CHAPTER 8

SUMMARY CONCLUSIONS AND POLICY IMPLICATIONS
Chapter - 8

SUMMARY CONCLUSIONS AND POLICY IMPLICATIONS

INTRODUCTION:

India is endowed with vast resources of granite of different types spread all over the country. However popular varieties like black granite, multi-colour, grey, pink and black galaxy are mainly formed in south India. About 160 varieties of granite are exported. Granite may be classified based on colour, grain size, texture, and structure.

India occupies a advantageous position on the world trade map due to the availability of abundant resources of granite in the country and also due to the fact that it is more easily accessible from East, the Far East, Europe and Middle East countries. India possesses most exotic colours and shades of granite. Indian granite catches the imagination of the deserving buyers through out the world.

Indian exports of granite are broadly categorized into four categories viz., 1) crude or roughly trimmed. 2) Cut block slabs 3) Polished blocks / tiles and others. The total value of exports of various types of granite increased from Rs.900 crores in the year 1994-95 to Rs.1140 crores in 1996-97. Which was the highest till recorded then. And thereafter it decreased to 958 crores in 1997-98. However, during 1998-99 the total exports of granite of all types were 7.8 lakh tonnes valued at Rs.1013 crores. The exports in 1999-2000 were 14.89 lakh
tonnes valued at 1564 crores which was the highest both quantity and value wise in the last few years.

In Karnataka State the use of stones for construction and architecture is as old as civilization. The beautiful temples built in stones and delicate carvings in potstone at Somanathapura, Halebidu, and Belur, the gigantic stone carving of Babubali the Gommata at Shravanabelagola, the stone idols carved at several places by Jakkanna have made Karnataka a tourist paradise. The beautiful Vidhana Soudha in Bangalore city is built of the grey granites of Dodda ballapur porpheries and felsites of grey, pink, green, and black hues have enhanced the ornamental beauty of new palace in Mysore.

In Karnataka nearly one lakh square kilometer is covered by granites and granitic gneissic rocks granite outcrops prominently cover an area of about 8947 sq.km. Ornamental granites including pink granites, grey granites, pink gneisses (multi coloured granites) granodiorities, red and grey syenites, felsites, dykes (black and green granites) occupy only 4262 sq.kms. It is estimated that this is about only 2.2% of the total geographical area of Karnataka.

In the 1980s Karnataka was exporting 60% of the Indian granite industry but the Government of Karnataka adopted restrictive policies in the later part of eighties. Hence, the share of Karnataka in the Indian granite exports has come down to 40% now.

Most of the quarrying work is done by cooly (daily wages) labourers, who get very less wages from the quarry contractors. Hence, their standard of living is very low. The Karnataka government has not intervened to raise their wages. Actually these workers need considerable wage increase. Beside this,
the drillers face health hazards because the dust while drilling. Other problems of the granite industry are:

Waste or overburden ratio is very high in many quarries. The disposal of waste therefore causes a big problem. Slurry from granite block processing produces fine-grained material, which will be airborne when dry. It is air polluting in character. Mining, cutting and polishing are also polluting. Thereby, causing dangers to human life as well as to the crops and cattle. Remedial measures are: - The excavated area should be filled in and trees should be planted on the filling. The quarrying operation should not be allowed in steep gradients and vegetated areas. Slurry could be used for making bricks and its application in similar fields should be explored.

Government of India constituted Granite Development Council in 1999 and framed certain rules. The same policies are adopted and implemented by Government of Karnataka also.

Mining lease applications will be disposed off with in three months. Self-assessment of granite will be introduced and this would be the basis for issue of transport permits. This measure is aimed at reducing the delays in grant of transport permits. Priority will be given to scheduled castes and scheduled tribes and women entrepreneurs while granting the leases. M/s Mysore Mineral Ltd., a state government undertaking will be advised develop a granite mine in any suitable location in the state in collaboration with other industries engaged in granite quarrying and trade. Waste generated from granite quarries will be charged at a lower or equivalent price of ordinary building material. Government will consider granting quarry leases for ornamental stone in Forest area subject to clearance under forest conservation Act 1980.
Adjoining granite leases of small size granted under KMMCR, 1994 will be allowed to be amalgamated into a single lease, provided the total area of all such leases does not exceed five hectares.

