



MINERAL POTENTIAL OF PUNJAB, PAKISTAN

**Mines & Minerals Department,
Government of the Punjab**

Investment Opportunities of Mining Sector in Punjab, Pakistan

AGENDA

- ▶ INTRODUCTION TO MINES & MINERALS DEPARTMENT, GOVERNEMENT OF PUNJAB
- ▶ STRENGTHS OF PUNJAB IN MINERAL SECTOR
- ▶ MINERALS FOUND IN THE PROVINCE
- ▶ KEY INVESTMENT OPPORTUNITIES OF THE PROVINCE
- ▶ RULES & REGULATIONS

Introduction of Mines & Minerals Department, Government of Punjab



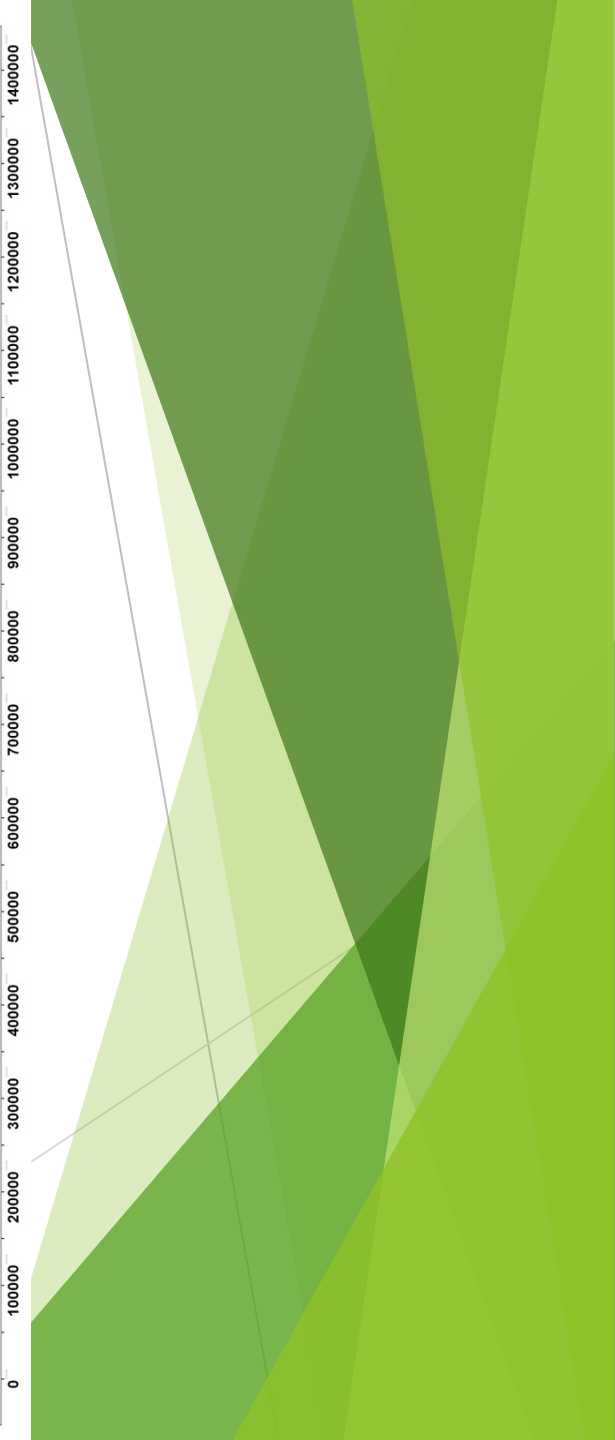
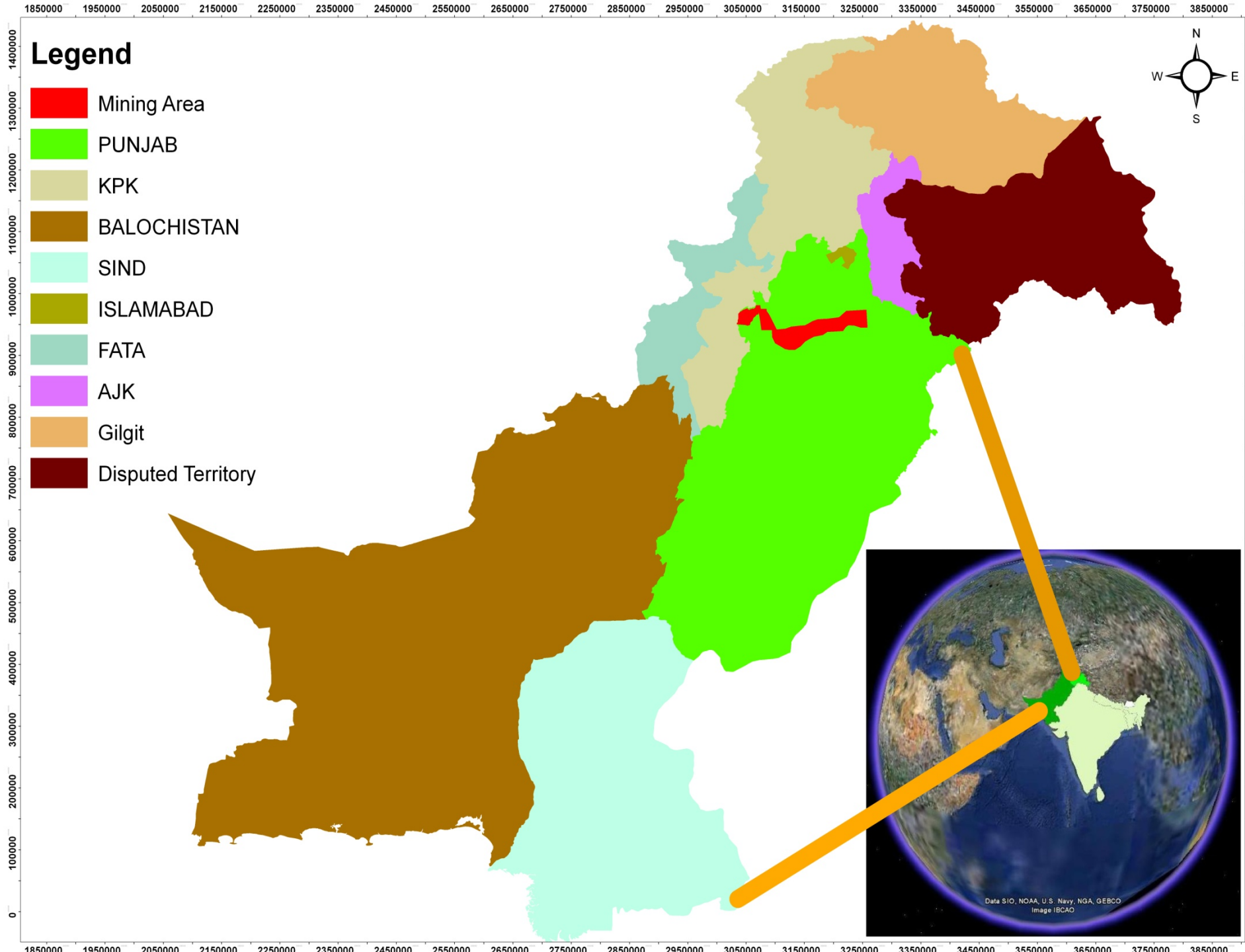
STRENGTHS OF PUNJAB MINERAL SECTOR

