td>
<td>100</td>
<td>2.34</td>
<td>50.82</td>
<td>5.71</td>
<td>25.00</td>
<td>1.11</td>
<td>5459</td>
<td>17.26</td>
<td>Available</td>
</tr>
</tbody>
</table>
Project Allocation

- Procedure for allocation of Blocks

Sindh Mining Concession Rules - 2002 spell out concession award procedure which is also available at our website www.sindhcoal.gos.pk. The successful applicant will get Exploration License after signing an MOU with Sindh Coal Authority. The Exploration license is generally granted for bankable feasibility studies (BFS) for a period of one year extendable on valid grounds. The license holder shall be required to submit reports on quarterly basis. The exploration license granted can be cancelled if conditions of MoU or Exploration License are not fulfilled. After successful completion of feasibility report, the Exploration License shall be converted into Mining Lease in accordance with the provisions of Sindh Mining Concession Rules, 2002.

Investors are expected to submit credible financing plans for the project including debt/equity financing.

Sindh Coal Authority shall provide all available data of the exploratory work conducted in a Block to the holder of Exploration License free of charge.

The investors are also expected to provide firm timelines with three monthly milestone plan. Preference will be given to those who offer narrow timelines leading to early completion of BFS and project execution phase.
Incentives offered by GoS/GoP for Thar Coal Mining

The Government of Pakistan has approved following set of incentives, concessions and protections for development of indigenous Coal resources of Sindh.

- Thar coalfield declared as Special Economic Zone, and the projects of development of Thar (also including coal mining and power generation) declared as “Project of National Security”.
- 20% ($ based) IRR to firms which achieve Financial close before 31st December 2015 for Mining & Power Projects based on Indigenous coal and additional half a percentage IRR i.e. 20.5% IRR for firms which financial close by or before 31st December,2014.
- Zero percent customs duties on import of coal mining equipment and machinery including vehicles for site use.
- Exemption on withholding tax to shareholders on dividend for initial 30 years.
- Exemption on withholding tax on procurement of goods and services during project construction and operations.
- Exemption for 30 years on other levies including special excise duty, federal excise duty, WPPF and WWF.
- In addition to the final aforesaid incentives, Coal based Power Projects and coal Mining Projects in Sindh shall have the same incentives, concessions, Protections and security package as that available to IPPs developed pursuant to Power Generation Policy 2002 (as amended from time to time).
- TCEB to function as the Coal Pricing Agency

Investment Plan

The financial assistance sought for the Thar Coal Mining Project is USD 3 Billion depending on the scope of the project. A Special Purpose Vehicle (SPV) will be incorporated under the Companies Ordinance, 1984 named as the Thar Coal Mining Company (i.e. the Project Company). The SPV will be responsible for construction, implementation and operation of the project. The company will be regulated by the laws of the Companies Ordinance, 1984 as well as the Energy Department.

Investors will arrange finances through international banks, consortiums, international financial institutions as well as local banking system of Pakistan.
Coal Deposits at Sonda Jherruk Coalfield

Location and Accessibility
The Sonda Coal field area is situated in southern of Sindh Province, about 125 kilometers east –northeast of Karachi and 30 kilometer east of Hyderabad. The coalfield area is accessible from Karachi via a metalled road known as the National Highway. The main Karachi – Hyderabad trunk, known as the Super Highway passes about 25 kilometer north of the center of the coalfield area.

The GSP and United State Geological Survey conducted the study; 26sqkm area was explode by drilling 26 drill holes.

<table>
<thead>
<tr>
<th>Number of Drill holes</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total drilling Meter age</td>
<td>5996.61 meters</td>
</tr>
<tr>
<td>Cumulative Thickness of Coal</td>
<td>0.3-1.5 meters</td>
</tr>
<tr>
<td>Shallowest depth of Coal Seam</td>
<td>129 meters</td>
</tr>
</tbody>
</table>

Chemical Analysis
- Moisture: 32%
- Ash: 8%
- Volatile Matter: 25.2%
- Fixed Carbon: 25.2%
- Sulphur: 1.4%
- Calorific Value: 6762-10251 BTU/lb

Rank of Coal: Lignite A-Sub-Bituminous C

Investment Process
- Application to Sindh Coal Authority
- Submission of Proposal along with fees $20,000
- Evaluation of Technical and Financial Strength
- Approval by TCEB
- Submission of PG @ $500,000
- Issuance of EL by DG (Licensing)
- Submission of Feasibility Study
- Approval of Feasibility by Panel of Experts and Application for Issuance of Mining Lease
- Submission of Fees for Lease
- Issuance of Lease by Government of Sindh
- Land Acquisition
- Financial Close
- Commercial Operation
Coal Deposits at Badin Coalfield

Location and Accessibility
Badin district is connected with Karachi (225Kms) and Hyderabad (130Kms) through highways. During the drilling by M/s British petroleum found the traces of coal, later on with the help of Geological Survey of Pakistan compiled the coal data.

The Geological Survey of Pakistan drilled 5 bore holes at a distance of 10kms a part covering 600sqKms and Sindh coal Authority drilled 22 bore holes and in the year 2005 spreads 510sqkms with 3kms interval. The coal is available at a depth of 83 to 220meters with thickness of 0.20meters 2.30meters seams.

Coal Reserves

<table>
<thead>
<tr>
<th>Category</th>
<th>In million tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>4.22</td>
</tr>
<tr>
<td>Indicated</td>
<td>33.88</td>
</tr>
<tr>
<td>Inferred</td>
<td>573.08</td>
</tr>
<tr>
<td>Total</td>
<td>611.18</td>
</tr>
</tbody>
</table>

Geological Information

<table>
<thead>
<tr>
<th></th>
<th>meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Drilling Meter age</td>
<td>582</td>
</tr>
<tr>
<td>Thickest Coal Seam</td>
<td>0.2 – 0. 95</td>
</tr>
<tr>
<td>Cumulative Thickness of Coal</td>
<td>0.45 – 1.58</td>
</tr>
<tr>
<td>Shallowest and Deepest Coal</td>
<td>78.38 – 137.58</td>
</tr>
<tr>
<td>Overburden</td>
<td>78.38 – 137.58</td>
</tr>
</tbody>
</table>
Chemical Analysis

- Moisture: 47.99%
- Volatile Matter: 23.65%
- Fixed Carbon: 20.72%
- Ash: 7.65%
- Sulphur: 2.3%
- Calorific Value: 5600-6000 Btu/lb

Rank of Coal Lignite – B

Based on the results of drilling, it is inferred that the occurrence of coal is a possible extension of the same formation from the Sonda East.

Investment Process

- Application to Sindh Coal Authority
- Submission of Proposal along with fees $20,000
- Evaluation of Technical and Financial Strength
- Approval by TCEB
- Submission of PG @ $500,000
- Issuance of EL by DG (Licensing)
- Submission of Feasibility Study
- Approval of Feasibility by Panel of Experts and Application for Issuance of Mining Lease
- Submission of Fees for Lease
- Issuance of Lease by Government of Sindh
- Land Acquisition
- Financial Close
- Commercial Operation
Coal Deposits at Lakhra Coalfield

Location and Accessibility
The Lakhra Coalfield is oldest coalfield of Sindh. The coalfield is 200 KM away from Karachi through Super Highway and 40 KM from Hyderabad. The coalfield is leased out to provide mine owners and they are using old method of underground mining. The coal field is spread out on 1309 sq km.