Non-working granite leases would be identified and would be made to ensure that the leases are not kept idle.

Environment problems of granite industry are similar to any other open cast mining operations. The general degradation of land due to unscientific and selective quarrying is a common feature. Owing to paucity of land in leased area the overburden consisting of soil and weathered material is being dumped in a disorganized manner in nearby fields, waterways and other open spaces. This will create hindrance to cultivation and waterways. The blasting and movement of heavy vehicles generate dust and thus air is polluted in addition noise pollution.

Besides, the processing of granite requires huge quantities of water for cutting and polishing and in some cases kerosene and lime water are used as coolants for cutting purposes. Although most of the kerosene and lime is recycled. There are always chances of mixing these coolants with natural water courses.

Sludge generated during cutting needs proper disposal. If allowed to flow with the water from factories, it choking the natural water ways with increased siltation and pollutes the water. If dumped improperly the fine particles get dried and mixed up with air causing serious breathing problems. For abating environmental pollution guidelines have been spelt out in Granite Conservation and Development Rules (GCDR).
Granite industry directly can create a million jobs throughout the country. It has already created thousands of jobs, if not lakhs in the state. It can definitely earn foreign exchange of over a billion dollars per year.

As regards employment generation, granite industry is attracting a large number of unskilled labour particularly from the rural sector. It can also help to reduce the dependence on agriculture where this unskilled labour is more than the requirement. In the share of ordinary quarrying of stones, which are used mainly used for the purpose of building construction. The labour absorbed in the country is 2.5 million and in other related acres, that is quarrying for ornamental purposes they employ about 1.5 million people.

While seventy percent of the quarries are carried out for building purposes, the remaining 30 percent of quarrying is for ornamental purposes. Therefore we can say that granite industry is helpful not only in providing employment to lakhs of people of which the majority are unskilled and ruralities, but also helpful in earning good amount of revenue for the economic development.

Granites and gneisses occupy by far the greater part of Bangalore Rural District. The prevailing rock of the district is light to dark grey or whitish biotic granitic gneiss, which varies considerably from place to place in texture, structure and appearance. Bordering on the Western side of the district runs the band of intrusive, coarse, uniform granite called “closepet granite”. Of the entire granite belt of the district, it may be said that “closepet granite” is famous and important. The total mapped area under this granite is about 30 square miles. In addition the district possesses some vast stone quarries in some area of the district, throwing a lot of scope for its exploitation. Some granite industries are operating in this Bangalore Rural District.
Granite industry in Karnataka faces so many problems. One of the biggest problems of the industry is disposing of over burden and waste. Another problem is the slurry from granite block processing which becomes airborne when dry. This will cause health hazards for the mining workers as well as people living around quarries and processing units. Besides, being dangerous to human life these polluting elements are also dangerous to crops and cattle around. Hence, my study will concentrate in findings out solutions and remedial measures to the above mentioned problems.

The main objectives of the proposed study are to analyze the progress and development of granite industry in general and Bangalore Rural district in particular, to know the impact of granite industry on economic development, to find out the impact of granite industry on employment generation, to know the impact of granite industry on worker's income and their standard of living and to find out the impact of granite industry on environment.

The study is aimed at estimating the potential of granite industry and its export potential. Varieties of important granites was also included in the study. The study was conducted in Karnataka generally and particularly in Bangalore Rural District.

Granite industry plays an important role in the economic development of the Karnataka State. This helps to enhance the standard of living of the workers. Granite industry not only generates employment but also helps in changing the socio-economic conditions of the people in Karnataka in general and Bangalore Rural district in particular.
Both primary and secondary data was used for the study. The primary data generated through survey methods and interviews according to the objectives of the study. The sources of secondary data taken from reputed publications of both government and private. Other materials such as house journals, periodicals, newspapers etc., was made use in the study of the granite industry in and around Bangalore Rural District.

