Introduction

Dimensional stones have emerged as a major economic commodity in India. The country has very extensive and rich deposits of wide varieties of dimensional stones like Granite, Marble, Sandstone, Slate and Quartzite etc. By definition any stone cut and dressed to a required size falls into the category of dimensional stones. Further those which are capable of receiving good mirror polish are classified into ornamental or decorative stone. India is the largest producer of dimensional stones in the world accounting for about 27 percent of the stone production. The country is a leading exporter of stones which ranks third in terms of tonnage after Italy and China. The stone sector in India provides employment to over a million people. The domestic consumption of dimensional stone in India exceeds Rs. 5000 crore per annum.

Granite

Granite deposits in India are put at 10,27,421 cubic meters. The country is having about 25 percent of the world granite reserves. Andhra Pradesh, Karnataka, Tamil Nadu, Rajasthan etc. are having the
country's major deposits of granite. India is one of the largest exporters of granite and granite products.

**Properties of Granite**: As a Dimensional Stone Granite the hardest building stone has very dense grain, which makes it impervious to stain. Granite is available in a wide array of colours and textures such as black, gray, pink, multi colored etc. Granite as a building material is used for wall cladding, roofing and flooring and a variety of other interior and exterior applications.

**Chemical Composition of Granite**

Granite is primarily composed of feldspar, quartz along with other minerals in varying percentages. However the percentage composition of each varies and accordingly imparts different colour and texture to the final product. The percentage of the components varies between 65-90 percent and 10-60 percent of quartz and that of biotite lie between 10 to 15 percent.

**Physical Properties of Granite**

Granite is a unique material in terms of its physical properties. Granite has almost negligible porosity ranging between 0.2 to 4 percent.

Thermally granite is highly stable. Therefore it shows no changes with the change in temperature. It is impervious to weathering from

temperature and even from the airborne chemicals. It has high resistance to chemical erosion that makes granite useful for making tanks to store highly caustic material.

Granite shows consistency in colour and texture. It is the hardest building stone and hardness of granite that lends it excellent wear.

**Varieties of Granite**

Granite is a holo-crystalline quartz bearing plutonic rock. It has 10 to 50 percent of quartz as its component and alkali feldspar / total feldspar in the ratio between 65 to 90 percent. The modal concentration of other minerals is less than 10 percent. The cutting of granite has been made easier by the use of steel abrasives. Use of such tools enhances cutting of granite, saves time and lends smoother edges.

Granite is available in three main varieties viz.

i) Biotite-granite

Includes quartz, plagioclase, biotite and K-feldspar

ii) Horn blend-granite

Also called Synitic granite, contains hornblende as well as mica.

iii) Tourmaline-granite

Compared mainly of tourmaline. This variety of granite exhibits a wide range of colours and is very rarely available as white or colourless variety.
Of these three varieties biotite granite is most prevalent. It forms a very suitable building stone for durability and decoration. These varieties are massive and have homogeneous grain. Hence they are eminently adopted for monumental and architectural work as well as for massive masonries. Their wide range in appearance and colours renders the stone highly ornamental and effective for a variety of decorative uses.

**Types of Granites**

There are various types of granite comprising of over hundreds of shades. There are around 200 shades of granite available in India. “To name a few – Tropical Green Paradiso, Kerala White, Pink and Grey Granite, Monumental red granite which is very coarse, Kashmir white, Tiger skin, Bash Parediso, Colombo Juparana, Sea Gree, Turaiyur Blue, Hosur Grar, Raw Silk, Ruby Red, Fish Belly, Tumkur Pink, Sira Grey, Savan Rose, English Teak, Hasan Green, Tiger Black, Chilly Red, Pista Green, Black Galaxy, Daisy Blue, Blue Pearl, Purplish Granite Porphyry, Mokulsar, Green, Silver Galaxy, Ivory Shine, Tan Brown, Steel gray, China Pink, Sea Weed Green, Spotty Black, Chika Blue, Red Pearl, Spotty Ribbon Gineiss, Deep Pink Granite, American/Cobra/Emerald Green”.
Granite - Uses and Applications

Granite is the hardest stone and because of its architectural beauty it is used as a building stone. It takes highly polished finish which endures it even in inclement environments. Granite is available in broad spectrum of colours. The infusion of various minerals in varying compositions during the formation of granite provides differing patterns and colours. Granite is used as a building stone, architectural aggregate, track and trail path ways, decorative land-scape stone, decorative rip rap stone and a source of economically valuable minerals.

**Granite Floorings:** Granite is used for laying floor because of its highly polished finish and a plethora of colours. The flooring is done by engraving the slabs, tiles or the blocks of granite. Granite flooring tiles are used to suit the intricate designs in kitchens, bathrooms and other rooms. It is used in office setup, halls for public gathering, big buildings and monuments.

**Granite Furniture**

Granite has been used in making tables in a huge range of styles and finishes using the unique physical properties of granite. The granite furniture has exotic and rustic appeal. The granite furniture items include tables, bed, benches, bathing tub, side tables, stools, and garden furniture.
Granite Counter Tops

The tops of granite are used to make counter tops. This is used mostly in kitchen, bars and counters of shops with its varied colors and sophisticated structure. Granite is found useful in complementing cabinets in kitchen. The granite counter tops give an elegant and impressive look. Further the granite counter tops are useful because granite is resistant to stain, scratch and heat.