General Geology
The coal beds at Lakhra have been gently folded into a major Anticline. Nearly all the coal occurs at shallow depths of 50 to 450 metres from the surface in gently dipping strata of the Anticline, dissected at places mostly with normal faults of 1.5 to 9 metres displacement. Although a large number of coal seams have been encountered in bore holes, only three of them are significant and have been named as Dhanwari, Lailian and Kath

Chemical Reserves
| Total | 1.328 Billion tones |

Chemical Analysis
- Moisture: 28.9 %
- Volatile Matter: 29.09 %
- Fixed Carbon: 25.02 %
- Ash: 18.00 %
- Sulphur: 4.7 %
- Calorific Value: 4622 Btu/lb

Investment Process
- Application to Sindh Coal Authority
- Submission of Proposal along with fees $20,000
- Evaluation of Technical and Financial Strength
- Approval by TCEB
- Submission of PG @ $500,000
- Issuance of EL by DG (Licensing)
- Submission of Feasibility Study
- Approval of Feasibility by Panel of Experts and Application for Issuance of Mining Lease
- Submission of Fees for Lease
- Issuance of Lease by Government of Sindh
- Land Acquisition
- Financial Close
- Commercial Operation
Legal Framework
In order to ensure the project operates in a robust regulatory environment, the following rules / acts may also be applicable.

- Renewable Energy Policy 2006
- Sindh Public-Private Partnership Act, 2010
- Foreign Private Investment (Promotion & Protection) Act, 1976
- Protection of Economic Reforms Act, 1992
- Commercial Arbitration Act, 2011
- The Arbitration (International Investment Disputes) Act, 2011
- Recognition and Enforcement (Arbitration Agreements and Foreign Arbitral Awards) Act, 2011
- Foreign Exchange Manual 2002 of State Bank of Pakistan
- Special Economic Zones Act, 2012
- Competition Act, 2010
- Banking Companies Ordinance, 1962
- Companies Ordinance, 1984
- Mining Concession Rules 2002
- Thar Coal and Energy Board Act, 2011

The above can be downloaded from www.sbi.gos.pk. Further details of the above can be provided upon request.
Sindh Map Showing Coalfields
Sindh Map Showing Coalfields

- Lakhra
- Sonda
- Metting- Jhimpir
- Badin
- Thar
Background
Granite is a premium construction material used to impart high aesthetic finish to buildings and is becoming a material of choice for the construction of sculptures, commercial complexes and premium residential structures. The granite stones are cut and trimmed to specific sizes and shapes and polished to suit the taste of uses. Pakistan is bestowed with large deposits of granite in KPK, Baluchistan and Sindh. Extensive resources of such dimension stones deposits are present in the mountainous areas of Nagar Parker, Sindh. Due to the color, tone, grain size, mineralogy geochemistry and mode of occurrence, the deposits of granite available in Nagar Parkar area is grouped in white, grey, black, pink to red, green, blue and grey-bluish.

Granite, in the form of slabs and tiles, has several attractive features, which, inter-alia, includes extra-fine mirror-polish, scratch-free glossy surface and durability. The dimensional stone is gaining increased acceptance in the civil construction industry all over the world. Italy, India, South Africa, Norway, Finland, Brazil, Spain and the United States of America are the major Granite exporting counties. Sindh is also rich in natural resources and Nagar Parkar area of Sindh has about 15 billion tons of granite reserve.

Through advance quarrying technology and adequate processing for value addition, the granite stones of Sindh have the potential of being exported to a large number of countries including the traditional customers such as North America Countries, Middle East, Western Europe and other higher buying markets. The increased demand for granite in the construction sector has helped a rapid growth in the granite production. Sindh’s proximity to the Middle East can be exploited profitably. The large granite deposits with availability of surface as well as ground water, electricity and communication network. Nagar Parkar Sindh has the ideal potential for increasing granite exports by value addition at site.
Objectives
The province of Sindh has large quantities of minerals. In all there are 24 minerals which are being currently mined in the province. It has granite and marble reserves. The granite area which was inaccessible has now been connected with Karachi by a network of roads and other facilities like Rest House, electricity, telecommunication, etc. It is also proposed that a Granite Park will be established at Nagarparkar. Karunjhar range of mountains in Nagarparkar has huge reserves of granite and other rock types of extractable thickness which has the potential to compete in the International market. It spreads over vast area and its estimated granite reserves are around 10 billion tons.

Resource Potential and Feasibility Studies
The following granite reserves of Sindh have been estimated by the Geological Survey of Pakistan (GSP), in the year 1977-78.

Salient Features

○ General Geology

The Nagarparkar igneous complex is a Late Proterozoic fragment of the western Indian Shield. Six major magmatic phases of intrusive and extrusive activity have been identified:

1. Basement rocks (metagabbroic and amphibolites)
2. Riebeckite-aegirine grey granite
3. Biotite-hornblende pink granite
4. Acid dyke
5. Basic dykes

<table>
<thead>
<tr>
<th>Granite Type</th>
<th>Million tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Granite</td>
<td>11,811</td>
</tr>
<tr>
<td>Pink Granite</td>
<td>3,813</td>
</tr>
<tr>
<td>Adamellite</td>
<td>240</td>
</tr>
<tr>
<td>Total</td>
<td>15,864</td>
</tr>
</tbody>
</table>

Nagarparkar area comprises of main Karunjhar hill and isolated hillocks of limited aerial extent, surrounded by sand covered plains. The hillocks predominantly consist of 8 to 10 varieties of pink and grey coloured granites. The hillocks include Voravoh, Churio, Berano, Parodhara, Dhedhvero, Dhingano, Chanida, Densi, Wadhrai, Ranpur and Kharsar, amongst others.

The principal range of Karunjhar is 19km in length and attains a height about 305m.

Geologically there is a variety of Quaternary deposits, subordinate and scattered Juro – Tertiary sandstones and clays, overlying a basement that is termed as the Nagar Igneous Complex. It is divided into Dhedvero basic intrusion, Nagar pink granite and Karunjhar grey granite.
Location and Accessibility
The Nagarparkar igneous complex is exposed in the southern extremity of the Tharparkar desert near the Runn of Kutch (24° 22’ 18” N, 70° 43’ 14” E), covering an area of approximately 1000 sq. km.

The road from Hyderabad to Nagarparkar is metalled, which is near about 475 kms, e.g. Hyderabad - Badin - Mithi - Islamkot - Nagarparkar. Likewise Nagarparkar can also be reached via Karachi, Karachi - Thatta - Sujawal - Badin - Mithi - Islamkot - Nagarparkar. Nagarparkar is also at the other extremity on the Coastal Highway, the new road under construction. Its earth work is completed. It connects Karachi with Nagarparkar via Keti Bundar - Badin - Nagarparkar.