- ▶ Minerals of Punjab provide the resource base of its Industrial Sector
- ▶ Around 20 Minerals under excavation including Coal, Limestone, Gypsum, Rock Salt etc by approximately **2300 Entrepreneurs**
- ▶ **57 Industrial Leases** under large Corporations/Multinationals for industrial production of Cement, Soda Ash, Caustic Soda, Fertilizer, Glass, Ceramics, Coal etc.
- ▶ Punjab has the World's largest **Rock Salt deposits** in Salt Range

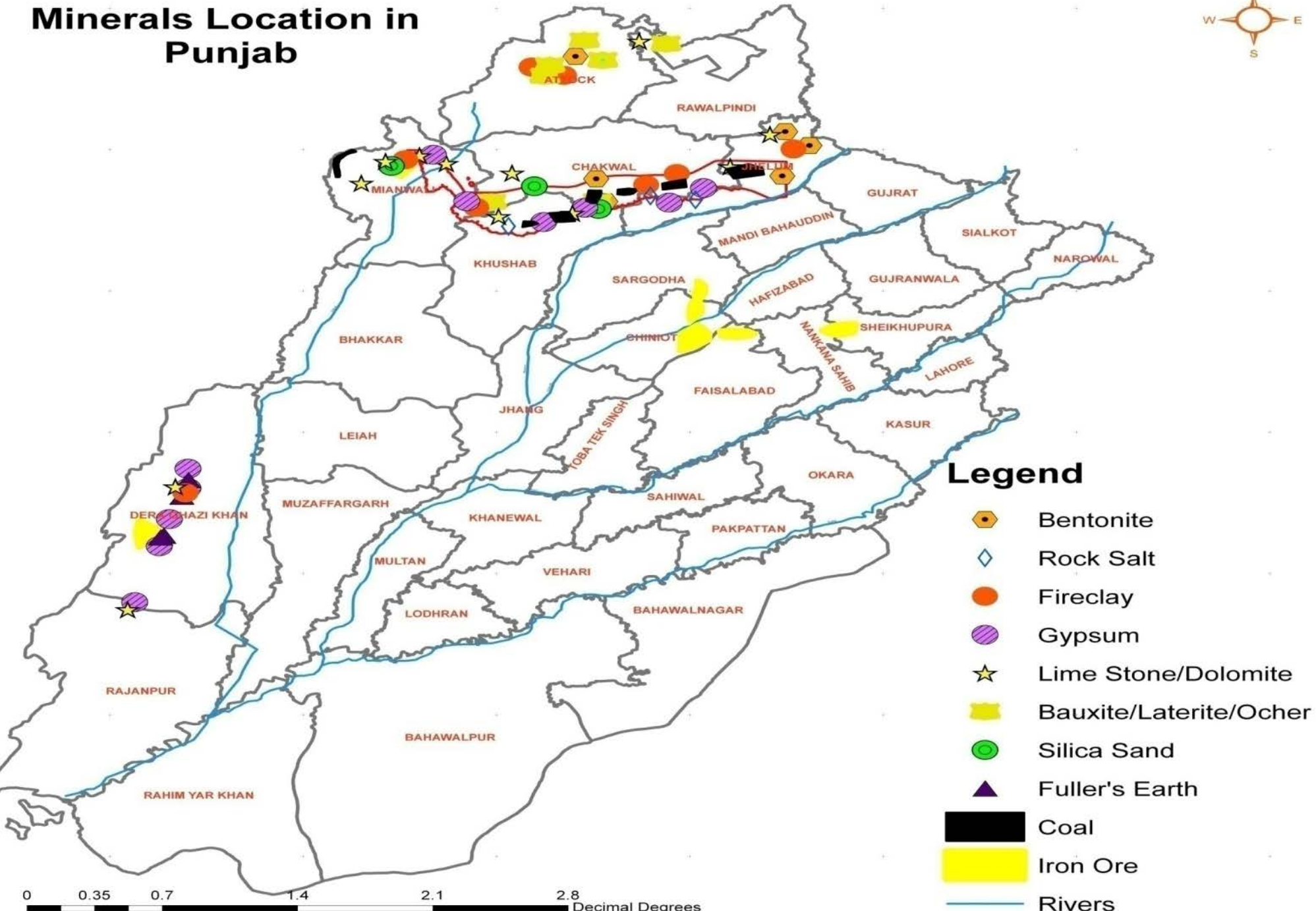
MINERAL BASE OF PUNJAB

- Our Province, Punjab is rich in industrial, construction and energy minerals. Following are the minerals usually exploited in the region.

ARGILLACEOUS CLAY	IRON
BAUXITE	LITRITE
BENTONITE	LIMESTONE
BRINE	ORDINARY SAND
CHINA CLAY	ROCK SALT
COAL	SAND STONE
FIRECLAY	SILICA SAND
FULLERS EARTH	SLATE STONE
GRAVEL	SPOTASH BRINE
GYPSUM	OCHER



Minerals Location in Punjab



Legend

-  Bentonite
-  Rock Salt
-  Fireclay
-  Gypsum
-  Lime Stone/Dolomite
-  Bauxite/Laterite/Ocher
-  Silica Sand
-  Fuller's Earth
-  Coal
-  Iron Ore
-  Rivers

0 0.35 0.7 1.4 2.1 2.8 Decimal Degrees

KEY INVESTMENT OPORTUNITIES

- ▶ **Developing Steel Industry - Smelting and Processing of Metallic Mineral Resources i.e. Iron Ore**
- ▶ **Establishing Cement Plants including opportunities for Mergers, Acquisitions and Joint Ventures**
- ▶ **Establishing Rock Salt Based Chemical Plants including opportunities for Mergers, Acquisitions and Joint Ventures**
- ▶ **Strengthening Silica Sand based Industries (Glass, Silicon chips etc.), Manufacturing and Export**
- ▶ **Tapping resources of Fireclay for utilization in Ceramics Industry**
- ▶ **Gypsum Based Industries; Extraction and Processing.**



IRON ORE RAW METRIAL



STEEL MILL



CEMENT RAW MATERIAL



**12 CEMENT FACTORIES INSTALLED
MORE POTENTIAL**



ROCK SALT RAW MATERIAL



CHEMICAL INDUSTRY



SILICA SAND



GLASS INDUSTRY & SILICON CHIP TECH.