Granite Table Tops

Table tops are made by slabs of granite. Granite is an excellent choice for table tops because of attractiveness and durability.

Granite Steps

The building steps made of granite are gaining immense popularity. They impart a completely new look to the surroundings.

Granite Industry

The granite industry comprises of granite quarrying, granite cleaning, granite cutting, polishing, etc.

Granite Processing

Granite processing consists of:

i. Dressing

ii. Cutting / Sawing

iii. Surface grinding and polishing and

iv. Edge - cutting - training
Cutting of granite follows processing. Cutting is done by steel abrasives. It is cut into thin slabs by multi blade gangs and using various types of granite cutting blades.

Granites are cut into tiles, slabs, and blocks. Granite industry has helped in the development of units manufacturing equipments used in granite quarrying, cleaning cutting and polishing.

The recovery of marketable grade granite is reported to be 32 to 40 percent in Karnataka, 25 to 75 percent in the four quarries around Jalore in Rajasthan and 20 to 40 percent in Tamil Nadu.

Need for the Research Study

Granite is a unique commodity to trade with, because of its technical qualities such as strength, durability, hardness and ornamental features. However the commerce of granite is a complex one and is decided by several non-geological factors like government policy bureaucratic tangle, lasses prerogative, consumers need, buyers preference caesthetics, infrastructure etc.

Granite industry expanded from 1970 onwards. However export market boomed in nineties when private entrepreneurs entered granite business in a big way. Even then the business experienced failures mainly due to failure in quarrying operations and consequent shortage of specific exportable raw materials at competitive prices. Nearly 600000 quarries were opened up in 1992 following the boom but only 0.5
percent of them were actually working and of them only 50 percent of
the quarries could work for export production. "A critical analysis of
commercial quarrying in parts of the southern states show that more
than 70 percent of the quarries failed, and that one of the main reasons
was the wrong assessment of potential of the deposits due primarily to
unscientific approach leading to wrong selection of quarry sites."²

Another problem faced by the granite and other dimensional
stone industries relate to the recent economic recession in major world
economies. India’s export opportunity dipped or affected due to recent
economic recession in USA, Italy, Germany and Japan. There are also
other hassles confronting the granite units in the country at policy level
or at operational level viz.

(i) Shortcomings at policy level relate to absence of global level
prospecting and mining policy, inadequate support measures for
investors in processing industry, non availability of advanced
technology (imported machines and equipment) under the
100 percent Export Oriented Unit Scheme (EOU) on duty free
basis, alleged impractical application of FCA1980, absence of long
term funding at cheaper rate.

² World Stonex : Resource Survey of Dimension Stone Granite (DSG) in India –
(ii) Shortcomings at Operational Level relate to alleged hindrance caused by reformulation of their own policies by various state governments, unhealthy competition amongst the entrepreneurs by under pricing the products in the global market etc.

The emergence of China as a strong competitor in world market is another problem faced by India’s granite varieties at cheaper rates. Buyers form Japan turned towards China due to the price factor. US market continues to be good for India but it has also become competitive. There has been a glut in the world market and margins have thus fallen very low.

The small and tiny granite industries are surviving on thin margins with the market prices of granite slabs crashing by more than 20 percent even as the input cost of consumables such as electricity and labour have increased by 20 percent.

The granite industry also suffers from some others disadvantages which are less intense in case of marble-another dimensional stone industry. The material wastage in marble industry for example is just 10 percent while it is as much as 70 percent in granite industry\(^3\). The cost of cutting a marble slab works out to Rs.2 per square feet. While it is Rs.15 per sq.ft. in case of granite slab. The royalty payable to the government by a marble unit is just 50 paisa per sq.ft. while it is Rs.6 per

---

The average production capacity of a marble unit involving an investment of Rs. 60 lakh is 8000 sq.ft. per day while in case of granite unit involving the same amount of investment capacity of production is 300 sq.ft. per day.

Indian granite dealer has not adopted some innovative methods of marketing. Consortium approach of marketing especially for exclusive type of granite would be useful. Design centres are working in USA for boosting exports. Such centres have significant advantage for exports of granite and other dimensional stones. Publicity through good advertisements needs greater attention.

Marketing of granites and other dimensional stones involves proper understanding of user's requirements, trends, price ranges, feasibility, economics of transportation etc. There is also the problem of giving credit to the buyers abroad. However such policy may result in low margins.

The production and marketing of the granites in the Indian context is faced with problems and inadequacies. The industry is highly export oriented along with an expanding domestic demand in recent years. India is one of the major producers and exporters of granite of different varieties. Production and marketing strategies need to be reoriented to meet adequately the intense competition in the world market and to face adequately the vicissitudes of demand and price
uncertainties. The researcher felt that a study of the problem of this fast growing granite industry with a special reference to the different dimensions of marketing would be useful in identifying the magnitude of issues involved and their prevalence in the study area which is one of the major granite producing regions in Karnataka. Hence the research problem was selected for an in-depth analysis of the granite production and marketing in the study area.