Geotechnical Properties and Feasibility Studies

○ Tested by Associzionz Italiana Bliaostuirz (AIB), Italy

<table>
<thead>
<tr>
<th></th>
<th>Karunjhar Hill</th>
<th>Karunjhar Hill</th>
<th>Diensv Hill</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volumetric weight</td>
<td>2.64</td>
<td>2.61</td>
<td>2.62</td>
<td>2.623 grs/cm³</td>
</tr>
<tr>
<td>Coefficient of water absorption</td>
<td>0.29</td>
<td>0.30</td>
<td>0.35</td>
<td>0.313</td>
</tr>
<tr>
<td>Compressive strength</td>
<td>1282</td>
<td>1149</td>
<td>1215</td>
<td>1215 kg/cm²</td>
</tr>
<tr>
<td>Flexure strength</td>
<td>178</td>
<td>119</td>
<td>132</td>
<td>143 kg/cm²</td>
</tr>
<tr>
<td>Friction wear resistance</td>
<td>1.75</td>
<td>1.00</td>
<td>1.60</td>
<td>1.45 mm</td>
</tr>
<tr>
<td>Impact strength</td>
<td>50</td>
<td>55</td>
<td>45</td>
<td>50.0 cms</td>
</tr>
</tbody>
</table>

○ Dimension Stone Testing values per ASTM Standard Specifications

<table>
<thead>
<tr>
<th>Stone Type</th>
<th>Absorption (max) per ASTM C 97</th>
<th>Density (min) Per ASTM C 97</th>
<th>Modulus of Rupture (min) ASTM C 99</th>
<th>Compressive Strength (min) ASTM C 70</th>
<th>Abrasion Resistance (min) ASTM C 241</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM Standard</td>
<td>-</td>
<td>lbs/ft³</td>
<td>kg/m³</td>
<td>lbs/in²</td>
<td>Mpa</td>
</tr>
<tr>
<td>ASTM C 615</td>
<td>0.40%</td>
<td>160</td>
<td>2,560</td>
<td>10.34</td>
<td>131</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,500</td>
<td>Mpa</td>
<td>10.34</td>
<td>25</td>
</tr>
</tbody>
</table>
Geological succession of the rocks of the Nagar Parkar area

<table>
<thead>
<tr>
<th>Age</th>
<th>Formation</th>
<th>Lithology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent Early Recent</td>
<td>Unconsolidated Quaternary Deposits</td>
<td>Stream bed and flood plain deposits Playa and Evaporate deposits Outwash deposits Piedmont and sub-piedmont deposits Aeolian sand deposits</td>
</tr>
<tr>
<td>Late Pleistocene</td>
<td>Sedimentary Rocks</td>
<td>Runn of Kutch mud deposits Residual deposits: laterite/kaolinite Bartalao Sedimentary Unit</td>
</tr>
<tr>
<td>Pre-Cambrian</td>
<td>Nagarparkar Igneous Complex (Basement)</td>
<td>Basic dykes (youngest) Rhyolites Acid dykes Pink granites Grey granites Basement rocks (Metagabbro, Amphibolites)</td>
</tr>
</tbody>
</table>

The colours of Granite in Nagarparkar area

Due to the colour tone, grain size, mineralogy, geochemistry, and mode of occurrence, the granites are grouped as:

<table>
<thead>
<tr>
<th>Color</th>
<th>Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Pure K-feldspars and plagioclases</td>
</tr>
<tr>
<td>Grey</td>
<td>Quartz, Ca-plagioclases</td>
</tr>
<tr>
<td>Black</td>
<td>Pyroxenes, hornblendes</td>
</tr>
<tr>
<td>Pink to Red</td>
<td>K-feldspars, limonite</td>
</tr>
<tr>
<td>Green</td>
<td>Olivine, plagioclases</td>
</tr>
<tr>
<td>Blue</td>
<td>Sodalite</td>
</tr>
<tr>
<td>Grey-Bluish</td>
<td>Sometimes quartz, feldspars</td>
</tr>
</tbody>
</table>
## Current Status

### Minerals Production – Sindh

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball Clay</td>
<td>1,280</td>
<td>2,450</td>
<td>2,197</td>
<td>4,201</td>
<td>4,715</td>
<td>3,213</td>
<td>741</td>
</tr>
<tr>
<td>Bentonite</td>
<td>2,850</td>
<td>390</td>
<td>95</td>
<td>1,760</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chalk</td>
<td>8,094</td>
<td>9,722</td>
<td>7,881</td>
<td>7,733</td>
<td>7,735</td>
<td>8,146</td>
<td>3,968</td>
</tr>
<tr>
<td>China Clay</td>
<td>15,674</td>
<td>12,968</td>
<td>8,574</td>
<td>7,215</td>
<td>7,041</td>
<td>8,796</td>
<td>10,071</td>
</tr>
<tr>
<td>Coal</td>
<td>994,558</td>
<td>978,540</td>
<td>1,010,469</td>
<td>1,049,042</td>
<td>924,142</td>
<td>917,975</td>
<td>1,066,257</td>
</tr>
<tr>
<td>Dolomite</td>
<td>166,889</td>
<td>182,592</td>
<td>132,478</td>
<td>146,603</td>
<td>123,950</td>
<td>114,059</td>
<td>80,921</td>
</tr>
<tr>
<td>Fuller’s Earth</td>
<td>17,184</td>
<td>14,016</td>
<td>15,186</td>
<td>13,526</td>
<td>10,716</td>
<td>10,312</td>
<td>9,486</td>
</tr>
<tr>
<td>Granite</td>
<td>1,274</td>
<td>948</td>
<td>963</td>
<td>1,047</td>
<td>401</td>
<td>372</td>
<td>282</td>
</tr>
<tr>
<td>Gravel</td>
<td>-</td>
<td>-</td>
<td>3,717</td>
<td>8,275</td>
<td>4,557</td>
<td>9,635</td>
<td>-</td>
</tr>
<tr>
<td>Lake Salt</td>
<td>12,677</td>
<td>14,700</td>
<td>14,375</td>
<td>16,652</td>
<td>11,555</td>
<td>14,375</td>
<td>15,249</td>
</tr>
<tr>
<td>Laterite</td>
<td>15,071</td>
<td>17,865</td>
<td>10,692</td>
<td>5,370</td>
<td>2,020</td>
<td>8,997</td>
<td>755</td>
</tr>
<tr>
<td>Lime Stone</td>
<td>1,995,244</td>
<td>1,900,518</td>
<td>1,900,761</td>
<td>1,579,147</td>
<td>1,528,809</td>
<td>2,393,099</td>
<td>2,573,266</td>
</tr>
<tr>
<td>Marble</td>
<td>1,595</td>
<td>2,620</td>
<td>4,639</td>
<td>5,265</td>
<td>5,766</td>
<td>4,354</td>
<td>548</td>
</tr>
<tr>
<td>Shale Clay</td>
<td>390,236</td>
<td>428,766</td>
<td>488,983</td>
<td>411,661</td>
<td>264,258</td>
<td>300,535</td>
<td>293,787</td>
</tr>
<tr>
<td>Silica Sand</td>
<td>60,263</td>
<td>67,690</td>
<td>59,085</td>
<td>106,130</td>
<td>83,990</td>
<td>81,750</td>
<td>66,823</td>
</tr>
<tr>
<td>Trona</td>
<td>3,054</td>
<td>3,513</td>
<td>3,887</td>
<td>3,484</td>
<td>3,234</td>
<td>1,654</td>
<td>2,371</td>
</tr>
</tbody>
</table>

Source: Censes of Mining and Quarrying Industries 2005-06 Pakistan Bureau of Statistics (PBS)
Investment Process

○ Mining Technology, Value Addition and Value Chain
The on-going practicing mining methods in Sindh have been obsolete, due to the technical obsolescence of mining and quarrying methods i.e. dynamite blasts etc, the percentage of raw material wastage is considerably very high. Sindh Board of Investment welcomes the international investors to bring in sophisticated and advance technology to optimize the mineral extraction in Sindh and offers 1-4 acres plots in Marble City (a project of Government of Sindh) for potential investors interested in mining and quarrying operations. For further details about Marble City project can be read at page # 45.