The random sampling technique was adopted for the study. The study was carried out at the district level i.e., Bangalore Rural District of Karnataka. Around seven to eight granite industries in the district has been selected for the random sampling study.

Primary data was collected with the help of a thoroughly prepared questionnaire. The Department of Mines and Geology officials was also be consulted.

Both descriptive and conventional regression techniques was applied to estimate the development of granite industry. On the basis of that economic development of Bangalore Rural District was analyzed. Wherever necessary tables, diagrams and maps will be made use of to interpret the study.

The study is limited to the Bangalore Rural District of Karnataka State. But broad generalization was made of other districts of the state. Since granite industry is part of the economic development. Hence, the thesis mainly rests on granite industry of Bangalore Rural District.
MAJOR FINDINGS OF THE STUDY

1. The local lessees account for 93 percent as against the non-locals and among the lessees, within the Kanakapura taluk and Bangalore city constitutes 32 percent and 68 percent, respectively.

2. Among the two granite colours covered in the study i.e. multi – colour and black colour. Multi-colour availability is predominantly dominate as compared to black colour granite quarries in Kanakapura taluk of Bangalore rural district.

3. Out of the total quarries selected for the study, quarries owned by male dominates (95 percent) as compared to female quarry owners and the latter owners are recorded in the official books only for the namesake, however, those quarries are also managed by male members of those families.

4. The sample respondents (lessees) family size indicates that multi – colour and black colour granite quarry accounts for 5.2 and 4.9, respectively.

5. By and large, the quarry owners are residing in Bangalore city and managers/ supervisors are operating the mining activity on behalf of the owners.

6. The machineries required for mining operation will be owned by and supplied by the quarry owners but the field evidences show that subcontractors are generally found at the quarry site.
7. It was observed that black colour granite quarries have inadequate machineries or equipments to excavate granite in the study area. Under such circumstances related machineries are normally hired from other quarry owners.

8. The sub-contractors across the colour of the granite quarries covered who are at the mining site belong to Tamil Nadu and very few are from Karnataka and majority of the quarry workers are from Tamil Nadu.

9. The density of the black colour granite seems to be slightly higher as compared to multi - colour granite.

10. Multi - colour granite quarry area in terms of acreage reveals highest and followed by black colour granite which are found in the districts like Bangalore rural district and Chamarajnagar district.

11. If the eleven cost variables to the gross cost, drilling and hiring of excavator constitutes 25 percent each and followed by salary for workers and management, transport of dressed slabs, royalty and miscellaneous cost in the case of multi colour granite quarry.

12. In the case of black colour granite quarry, the cost on drilling and hiring of excavator accounts for 27 percent and 25 percent respectively, of the total cost structure. Then comes the salary for workers, transportation of dressed slabs, royalty and miscellaneous cost, the other costs like hiring of trucks and crane on flame jet.

13. The price per square feet of granite varies by different millimeter i.e., 40mm and 20mm. The prices fixed or sold across the different
colours of granite and sizes by the granite dealers contacted do vary, however, not vary very much in Bangalore city.

14. Both skilled and unskilled workers are hired in excavation of granites for the quarries in the study area. The former category of workers is hired to operate machineries and equipments in the mining site and for manual works the latter category is employed.

15. Out of the total work force, 88 percent belong to unskilled workers and rest of them are skilled labourers. Further, the proportion of both the categories in the case of black colour granite quarry was 90:10 and multi-colour granite quarry proportionate figure was 83:17 in Kanakapura taluk of Bangalore Rural District.

16. Regarding educational level of the quarry workers, more than 75 percent of the adult male workers are illiterates, followed by 18 percent were educated upto primary and middle and 3 percent got education up to secondary school level. Whereas, cent percent of the female adult workers have not attended the school at all. A similar trend also emerges in both the types of granite quarries in the study area. By and large, majority of the workers are landless.

17. The major types of quarry workers are cutters, drillers, jack holders, compressor operators, crane operators, stonecutters, helpers / cleaners, crushers and a cook who prepare food for the above said workers in the site area. Among these categories of workers, 56 percent constitutes cutters, drillers and jack holders in the multi - colour granite quarry, while in black colour granite quarry it accounts for 88 percent. Followed by this, stone cutters, compressor operators and crushers (8 percent each)
and then crane helpers / cleaners and a cook account for 4 percent in multi-colour granite quarry and in the black colour granite quarry these categories of share and percent each in the study area.