Statement of the problem

The granite industry has taken firm roots in the northern parts of Karnataka particularly in Bagalkot, Bellary, Gulbarga, Koppal and Raichur districts. A good number of granites industrial units have been set up and have made an impact on the granite trade not only in Karnataka state but also at the national level. The occurrence of wide varieties of ornamental granite stone deposits along with an increasing demand for these varieties abroad have given an upsurge to quarrying of such material in Karnataka from a small beginning made in this state in 1930s for black granites, the granite industry in Karnataka has developed now to an extent of contributing nearly 40 percent of the total production of the country.

The red and pink variety of granite from Ilkal areas of Bagalkot district (erstwhile Bijapur district) are much in demand in the domestic as well as foreign markets. A cluster of quarries have developed there
for mining the granite around this area. The production of marketing of
the granites in the study area have been facing varies problems which
are largely similar to granite units operating in the other parts the state.
Hence the different issues of production, finance, infrastructure and
marketing dimensions of the granite units in the study area have been
probed and analysed. Hence the statement of the research topic is

"PROBLEMS AND PROSPECTS OF GRANITE MARKETING WITH
REFERENCE TO ILKAL IN NORTH KARNATAKA"

Objectives of the Study

The research study has set forth the following objectives.

1. To study the growth of granite industry in India, Karnataka and in
   the study area.
2. To provide the profile of the selected granite units in the study area.
3. To examine the production dimensions of the selected granite units
   in the study area.
4. To analyse the marketing dimensions of the selected granite units in
   the study area.
5. To identify the production and marketing problems of granite units
   and to indicate the needed measures to improve their performance.

Hypotheses

The researcher has set forth the following hypotheses for
verification in the light of the research findings.
1. Infrastructure in adequacies has affected the operations of the granite units.

2. Government policies towards the granite mining and marketing have been favourable.

Limitations of the study

Limitations are the restrictive conditions under which the researcher has to conduct his research work. Such restrictive conditions are essential for the researcher to reduce the problem to a workable size and set the boundaries by limiting the scope.

Following are the limitations of the study

1. The study is confined to cover only 25 granite units in the study area.
2. The area is restricted to cover only Bagalkot district.
3. The data on different aspects of production and marketing is limited to only 5 years in general
4. The data analysis is done using only simple statistical tools to arrive at proper conclusions and inferences

Research Methodology

The research study is an empirical survey of selected granite units in terms of their production and marketing dimensions. The data is collected from both primary and secondary sources.
Selection of the Area

The study covers the granite mining areas of Bagalkot district in north Karnataka region. The areas covered are having rich deposits of red and pink varieties of granite with great market potentials. Hence the units which lie in the home district of the researcher are selected to suit his convenience of proximity.

Selection of the Granite Units

The cluster approach of selecting the units has been adopted by the researcher. The significance of the mining units in terms of their magnitude of their production and marketing has influenced the researcher in selecting the respondent units.

Data collection

The study is based both on primary and secondary data.

Primary data is collected from the selected 25 respondent granite units. The data is collected as per a well designed questionnaire which contains questions on different aspects of granite production and marketing. The questionnaire has been finalized after a preliminary study relating to some sample units in the study area. The questionnaire is quite comprehensive and it elicited information on the varied aspects of the production and marketing operations of the granite units.
Data Analysis and Interpretation

The data collected through the field investigation as per the predetermined questionnaire schedule has been scientifically tabulated to provide completed picture of the operations of the granite units covered by the study.

The data has been analysed and interpreted properly to arrive at appropriate inferences and conclusions. The data analysis is done using simple statistical tools like percentages, averages, growth trends and ratio’s. Graphs and charts have been used wherever necessary to highlight some important trends.

Review of literature

Research studies and reference works on the granite industry in general and the granite industry in India and the different regions in the country are limited in number. However some news magazines and government and trade associations related to the minerals industry in partial are have published some articles and government notifications. The available literature in the form of articles and other publications are too inadequate to provide an insight into the details of the production and marketing aspects of the dimensional stone industry in general and granite industry in particular.

The research could get some united number of publications in the form of articles on granite industry in the country particularly the major
states with substantial reserves of varied type of granite and the quarrying and processing units. The publications have been reviewed here to provide good backdrop for the empirical analysis of the data collected from the field investigation by way of obtaining responses of the granite units selected for the study in the study area.

M. P. Jain

The author in his article "Rising Global Demand Adds Luster to Granite Sector" has observed that in the changed global scenario, the position of India has become unique and its market share in the world has shot up to about 27 percent. The author has drawn attention to the fact that India has wide variety of ornamental stones with vast deposits of granite, marble limestone, sandstone etc. India, he feels, is being and end-users. The author has landed the efforts of stone-market which has been responsible for convincing the world buyers about the exotic varieties dimensional stones found in India and their structural properties. He has rightly focused his article on the rising global demand which has added luster to granite sector in the country.