Grant of Mining Concessions / Lease

Mineral Title
Meant for Large Scale Mining
Mineral Permit
Meant for Small Scale Mining (which involves capital investment of less than 300 million rupees)

○ Stages of Mineral Title

<table>
<thead>
<tr>
<th>Stage</th>
<th>Application Fee</th>
<th>Period</th>
<th>Area</th>
<th>Annual Rent (per sq km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconnaissance License</td>
<td>Rs. 15,000</td>
<td>One year</td>
<td>100 Sq. Km (Maximum)</td>
<td>Rs. 10,000 per sq km</td>
</tr>
<tr>
<td>Exploration License</td>
<td>Rs. 25,000</td>
<td>Three year</td>
<td>1000 Sq. Km (Maximum)</td>
<td>Rs. 15,000 per sq km</td>
</tr>
<tr>
<td>Minerals Deposits</td>
<td>Rs. 100,000</td>
<td>Two years</td>
<td></td>
<td>Rs. 10,000 per sq km</td>
</tr>
<tr>
<td>Mining Lease</td>
<td>Rs. 100,000</td>
<td>Thirty years</td>
<td>Area not exceeding 250 Sq. Km</td>
<td>Rs. 10,000 per sq km</td>
</tr>
</tbody>
</table>


### Charges of Provincial Government on Extraction of Minerals

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name of Mineral(s)</th>
<th>Pakistani Rupees (Per Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coal</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>Clay/Shale</td>
<td>04</td>
</tr>
<tr>
<td>3</td>
<td>Celestite</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Dolomite</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Fullers Earth</td>
<td>08</td>
</tr>
<tr>
<td>6</td>
<td>Fire Clay</td>
<td>06</td>
</tr>
<tr>
<td>7</td>
<td>Laterite</td>
<td>06</td>
</tr>
<tr>
<td>8</td>
<td>Marble</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>Ochre</td>
<td>06</td>
</tr>
<tr>
<td>10</td>
<td>Lake Salt</td>
<td>06</td>
</tr>
<tr>
<td>11</td>
<td>Lime Stone</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>Trona</td>
<td>15</td>
</tr>
<tr>
<td>13</td>
<td>Flint Stone</td>
<td>40</td>
</tr>
<tr>
<td>14</td>
<td>Gypsum</td>
<td>04</td>
</tr>
<tr>
<td>15</td>
<td>Ball Clay</td>
<td>04</td>
</tr>
<tr>
<td>16</td>
<td>Calcite</td>
<td>04</td>
</tr>
<tr>
<td>17</td>
<td>Silica Sand</td>
<td>04</td>
</tr>
<tr>
<td>18</td>
<td>Bentonite</td>
<td>03</td>
</tr>
<tr>
<td>19</td>
<td>Bauxite Clay</td>
<td>04</td>
</tr>
<tr>
<td>20</td>
<td>Granite</td>
<td>140</td>
</tr>
<tr>
<td>21</td>
<td>Quarry License</td>
<td>150/Per Acre/ Per Annum</td>
</tr>
<tr>
<td>22</td>
<td>Surface Minerals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I. Pick up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>II. Tractor – Trolley</td>
<td></td>
</tr>
<tr>
<td></td>
<td>III. Trucks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rs 6/- per ton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rs 36/- per ton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rs 60/- per ton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rs 60/- per trip upto 10 tons load</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rs. 6/ per ton for exceeding 10 ton</td>
<td></td>
</tr>
</tbody>
</table>

### Legal Framework

- National Mineral Policy, 2013
- Sindh Mining Concessions Rules, 2002 are applicable to mining business in Sindh province
- "The Sindh Mining Concession (Granite) Order-2007" regarding procedural matters relating to Granite mining in Sindh,
- The Protection of Economic Reforms Act of 1992
- Foreign Exchange Regulation Act, 1947

The list of indigenous policies, procedures laws, rules and regulation can be downloaded from our website [www.sbi.gos.pk](http://www.sbi.gos.pk)
Dimension and Cutstone
Background
A wide variety of dimension stones, with thousands of shades and colors, are present in nature. Some known names are marble, granite, limestone, travertine and sandstone. Extensive resources of such dimension and cut stones deposits are present in the mountainous areas of Sindh. Dimension stones are cut and trimmed to specific sizes and shapes. Some stone varieties can be polished to increase their attraction.

The stones occur naturally in rocks and are geologically known as igneous, sedimentary and metamorphic rocks. Marble is a metamorphosed form of sedimentary rock, called limestone. However, commercially all calcareous rocks capable of being polished are termed marble.

The best quality marble deposits of Sindh are commercially known as Golden and Coral Marbles. While the large deposits of Golden Marble occur at Sonda (Daduri area) in Thatta district, significant reserves of Coral Marble are also present in Bado Jabal, Bhago Thoro Jabal and other parts of Jamshoro district. In addition, huge reserves of limestone deposits of cut stone quality are present at numerous locations in Thatta and Jamshoro districts. Dimension and cut stones have played a dominating role in the rich architectural and construction history of Sindh and their influence can be found in majestically built historical buildings in Karachi and other parts of Sindh. The use of dimension stone was affected with the invention of reinforced concrete technology. However, in recent years there is worldwide trend of increase in limestone use as building blocks, outdoor decoration slabs and as polished tiles for flooring and elevation.

The use of dimension and cut stones goes back thousands of years. The beauty of dimension and cut stones lies in the fact that it is real or natural and can not be duplicated; it can give an exceptionally long life to buildings with minimal maintenance. The special character and history of dimension stones is reflected in great buildings of the past times constructed thousands of years back. Large blocks of many tons of granite and limestone were used to make great Egyptian pyramids and temples more than 2500 years B.C. In 80 B.C, a multi-story building -The Colosseum ∆ (50 thousand capacity stadium) was built in Rome, using large blocks of travertine stone. Since then, world’s numerous small and large magnificent buildings, such as the Taj Mahal, have been constructed using dimension and cut stones.
In Sindh, the use of limestone and sandstone as a dimension stone dates back to the construction of Ranikot Fort. The historical graveyards/monuments of Chaukundi, which is 29km east of Karachi and Makli in Thatta are more modern examples (14th to 18th century) of the use of dimension and cut stones. These monuments represent the rich cultural and architectural heritage of Sindh. In the past 200 years, numerous buildings in Karachi, Hyderabad, Thano Bula Khan, Sari Singh and other parts of Sindh have been constructed using a variety of limestone and other rocks quarried locally.

Objectives

Based on detailed geological surveys and laboratory investigations carried out as part of the ongoing project “Exploration and Evaluation of Dimension and cut stones deposits in Thatta, Jamshoro, and Dadu districts of Sindh” of the Mines and Mineral Development Department, Government of Sindh, a number of potential/target areas suitable for mining of dimension stone on a commercial basis have been studied. The location of these deposits and other details are shown in the following map and table.
## Location/target areas of dimension and cut stones deposits in Sindh