CERAMIC RAW METRIAL



INDUSTRIAL PRODUCTS



GYP SUM RAW MATERIAL

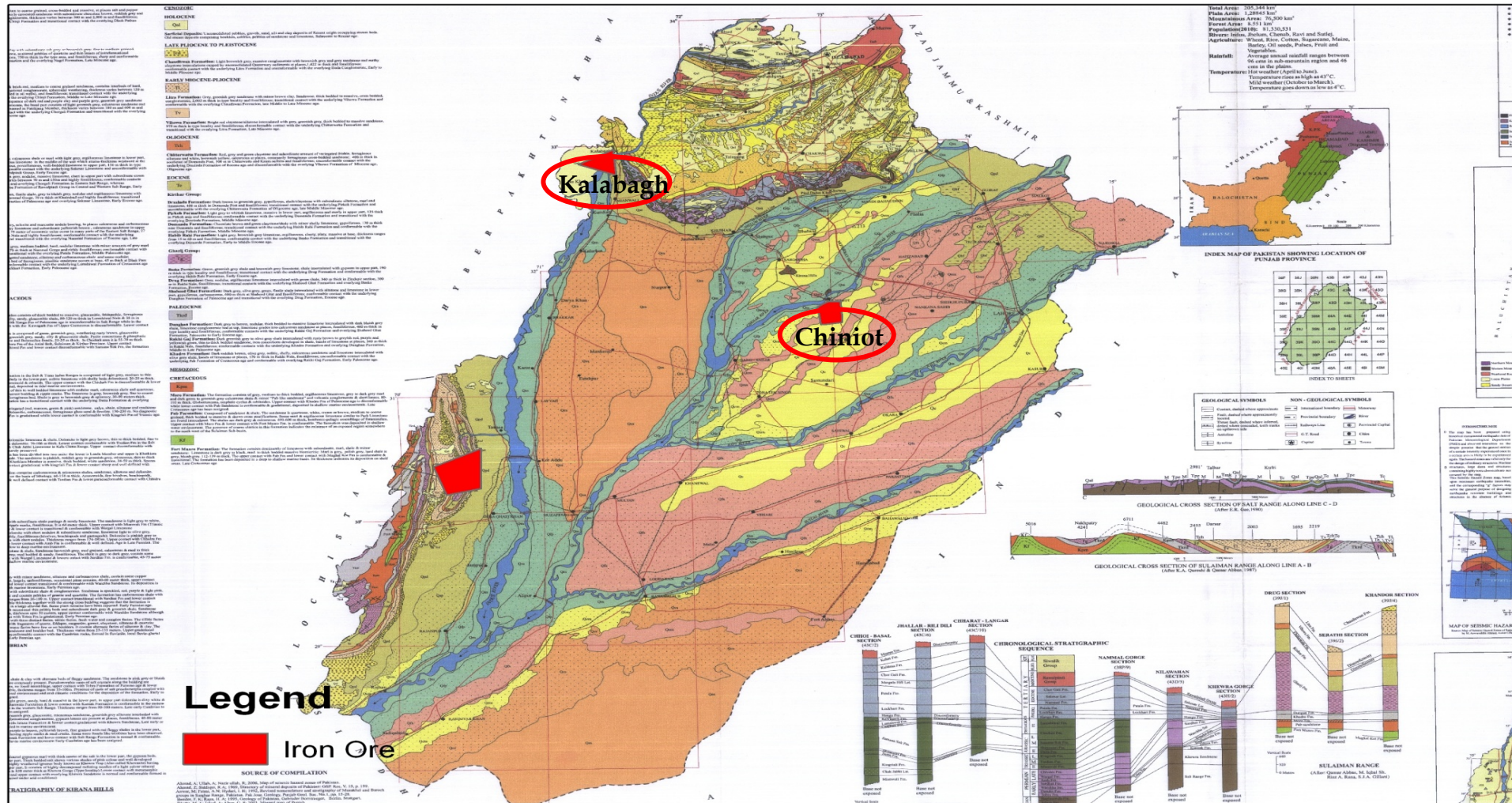


GYP SUM FERTILIZERS ETC.

