Gujarat State Mineral Policy, 2003

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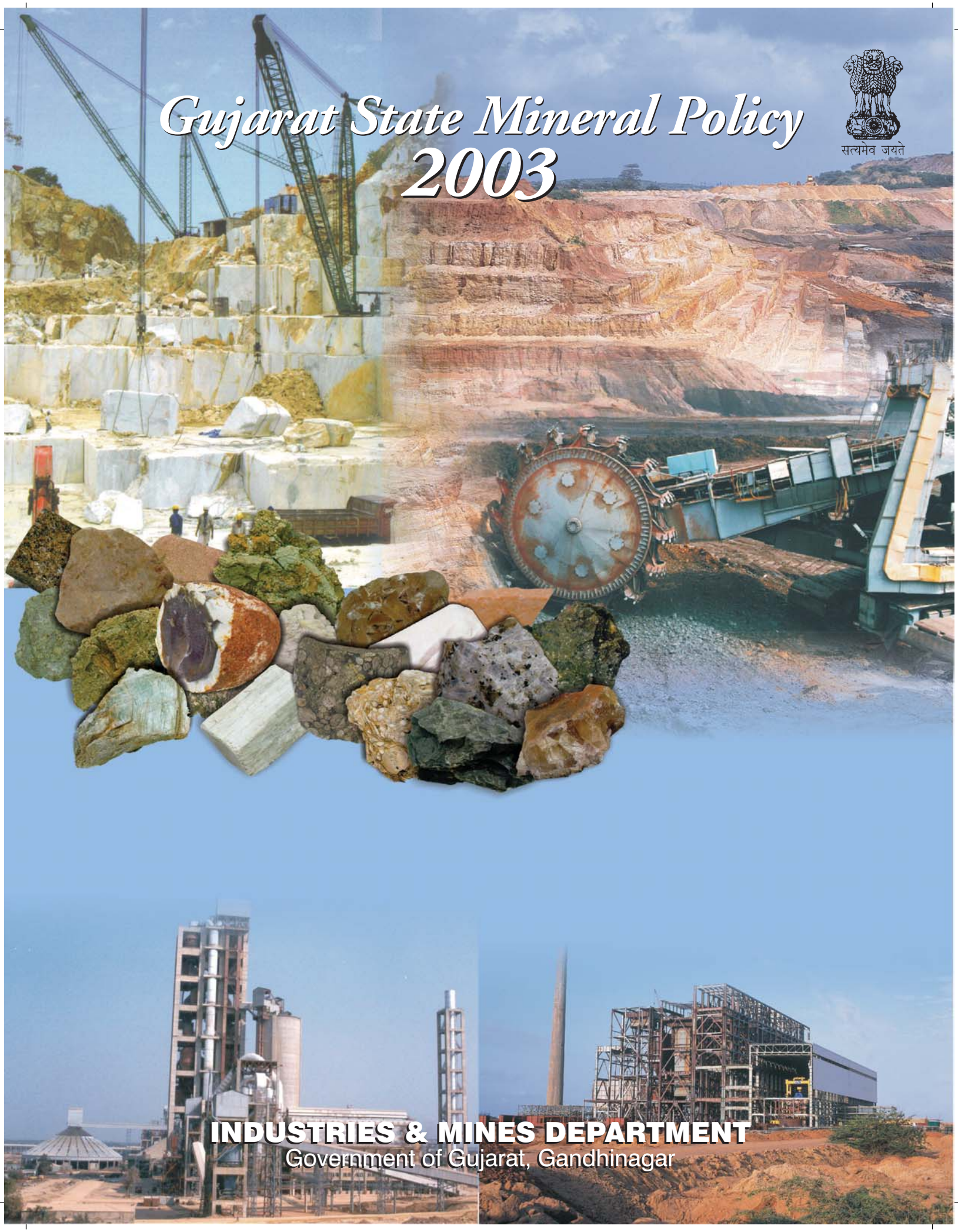
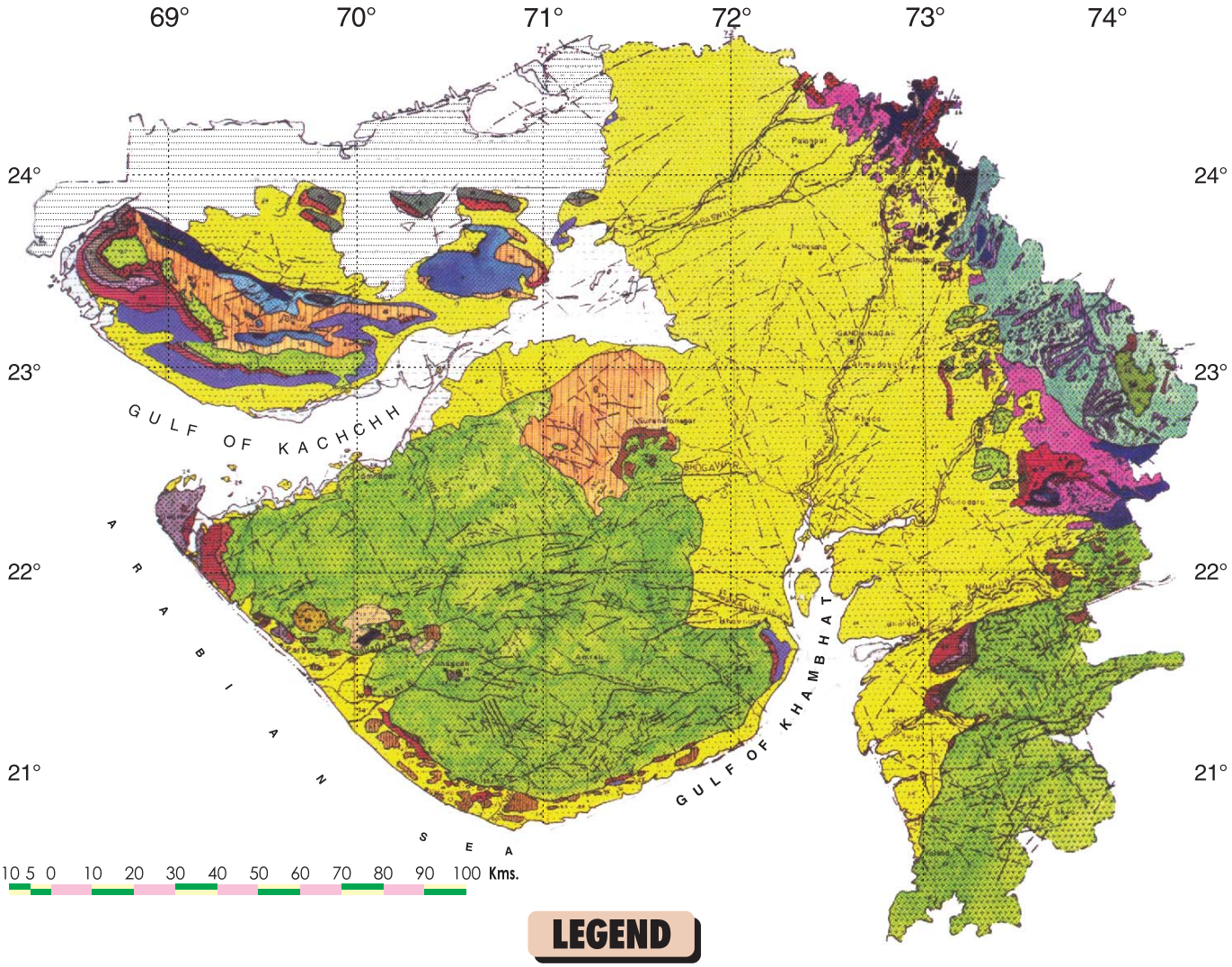


