

earthshastra



Developing the mineral wealth of Guj



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Human race has always had a symbiotic relationship with mother earth. While earth provides means of sustenance, growth and progress, man endeavors to conserve the balance. GMDC activities are a manifest of this man-nature relationship. Acknowledging the importance of earth's bountiful wealth for progress while preserving the ecosystem.



Everybody's 'Mine'

Industrial growth is essential to any state's progress and development. Minerals form an essential ingredient of industrialization. In **1963**, Gujarat Mineral Development Corporation Ltd. (GMDC) was set up to develop state's major mineral resources. A modest beginning with Sand Crushing Plant at Surendranagar that supplied graded sand to manufacturers of Sodium Silicate and Glass industries.

In **1968**, GMDC set up plant for beneficiation of Flourspar, a rare mineral essential for basic industries, like refining of Steel manufacturing of Aluminum, Hydrochloric acid, Foundry flux and Welding electrodes among others.

Early **70s** witnessed rapid industrialization particularly in Chemical & Textile industries, which needed large fuel supplies. GMDC responded with mining of Lignite, a cheaper and efficient coal substitute, in Kutch district.

In the year **1980**, GMDC embarked on modernization and expansion drive in mining. As part of this effort, the state of the art technology in mining prevailing in those times was employed at Panandhro. The Bucket Wheel Excavator installed at Panandhro placed GMDC in the league of modern mining PSUs.

The demand and therefore production of Lignite escalated to 5 million tonnes by **1997-98**. Exploration led to discovery of Lignite deposits in Bharuch district. Rajpardi near Ankleshwar has been the lignite source for majority of textile industries of Gujarat.

GMDC stepped into the **new millennium** embracing modern technology as it set up a 2 x 125 MW Power Plant employing the CFBC Technology, one of the most advanced and environment friendly power generation technology of the modern times. This Thermal Power Generation facility is based on the lignite mined from its Panandhro mines.

2010 is witness to GMDC's relentless quest for development as one of the first state PSUs to venture into 100 MW capacity Wind Power Generation. With this, GMDC has acquired much coveted "GREEN" cover.



Exploring Opportunities, Evolving Strategies

Lignite, popularly known as Brown Gold, is an invaluable energy source abundantly found at Panandhro in Kutch and South Gujarat. 200 million tonnes have been identified and more is under geological investigation.

Guajrat State Electricity Corporation Ltd. at Panandhro & GMDC's own power station at Chher consume this Lignite.

Bauxite, an important Aluminium Ore is found in Kutch & Jamnagar. While plant grade Bauxite is marketed to refractory and chemical industries, some non plant grade is exported from time to time.

Flourspar, popularly known as Fluorite is used in production of hydrofluoric acid, which is used in the electroplating, stainless steel, refrigerant, and plastics industries, in production of aluminum fluoride, which is used in aluminum smelting, as a flux in ceramics and glass, in steel furnaces, and in emery wheels, optics, and welding rods.

Available in the hills of AmbaDunger, low grade ore is extracted in the open pit mine and is upgraded, through froth-flotation process, in a 500 tpd beneficiation plant to produce 96% CaF₂ Acid Grade and 90% CaF₂ Metallurgical Grade.

Multi-Metal. GMDC Ltd. is holding a mining lease for Base Metal at Ambaji for about 7.5 million tonnes of base metal deposit consisting of lead, zinc and copper ore, containing 10% total metal contents.

Manganese, a free element found in combination with iron, has important industrial metal alloy uses particularly in stainless steels. Also used in metallurgy, dry battery, chemicals, steel alloys, ceramic, paint, glass and foundry industries.



emPowered... Energized

GMDC has forayed into Power generation with the implementation of 2x125 MW Akrimota Thermal Power project in Kutch. This Lignite based plant uses state-of-the-art DDCS technology and environment friendly CFBC boiler that controls sulfur in the fuel gas emission. A 100 meter green belt surrounds the entire site.