Developing Steel Industry

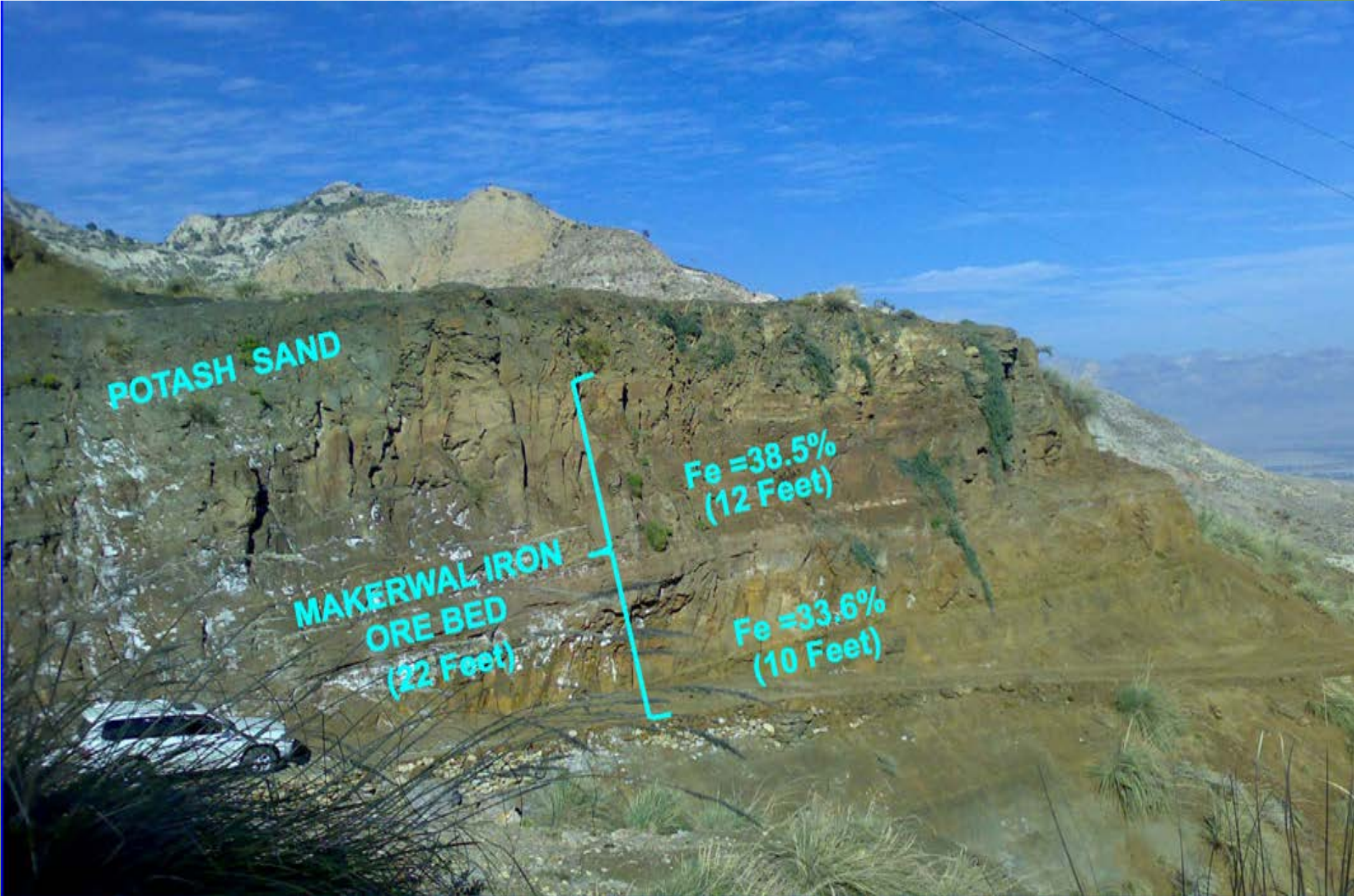
- ▶ **Kalabagh Iron Ore Deposit**
- ▶ **Chiniot-Rajoa Iron Ore Deposit**
- ▶ **Koh Sulaman Range Iron Ore Deposits**

IRON ORE POTENTIAL IN PUNJAB



KALABAGH IRON ORE DEPOSIT

- ▶ **According to the historical estimates and past studies, 300 MT iron ore deposits exist near Kalabagh, District Mianwali**
- ▶ **IMC-Montan Consulting GmbH has developed economically viable process for sponge iron and steel using Kalabagh iron ore and indigenous Pakistani coal**
- ▶ **Utilization of vast reserves of indigenous Kalabagh Iron Ore and Pakistani coal.**



POTASH SAND

MAKERWAL IRON
ORE BED
(22 Feet)

Fe = 38.5%
(12 Feet)

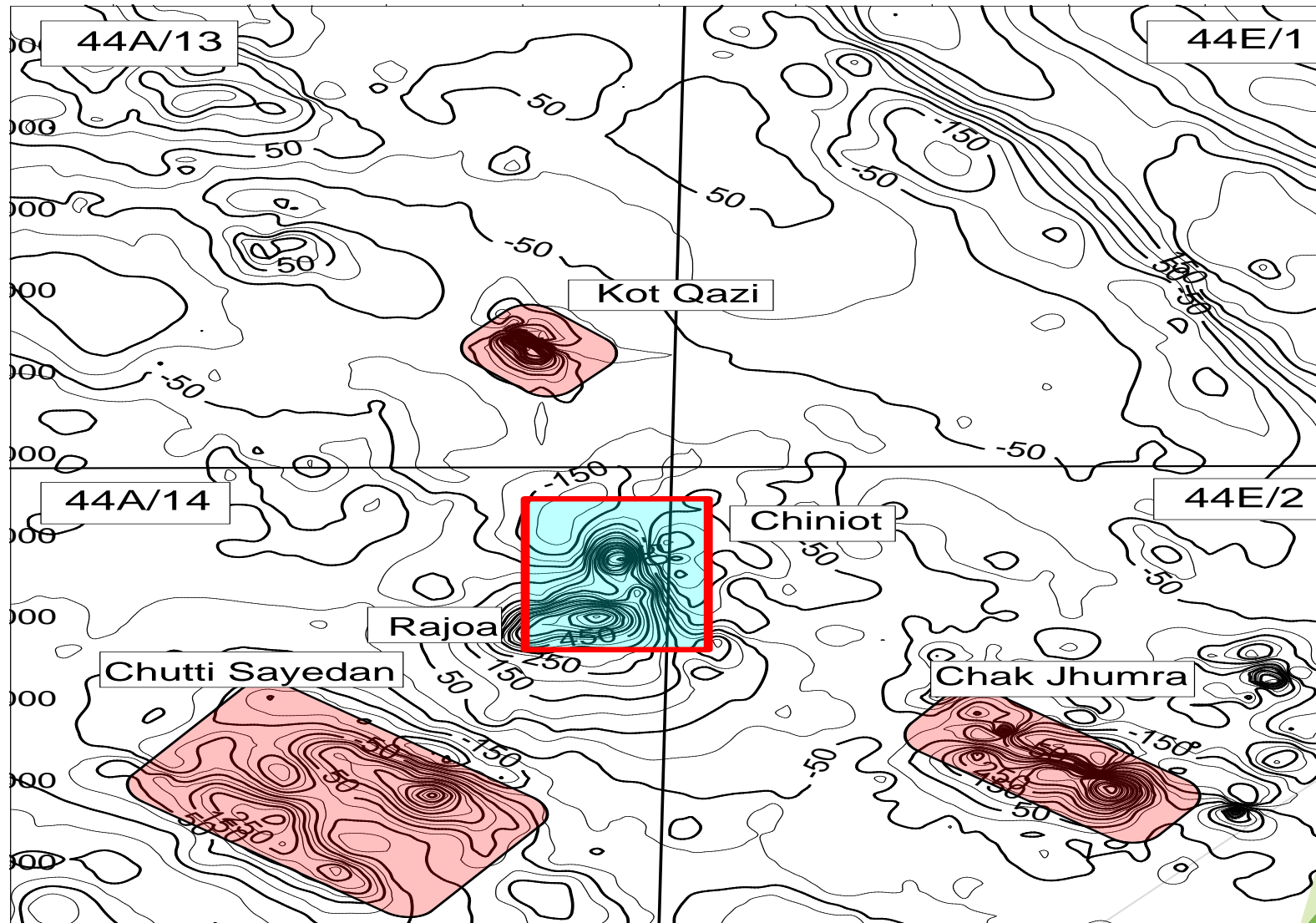
Fe = 33.6%
(10 Feet)