<table>
<thead>
<tr>
<th>Target Areas</th>
<th>Latitude – Longitude</th>
<th>Type of Work</th>
<th>Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jungshahi</td>
<td>24°-51' - 56.5&quot; N 67°- 43' - 55.20&quot; E</td>
<td>Limestone</td>
<td>Nari/Laki</td>
</tr>
<tr>
<td>Maru</td>
<td>24°-55' - 45.9&quot; N 67°- 46' - 42.40&quot; E</td>
<td>Sandstone</td>
<td>Nari</td>
</tr>
<tr>
<td>Abbas</td>
<td>24°-53' - 26.4&quot; N 67°- 39' - 02.40&quot; E</td>
<td>Limestone</td>
<td>Nari</td>
</tr>
<tr>
<td>Dars (16 Million tons)</td>
<td>24°-46' - 43.3&quot; N 67°- 44' - 24.90' E</td>
<td>Limestone</td>
<td>Nari</td>
</tr>
<tr>
<td>Chilia</td>
<td>24°-49' - 43.9&quot; N 68°- 00' - 50.90&quot; E</td>
<td>Limestone</td>
<td>Lakhra</td>
</tr>
<tr>
<td>Sonda (50 M Tons)</td>
<td>25°-01' - 07.4&quot; N 68°- 12' - 05.20&quot; E</td>
<td>Limestone</td>
<td>Lakhra</td>
</tr>
<tr>
<td>Thano Ahmed Khan</td>
<td>25°-23' - 48.1&quot; N 67°- 44' - 10.60&quot; E</td>
<td>Limestone</td>
<td>Kirtha/Gaj</td>
</tr>
<tr>
<td>Gidari</td>
<td>25°-19' - 40.8&quot; N 67°- 30' - 10.90&quot; E</td>
<td>Limestone</td>
<td>Gaj</td>
</tr>
<tr>
<td>Matar</td>
<td>25°-21' - 54.8&quot; N 67°- 36' - 35.50&quot; E</td>
<td>Limestone</td>
<td>Gaj</td>
</tr>
<tr>
<td>Purkani</td>
<td>25°-16' - 32.0&quot; N 67°- 29' - 20.10&quot; E</td>
<td>Limestone</td>
<td>Gaj</td>
</tr>
<tr>
<td>Mol</td>
<td>25°-23' - 40.9&quot; N 67°- 29' - 20.10&quot; E</td>
<td>Limestone</td>
<td>Gaj</td>
</tr>
<tr>
<td>Fang</td>
<td>25°-32' - 30.0&quot; N 67°- 38' - 28.50&quot; E</td>
<td>Limestone</td>
<td>Gaj</td>
</tr>
<tr>
<td>Badhro</td>
<td>26°-11' - 18.6&quot; N 67°- 37' - 45.00&quot; E</td>
<td>Limestone</td>
<td>Kirthar</td>
</tr>
<tr>
<td>Khadahar (15 M Tons)</td>
<td>25°-25' - 24.2&quot; N 68°- 11' - 05.6&quot; E</td>
<td>Limestone</td>
<td>Lakhra</td>
</tr>
<tr>
<td>Bhago Thoro Jabal</td>
<td>26°-20' - 16.7&quot; N 67°- 52' - 00.6&quot; E</td>
<td>Limestone</td>
<td>Kirthar</td>
</tr>
</tbody>
</table>
Salient Features

○ Topography and Climate
The general topography of the area with dimension and cut stones deposits is that of valleys and hill ranges with nala cuttings. The most prominent features are Kirthar and Laki ranges, which represent major structural highs, due to the anticlinal folds. Valleys have been formed in the large synclines, possessing long axis and have general strikes trending in northeast-southwest direction.

The famous towns in synclines of Jamshoro district are Sari, Mol, Thano Bula Khan and Thano Ahmed Khan. The most prominent physiographic features are Surjan Anticline. The famous Kirthar range is exposed in the west of Karchat, leading to Kanbhu Jabal and ending at Kothar and Hundi Jabal.

○ Water Resources
The rainfall in these areas is minimum, except in the monsoon season. Total rainfall is about 200mm per annum, making water scarcity common feature. However, in some areas, surface and ground water resources are available, for domestic and agricultural needs of the local communities.

a. Surface Water
As these areas are mostly mountainous, canal system is almost non-existent, except in Sonda area of Thatta, where Kalri Beggar feeder, Kinjhar Lake and river Indus are close to the potential target area. In other areas, the natural depression is usually filled during the rainy season, acting as source of water for the local people, for a short period.

b. Ground Water
In many areas, the ground water quality is poor and water is not fit for drinking. However, there are some target areas like Dars, Jungshahi, Abbas, Sari Singh, Thano Bula Khan, where potable quality ground water is being exploited for domestic and agricultural purposes. The ground water is obtained through dug wells, hand pumps. In some areas tube wells have also been installed.

○ General Geology of Dimension and Cut Stones in Sindh
Geologically, the western Sindh consists of hilly terrain and largely comprises of sedimentary rocks. In most cases, the dimension and cut stones quality limestone occur in geological horizons ranging in age from Upper Paleocene to Miocene. Structurally, the accessible horizons with dimension stone are generally characterized by gentle dips, whereas in certain locations, such as Bado Jabal and Bhago Thoro Jabal, the potential horizons lie at the axis of the anticline where nala cuttings are common. The dimension and cut stones deposits occur in the following geological formation.
Current Status and Project Site

In Sindh, quarrying methods being employed are by and large outdated. In general, large blocks of about 10-20 tons are quarried by split and wedge method. In other areas, the dimension stones are generally mined manually. As such, small blocks of stone are separated from the rock mass by initiating cracks through manual hammering by a sharp-edged or chisel-shaped tool. Mobile cranes are mainly used for tilting, lifting and loading of the blocks.

A significant indigenous skilled labour force is available in all these areas, which has been engaged in mining activities for centuries. However, the mining methods they know are low-tech and crude, which result in wastages. However, with some training and exposure to modern mining techniques the local human resource is likely to be a great asset for prospective investors.

Realizing the potential of the area, two plants have been established by the private sector out of which one is a dressing yard in Daduri and the other is a complete processing plant in Jamshoro. The dressing plant in Daduri has the capacity of handling 10-20 ton blocks. The plant in Jamshoro has a complete range of facilities, from making slabs from blocks to cutting and polishing of tiles.

Dimension and Cut Stone Deposits

- Lakhra Formation

The limestone horizons of dimension quality occur in B and C units of Lakhra formation of Paleocene age (60 million years), at around Sonda and Chilla areas of Thatta and at a distance of about 5km west of Liaquat Medical University in Jamshoro. In Sonda areas, the massive limestone bed is about 3-5 feet thick, covered with up to 5 feet overburden, at present. Its fresh surface is golden yellow and because of this color it is named as golden marble. The huge blocks of 10-20 ton are trimmed at onsite processing plant.

- Kirthar Formation

The dimension quality limestone of Kirthar Formation of Upper Eocene age (40 million years) is exposed mainly in the Bado Jabal, Bhago Thoro, Thano Ahmed Khan and Tikku Baran areas. It weathers grayish white and at the fresh surface it is cream to creamy white and in places it becomes white. Some beds are highly fossiliferous, which gives the stone a very attractive appearance, hence this form is known as coral marble. It is present in more than one layer and its cumulative thickness can be more than 10 feet. This stone can contribute significantly if further reserves can be found during the ongoing exploration project.
○ **Nari Formation**

The cut stone belonging to Nari Formation of Oligocene age (25 million years) has a unique homogeneous color, giving it a cool and sophisticated appearance. The blocks are either used with plain surfaces, or various designs are made to make the stone more attractive. These types of plain and designed bricks/blocks are used for the decoration of boundary walls and front Sonda, Thatta District elevations of buildings. Large deposits of Nari Formation Limestone occur at a few miles from the Sari Singh town in Jamshoro district and west of Jungshahi.

○ **Gaj Formation**

The deposits of Gaj formation limestone of Miocene age (20 m years) are found in Mattar area, near Sari Singh. 5-10 square feet. blocks of these stones are mined for making rock and plain faced slabs, for exterior decoration of walls and buildings. This limestone has a very attractive pinkish color, which makes it popular.

○ **Golden Marbles**

The estimated Golden Marble resources of Sonda are over 50 million tons. The scattered outcrops of Golden marble in Sonda area spread over nearly 100 sq. km. The limestone beds occur predominantly in B and C units of Lakhra formation. It is light to dark yellow, with a golden hue. Major chemical constituents are CaO (63-91%), and FeO (Average 10%). Calcite is the major mineral present in the marble. The rock is highly lithified, with strong intergranular bonding.