Green Energy

Gujarat is blessed with long coastline and good wind speeds for harnessing Wind Energy thereby reducing carbon footprints and dependence on finite fossil fuel resources. In a short span of 15 months GMDC is committed to achieving 100 MW power generation which by any standards is remarkable. Wind Turbine Generators of a total 19.5 MW capacity at Varshemedhi in Maliya taluka of Rajkot have been installed. The 40 million unit electricity generated is supplied to the state grid. Once 100 MW capacity is achieved, 200 million unit electricity would be generated. GMDC is actively exploring opportunities in solar power generation.



The Joy of Giving back to Society

Whether it is mother nature or the society, GMDC believes in giving back more than what it takes. Preserving the ecology and making lives better is second nature to GMDC.

Socially Responsible and Inclusive Development

GMDC acknowledges the contribution of all its stakeholders - those residing near project sites, investors, consumers, industry etc. Providing rural infrastructure in the field of water, sanitation, education, health, employment and livelihood, micro irrigation and continuous fuel supply to small and medium scale enterprises and generous dividend payout policy has been well received and made significant impact on people's lives.

CSR has acquired immense importance in environmental clearances. Therefore, GMDC has charted out a focused and holistic strategy to usher in developmental impacts in mineral bearing villages which would also result in harmonious relationship with the society at large. These initiatives would also result in an all-round inclusive growth.



The Focus Avenues

Water Management & Conservation : GMDC has proactively constructed Village Ponds for storage of drinking water for inhabitants and cattle, irrigation and increasing moisture retaining capacity of land. Weirs or Low-Head Dams help store water that is used during dry months of the year. They also help recharge underground water to raise levels in wells



Employability & Livelihood : In association with Gujarat Handloom & Handicrafts Development Corporation, GMDC undertakes skill upgradation programme to enhance employability. Embroidery kits are distributed and training is given to help them generate income. Vocational guidance seminar for youth to identify interest and hone their skills.



Agriculture : GMDC gives 25% additional assistance for those installing micro irrigation system. This has met with huge success and vast areas of land has benefitted from this initiative.



Health & Sanitation : Hospitals and Mobile Dispensaries help patients with proper medicare. Telemedicine initiatives have bridged the gap between rural and urban healthcare. GMDC also takes care to create rural infrastructure for providing better sanitation facilities.



Education : Construction and management of schools and colleges has been a major successful initiative of GMDC with long term benefits to society. Sports facilities inculcates sportsmen spirit within the young generation.



New Mineral Policy

The new mineral policy would provide impetus to mineral based industrial growth.



Lignite resources have been reserved for power generation and wherever possible, for underground coal gasification by State PSUs or by Joint Ventures with State PSUs. GMDC would continue to supply surplus quantity of lignite from its mines to the industries in state, in particular to small and medium industries on a long term basis in a transparent manner.

Bauxite bearing areas in the state except already granted has been reserved for GMDC which has been made a facilitating and channelizing agency for bauxite sale and export. It would become the sole supplier to bauxite users in the state for higher value addition. Export of Bauxite, both plant grade and non plant grade would be carried out through GMDC who will also set up plants in JV for maximum value addition.



Limestone leases granted for trading purpose shall have to register with GMDC before supply of Limestone. The role of GMDC and Commissioner of Geology and Mining would be to oversee assured mining from lease area for trading purpose as well as for requirement of small scale industrial units.

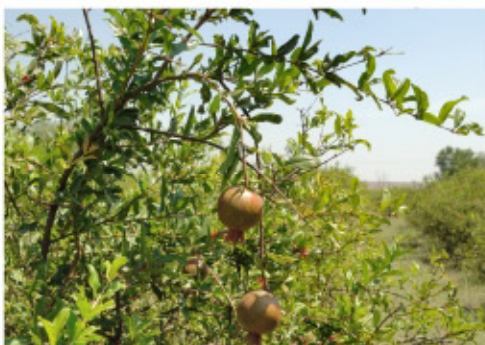
Manganese areas of 1153 ha are reserved for GMDC, while the remaining areas would be granted to captive users for forming a JV with GMDC to produce value added products like $MnSO_4$, MnO , Ferro Alloys or EMD etc. The new mineral policy has made GMDC a catalyst and a propeller in manganese based industries. This would open up a whole new gamut of industrial growth particularly in the under developed regions of the state.