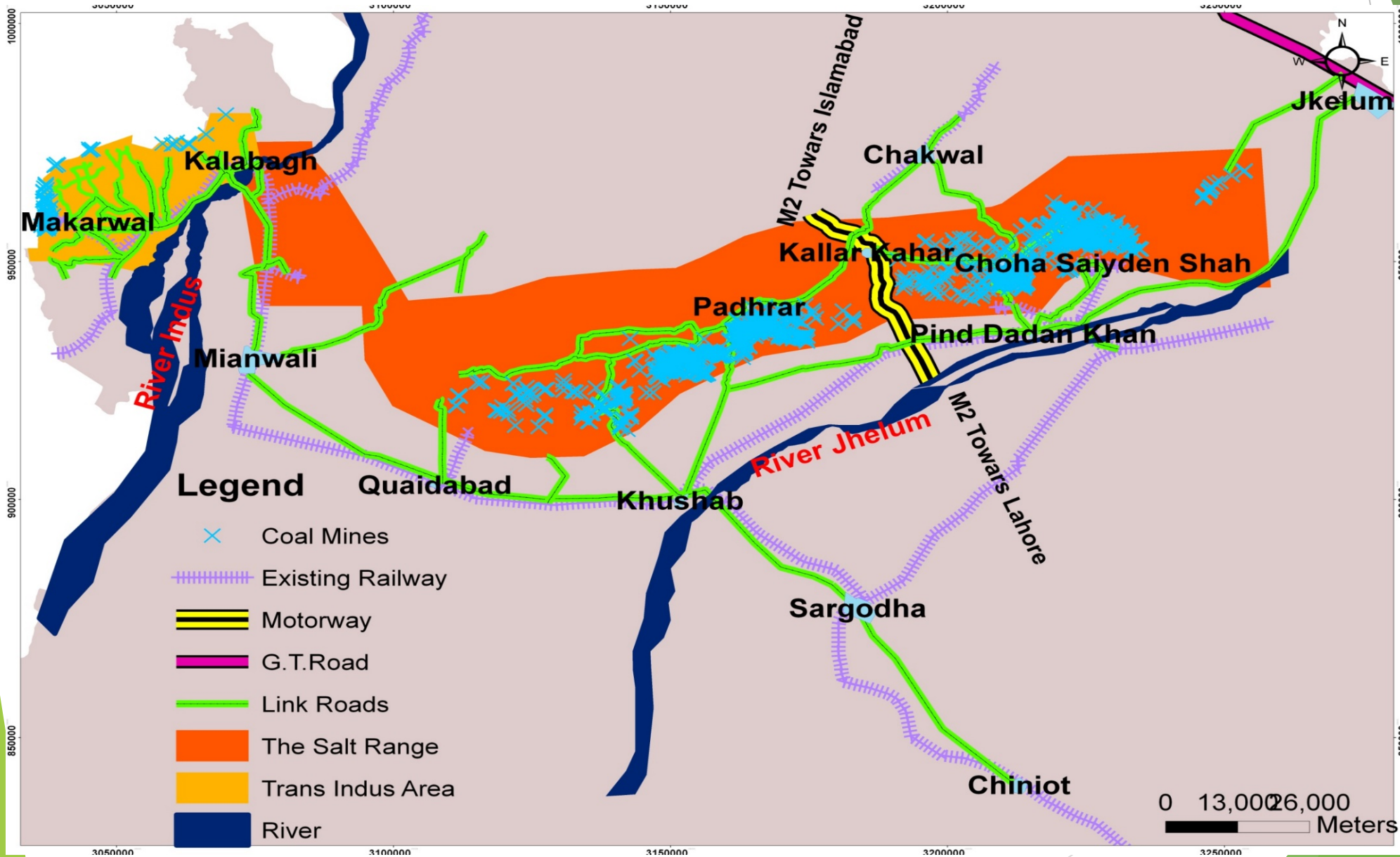
Current Status of Chiniot-Rajoa Iron Ore Estimation Project

- ▶ **MCC China working as Contractor with German Resident Supervision to complete Chiniot Iron Ore Resource Estimation by February 2016.**
- ▶ **Procurement of Transaction Advisory Services for Feasibility Study and selection of Concessionaire / Investor(s) for Iron / Copper Mining and Steel mill in Chiniot, Punjab, Pakistan” in process.**

New Anomalies Detected in Geo-Physical Survey



INFRASTRUCTURE AVAILABILITY



INVESTMENT IN CEMENT INDUSTRY



DOMESTIC CEMENT INDUSTRY IN PUNJAB

- ▶ **Mainly located in the Salt Range like Chakwal & Mianwali and Suleiman Range in Dera Ghazi Khan, Attock, Punjab, Pakistan**
- ▶ **Product Range:**
 - 1. Ordinary Portland Cement**
 - 2. Sulphate Resistant Cement**
 - 3. Quick setting cement**
 - 4. Low Alkali Ordinary Portland Cement**
 - 5. Clinker**