INDUSTRIES & MINES DEPARTMENT

Government of Gujarat, Gandhinagar

GEOLOGICAL MAP OF GUJARAT



LEGEND

Upper Cretaceous To Palaeocene

- Deccan Trap
  - Acid & Alkaline Intrusive (Quartz Monzonitive, Granophyre & Monzonite)
  - Diorites
  - Basic Intrusives (Gabbro & Basalt)
  - Dykes
  - Felsite, Rhyolite & Pitchstone Flows
  - Basalt Andesit, Trachyte Flows

Post Delhi

- Granitoid & Pegmatites
- Basic Intrusives

	Recent Sub Recent Pleistocene	Alluvium, Blown Sand & Miliolite Sand
Pliocene System	Dwarka Beds	Miliolite Limestones
Miocene System	Manchhar Series	Gypsiferous Clays & Sandy Limestones
	Gaj Series	Brown Sandstones, Calcareous Clays & Conglomerates
Oligocene System	Nari Series	Shales, Marls & Sandstones
Eocene System	Kirthar/ Laki/ Ranikot Series	Limestones, Interbedded Variegated
Palaeocene to Mid Eocene	Supra-trappeans	Limestones & Gypsiferous Pyritous & Carbonaceous Shales & Lignite
Lower Cretaceous	Intratrappean Bagh/ Lametabeds	Laterite & Bauxite
Jurassic Cretaceous	Umia & Bhuj Series (Kachchh), upper Gandwanas eg. Dhrangadhra (Saurashtra) & Himmatnagar Series (Sabarkantha)	Limestones, Nodular Marls & Sandstones
		Calcareous Sandstones & Shales
Jurassic System	Katrol Series	Sandstones & Shales
	Chari Series	Calcareous Oolite Shales with Calcareous & Ferruginous Nodules
	Patcham Series	Sandstones, Yellow Limestones

Delhi Supergroup

- Ajabgarh Group
  - Quartzites
  - Quartz-Mica Schists & Phyllites (Party Gneisses)
  - Calc-schists, Dolomites Marble Calc-Gneisses, Amphidolites
  - Mica Schists, Phyllites
- Alwar Group
  - Quartzites, Conglomerates, Mica Schists

Aravalli Supergroup

- Champaner Group
  - Quartzites with Intercalated Phyllites & Basal Conglomerate
  - Phyllites, Phyllites with Manganiferous Horizon Near Base, Mica Schists, Quartzites with Basal Conglomerate
  - Dolomites
- Lunawada Group
  - Quartzites
  - Phyllites, Mica Schists
- Per Aravalli (?)
  - Gneisses, Granitic

- Major lineaments (300 kms) showing limits of known faults
- Intermediate lineaments (100 300 kms) showing limits of known faults
- Minor lineaments (100 kms) showing of known faults

Gujarat State Mineral Policy 2003

Index

1. Preface

Mineral resources are important ingredients of the State economy and it is a yardstick to measure the economic growth because Mineral consumption is an indicator of industrial development of a particular area. Minerals are directly or indirectly a basic raw material for strategic industries. Therefore, it is essential to manage mineral resources with utmost care.

Mineral is finite and non-renewable natural resource. Rational approach for the development of mineral resources is required. Planning for mineral exploration and exploitation is to be made looking to the long term objectives and viewpoint of state/central govt. It is essential to make policy for the beneficial utilization of mineral resources in accordance with environment protection, mines safety and mineral conservation. Optimum utilization of mineral, minimum waste & maximum mineral revenue generation through value addition are also important aspects to be considered. In accordance with the National Mineral Policy, present and future demand and priorities for development are also to be taken in to account.

Geologically the State of Gujarat consists of varieties of rock ranging from oldest Precambrian to dinosaur bearing Jurassic and Cretaceous and lignite, oil and natural gas bearing tertiary and quaternary rocks.