○ **Polished Golden Marble**

The target area, Sonda, is situated near the famous Kinjhar Lake in Thatta district. The main locations are Lakho Pir, Dadori, Sheikh Ismail, Pir Fatah Ali Shah, and Sumar. There are quite a few locations which are close to the main national highway. Many other quarry locations near the national highway are also easily accessible by four wheel vehicle, as all the remaining roads are unmettelled.

**Thin Section Analysis**

○ **Thin Section.1 Golden Marble**

This limestone is texturally Grainstone, comprising of 60% Bioclast, 20% intraclast with 5% quartz embedded in micritic ground mass, with about 10% organic/opaque matter and Intragranular and Fenestral porosity. Bioclast containd Assilina, Alveolina, Nummulites and Orbitolites embedded in Spary Calcite.
Thin Section.2 Golden Marble

This limestone is texturally Packstone, comprising of 10-15% Bioclast, more than 30% intraclast, with 2% Quartz and 1% Muscovite, embedded in micritic ground mass, with about 60% organic / opaque matter and Fenestral porosity. Bioclast contains Assilina and Cibicides.

Geochemical analysis results of Sonda samples on XRF

<table>
<thead>
<tr>
<th>Sample</th>
<th>CaO</th>
<th>MgO</th>
<th>SiO2</th>
<th>Al2O3</th>
<th>Na2O</th>
<th>P2O5</th>
<th>Fe2O3</th>
<th>TiO2</th>
<th>K2O</th>
<th>MnO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO -7</td>
<td>91.47</td>
<td>0.58</td>
<td>1.89</td>
<td>0.99</td>
<td>0.24</td>
<td>0.08</td>
<td>4.11</td>
<td>0.13</td>
<td>0.06</td>
<td>0.44</td>
</tr>
<tr>
<td>SO - 8</td>
<td>67.51</td>
<td>0.42</td>
<td>1.44</td>
<td>0.63</td>
<td>0.07</td>
<td>0.07</td>
<td>2.93</td>
<td>0.09</td>
<td>0.04</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Kirthar (Coral) Limestone

Kirthar limestone, also called coral marble, is another important dimension stone which is largely found near Sehwan (Bado and Bhago Thoro Jabal) areas. The preliminary results of the ongoing project indicate that this limestone can also compete in the market due to its beautiful texture. Its unique appearance is largely due to the presence of large fossils. Polished tile of Kirthar limestone is shown in top left photograph and some outcrop photos are shown below.

Bado Jabal

The Kirthar Limestone is of good quality and occurs in Kirthar formation. The limestone is in light milky white and offwhite colors, at fresh surface. It is highly fossiliferous and is commonly crystallized. The reserves seem to be of reasonable size. The mining of large size blocks (of 10-15 ton) is occasionally carried out from the top of the Bado Jabal. The ongoing exploration project is focusing upon finding more reserves of this important dimension stone.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Compressive Strength in psi</th>
<th>Specific Gravity</th>
<th>% Water Absorption</th>
<th>Hardness</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO -6</td>
<td>9200</td>
<td>2.49</td>
<td>1.74</td>
<td>More than 3</td>
</tr>
<tr>
<td>SO - 8</td>
<td>12300</td>
<td>2.60</td>
<td>1.57</td>
<td>3-4</td>
</tr>
</tbody>
</table>
Bado Jabal is about 21km to the South of Manchar Lake, Jamshoro district. This target area covers an area of about 46 sq. km. However, the desirable horizon is not accessible due to topographic and structural complexities. The area in general is easily accessible in all weathers.

Bhago Thoro is about 5km to the south of Sehwan town, Jamshoro district. Indus River and Lal Bagh are famous here. This target area covers a significant area where Kirthar formation is exposed.

- **Sari Singh Depoists**
  Huge deposits of dimension and cut stones are found in Sari Singh area of Thano Bula Khan Taluka. The yellow colored limestone of Nari formation and light pink colored limestone of the Gaj formation are the main varieties used for making blocks, designed bricks and rock and split faced small slabs. The deposits occur in Mattar, Gidari, Purkani, and Mol areas. The stones from this area are being used locally and also are supplied to markets in Karachi and Hyderabad.

  The deposits in Sari Singh area are located at 5 to 10km distance from the Sari Singh town and are accessible in fair weather conditions, by a four wheel or other suitable vehicle.

- **Mining Techniques**
  In Sonda area (Daduri) of district Thatta, large blocks of about 10-20 ton are quarried by split and wedge method. Mobile cranes are used for tilting, lifting and loading of the blocks. In other areas, the dimension and cut stones are generally mined manually. At other places, the small blocks of stone are separated from the rock mass by initiating cracks, through manual hammering on the sharp edged or chisel shaped tool.

- **Sari block Factory**
  At various locations where quarrying activity is carried out, skilled workforce is locally available; they have been engaged in this work since a long time. Under the existing methods, significant proportion of excavated dimension stone goes waste, in the form of crushed material. Their methods, however, can be improved through the intervention of stakeholders, by introducing mechanized and cost effective mining methods for producing ideal end-products i.e. large, solid, relatively flawless blocks of stone of attractive texture and color at a minimum cost.
○ Processing Plants

Realizing the potential of the area, two plants; one dressing yard in Daduri and the other a complete processing plant in Jamshoro, have been installed by the private sector. The dressing plant in Daduri has the capacity of handling 10\(\sqrt{20}\) ton blocks. The plant in Jamshoro has a complete range of facilities, from making slabs from blocks to cutting and polishing of tiles.

Investment Process

○ Mining Technology, Value Addition and Value Chain

The on-going practicing mining methods in Sindh have been obsolete, due to the technical obsolescence of mining and quarrying methods i.e. dynamite blasts etc, the percentage of raw material wastage is considerably very high. Sindh Board of Investment welcomes the international investors to bring in sophisticated and advance technology to optimize the mineral extraction in Sindh and offers 1-4 acres plots in Marble City (a project of Government of Sindh) for potential investors interested in mining and quarrying operations. For further details about Marble City project can be read at page # 45.

Legal Framework

- National Mineral Policy, 2013
- Sindh Mining Concessions Rules, 2002 are applicable to mining business in Sindh province
- The Protection of Economic Reforms Act, 1992
- Foreign Exchange Regulation Act, 1947

The list of indigenous policies, procedures laws, rules and regulations can be downloaded from our website www.sbi.gos.pk
Marble City

Keeping in view the success of SEZs in developing specific sectors, both in the developed and industrialized countries, the Government of Sindh is developing a State of the Art Industrial Enclave on 300 Acres to uplift the marble and granite sector in Sindh. The Marble City project shall have tremendous investment and growth potential for entrepreneurs being based on cutting edge stone technology, innovation and services.

The concept is based on cutting edge stone technology and custom facilities to create largest and most technologically advanced industrial park for Dimension Stone (Marble & Granite) in Karachi. The dedicated entity namely “Sindh Stone Development Company” has been formed to develop the Marble City Project.