An Attitude of Environmental Sensitivity

GMDC is committed to

1. Adopt best environmental management practices by consistent knowledge upgradation, capacity building and adoption of best suited measures by systematic approach to prevent and control pollution at its facilities.
 2. Ensure total compliance of all environmental regulations, requirements and integrating best practices with assigned line-functions
3. Develop a culture consciousness, resource conservation and waste reduction awareness among all stakeholders for shared responsibilities of environmental protection.
 4. To develop green belt in harmony with nature for sustainable development, mining, power generation, industrial activities.
5. To reduce carbon footprints and in long term go for carbon and climate neutrality by adopting best practices in the operations and management.



GMDC is extremely conscious about environment protection and takes appropriate preventive and curative measures.

Effective environment management system at all its projects include

1. Regular water sprinkling for dust suppression
2. Electrostatic precipitator for stack dust emission
3. Sewage and effluent treatment plants for the control of water pollution
4. Regular vibration measurement for controlling noise pollution from machines.
5. Reclamation of mined out area by backfilling and afforestation
6. Plantation on overburden dump, virgin area and roadside through in-house sources as well as through Forest department
7. Monitoring of pollution parameters internally as well as through external agencies and effectively maintaining the environmental control measures and standards
8. Environment Audit by external agency and audit report submitted to Gujarat Pollution Control Board
9. Rigorous plantation drive

As the wings spread, the world shrunk

GMDC has been on a meticulous and focused path for capitalizing on its mining competence accumulated over a period of more than 45 years. It has been enhancing production on various mineral fronts, primarily Lignite.

- Total Lignite production capacity is being enhanced to 11 MT from the existing 8-9 MT per annum, a whopping 30% escalation.
 - Strategic partnership with various parties for mineral beneficiation particularly of Bauxite and Manganese.
- GMDC has been allocated 2 coal blocks outside Gujarat, by Govt. of India, for power development. The power developed is to be wheeled to Gujarat after meeting with the host state's requirement. This would further reinforce Gujarat's energy credentials.
 - GMDC is also exploring the opportunities to foray into overseas mineral operations, particularly in West Africa. This includes Coal mining in Mozambique and Bauxite mining in Sierra Leone.

This holds great export potential to USA, Canada, France and Russia.



Tapping the untapped... Exploring the unexplored

In order to trigger mineral driven industrial growth, GMDC has embarked upon rigorous quantitative and qualitative exploration of Lignite, Bauxite, Limestone and Manganese in geo-rich areas of Gujarat.

Glimpses of exploration on hand are presented here.

Upcoming Lignite Mines

GMDC plans to commence mining at

1. Umarsar Lignite Mines, Kutch having an estimated lignite reserves of 22 million tones.
 2. Lakhpat Dhedadi Lignite and Limestone Mine, Kutch having an estimated reserves of 50 million tonnes.
3. Damlai Padal Lignite Mine, Bharuch, having an estimated reserves of 19 million tones.
 4. It has also applied for mining lease in Ghala near Surat.



Strategic Synergies

Underground Coal Gasification : GMDC has entered in to a Memorandum of Understanding with ONGC and a leading business house for undertaking underground Coal Gasification for deep seated Lignite, which cannot be mined using traditional mining technology.

Cement Plant : GMDC is in a joint venture with a private party to set up 2.6 million tonnes of cement plant for which it will supply Limestone.

Coal Block Development : GMDC has been allocated one Coal block at Naini in Orissa, in joint venture with M/s Pondicherry Industrial Promotion Development and Investment Corporation (PIPDIC), Government of Pondicherry with 50 : 50 equity stake. Naini Coal Company Limited has been incorporated and mining permission has been sought.

New Coal Blocks : GMDC intends participating in Coal Block auctions in collaboration with other parties under Government dispensation route.

80 MW Power Project : GMDC has participated in joint venture with a business house with an equity stake of 26%. A separate joint venture company has been set up for this purpose. The land required for this project has been acquired and environmental clearance for the project has been received.