Mineral exploitation basically is being carried out under the Mines & Mineral (Regulation & Development) Act 1957. Whereas, grant of Mining

Lease, Prospecting Licence and Reconnaissance Permit are being regulated under Mineral Concession Rules-1960. Generally Central Government determines the policy for major minerals whereas minor minerals such as rocks/minerals used in construction etc come under the purview of the State Government. To regulate the minor minerals, State Government has framed Gujarat Minor Mineral Rules-1966 under the Section-15 of Mines and Minerals (Regulation and Development) Act-1957 and Central Government has framed Granite Conservation and Development Rules-1999 and Marble Development and Conservation Rules-2000. In addition, mines are being regulated under other Acts and Rules of Central Government such as Mines Act-1952, Mines Rules-1955, Mineral Conservation and Development Rules-1988.

In the major minerals (including Oil & Natural Gas), Gujarat is placed at 3rd position as on March-2002 in Mineral Production value. Gujarat ranks second in working mining leases. Only Gujarat produces minerals like Agate, Chalk and Perlite in the country. Production wise Gujarat ranks first in Fluorite and Silica sand, second in Bauxite, Lignite, Fire clay and Clay (others) and third in Quartz and Ball clay and fourth in Limestone and China clay.

Compare to 89 minerals occur in the country, there exist total 1201 mining leases in 32741 hectares of area for 33 major minerals and 5388 quarry leases in 8939 hectares of area for 17 minor minerals in Gujarat as on March 2003.

About 6582 mineral-based industries have been established in the state such as Limestone based cement and soda ash industry, Lignite-based power stations, Bauxite-based calcination, refractories, abrasive units, Silica sand based glass units, Bentonite based pulverizing units, organoclay units, and China Clay, Fire Clay, Chalk based Levigation units, Black trap, Dolomite & Quartz based stone crushing and Dimension stone such as Marble, Granite based cutting, polishing units, Fire clay, Ball Clay, China Clay and Red Clay based Ceramic and roofing tile units. These mineral-based industries have been set up in mineral reach but relatively underdeveloped, coastal and interior tribal areas, where otherwise very rare scope available to establish an industry. In its entirety industrial development of the state is directly or indirectly linked to the Mineral Exploitation.

Total 1,27,000-sq kms area of the state is rocky, which is mineral probable area. About 46% of these rocky areas have been covered under Remote Sensing Survey and Pre-detailed Mineral Survey, and about 19% area, under the Detailed Mineral Survey. As a result of mineral exploration reserves of 18 important minerals have been established. Of which important minerals like Limestone - 11987 million tones, Bauxite - 105 million tones, Lignite - 2139 million tones, Fluorite 11.61 million tones, Wollastonite 3.04 million tones, Marble - 259 million tones, Chalk 83.79 million tones has been estimated. Unexplored areas will be covered by the department as well as through outsourcing and private participation

within a planned time frame.

Gujarat is the ideal state for the investment in mineral based industries looking to the state mineral resources and infrastrural facilities. There is ample opportunity to establish mineral oriented industries like Limestone based cement and soda ash industry, Lignite-based power plants, Bauxite-based Alumina plant, Marble & Granite based cutting, polishing plants, Clay based ceramic units, Silica sand based glass units.

2. Objectives

To build global competitiveness in all aspects

To infuse transparency at all levels of operation

To enhance efficiency by adopting e-governance

3. Approach

Promotional policy for the minerals sector is essential keeping in view the process of globalization, economic liberalization and the prevailing trends of the World Trade Organization.

The Government of Gujarat has envisaged specific policy initiatives for industrial minerals occurring in the state to attract investment in the fields mineral exploration, exploitation, and mineral-based industries. It is intended to create competitive environment to speed up industrial development in mineral potential area by enhancement of Human Resource capabilities, improvement in infrastructure & adopting modern technology. The approach is to make progress by increasing mineral production and export of value added material through local and global competitiveness. Efforts to develop with special attention to minerals which are only available in the Gujarat as compared to other states in the country and mineral occurring in few states & having high quality. Creating local employment through mineral exploitation while maintaining mine safety & striking ecological equilibrium is also an additional addendum of this policy.

4. Strategy

4.1 Mineral Exploration:

Total area of the State of Gujarat is 1,96,024 sq.kms. Out of which 1,27,000 sq. kms is rocky, which is mineral probable area. About 57,970 sq. kms of these rocky areas have been covered under the Remote Sensing Survey / Pre-detailed Mineral Survey, and about 23,596 sq. kms, under the Detailed Mineral Survey. Till now total 3,63,534 meters of drilling has been completed for various minerals at different places in the state. Out of this, 3,13,613 meters of drilling was conducted by the department, and the remaining 49,921 meters of drilling, by expeditious drilling programme by hiring men & machines.

Remaining uncovered area of 69,030 sq. kms will be covered in the next five years by remote sensing / pre-detailed mineral surveys. Total 12,030 sq. kms will be explored by the department, and 57,000 sq. kms, through outsourcing/ private participation.

Of the areas earmarked to be earmarked as mineral bearing by these pre-detailed mineral surveys, 10,000 sq. kms will undergo detailed mineral surveys, with a view to evaluate reserve, quality and utility of the minerals, within the next five years. 500 sq. kms of this area will be covered by the department, and the remaining 9,500 sq. kms, through private participation/outsourcing.

In the next five years, 4,00,000 meters of drilling will be completed. Out of this, 23,000 meters of drilling will be conducted by the department, and the remaining 3,77,000 meters of drilling, through private participation / outsourcing.

The process of private outsourcing will be carried out through introducing the Tender system, once potential mining areas are earmarked, and the standards of private exploration are laid down.

To meet power demand of state & fuel requirement of industries a priority was given to lignite exploration during last decade which will continue and in lignite areas exploration will be carried out by department and private participation / expeditious outsourcing.

Important minerals from industrial point of view such as limestone, chalk, china clay, bentonite, and dimension stone like marble, granite etc, will also be explored on priority bases.