Objectives

- Value addition of stone and mineral resources
- Attract Foreign Direct Investment for production and processing
- Better Jobs in terms of working conditions
- Increase income resulting from improved skills imparted by the training.
- Increase direct and secondary job creation, supporting poverty alleviation.
- Enhance exports of marble, granite and others stones.
- Waste reduction and increased productivity in the stone sector

Common Facility & Training Center (CFTC)

The CFTC will provide training and support to the industry in high tech areas such as water jet technology, chamfering, cut to size, auto polishing lines etc., provide training and support the industry, in providing processes, those are not available otherwise in individual units. CFTC will comprise the following:

- Modern Machinery Production Lines for Cutting, Finishing, Sizing, Polishing, Square Blocks, Packaging.
- Trainings in Mosaics, Inlay, Handicraft and Cutting for semi and skilled manpower.
- Marketing techniques and presentation/display skills at trade fairs
- Requirement of training in processing of stone to produce better quality products for all the current product lines such as tiles & introduce new products based on new skills development & market demand to engage the local inhabitants.
In addition to the above-mentioned components, the CFTC will also train processors and workers to:

- Check for the overall quality of the products and improve packaging for the market.
- To develop improved Sales, Purchase & Services skills and to set up a CFTC marketing Department to handle selling and purchasing of products manufactured at the CFTC and by those processors using its facilities.
- Select and purchases stone waste and blocks for processing into handicrafts, mosaics and other products developed by the CFTC.
- Increased direct and secondary job creation supporting poverty alleviation in the area.
- Increased investment, production, and higher wages as a result of higher demand and improved quality products.

**Warehouse**

- Warehouse shall provide storing, stacking, and cutting/squaring services for irregular shaped blocks of Marble, Granite and Onyx for their extractors and processors in the country on rental basis. The warehouse would be used to store raw Marble and Granite blocks on rental basis to provide single place for all sort of M&G buyers and sellers within and outside the country.
- The warehouse will also add value to the raw blocks by properly squaring them to improve processing efficiency and exportability at low and affordable charges. The facility will also produce processed raw material for Marble & Granite handicrafts and chips making industry as a byproduct by using the wastages left from cutting/squaring the M&G blocks.

**Waste Water Treatment Plants / Slurry Management**

- In order to address the environmental concerns, water treatment plant / re-cycling unit will be facilitated that address the effective water utilization and prevent the wastage and pollution.
- Slurry waste will further utilized in the manufacturing of bricks, road construction, in cement & glass industries and in pharmaceuticals.

**Mechanical & Electrical Workshops / Services**

- For the provision of mechanical and electrical support at site, local service providers will be provided commercial land for the erecting, repair and maintenance services within the marble city.
Support facilities
• Establishment of stone testing laboratory
• Marketing Support Services
• Expo Centers/ Display centers
• Collaborating with local and foreign institutions.

Research & Development
• Market & technology research
• Conformity & compliance to international trade requirements regarding Stone Testing & Branding
• Create a pool of local and international sector experts
• Mapping of stone reserves of Sindh
• Develop Academia Industry Linkages
• Benchmarking industrial processes and procedures with international standards (Italy/China/Turkey/Brazil/India etc)
• Conduct research/strategic case studies for quality improvement and environmental concerns with academia and bodies of international repute.

Investment Opportunities
• Infrastructure development
• Captive power plant
• Quarrying (Mining)
• Training centre
• Warehousing
• Machinery pool
• Waste Water Treatment facility
Project Benefits
The program will have the following benefits:

1. Product diversification and innovation
2. Economies of scale
3. Better quality jobs in terms of working conditions and income resulting from improved skills imparted by the training
4. Reduction in processing waste through its utilization in making of better quality and better designed handicrafts and mosaics
5. Poverty alleviation through Skill Development in the area
6. Increased direct and secondary job creation
7. Increase in the exports of value added products

Socio-Economic Impacts of the Project

1. Employment Generation
The Marble City with all established units will employ around 6000-8000 direct labor and around 15000 indirect labors.

2. Environmental Impact
Various schemes including plantation, sewerage water/waste water treatment plans, slurry management unit and incentives to the industry for provision of green areas in the units are proposed.

3. Education & Skill Development
Local inhabitants will be provided the technical and vocational training for modern quarrying and processing practices. The trainees shall not only serve the needs of the local industry but also serve the foreign countries.

Sectoral Impact

1. Technology Transfer in Remote Areas
The transfer of technology will dissipate to the under developed region of Sindh where the project is proposed.

2. Competitiveness
Marble City will support clusters in developing value chains and that too at an organized and well integrated manner. This will drastically reduce production costs, improve quality and enhance awareness amongst all units inside the City which will largely make them internationally more competitive.
3. Minimization of Mushrooming
Various informal clusters of Marble & Granite Industry have been created at various locations, causing serious threat to residential areas and health of residents besides depriving them with the benefits of integrated value chain management. This project will help such units reap the benefits of integrated set ups at the Marble City.

**Important Milestone Achieved**
- Formation of Sindh Stone Development Company (SSDC) in collaboration with Mines & Minerals Department and Industries & Commerce Departments, GoS.
- Representation of Marble and Granite Businessmen on the Board of Directors.
- 300 Acres land allotted by Government of Sindh.
- Procurement of the land by SBI through execution of Lease Deed.
- Marble City Need Assessment carried out. Conceptual Master Planning initiated.
- The Project is envisaged to be executed either through SSDC platform or under Public Private Partnership (PPP) mode.
- 300 feet wide road from Hub Dam Road is provided to access the marble city.
**Investment Plan**
Government of Sindh invites investments in Granite mining and Cutstone in Public Private Partnership (PPP) mode and offers all kind of support and assistance to investors.

**Incentives offered by GoS/GoP**

**Taxes and Levies Applicable to Mines and Mineral Sector in Pakistan/Sindh**

- **Income Tax**
  - **Rate of Corporate Tax**
    The Government embarked upon a progressive reduction in the effective rate of corporate tax. The applicable rate of tax as regulated under the Income Tax Ordinance, 2001, is 34% for companies.

- **Minimum Corporate Tax**
  A minimum amount of corporate tax is payable annually at the rate of 1.0% of the declared turnover by resident companies. However, where the corporate tax payable exceeds this amount in any year, the minimum tax is not charged.

- **Exemption from taxation on refining or concentration of mineral deposits**
  Exemption from taxation on profits from refining or concentrating mineral deposits is also allowed at the rate and for the period prescribed under tax laws.

- **Pre-commencement expenditure**
  Expenditure incurred before commencement of business including feasibility studies etc., is also allowed to be amortized on a straight line basis at the specified rates.

- **Development Expenditure Deduction and Loss Carry Forward**
  Expenditure incurred on exploration operations qualifies for immediate deduction in the determination of taxable income. Expenditure incurred for project development operations will be allowed deduction at a rate of 25% per annum, in line with international practice. However, the depletion allowance will be allowed as per provision of current tax laws.

- **Ring-Fencing**
  A mining company will be assessed for income tax on the entirety of its mining operations in Pakistan.

- **Withholding Taxes**
  - **Dividends**
    Except where lower rates are specified in the Avoidance of Double Taxation Treaty with the country of the recipient, the withholding tax levied on dividends paid is 10%.
Non-Resident Contractors
The rate of withholding tax is 6% on payments made either in full or part to a non-resident on the execution of a contract or sub-contract under a construction, assembly or installation project in Pakistan, including a contract for the supply of supervisory activities in relation to such project.

The tax collected shall be a final tax if the contractor furnishes on option under clause (4) of the Part-IV of the Second Schedule to the Income Tax Ordinance, 2001.

Interest
Interest paid to non-residents in respect of availed approved loans is exempt from withholding tax.

Royalty & Fee for Technical Services
Tax @ 15% shall be deducted from the gross amount paid to a non-resident person on account of royalty and fee for technical services.

Other Taxes
Sales Tax
Mining companies shall be liable to pay general sales tax at the rate prescribed by the Government from time to time.

Additional Profits Tax (APT)
An Additional Profits Tax is payable by large scale mining companies at agreed rates based on the economic projections as stipulated in the agreement with the Government.