The author has referred to the emergence of China as a strong competitor in the industry and has observed that Japan has turned. However the existing us market continues to be good for India. He has cautioned that us market has also become competitive. Mr. Jain has

rightly referred to view of the stone mart that there is a glut in the world market and margins have fallen very low. The industry is passing through a recessionary phase.

The author has drawn attention to the important view point that for marketing of granite the need is to know the users requirements trends, price ranges, feasibility, economics of transportation etc. The sales through credit sales abroad have become unattractive due to low margins and the interest difference is also high the author as expressed the view that fresh investments are some what attractive with the government liberalizing the foreign exchange investment norms.

Dr. H.S. Yadav and A. Raja Babu

The granite industry according to the authors is still in infant stage in Gujarat. The state has huge deposits of granite and has good market factors contributing for this. They have mentioned insufficient exploration and lack of geological-cum-geotechnical information of the rock mass and uncertainty of the economic viability of the deposit, fever varieties of granites, absence of aggressive marketing through collective approach and unfavourable policies of the government are the factors in addition to others causing slow growth of granite industry in Gujarat.

The authors have referred to the lack of awareness among the entrepreneurs about the quality of blocks and careless marketing strategy.

5. Dr. H.S. Yadav and A. Raja Babu—Some issue on the future of Gujarat Granite.
They have mentioned other drawbacks like lack of R and D for exploration, extraction techniques, testing and market statistics. The authors have suggested that entrepreneurs should come forward and utilise the expertise of Government and other consultants for scientific way of quarrying. They have emphasised the need for approach in their article “Some Issues on the Future of Gujarat Granite”.

Dr. M.K. Pandya, Dr. D.K. Pandya and T.S. Ranawa

The authors have observed that black granites are categorized as a major exportable commodity amongst the dimension stones. The authors have estimated that India possesses 11, 114 thousand cubic metres of proved recoverable reserves of black granites. The authors in their paper “Black Granite Resources of Rajasthan and Their future Prospects” have mentioned that there is vast scope for enhancing the production of black granites in Rajasthan if a systematic evaluation of such granites is carried out from commercial point of view. The authors have provided details of different varieties of black granites found in different part of Rajasthan. The authors have referred to the dependence of granite cutting and polishing factories of Rajasthan on black granite obtained from the states like Karnataka, TamilNadu, Andra Pradesh and Orissa. The authors have suggested for launching projects of identifying the varieties of black granites in Rajasthan itself.


18
Vikrant V. Rastogi and K. Vikram

The authors in their article "Exports of Indian Dimension Stones, A Critical Analysis" have observed that there has been a market diversification in the export of natural stones in recent years. They have attributed this development to the emergence of internet which has helped in obtaining information on sources varieties, finishes, prices and payment terms at once. Negotiations have become quick and the products have become very competitive. The authors have mentioned a substantial increase in the exports of granites, marble slate and other stones from Rs.1043.7 million in 1987-88 to Rs.26146 million 2001-02. However they have mentioned that India’s contribution to world exports by tonnage is 9.5 percent only compared to 19.5 percent of China’s exports in the world market. China has occupied the first position in only 15 years. Italy occupies second place with 14.7 percent. India ranks third followed by Spain.

The authors have opined that a close understanding of the market with respect to its requirements, climatic conditions, finishes, and sizes is essential to export Indian stones to such countries. The authors have observed that some Indian stones which are quite similar to other in the world have stiff competition in respect of CIF prices. For polished granite and marble the ocean freight is important. The authors have

made a significant observation that there a substantial scope for Indian exporters in venturing into new countries where requirements may not be large but quality products can be sold at a better price and payment terms in such market need to be identified.

The authors have suggested feedback from local architects and builders would be of great help in ascertaining what types of stones have demand in a particular country. The Indian exporters should study the nature of demand and the import duty and other taxes for such items. Analysis of prices and the existing distribution channels must be made in detail.

The use of modern marketing techniques is a felt need. Three authors have suggested that Indian exporters must keep in touch with advertisements through print and electronic media. It is also suggested that participation in fairs, publication of brochures can help in the business of exporting.

Ch Parkas Reddy

The author has made a significant note that as far as the small and tiny granite industries are concerned, they are surviving on thin margins with the market prices of granite slabs crashing by 25 percent even as the inputs cost of consumables such as electricity such as electricity and labour increased by 20 percent the author finds that the

8. Ch Prashant Reddy - Granite Industry wants excise duty rolled back business line, April 26-2002-p1
imposition of 16 percent Central Excise duty seems to have affected very much the small scale and tiny granite industries which have been surviving on thin margins. The author has referred to the view that granite and marble industries are not comparable as there is a vast difference in the cost of production as well as price realization between the two. Marble industry is stated to be much profitable that that of granite since raw material wastage in marble industry is just 10 percent while it is 70 percent in granite industry. Further the cost of cutting a marble slab works out to Rs.2 per sq.ft. While in case of granite it is Rs.15 per sq.ft. The royalty payable to the government by a marble it is Rs.6 per sq.ft. for a granite unit. The author has further tried to mention the advantages of marble unit when he says that the average production capacity of a marble unit involving an investment of Rs.60 lakh is 8000 sq.ft. per day while in case of granite the production capacity is 300 sq.ft. per day for the same amount of investment. The author’s plea for exemption of excise duty on granite is justified taking into account all these factors.