Mineral Atlas and Data Bank:

To make mineral exploration more effective and to make it play significant role in state's development, it has been decided to create data bank by compiling geological & technical details of state and central government agencies in the field of geological survey and mineral exploration such as Geological survey of India, Indian Bureau of Mines, Mineral Exploration Corporation, ONGC, Central Ground Water Board etc. by approving their exploration programme / schemes /studies and meaningful review in the state Geological Programming Board meeting. Optimum utilization of minerals will be monitored by keeping in view mineral conservation aspect. Mineral Atlas and Data Bank will be created in collaboration with government agencies like ISRO, RESICO, Universities and experts from private sector. Mineral Atlas will be prepared with the help of latest software in collaboration with expert agencies so as to convert exploration report/maps on cadestral maps to make available such mineral established areas for exploitation. In mineral-bearing cadestral maps, the details of survey numbers, government waste land, forest /

sanctuary areas, pasture lands, private survey numbers, residential areas, areas notified for public purposes, etc. will be included so as to initiate procedures for delineating areas for mining activities.

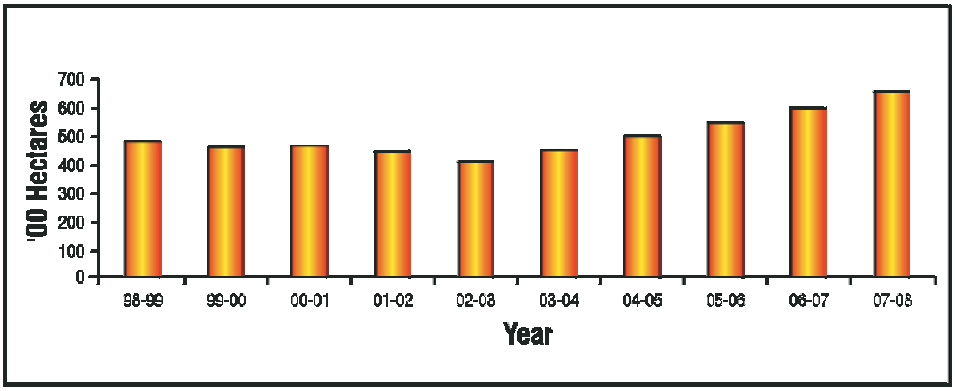
A system to mark mineral-bearing areas in village form 7/12 of revenue records will be developed in consultation with the Revenue Department. A system will be introduced to ensure that mineral-rich areas are not transferred for any purposes other than mining, without a No Objection Certificate from the office of the Commissioner.

Mineral-bearing areas in Kachchh and other districts, which have been transferred for compensatory aforestation will be reviewed, and procedures will be initiated to release such areas for mining activities.

4.2 Mineral Exploitation:

As on March '03, there exist 7,334 leases of major and minor minerals in Gujarat. Total area of which is 42,680 hectares. To make explored areas available for mining; mining lease and quarry lease areas would be increased to 61,024 hectares in a phased manner at an annual rate of 10%, in the next five years.

Area Under Leases



Area under mining lease and quarry lease during last five years & expected area in next five years

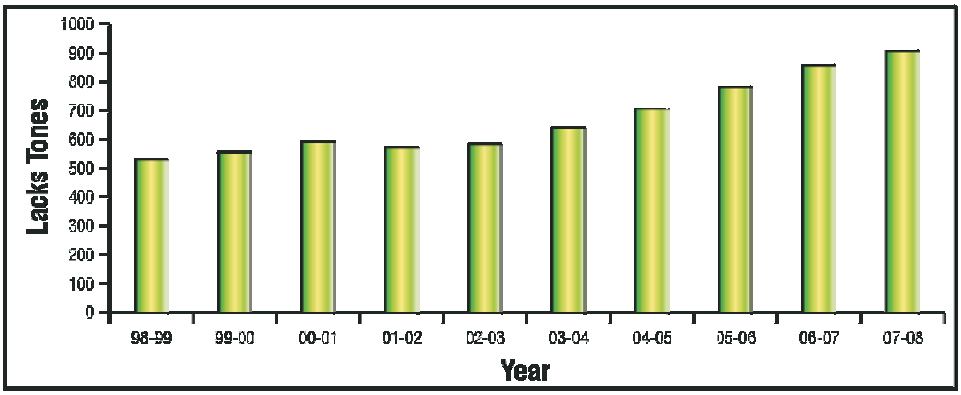
At the end of March 2003, Total 1201 mining lease are pending which is to be disposed off within a year whereas 5506 quarry lease pending

applications to be disposed off within 3 month's time.

Amendment & simplification of the Gujarat Minor Mineral Rules will be completed soon, to simplify the procedures for leaseholders, and to maintain a balance between the demand and supply of minor minerals.

It is aimed to increase present production of major minerals from 2.77 to 4.47 crores metric tonne and production of minor minerals from 3.03 to 4.88 crores metric tonnes in the next five years to meet the demand of important industrial minerals by increasing area & production at an annual rate of 10%.

Mineral Production



Production of Major & Minor Minerals in last five years and expected production in next five years

A core group will be formulated & suggestions will be invited & reviewed to rationalize rates of royalty, dead rent on minor minerals.

Rules will be framed and strictly implemented to curb illegal excavation, transportation and storage of minerals.

Mineral trading, processing units, and mineral-based industries, will be required to register with the department, to ensure easy and speedy

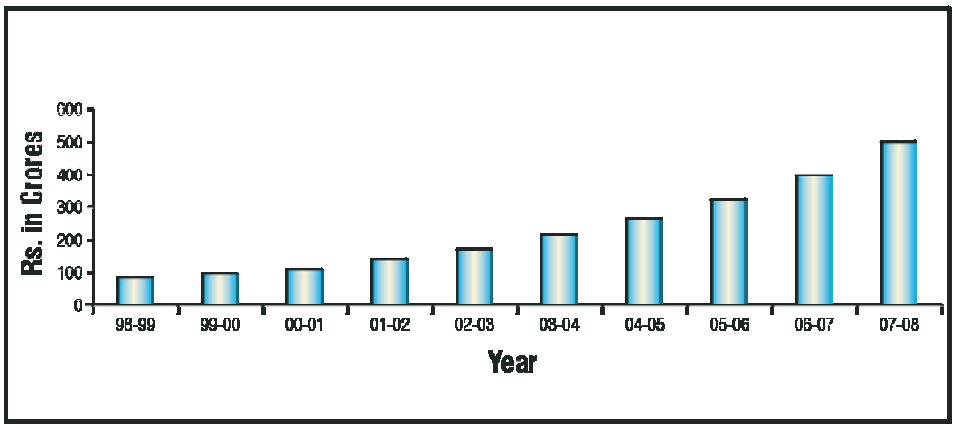
recovery of royalty.