The APT will be determined based on a three-tier mechanism and will be payable only when the mining project achieves the agreed threshold level of profitability. The three-tier mechanism is summarized below:-

<table>
<thead>
<tr>
<th>Rate of Return (ROR) Threshold</th>
<th>Resource Rent Tax (RRT) Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>25%</td>
<td>18%</td>
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</table>

APT will only be paid if the mining project earns an after-tax real (i.e. inflation – adjusted) rate of return of 15%. The second and third tiers of RRT become payable once the profitability levels exceed 20% and 25% respectively.
Other Levies

Workers Profit Participation Fund (WPPF)
A levy is payable to the Trustees of WPPF at an agreed percentage of net profits as per accounts for the year by companies and associations of persons with more than 20 members (partners) engaged in industrial undertaking, and employing 50 persons or more, whose paid-up capital is Rs 2.00 million or more and/or the fixed assets are Rs 4.00 million or more.

Workers Welfare Fund (WWF)
A levy is payable by companies engaged in industrial undertaking at an agreed percentage of the taxable income of the year where such income is Rs500,000 or more.

Workers Children Education Cess
This is a provincial levy payable in every quarter by an establishment employing 20 workers or more at Rs25 per worker per quarter, except in case the employer has made arrangements for the education of children of his/her workers or cess/excise duty is paid under the Excise Duty on Minerals (Labour Welfare) Act, 1967.

Employees’ Social Security Contribution
This is a provincial levy requiring every employer employing ten or more workers with wages up to Rs7,000 per month to pay Rs. 370 per wage earner including Rs. 20 contributed by the wage earner per month to the Employees’ Social Security Institution while the workers and their family members are provided free medical treatment, maternity benefits and other assistance.

Employees’ Old-Age Benefits
Every employer employing ten or more persons is to contribute 6% of their salary up to a maximum of Rs. 210 per month to the Employees’ Old Age Benefits Institution in respect of each employee, including Rs. 30 per month contributed by such employee who will be entitled to old-age pension on attaining the age of 55 & 60 years in the case of women and men, respectively.

Excise Duty on Minerals
All dispatches of specified minerals from mines are subject to levy of a cess/duty of excise at the notified rate from one to five rupee per ton, meant for financing measures for promoting the welfare of labour employed in the mining industry.

Surface Rent & Compensation
The respective Government will ensure adequate access and freedom to the mineral title holder to carry out the prospecting, exploration, exploitation and processing activities etc. while the mineral title holders will provide fair surface rent and compensation to the landowner as prescribed under the mineral concession rules.
Concessions on Imports

For Mining Companies and Mineral-Based Industry
There is no customs duty and sales tax on the import of machinery, equipment, materials, specialized vehicles (4x4 Non-Luxury), accessories, spares, chemicals and consumables meant for mineral exploration phase. These concessions are applicable to Mineral Exploration and Extraction Companies or their authorized operators or contractors who hold permits, licenses, leases and who enter into agreements with the Government of Pakistan or Provincial Government, subject to the condition that imported goods shall not be sold or otherwise disposed of without prior approval of the Federal Board of Revenue and payment of customs duties and taxes levy-able at the time of import.

However, customs duty at the rate of 5% ad-valorem with no sales tax is payable on import of such machinery meant for the mine construction phase or extraction phase, with the added advantage of entitlement for deferred payment of duty for a period of five years subject to 6% surcharge per annum.

For Local Manufacturers of Mining Machinery
In order to encourage local manufacture of machinery and equipment needed by the mining industry, raw material will be subjected to customs duty at the rate of 10% with 15% sales tax but on components and machinery customs duty at the rate of 10% with no sales tax, will be levied if imported by local manufacturers for mining machinery and equipment for mining operations only.

National Minerals Policy, 2013
The new National Mineral Policy-2013 seeks to address revolve around the following five broad themes:

• Increasing the economic contribution of mining sector to Pakistan’s economy through more private investment.
• Being competitive for scarce and mobile international capital for investment in the mining sector through a stable and enabling environment.
• Ensuring smooth operational and effective coordination between Federal and Provincial institutions in the implementation of the regulatory and legislative regime for the mining sector.
• Ensuring that exploration, development and production of Pakistan’s mineral resources are environmentally sustainable.
• Encouraging small scale mining and local private participation in the development of the sector.

Environmental Legislations/Laws
Government of Pakistan is signatory to number of international environmental protocols and agreements (a list is provided below), therefore, number of indigenous legislations and laws are legal binding to the foreign and domestic investors without any discrimination.

2. Plant Protection Agreement for the South-East Asia and Pacific Region (as amended), Rome, 1956.
Companies will be expected to ensure that their mining operations are carried out in an environmentally acceptable and safe manner and that such operations are properly monitored. To ensure that the mineral resources development activities are undertaken in an appropriate manner, environmental stewardship needs to be incorporated throughout the development process. This can be achieved through:

- Implementation of the regulatory environmental management measures including Environmental Impact Assessment, as well as environmental management system, plan and audit
- Compliance with the national environmental protection law and other appropriate national and international standards, codes, guidelines and policies;
- Ensuring effective implementation of progressive post-mining rehabilitation;
- Promoting the recovery, recycling and reuse of minerals, metals and mineral-based products
- Ensuring the implementation of effective mine waste management measures
- Promoting and disseminating information on the use of best mining practices, public disclosure and corporate social responsibility (CSR).
Enforcements of Investors’ Rights

All foreign investors in relation to the establishment, expansion, management, operation, and protection of their investments shall be accorded fair and equitable treatment without discrimination. As per the Clause 4 of the Protection of Economic Reforms Act of 1992 which is reproduced as under:

**Freedom to bring, hold, sell and take out foreign currency:** All citizens of Pakistan resident in Pakistan or outside Pakistan and all other persons shall be entitled and free to bring, hold, sell, transfer and take out foreign exchange within or out of Pakistan in any form and shall not be required to make a foreign currency declaration at any stage nor shall be one be questioned in regard to the same.

Pakistan has signed Bilateral Investment Treaties (BITs) with 47 countries, of which 26 are in force. A further 27 are under negotiations. Foreign investors look favorably upon the existence of a BIT between their home and host country as a means to have stronger protections of their investments. However, the existing BITs have been negotiated over a period of 50 years by various ministries and there are great inconsistencies between them, which create legal uncertainty for both investors and the government.

Repatriation Facilities. -

Subject to the provisions of the Foreign Exchange Regulation Act, 1947:

a. A foreign investor in an industrial undertaking established after the 1st day of September, 1954, and approved by the Federal Government, may at any time repatriate in the currency of the country from which the investment originated-
   1. foreign private investment to the extent of original investment;
   2. profits earned on such investment; and
   3. any additional amount resulting from the reinvested profits or appreciation of capital investment; and

b. A creditor of an industrial undertaking referred to in clause (a) may repatriate foreign currency loans approved by the Federal Government and interest thereon in accordance with the terms and conditions of the said loan.
Incorporation of Company in Pakistan/Sindh

The companies in Pakistan/Sindh are formed and incorporated under the Companies Ordinance, 1984. Please refer www.secp.gov.pk for further details regarding rules and regulation of incorporation of company in Pakistan.

The relevant institutions/department of Government of Pakistan responsible for companies incorporation is Securities and Exchange Commission of Pakistan (SECP). The contact details of SECP - Karachi companies’ registration office is as under;

**Mr. Sidney Custodio Pereira**  
Joint Registrar  
Securities & Exchange Commission of Pakistan  
Company Registration Office  
State Life Building-2, 4th Floor North Wing, Wallace Road, Karachi  
**Tel:** +92-21-99213272  
**Email:** sidney.pereira@secp.gov.pk
Contact us

Sindh Board of Investment
Government of Sindh

1st Floor, Block B, Finance & Trade Center, Shahra-e-Faisal, Karachi, 74200
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