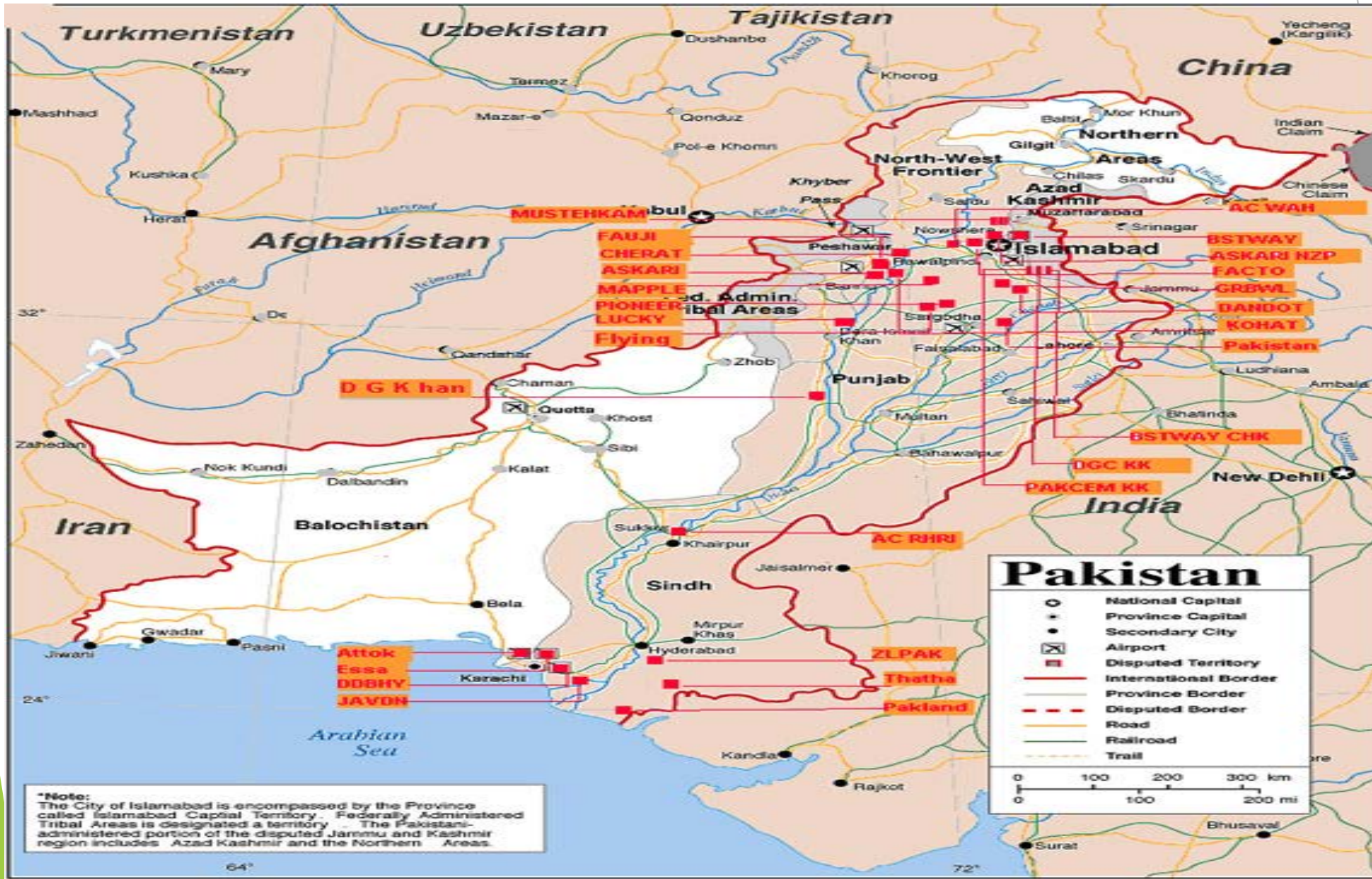
Major Players in Cement Industry

Pakistan is the **6th largest** cement exporter in the world.

Major export destinations are Sri Lanka, Afghanistan, Middle East, India, South Africa, Middle East

- ❑ Lucky Cement: Karachi (1 plant), Pezu (1 plant)
- ❑ DG Cement: Chakwal (1 plant), D.G.Khan (2 plant)
- ❑ Bestway Cement: Chakwal
- ❑ Askari Cement: Wah Cantt
- ❑ Gharibwal Cement: Chakwal (2 plant)
- ❑ Dandot Cement: Jhelum
- ❑ Mapple Cement: Mianwali
- ❑ Fauji Cement: Attock
- ❑ Pioneer Cement: Khushab
- ❑ Flying Cement: Khushab
- ❑ Pak Cement: Chakwal

Domestic Cement Industry



Raw Materials for Cement Industry

► Availability of Resources

1. **Limestone**

Attock, Rawalpindi, Chakwal, Khushab, Mianwali, D.G.Khan

Beds are thick and massive, capable of being mined and developed using benching and slicing techniques.

2. **Lateritic clays, Gypsum and Argillaceous Clays**

Available in the vicinity of limestone deposits (especially in the Salt Range) for manufacturing of cement.

FACILITATING FACTORS

- ▶ **Fast Track Grant of Large Scale Mining Leases for the raw materials**
- ▶ **Massive scope for mergers, acquisitions, technological up-gradation**
- ▶ **A good network of inter-connected roads, railways and highways is available**
- ▶ **Trained/Semi skilled labor available at cheaper wages**
- ▶ **Utility facilities and required land readily available**
- ▶ **Water resources abundantly available**
- ▶ **International airports are available at around 2 hours drive**
- ▶ **Social, communal, cultural and peaceful environments**
- ▶ **Rich domestic and export potential markets**

Investment in Rock Salt based Chemical Industry



Domestic Rock Salt Based Chemical Industry in Punjab

- ▶ **Mainly located in the Salt Range like Jehlum, Khushab and in the industrial cities of Faisalabad and Sheikupura.**
- ▶ **Product Range:**
 1. **Soda Ash**
 2. **Caustic Soda**
 3. **Sodium Sulphate**
 4. **Sodium Silicate**

Major Players in Chemical Industry

► Current Production Capacity of Soda Ash in Punjab is 1250 Tons / day. Two major producers i.e ICI and Olympia are running at full capacity and fulfilling the local demand, so there is huge scope of export to countries like Afghanistan, India, Iran and Middle Eastern Countries by installing new chemical plants.

► Major Players

- | | | |
|----|-------------------|----------------------------|
| 1. | ICI Limited | Khewra, Jehlum |
| 2. | Olympia Chemicals | Khushab |
| 3. | Sitara Chemicals | Faisalabad |
| 4. | Ittehad Chemicals | Kala Shah Kaku, Sheikupura |

Availability of Raw Materials

- ▶ **Availability of Resources**
- ▶ **World's largest and inexhaustible deposits of pure Rock Salt are available in the Salt Range, Punjab.**
- ▶ **Deposits of 160 Kms in length extending across trans Indus (Chakwal, Khushab, Mianwali, Jehum)**
- ▶ **Thickness of the deposits range from 300 ft to 3000 ft**

Silica Sand based Industries

The right side of the slide features a decorative graphic composed of several overlapping, semi-transparent green triangles and polygons. The colors range from a light, pale green to a dark, forest green. The shapes are arranged in a way that creates a sense of depth and movement, with some shapes appearing to be in front of others. The overall effect is a modern, abstract design element.