In order to procure complete royalty on mineral quantum from the contractors of R&B, Irrigation, Panchayat, Corporation, etc., a practice of deduction of royalty directly from the bills will be implemented.

Revenue Income of Minerals

Total revenue income of major and minor minerals during the year 2002-03 is Rs. 174.82 crore. This income has been increased at an average annual rate of 20% from 1998-99 to 2002-03.

Mineral Revenue



Mineral revenue income in last five year & expected income in next five years

It is projected that mineral revenue income would be increased to Rs. 500 crore keeping the an average annual growth rate of 23% in the next five years from Year 2003-04 to year 2007-08.

Implementation of Lease deed conditions:

In order to establish systematic and scientific mining, ensure safety, minimize wastage, control the impact of mining on environment, the mining plan will be strictly implemented, and environment impact

assessment norms will be constantly monitored in leases of major minerals. Every lease will be inspected at least once a year.

Minor mineral quarry lease will also be inspected once a year to implement lease deed terms & conditions.

To promote modern technology in mining, exhibitions of new mining machinery, tools and equipments products will be organized time-to-time and it will also be

demonstrated that how to achieve more productivity & profitability in less time in the mineral sector.

Project profiles have been prepared by technocrats experts for value addition, maximum usage and marketing of established mineral wealth of the state. These are to be updated keeping in view of current market conditions, available facilities & costing etc. Gujarat Mineral Development Corporation Limited (GMDC) will prepare a techno-economic feasibility report of each project profile. A facilitation center will be set up for this purpose, at GMDC.

Mining of Carbonaceous shale is being done under the minor mineral rules. Carbonaceous shale occurs below Silica Sand and Fire Clay. Silicasand & fireclay are major minerals. So, the policy will be to grant quarry lease of Carbonaceous Shale only to mining lease-holders of Silica Sand and Fire Clay, so as to prevent wastage, ensure scientific mining and mines safety.

Bauxite is occurring mostly in Kachchh and Jamnagar districts. Total 1,050 lac tones of bauxite is estimated covering in an area of approx. 2,339 sq. kms by exploration in the state. At present 157 mining leases are working in approximately 4,174 hectares of area. Which is being

mainly consumed by calcination, refractories, abrasives and chemical industries. Non plant grade is exported also.

At present the deposits of bauxite of Kachchh district are kept reserved for State public undertakings in view of requirement of proposed Alumina plant. Whereas in Jamnagar district, mining lease are being granted for value addition and captive consumption only. Jamnagar and other districts such as Kheda, Junagadh, Amareli, Porbandar where bauxite is occurring mining leases are being granted after obtaining prior approval from the Central Government.

Non plant grade bauxite for export is allowed by leaseholders, if the quantity is not more than 50 % of total production after Dt.: 01-01-92 and if it contains less than 58% Alumina, more than 3% iron & Titanium oxide, more than 1.25% Calcium oxide and more than 3.5% Silica oxide.

A study to find out alternative utility of non-plant grade Bauxite will be undertaken, and export will be permitted until an alternative utility is not identified. However, lease-holders will have to produce certified chemical analysis report and certificate of advance royalty payment to the district officer, prior to export.

Gujarat Mineral Development Corporation will undertake the development of the multimetal project at Ambaji, Banskantha districts, in a joint venture. The corporation will also achieve maximum recovery of Fluorspar at Kadipani, by adopting new techniques and upgradation.

Gujarat Mineral Development Corporation will also undertake mining and development of Bentonite-bearing areas within the 50 meters periphery of Bauxite-bearing areas, in Kachchh district.

On the basis of exploration reports, mineral bearing areas of Dolomite,

Wollastonite & Manganese ore are to be earmarked survey number wise keeping in view their reserves, quality usage and industrial importance due to value addition recommendations will be made to the Central Government to release such mineral clusters from forest and sanctuary areas as per provisions of Forest Conservation Act, 1980 in consultation with forest and revenue departments for exploration, value addition and development of those minerals. It will be a policy to release Wollastonite, Dolomite, Bentonite, Lignite and Marble from forest & sanctuary.

4.3 Value Addition

Lignite

Mainly occurs in Kachchh, Bhavnagar, Bharuch and Surat districts. As a result of exploration total 21390 lac tones of lignite is estimated covering approximately 647 sq. kms area of the state. At present 6 mine leases are working in approximately 4,897 hectares area. It is being used as fuel and for power generation.

In areas, where Lignite is found 120 meters below the ground level, where open cast mining is not possible GMDC and private agencies will explore in situ gassification of Lignite seams keeping in view the techno-compatibility, ecological balance and cost-effectiveness. GMDC will carry out a detailed study on liquification of Lignite to generate energy.

Bauxite

Bauxite found in Gujarat is mainly used in calcinations refractories and abrasive industries. There will be a policy to set up an Alumina plant based on plant & non plant grade bauxite deposits of Kachchh district for value addition.

China Clay

Found mainly in Mehsana, Sabarkantha & Kachchh districts. A total of 1,630 lac tonne is estimated covering approximately an area of 383 sq. kms in the state. At present, 133 mining leases are working in approximately 10884 hectares area. It is used mainly in China Clay lavigation and ceramic units.

A techno-economic feasibility report on the utilization of China Clay in paper and textile industries will be prepared for entrepreneurs.