Alok Kumar and Kulveer Singh

The article “Indian Stone Industry- An Insight” by the authors provides a comprehensive picture of the production and trade dimensions.

of India's dimensional stones. He has tried to explain the different aspects of this industry relating to the major type of stones viz, marbles, granite, limestone, sand stone etc and their economic significance to the different states. He has rightly mentioned that the stone sector in India provides employment to over a million people and it has grown at a remarkable pace over the past decade taking India to the fire front of the world stone scenario.

The authors have lauded the wide spread use of modern technology in the cutting and policing of the different type of stones thereby creating value addition and greater demand. Stones are still the mainstay of civil construction in India and the domestic consumption of natural stones exceeds Rs.5000 crore per annum. The authors have provided a comprehensive list of dimensional stones manufactured in the different states of the country. They have provided good statistical data on the exports of major dimensional stones from India during the last one decade.

Granite production in leading states like Tamil Nadu, Andra Pradesh and Karnataka has been discussed by the authors in detail. Writing about granite production in Karnataka authors have said, "Karnataka is endowed with rich varieties of granite resources. Approximately one hundred varieties of rocks are available in Karnataka. Granites with pleasing textures and colours apart from
attractive gneisses, migmatites, and sober dyke rocks are abundantly available. The per insular gneiss, closepet granites and younger granites intrusions are main sources of ornamental stones in Karnataka. The pink migmatic granite and grey granite of peninsular origin are attractive and widely used. Pink propheries and pink granites of close pet groups add to the varieties with their enchanting look”. The author has provided a list of the granite resources available in different districts of Karnataka.

Jeffrey Mathews

Mr. Mathew’s article ‘The Dimension stone Imports into the United States-Granite’ has provided the market potentials of USA for the granite and the performance of a few major countries whose granites have been imported there. The author has provided details of imports of granite from Brazil, Canada, China, India, Italy and Spain.

The authors’ comments on imports of granite from India re quite significant. He has made special reference to imports of granites of green and black varieties and also red varieties of granites whose demand in us is fast increasing. The author has made a special mention of Indian exporter’s arrangements of warehouses across USA market. These producers have been promoting heavily the Indian granites which

number in the 75 to 100 type category. The author says the number of Indian companies promoting stones has increased to 500 and India has over taken Spain and Canada in the US market.

The author’s suggestion to enhance the sale of Indian granites in USA is very significant. He has suggested that India’s market share can be greatly increased if Indian producers can show the US market that they can supply quality cut to size work for large commercial buildings. At present they are still more limited to tiles slabs and blocks. The author says that the US market still remains one of the largest potential markets in the world.

**Vishwanath Kulkarni**

The slump in granite prices has caused much worry for Indian granite exporters according to Vishwanath Kulkarni. In his article - “Granite Exporters Hit by Price Slump” the author has mentioned that the average export prices have dropped by about 40 percent over the last few years and the slide is much higher in cases of rough blocks. Mr. Kulkarni has observed that the fall in prices which has squeezed that the fall in prices which has squeezed the margins of exporters is mainly attributed to the slump in global demand.

More over China has emerged as the largest exporter and its prices are lower. Indian exporters are in no position to match the Chinese prices and compete with them.

China does not have enough varieties in terms of colours and texture and it has been dependent on India for rough blocks. It re-exports rough blocks after adding value in terms of processing and polishing them.

K. Virendrasingh\textsuperscript{12}

The author has reviewed different aspects of stone industry in India. He has given detailed statistical evidences about the growth of stone industry in terms of production and exports. He has lauded the achievements of stone industry in the areas of modern technology, widespread use of latest mining and processing machinery handling equipment, transporting vehicles consumables and various tools etc. All these are being manufactured in India.

The author has been quite appreciative of the quality standards of Indian stones when he says that Indians stones conform to the highest international standards and have been used in several well known buildings all over the world. The stone industry has created employment opportunities, pushed up industrial activity and promoted export trade.

The author is optimistic about huge potentials of demand in the world market for Indian stones particularly granite marble, slate, line stones and sandstones.

\textsuperscript{12} K. Virendra Singh. Dimensional stone www.indianet.nl/budhpura.pdf
The author has cautioned that if Indian stone sector has to compete in the world market it certainly has to adopt world’s latest skill. To cut down the production cost and improve quality of the product both in mining as well as in processing sector. The mining methods are primitive, manual, slow, wasteful and highly uneconomical. Hence there is need for international exposure on technological upgradation, quality consciousness, pollution control measures and market exposure foreign buyers to India’s dimensional stones. The author has suggested for providing strong bridge and bondage between the key players of the industry viz-quarry owners, processors, importers, exporters, architects, crofts men, policy makers and research and development organisations. The author stresses the need for technical educational institutes and training facilities for the technocrats as well as for mines supervisors and machine operators and also for the entrepreneurs of stone industry.