Downstream project based on Manganese Ore : GMDC has signed MoUs with private business entities to set up Manganese beneficiation project based on Manganese waste dump.

Refractories, Monolithics & Castables : GMDC has signed MoUs with leading business houses to manufacture refractories and castables and other value added products using Bauxite.

Bauxite Based Development : GMDC has charted out a plan to undertake development of Bauxite resources of the state.



Flourspar Beneficiation : GMDC proposes to set up joint venture with Gujarat Fluorochemicals Limited and a private business group with equity pattern of 50:50.

Silica Sand Beneficiation : GMDC proposes to set up a 2 lacs MT per annum capacity Silica Sand beneficiation plant in joint venture with an investment of Rs. 37.50 crores.

Brown Fuse Alumina-Tabular Alumina : GMDC has signed two MoUs to set up Brown Fuse Alumina - Tabular Alumina plant based on Bauxite.

Integrated Coke Oven Plant : A separate company, Gujarat State Minerals & Resources Corporation Limited has been incorporated for Joint venture with a private enterprise with equity pattern of 51 :49.

Multi Metal Project Ambaji : GMDC has signed MoU with Binani Zinc Limited and Rajasthan State Mines Mineral Development Corporation for setting up beneficiation plant with a capacity of 2000 tonnes per day based on the deposits of Ambaji Deri and Basant Gadh, with a approximate project cost of Rs. 239.11 crores.



Safety is our **Top** priority

GMDC's has cultivated a safety conscious mining culture. It has been regularly awarded Safety Awards by Director General of Mines Safety.

GMDC is committed to achieve 'zero' accidents rate through a rigorous safety framework.

Conducting training, educational and promotional programmes on Safety.

Compliances with statutory requirements and permissions

Constituting effective mine "Safety Committee"

Medical examination and monitoring of health of mining personnel.

Preparing, Implementing and Monitoring of risk and safety assessment and management plans.

Using latest technology for Safety Management..



In recognition of GMDC's safe mining practices, it has been consistently awarded Mines Safety Awards by Director General of Mines Safety, Govt. of India. In the year 2008-09, GMDC's Tadkshwar Lignite Mines won the First Prize in Lignite Mines category, Ambadungar Fluorspar Mines, Kadipani also won the first prize in Mechanised Metalliferous Mine. Bauxite mines at Wandh-I at Gadhsisa group of mines won the first prize in semi mechanized mine. In the year 2009-10, once again, Mata no Madh Lignite Mines won the first prize for mines safety in Lignite Mines category



IT intervention in **Mineral** development

GMDC is in advance stage of implementing an all pervasive ERP project – iMine. This is set to revolutionize the way mining and all support processes are carried out. With this project, GMDC will be one of the pioneers in mineral sector in India to implement this ERP solution. It will be a "Revolution on Evolution"

The Government of Gujarat has introduced e-Royalty module for better mineral administration in the state. GMDC is the pioneer to adopt and implement e-Royalty at its various mines.



Raising the bar every year

Increasing Lignite Production to 100 lac MT

Lignite production of GMDC during the year 2009-10 was 88.73 lac MT. The aim is to take the Lignite production to 100 lac MT and beyond.

100 MW Wind Power Generation

The present wind power generation is 19.5 MW. The benchmark is set at Wind Power Generation of 100 MW in a record breaking short duration.

ERP implementation for effective functioning of GMDC

With a view to bring international standards and practices to optimally utilize human and other resources in the best and efficient manner in comparison with global companies, ERP has been implemented.

Rapid Exploration in Minerals

GMDC plans to carry out rapid exploration for important industrial minerals like Lignite, Bauxite, Limestone and Manganese.



The Final Word



GMDC is Gujarat's premier Mineral PSU that embodies the philosophy of symbiosis. Man and nature are two inseparable entities which co-exist with mutual care, concern and consideration. While mother earth gives essential minerals for industrial progress, GMDC reciprocates by its ecological conservation activities while bettering the lives of people who contribute to GMDC's success.

The adjacent photograph summarizes the essence of GMDC's motto and mantra.







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