DEPOSITS OF SILICA SAND

- ▶ The silica sand deposits are found in Western Salt Range in Datta Formation of Jurassic age in Dhak-Pass and Thatti areas near Musakhel, in Surghar Range at Chapri, Kutki, Narmia and Mulla Khel areas (Makarwal) near Kalabagh in Mianwali Distt.
- ▶ **Uses;**
 1. **Glass and Allied industry**
 2. **Electronic and Silicon Technology**

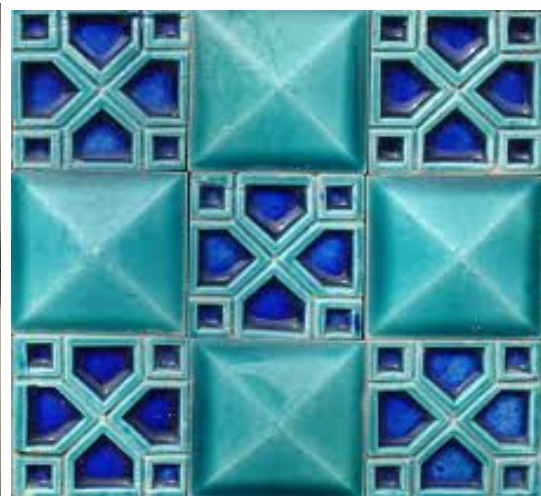
MAJOR PLAYERS IN SILICA SAND INDUSTRY

- ▶ Silica sand occurs as stream fluvial, marine, lake, glacial and residual deposits. The deposits vary in thickness, composition, shape and lateral extent; occur as loose and friable beds. All the silica sand deposits are of sedimentary origin.
- ▶ **Major Players;**
 1. Ghani Glass Industries
 2. Balochistan Glass Industries

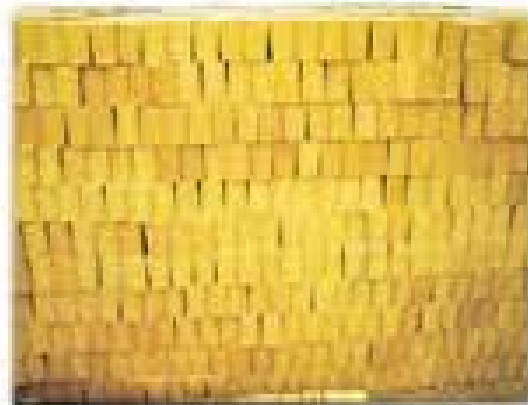
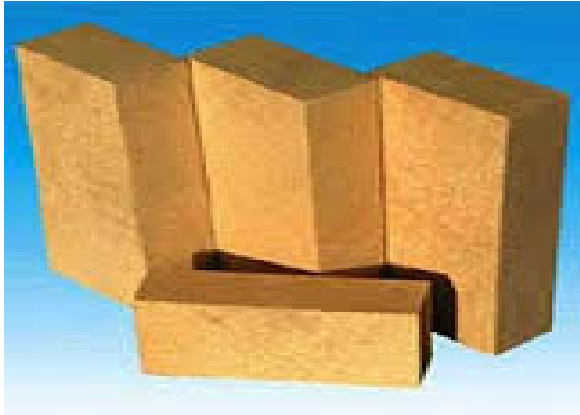
FIRECLAY BASED INDUSTRIES

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the page, creating a modern, layered effect. The rest of the page is a plain white background.

TAPPING THE FIRECLAY DEPOSITS



Fire Bricks



Ceramics Industry & Sanitary Ware



Major Players

► **Market Dimensions:** 97 Ceramic Industries & 160 Pottery units are working in Punjab, Pakistan

► **Major Players;**

1. Master Tiles: G.T Road Gujranwala
2. Sonex Tiles: G.T Road Gujranwala
3. Emco Tiles: Sheikhupura Road, Lahore
4. Frontier Tiles: Peshawar
5. Swat Tiles : G.T.Road, Shaidu NOWSHERA, Jahangira
6. Karam Tiles : 4-L Gulberg III, Ferozpur Road Lahore
7. Shan Ceramic: Lahore
8. Shabbir Tiles: Quaid-e-Azam Town (College Road), LHR

Raw Materials & Products

► Availability of Resources

1. Clays – Fireclay (Kaolinite type)

Mianwali, Attock, Khushab, D.G.Khan

2. Limestone

Attock, Rawalpindi, Chakwal, Khushab, Mianwali, D.G.Khan

3. Silica Sand

Mianwali, Khushab

4. Talcum & Feldspar

Hazara Division (Abbotabad, Mansehra etc.)

Products;

Glazed wall tiles, Glazed floor tiles, Glazed granite floor tiles, Homogenized Porcelain tiles
Strips, trims & Mosaics

Raw Materials

Average Annual Production;

MINERAL	PRODUCTION (Metric tonnes)	POTENTIAL (In million tonnes)
Limestone	19,400,000	Inexhaustible reserves
Fireclay	443,000	10.52(Punjab)
Silica Sand	293,500	20(Punjab)
Talcum	260	0.8(KPK)
Feldspar	32,000	Large deposits(KPK)
Gypsum	900,000	55(Punjab)

NOTE: Sustainable demand of raw materials would lead to optimization of production requirements

Proposed Site

▣ Proposed Site for Setting up Ceramic Factory

- Close proximity of Brahma – Bahattar Motorway Interchange, Attock

▣ Rationale

- Clay resources located at Mianwali, Khushab, Attock and Swat
- Silica sand resources located at Khushab & Mianwali
- Limestone resources located at Attock
- Talcum and Feldspar resources located at Abbotabad and Mansehra(Uggi)