In the area of marketing the author has suggested that in order to assess the development of the national and international market there is need for setting up a statistics centre. This centre should automatically collect and analyse all the statistics which may be used to formulate strategies and projects in various area of interest.
Harlod A. Taylor. Jr.\textsuperscript{13}

The author in his article “Dimension Stone” has given statistical details of production and consumption of dimension stones of different varieties in USA during the middle nineties. His efforts are mainly focussed on the statistical compilation of the production, trade and use of the different dimension stores. He has been purely narrative and informative.

The author has restricted his analysis of trade in dimension stones to a few countries like Brazil, Canada and Japan. He has also projected the demand for dimensions granite, marble and limestone only upto the year 2000 from 1993-94.

\textbf{R. Veeramani}\textsuperscript{14}

The views expressed by R. Veeramani Chairman Gem Group and member capexcil panel on granites at a press conference on granite industry have been presented by the Bureau of Business Line.

Mr. Veeramani has observed that ambiguous policies, high input costs and lack of infrastructure affect the growth of the granite monument industry which has emerged as the largest exporters in the mineral sector. Mr. Veeramani has mentioned that Tamil Nadu, Karnataka

\textsuperscript{13} Harold Taylor. Jr. Dimension Stone.

\textsuperscript{14} K. Veeramani, India-Treasure Land of Dimensional Stones, Indian Stone AIGSA Magazine.
and Andhra Pradesh had emerged as leading centres monumental manufacturing and as almost exclusively export oriented activity. The industry had a total investment of Rs. 1250 crore and monuments account for about 25 percent of granite exports which were estimated around Rs. 2500 crore. Over 75 percent of the industry was based in Tamil Nadu and the three state together supplies 90 percent of the raw material required while the balance is imported.

Mr. Veeramani has mentioned that with increasing competition from other international players like China, the Indian Industry was loosing its markets despite high levels of efficiency and technology infusion. Mr. Veeramani has listed some of the constraints to Indian granite industry viz.

i. Royalty rights are grossly over priced.

ii. Inland transport costs are high.

iii. Increased dependence on feeder vessels has affected exports.

iv. Manufacturing cost is adversely affected by high cost of power and fuel.

v. Entry tax levied by the Tamil Nadu Government of the raw material comes from other states.

Mr. Veeramani has stressed the need for policy issues to be addressed and infrastructure put in place.
Mr. Poddar's views on national policy for the granite industry announced in 1999 by the Government are quite relevant here. The policy has brought about a uniform approach on granite aimed at unchanging set pattern of leasing and systematic exploitation of granite resources without affecting environment. The new policy comprises of provisions like prospecting licenses upto 30 years, minimum area of grant of lease with not less than one hectare and not exceeding 50 hectares etc. Mr. Poddar has expressed the view that the policy contained measures to ensure prospective mining and the protection of environment. He felt that India could regain its lost position in the world granite market with the new policy. Mr. Poddar expressed the view that the long term lease grants would ensure large investment not only from Indian entrepreneurs but also from abroad. Mr. Poddar pleaded for liberalizing policies relating to royalty and fixing dead rents and according status of 100 percent export oriented units to quarries.

A. Rajan Babu and R.N. Gupta

The author in their article "Technical Aspects of Granite Quarrying in India - An Over view" have observed that the no proper mining plans are made and adhered to while operating mines and quarries.

are developed without micro level scientific exploration sampling and surveying techniques. They are of the view that quarries which are mechanised the degree of mechanization is either on the lower or on the higher side and did not match with the production targets and quarry lay out and life of the quarry. The authors attribute it to lock of scientific approach in the evaluation of the deposits and isolating the machinery requirements based on quarry performance and assumptions improper selection of equipments, say the authors, often leads to under utilisation posing serious operational problems apart from poor rate of production.

The authors have suggested for complete mechanisation of quarries and for scientific way of quarrying. It is necessary to know the physico mechanical properties of the rock which will also guide in the selection of proper technology as well as suitable equipments.

M. Ramesh17

The author in his article “This Business Rocks” has observed that the last few years have been tough for the Indian granite industry. However he perceives that, there is a niche waiting to be tapped, value added products like sculptures and monuments are much sought after in the West. The author has mentioned that in 1980s, the Indian granite industry evolved out of the waning fortunes of its European

counter part, which was killed by high cost. Further he contends that the biggest problem was a lack of understanding of the material as well as its availability non value added exports, idle machinery and the entry of Chinese players who quickly captured the low end market - tiles and standardized slabs - added to the misery of Indian granite industry. The author has expressed his optimism that today those who survived the tough times have found a niche market for custom - built granite furniture and sculptures.

C. Kaliannan 18

The author has examined the problems and prospects of granite industry in his article “Problems and Prospects of Granite Industry in India”. He is optimistic that there is a bright future for increasing the Indian share in the world market with its vast area of granite deposits spreading over more than 15 states and with wide variety of colours and skilled work force. The author has rightly opined that the growth of granite sector which provides a lot of employment particularly for the rural masses is important for the socio-economic development of the country.

The author has focussed on the two main problems of low productivity and high wastage of granite industry. He attributes low productivity of conventional methods pf mining adopted at present. The

The author stresses the view that high productivity and production of defect-free blocks with low wastage is essential for economic viability of the industry.