Bentonite

Occurs mainly in Bhavnagar & Kachchh districts. In the state covering an area approx. 590 sq. km. 1050 lac tones of reserve is estimated. At present, 271 quarry leases are working in approximately 543 hectares area. Bentonite based pulverizing and value addition units are established. Mainly used in drilling mud, foundries & palletization, animal feed and soft drinks purifier. Bentonite from Kachchh finds applications overseas, in oil well drilling mud and bleaching. A study will be carried out for the value added export of bentonite so as to recommend for export policy.

Stone Artisan Park:

Marble deposit suitable for craft is available in plenty around Ambaji area of Banaskantha district. Based on this, a craft profession has been developed here. Marble stone Artisan park is to be established at Ambaji for the development of systematic and well planned artisanship.

Sandstone a dimension stone occurring around Dhangadhra in Surendranagar district is used for carving on large scale. Based on this, stone artisanship is developed locally. Sandstone artisan park is to be set up at Dhangadhra. In consultation with revenue department after identification of land, artisans joining the park will be provided tools and

financial assistance under schemes of cottage Industries and necessary training arrangements through Industrial Training Institutes.

4.4 Study on Conditions of Mines:

Limestone, Lignite and Bauxite are being produced in extensively in the state. During the year 2001-02 production of which were 149.77, 57.66 and 15.31 lakh metric tones respectively.

These minerals are being administered and regulated by the Central Government laws. Total 13,294 hectares of area in 372 mining lease of limestone, 4,174 hectares of area in 157 mining lease of Bauxite and 4,897 hectares of area in 6 mining lease of lignite were under mining in the year 2001-02.

Detailed studies will be under taken for Chalk, Fire Clay, Limestone, Bauxite, Lignite, Bentonite, China Clay, Marble and Silica Sand mines. The study will cover issues related to conditions of mines mining facilities available & obstacles faced by miners, ecological balance in mining areas, infrastructure facilities in mining areas, mining skills, appropriate use of mining techniques, and level of mineral wastage. Follow-up remedial actions will be initiated, as and when required.

4.5 Research & Development

Mineral chemical analysis, determination of physical properties, and microscopic studies/ identification of minerals & rocks, are being carried out in the departmental laboratory. Referral level facilities will be created at Laboratory to function professionally. To make available facility of Chemical Analysis and testing of Physical properties at local level Private Laboratories equipped with available equipments, facilities and technical competence will be accredated.

Analysis & Study reports of such laboratories will be considered valid.

In addition, laboratory scale beneficiation studies will be conducted in co-ordination with renowned research organizations.

4.6 Improving Infrastructure Facilities

In view of the social responsibilities that are concomitant to mining activities, infrastructure facilities such as road, water and first aid medical help, etc., will be enhanced with the help of the State Government's decentralized District Development Fund, in mining clusters.

4.7 Human Resource Development

To enhance the skills of miners, labourers, technicians working in the mines of minor & major minerals, training programmes for mine safety improvement, maintenance of ecological equilibrium and prevention of mine wastage will be conducted in country's well-known institutes.

Recruitment/promotion rules of technical officers / staff will be amended as per the contemporary needs.

The department will organize National / International level training programmes by renowned institutions to increase skill & awareness levels of miners, workers, technocrats and managers.

Workshop / seminar and group discussion events will be organized for mining, mineral processing, value addition and technical skill upgradation in consultation with National & International technocrats / institutes.

At Dhangadhra, a training programme for sandstone and limestone dimensional stones will be organized with the help of UNIDO, under the National Programme for Development of Stone Industries.

A graduate course in Mining Engineering will be introduced in engineering colleges of Ahmedabad, Bhavnagar, Bhuj and Morbi. A post-graduate course in Geology will be introduced in the Gujarat University instead of the one, which is being taught at M. G. Science Institute.

Restructuring of the Department

It is necessary to restructure department, as mineral exploration, development, regulation and administration are all inter-linked for the speedy development of mineral sector. It is being planned that all the services related to minerals can be made available to entrepreneurs from the state capital Gandhinagar.

Information related to minerals found in the state, origins of minerals, usage, processes, & various types and samples of minerals will be displayed and a natural mineral museum will be set up at Khanij Bhavan. A research & development wing at Khanij Bhavan will be created to maximize usage of mineral found in the state through value addition, provide guidance to leaseholders & entrepreneurs for establishing mineral base industry, and also to provide business opportunities to small & middle level industrial units. The library will be equipped with Internet facility. Department will be provided with proper manpower after reviewing its day-to-day working. Mining cell created at Commissioner office will be strengthened.

4.8 Simplification in Administration

Application forms for Reconnaissance Permit (R.P.), Prospecting Licence (P.L.), Mining Lease (M.L.), Quarry Lease (Q.L.) and its renewals will be simplified. A check list will be maintained for scrutiny of applications, and

all queries will be sorted out at once.

The department will prepare a Citizen's Charter, displaying the time limit / schedule for disposal of applications. Such as:

Major Mineral	Application disposal Time Limit	Technical / landavailability opinion from District level	Scrutiny & recommendation form CGM level	Final decision at Industry & Mines dept. level
Reconnaissance Permit	6 months	2 months	2 months	2 months
Prospecting Licence	9 months	3 months	3 months	3 months
Mining Lease	12 months	4 months	4 months	4 months
Prospecting Licence renewal	3 months	1 month	1 month	1 month
Mining Lease renewal	12 months	4 months	4 months	4 months

Minor Mineral	Application disposal Time Limit	Technical/ land availability opinion	Final decision at competent officer level
Quarry Lease (except Marble & Granite)	3 months	2 months	1 month
Marble & Granite Quarry Lease	3 months	2 months	1 month
Quarry Permit	45 days	30 days	15 days
Quarry Parwana	30 days	20 days	10 days
Quarry Lease renewal	6 months	4 months	2 months

Under section 23 (A) (1) of Mines and Mineral (Development and Regulation) Act, District officer will be empowered to compound offences related to illegal excavation, transportation or storage of minerals.