Proposed Site



GYPSUM BASED INDUSTRY

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Gypsum Based Industry

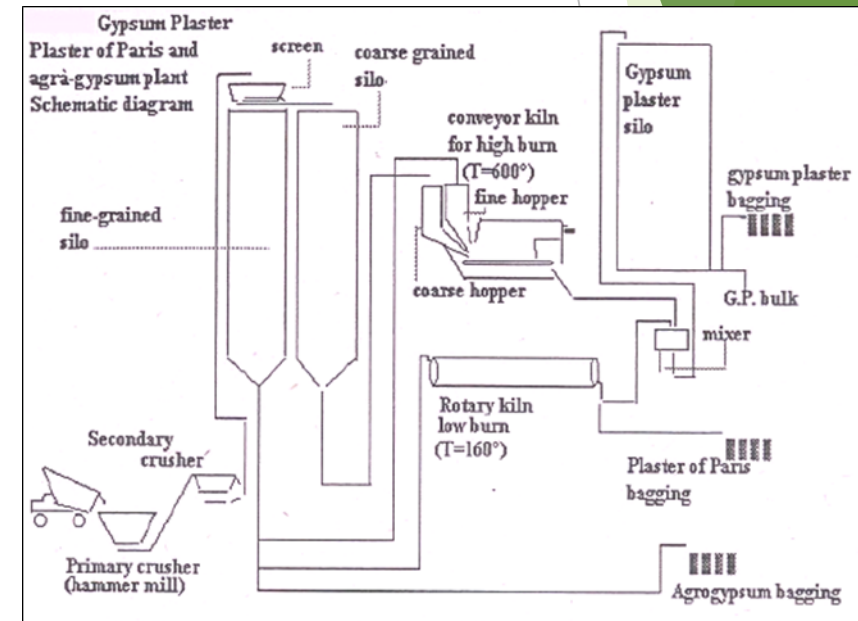
- ▶ The integrated extraction and processing project with a total capacity of 300,000 MT per annum for producing Agro Gypsum, Gypsum Plaster and Plaster of Paris is proposed to be located at Daud Khel, 30 miles from Minawali, Punjab.

- ▶ **Stage 1 – Extraction**

Gypsum is found in massive forms in the outcropped/exposed rocks. Its extraction would be through open pit mining or by developing benching-cum-slicing techniques.

- ▶ **Stage 2 – Processing**

The process technology of the plant includes from crushing, sifting, calcinations, grinding, mixing, testing and eventually packaging.



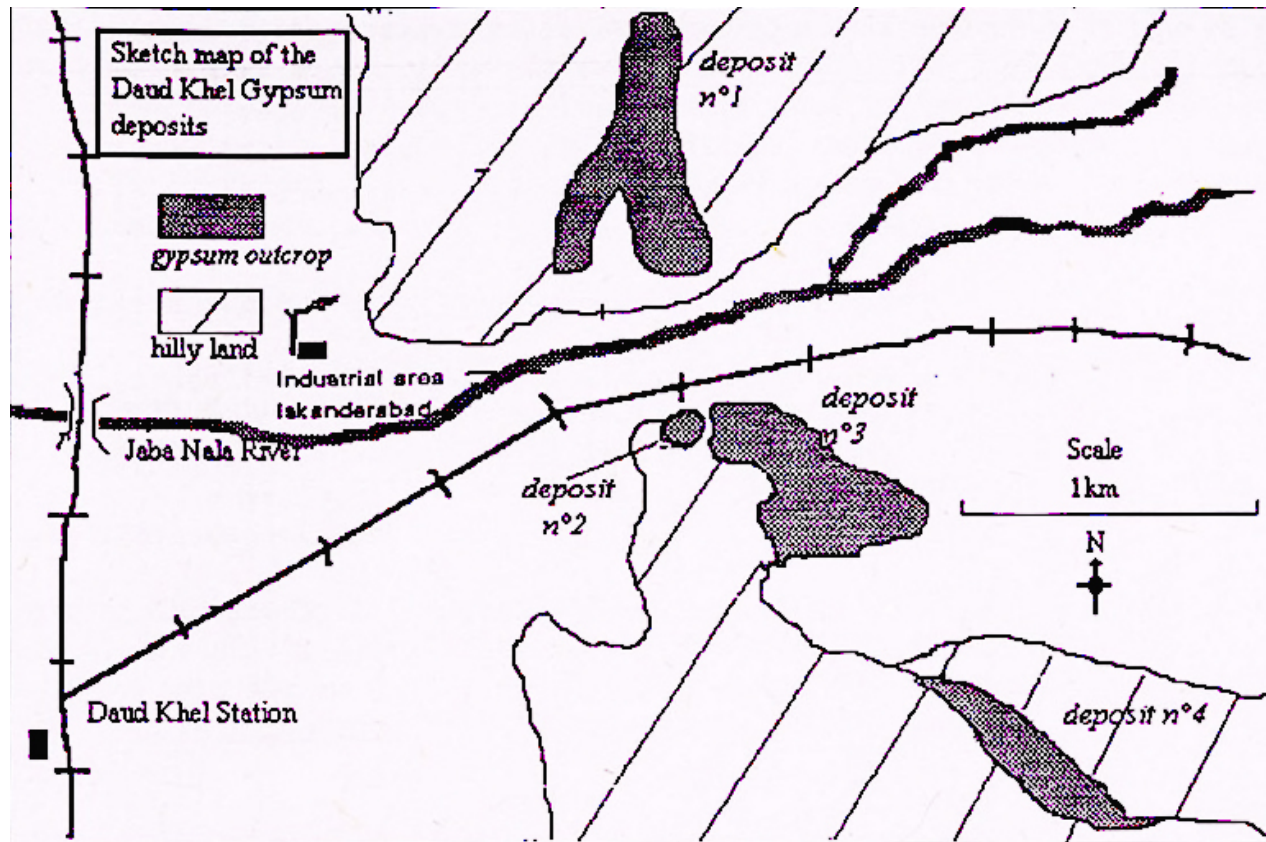
Uses & Products

- ▶ **Agro Gypsum,**
- ▶ **Gypsum Plaster**
- ▶ **Plaster of Paris**
- ▶ **retardant in the production of cement**
- ▶ **gypsum for reclamation projects**



Deposit Size & Location

- Four gypsum hills of Eocene age occur in the Salt Range hills 6 km South East of Daudkhel Railway Station, Mianwali District, Punjab. The deposits are massive in form with very few clay intercalations. The total reserves/resources estimated are 53 million MT. The content of gypsum (i.e. $\text{CaSO}_4 \cdot \text{H}_2\text{O}$) is more than 90%.



Studies conducted for Gypsum Reserves

- ▶ **BRGM – France; 1994 Evaluation and Development of the Potential in Gypsum and Vermiculite in Pakistan – contribution to the establishment of a Plaster Industry in Pakistan.**
- ▶ **MWS Consultants Inc. USA, United Consultants Pakistan; 1980, Feasibility Study – Utilization of Gypsum in Pakistan**
- ▶ The area lies in developed region of the country in the middle of a few large cities in the Punjab province. It is situated 30 Km north of Mianwali. The area is connected through highways and rail network

Rules & Regulations

Legal Framework includes the following

- ▶ Mines Act, 1923
- ▶ Regulation of Mines, Oil field, mineral development (Government Control) Act, 1948
- ▶ Punjab Mining Concession Rules, 2002
- ▶ Excise Duty on Minerals (Labour Welfare) Act, 1967
- ▶ Punjab Mineral Development Corporation Act, 1975



THANK YOU