Writing about the need for modernization of granite industry the author has mentioned that the main obstacle for the slow rate of modernizing the quarry is due to very high rate of import duty on capital equipment like diamond wire saw machines, drilling equipment and on consumables like diamond wire, drilling rods etc. - He has suggested that the government should consider granting mining industry 100 percent Export Oriented Unit Status. Alternatively he has suggested for full duty exemption for imports against exports of blocks. This the author mentions would encourage entry of corporate companies into the granite sector.

The author’s suggestion for establishing a Training Institute to educate and train the work force would help in raising the productivity of labour.

The author has rightly suggested for announcing a long term mining policy and discontinuing the frequent changes in the leasing policies by the state governments. He has pleaded for simplifying the procedures of lease agreements, permits for movements of blocks, payments of royalty etc.
The processing industry of granite is inhibited by non-availability of best quality blocks. Exports of quality granite blocks are affected by the shortage of quality blocks. The author has opined that domestic market should be encouraged by lowering the excise duty on the second sales from 100 percent processing companies to achieve higher capacity utilisation and more domestic demand. He has pleaded for improving the infrastructure facilities like road, rails, electricity services, water sources need to be improved. The author has also suggested for reducing the high rate of interest charged by financial institutions to make the Indian products more viable in the world market.

A. K. Basu19

The author has provided an elaborate account of granite reserves and the policies of the state government in Bengal about the granite industry in his article “Granite Deposits in West Bengal”. He has provided the distribution of different type of granite in the different districts of West Bengal. Writing about the state government policy on granite industry Mr. Basu has referred to the policy measures taken by the state. He has mentioned the implementation of Granite Rules 1999, disposing of Lease applications within six months and the government’s

measure in reducing the delay in grant of transport permits. The author has explained the state government’s measure in protecting the interest of SC and ST applications while granting mining leases. The state governments steps in charging a lower price for granite waste for the buyers whose it as a building materials has been mentioned by the author.

Franco – Vianello

The author has tried to provide a comprehensive description of the black granite and its utilization in several of construction of decorative nature. He has classified the black granite in the two types of commercial black granite as intrusive magnetic rock - gabbrons and ultrabasics. They contain less silicon.

The author has observed in his article “Black Granite - Utilisation”, that black granites are used mainly as decorative materials, in polished slabs that confer a certain sobriety, if not down right elegance to the rooms in which they are used, unless combined with pale or colured materials, which lighten the effect. They have the some physical mechanical properties as other granites and like them can be used out of doors with no problems, since they undergo little or no chromatic alteration.

Hans Raj Verma\textsuperscript{21}

In his article “Granites of Tamil Nadu” Hans Raj Verma commissioner of Geology and owing Govt. of Tamil Nadu has provided details of the granite deposits of Tamil Nadu. He has mentioned the significance of the state in the granite economy of the country stating that Tamil Nadu forms part of the peninsular shield and about three fourth of the area is underlain by the unclassified crystalline rocks of Archaean and Pre-cambrian ages. He has mentioned that the rocks are mainly granulitic and comprise of charnockites, leptynites, gneisses of various types, systems, younger granites and dolerite dykes also are found in restricted manner alone in tectonic zones.

The author has highlighted the significance of black granite, its utility and its availability in Tamil Nadu. Verma has detailed the mining and exports aspects of granite in Tamil Nadu.

James Callaghan and Steven Collick\textsuperscript{22}

The authors in their article “How Granite And Stone Fabricators Can Advance to the Next Level” have expressed the view that the rapidly expanding popularity of counter tops made of granite and other stone presents growing business opportunities for stone fabricators who must constantly upgrade to increase production to meet demand. The

\textsuperscript{22} James Callaghan and Steven Collick - How Granite And Stone Fabricators Can Advance To The Next Level - Stonex - InfoTech Pvt Ltd .pp 1-4.
authors by implication have referred to the expanding trade in these stones. They have mentioned that in the last five years alone the number of fabrication shops in the US has nearly doubled from around 8000 to more than 15000. The authors are optimistic that the trends are expected to continue because market demand shows no signs of slowing down. They have further mentioned that by carefully choosing stone fabricating machine with automated equipment that can improve both production and quality, a fabricator can guarantee itself security in the industry.

Devaraj

The author has examined the prospects and perspectives of granite processing in his article “the Innovative Technology For Granite Processing and has observed that the global consumption in granite products in the year 2003 inspite if several set backs was growing at the rate of 8 percent. He has noted that the capacity utilization is finding an upswing and investments are taking to increase the capacity. He has rightly observed that India is a major player in the world granite trade and is the third country after Italy and Spain. However the author has blamed the industry for being overtaken by China due to some inadequacies viz.

- non pragmatic policies
- not updating the technology levels
- unorganized marketing efforts and
- absence of brand building

The author has exorted the granite industry to focus on upgrading technology and to undertake effective cost cutting measures at all levels to produce quality products for meeting the international standards at a competitive price.

Mr. Devaraj contends that the industry is still using the technology and machineries which are at least 10 years old and yet to adopt the type of machineries which are used in Spain and Italy. He has pleaded for change in the Government's policies in terms of leasing period of quarries. Government should provide incentives for innovative investments and provide competitive platforms for the industry.