4.9 e-governance

Implementation of Citizen's Charter of Department will be a part of Policy. Lease applications at all levels will be connected online, including the applicants. Transparency will be ensured through a computerized file tracking system. The department will also upload an interactive website.

5. Implementation

It is of utmost importance that all aspects/plans covered under this policy

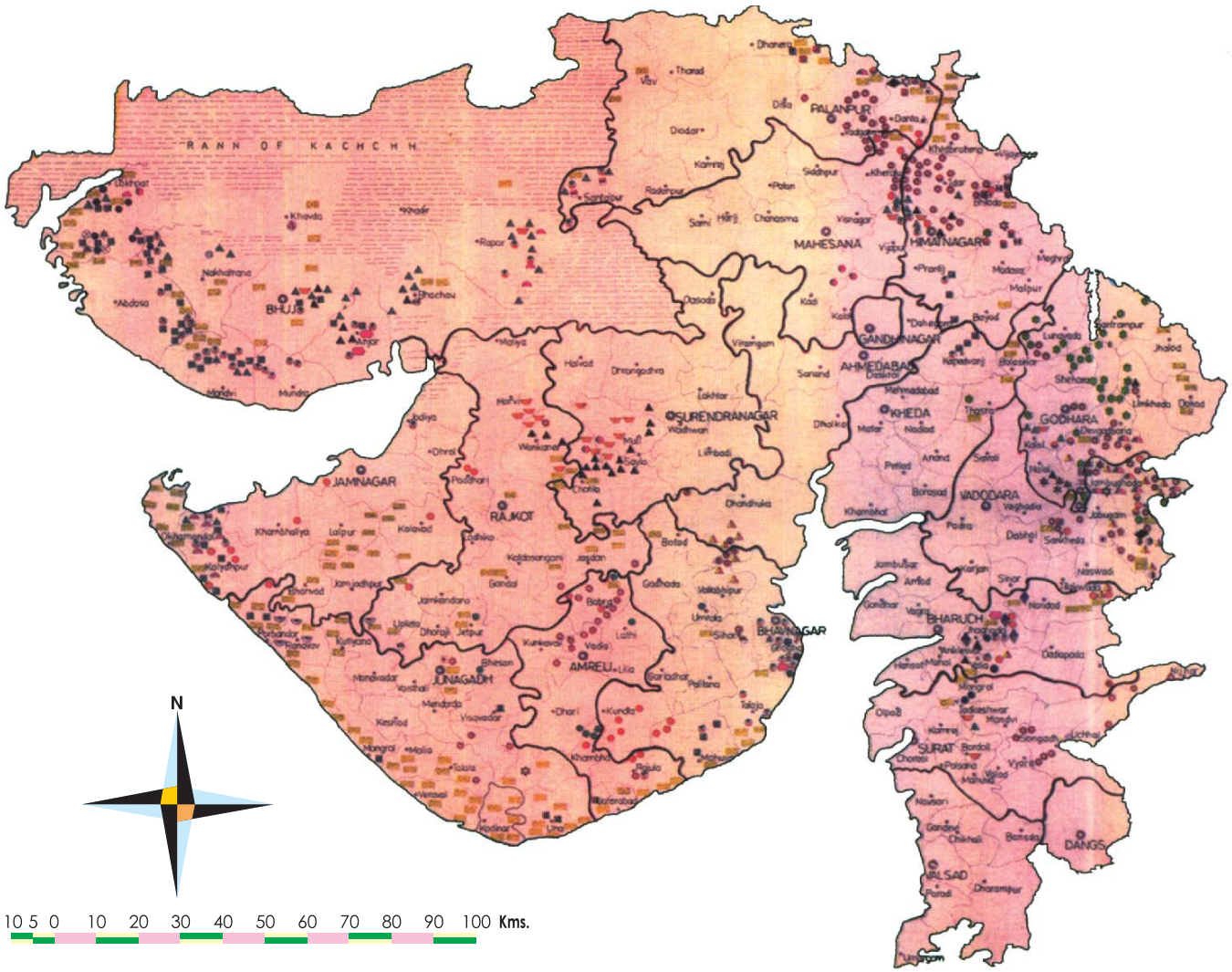
are being implemented properly. For the development of mineral sector, time bound & effective implementation and creating a structure for clarification of each point are essential. Proper co-ordination among various government departments related to mineral exploration, development, regulation and administration, mining and mineral based industry is required. For the purpose of which it is proposed to constitute two high level committees under the chairmanship of Hon. Chief Minister and Hon. Minister Mines & Minerals.

The State Government has constituted a Mineral Advisory Committee, under the chairmanship of the Honourable Minister of Mines and Minerals. The committee may advise the government on framing of Mineral Policy. The Mineral Advisory committee will review the implementation of Mineral Policy, periodically.

The Empowered Committee, under the chairmanship of the Honourable Chief Minister, will have comprehensive command & control - it will solve problems related to the Mineral Policy, and clarify, rectify and modify it as and when required. This committee will also take specific decisions on

Important Minerals, Occurrences and Estimated Reserves (In Lacs Tons)			
Mineral		**Estimated Reserves**	**Important Places of Occurrences (Districts)**
01	Limestone	119870	Kachchh, Junagadh, Porbandar, Amreli, Bhavnagar, Jamnagar, Panchmahals, Sabarkantha, Banaskantha
02	Bauxite	1050	Kachchh, Jamnagar, Jungadh
03	Lignite	21390	Kachchh, Bhavnagar, Surat, Bharuch
04	Dolomite	7200	Vadodara
05	Silicasand	9835	Kachchh, Surendranagar, Bharuch, Sabarkantha
06	Basemetal	85	Banaskantha
07	Chalk	570	Porbandar, Rajkot, Jamnagar
08	Chinaclay	1630	Mehsana, Sabarkantha, Kachchh
09	Fluorspar	116	Vadodara
10	Fireclay	1552	Surendranagar, Rajkot
11	Granite	20050	Amreli, Banaskantha, Mehsana, Sabarkanatha, Panchamahals
12	Manganese	25	Panchamahals, Vadodara
13	Marble	2596	Banaskantha, Vadodara
14	Wallostonite	30	Banaskantha
15	Quartz	40	Panchamahals
16	Bentonite	1050	Kachchh, Bhavnagar
17	Coal	30	Surendranagar, Kachchh
18	Gypsum	33	Kachchh, Jamnagar

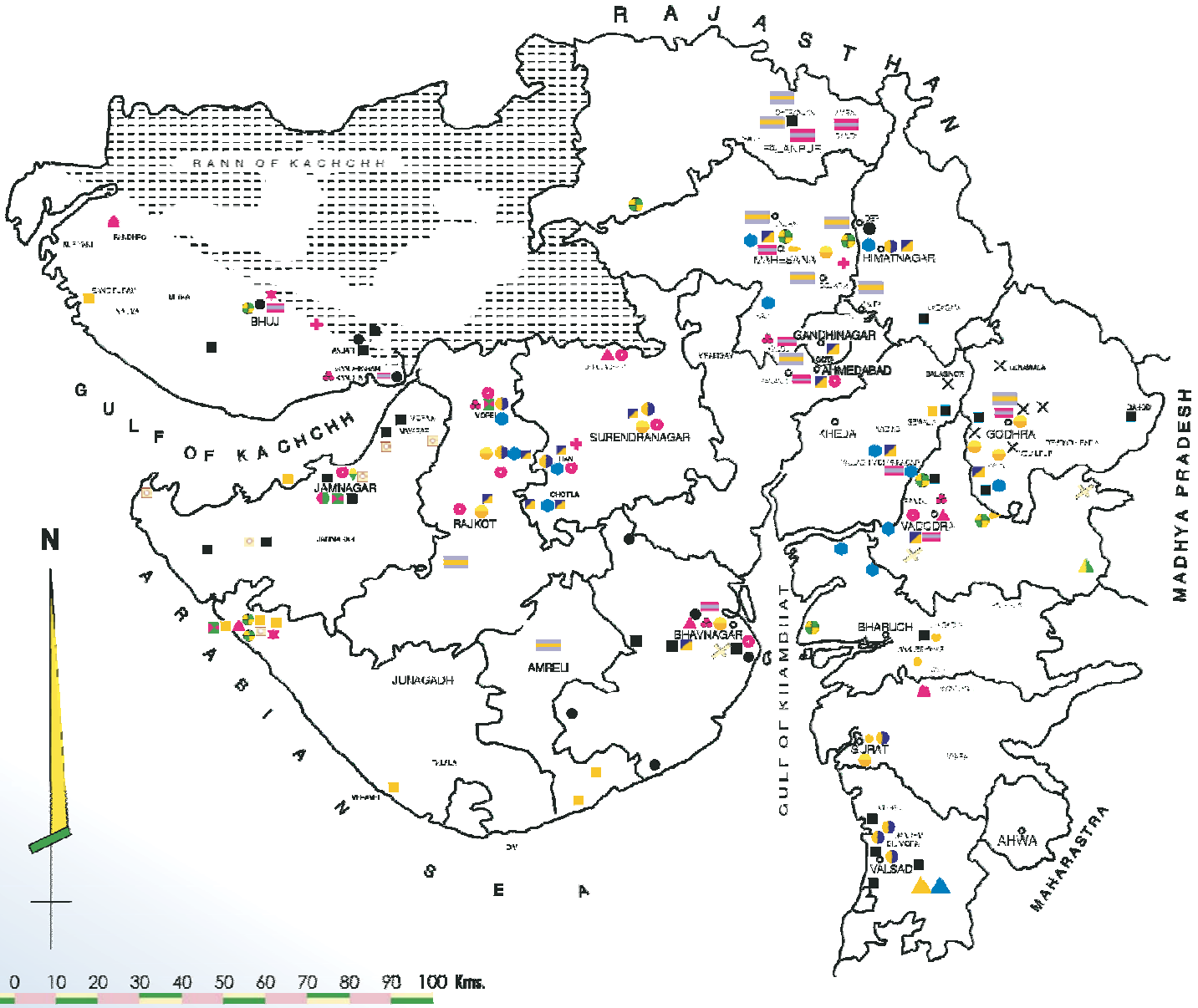
MINERAL MAP OF GUJARAT



INDEX

- Agate
- Asbestos
- Attapulgite
- Base Metals
- Bauxite
- Bentonite
- Brine Water
- Calcite
- Chalk
- China Clay
- Coal
- Diato Earth
- Dimension Stone
- Dolomite
- Feldspar
- Fire Clay
- Fluorite
- Fullar's Earth
- Graphite
- Gypsum
- Lignite
- Limestone
- Manganese Ore
- Marble
- Napheline Syenite
- Ochre
- Perlite
- Quartz
- Siderite
- Silica Sand
- Steatite (Soap Stone)
- Vermiculite
- Wollastonite

MINERAL BASED INDUSTRIES - GUJARAT STATE



INDEX

- Agate Industry
- Activated Earth
- Abrasive Unit
- Bauxite Calcination Plant
- Bentonite Pulverising Unit
- Caustic Soda & Soda Ash Plant
- Cement Plant
- Crockery / Ceramic Unit
- Dolomite Pulverising Unit
- Emery Unit
- Fertilizer Plant
- Flourspar Beneficiation
- Fire Bricks Unit (Plant)
- Trap Crushing Unit
- Glass Factory
- Glazed Tiles Factory
- Granite Cutting & Polishing Plant
- Gypsum Pulversing Unit
- Lavigation Plant (Chinaclay, Chalk, Fireclay)
- Lignite Thermal Power station
- Micron Plant
- Marble Cutting & Polishing Plant
- Quartz Crushing Unit
- Roofing Tiles Factory
- Smelting Plant
- Stone ware Pipe & Drainage Pipe Factory
- Silica Sand Crushing Plant

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