Keshav Kumar

The author has made a very optimistic statement that the Indian granite 'Black Galaxy' has tremendous appeal in the market. In his article "Black Galaxy, Galaxy in Granite" the author has mentioned that the allure and endurance of this granite has been tremendous over years with an estimated sale of almost a million cubic metres of this material over the years.

The author has referred to the Ongole district in the state of Andhra Pradesh where the Black Galaxy quarries are located in a village by the name Chimmakurthi. The author has however drawn the attention to the fact that the quarries have limited possibility of recovery of the material and this according to the author has led to the rise in the cost of quarrying. The author has referred to fact that this 'Black Galaxy' granite is one of the more expensive granite in the world.

The author has appreciated the fact that of late the India processors have become aggressive in marketing black galaxy slabs in the European and Australian markets. The smaller blocks of the black galaxy are mainly exported to China.

Dr. M. Basappa Reddy

Writing on "Ornamental Stone Resources of Karnataka and State policy "Dr. Reddy has observed that the total estimated deposit of granite in the state is 221 m cum. Considering quarriable depth at 20m. Classifying the ornamental varieties of rocks of Karnataka into (1) granites, gneisses and other acidic rock and (ii) Dykes the author says gneisses and granite are the rocks abundantly available with different colours and shades of pink to grey,porphyritic to equigranular in texture. Dr. Reddy has mentioned some of the popular varieties in the

market like Ilkal Red, Shahapur Ruby, Savan Rose, Tumkur porphyry, Imperial Red, Raichur Porphyry Marigold, Rose fantasy, Candy green etc. These varieties are quarried in Bangalore, Tumkur, Dharwad, Koppal, Bijapur, Gulbarga and Raichur district. The author has detailed the physical properties of Ornamental Stones in Karnataka.

Dr. Reddy has specified the different measures taken by the government of Karnataka to promote granite industry as announced in the Karnataka Mineral Policy 2000. They are:

2. Disposing of lease applications within three months.
3. Initiation of action to amalgamate leases of small size granted under KMMCR 1994 into a single lease does not exceed 5 hectares.
4. Giving priority in the grant of lease to those who put up export oriented units in the state.
5. Introduction of self assessment of granite which will reduce delay in issuing per units.

The above and other measures taken by the Government would help substantially in promoting granite industry in Karnataka.

S. S. Joshi

Shri. S. S. Joshi in his paper "Modern Technology in Economic Granite Block Winning" has provided details of the modern technology,
in economic granite block winning. He has discussed developments in abroad in this area and has tried to examine how the same could be adopted in India.

Mr. Joshi has examined all the modern techniques of modern quarrying and has provided some useful guidelines. He has concluded that use of diamond wire sawing technique and derrick crane has brought revolution in the granite production in India. He mentions that it is advisable that granite mine owners keep themselves up to date with the advancement of technology. There is a great demand for Indian granite in foreign countries and with modern technology, we can produce good quality granite with less cost to compete in the world market.

B. S. N. Shetty, Yashodhar Shresthi and Dr. S. Jayaram27

The authors in their paper "Review of Data on physical properties of Rocks of Southern India" have made a review of the data available to them on physical properties of different rock types occurring in Karnataka, Andhra Pradesh and Tamil Nadu. They have indicated the thrust areas for further work. The authors have observed that whether a 'stone' has been quarried as dimensional stone or for other purposes (building stone) it is essentially a rock type and the physical properties have the same meaning and significance. The author

have mentioned the important physical properties of rocks as
(1) Specific gravity (2) Porosity (3) Water absorption (4) Compressive
Strength (5) Transverse Strength(6)Shear strength (7) Durability
(8) Weathering (9) Reflectance and (10) Parameter Vs Climates.

Organisation of the study

The thesis is divided into the following six chapters

Chapter I: Introduction And Research Design

The first chapter contains an introduction to the research study
providing details of the major arguments pin pointing the reasons for
the need for the research study, objectives of the study, hypothesis,
limitations of the study, the methodology of data collection, analysis
and interpretation. The chapter also contains a comprehensive review of
the existing literature relating to the topic of research.

Chapter II: Granite - Global, National and Regional Perspectives

The second chapter provides some details of the granite industry
at the global level in terms of the growth of the industry - commodity
and country wise. The discussion at the global level is followed by the
granite industry at the national level in all its dimensions viz
production and marketing etc.

The growth of the granite industry at the state level i.e. Karnataka
state, has been made with necessary statistical details.
Chapter III: Profiles of Granite Units

The third chapter provides details of the profiles of the selected 25 granite units in the study area.

Chapter IV: Production Dimensions of Granite Industry

The fourth chapter is devoted to an analysis of the production dimensions of the granite industry in the study area.

Chapter V: Marketing of Granites- Problems and Prospects

The fifth chapter is the core chapter. It provides the different problems and prospects of the marketing of granite by the selected granite units in the study area.

Chapter VI: Summary of Findings, Conclusions and Suggestions

The sixth and the final chapter contain major findings of the research study and it provides some suggestions for improvements of the granite industry in the study area.