18. The field evidences regarding number of years working in black and multi-colour granite quarry, 60 percent and 72 percent reported that they are working more than 10 years.

19. The number of members working in the family in the case of multi-colour quarry account for 64 percent belongs to one labourer per family, while 24 percent and 32 percent fall in the category of 2 members and 3 members per family respectively.

20. The salaries for the skilled workers are considerably higher across the different types of machinery operators like compressor operator, operator of crane and tipper drivers in multi-colour granite quarry and such jobs are also found in black colour granite quarry.

21. The quarry owners generally put up temporary sheds / huts at the radius of 1km, therefore, majority of the work force stay in and around the quarry.

22. Little less to 60 percent of the work force in the selected granite quarries are residing at a distance of upto 1 km, 16 percent and 18 percent are commuting from 2 and 3 km, respectively. And rest of the labour force is residing at a distance of 4 to 5 km.

23. The basic amenities facilities like interest payment on advance taken from multi – colour quarry owners, creches, insurance for workers are not
provided to the quarry workers. Providing food, drinking water, temporary housing/huts were given by the multi-colour quarry. Transport and medical facility was concerned about 28 percent and 72 percent of the sample workers reported that such facilities are not given.

24. Regarding the facilities like food provision, water supply, temporary housing/huts and cent percent of the quarry workers reported that such facilities were provided by the black colour granite quarry owners.

25. The overall health scenario of the granite quarry workers put together both the varieties of granite before and after mining reported was deteriorated though not considerably but marginal decline was observed in the study area.

26. About 44 percent of the total workers' medical expenditure was Rs.350 per month per worker. Nevertheless, 40 percent and 16 percent of the respondents reported that their medical expenditure was Rs.500 and Rs. 1000 per month per worker, respectively.

27. Regarding employment generation in the multi-colour granite quarry, both adult male and female workers are employed and in the case of black granite quarry only male workers are hired in the study area. Further, both the types of granite quarries are in functioning throughout the year. Male workers out weigh female workers in both the categories of granite quarry. Similar trend found relating to the monthly average wage in the study area.

28. The field evidences reveal that the exports of granite is still trail and characterized by a lot of bottlenecks. The granite exporters are still met
with negative forces, such as, quality problem, inability of the manufacturers to entertain bulk orders at competitive rates and inability to adhere to delivery schedule.

29. Granite industry is very interesting, attractive due to its natural beauty hidden inside the rocks. Majority of the stones are suitable for building varieties and for monumental purposes. The rate of success in granite industries is only 20 percent. It is also highly both capital intensive and labour intensive and subject to risks, hence granite industry i.e., processing and quarrying are not just easy and simple.

30. Granite is produced in several states like Karnataka, Tamil Nadu, Andhra Pradesh, Rajasthan, Madhya Pradesh, Orissa and Uttar Pradesh. In India, granite is also the third largest foreign exchange earner amongst the minerals and metals, after cut diamonds and iron ore. There are more than 200 varieties of granites available in India.

31. Besides a good domestic demand due to steady growth in the commercial complexes and other building industry, there is good export potential for granite tiles. India has an established market in Singapore, Taiwan, Australia, Japan, USA, UK, Italy and Germany.

32. About 48 percent (92,000 Sq.kms) of the geographical area of the state is covered by granites and granitic rocks. But of which 4,200 sq.kms is established to be composed of granites of ornamental quality. There are three main tracks of ornamental granites viz., the Eastern Karnataka, the central track and southern Western track. Most of these tracks are found in districts like Mysore, Bangalore, Mandya, Tumkur, Kolar, Chitradurga, Bellary, Raichur and parts of Bijapur in Karnataka.
33. Granite quarrying and export from Karnataka state recorded tremendous growth, which accounted 60 percent in the country during 1980's. Subsequently, Karnataka’s share has reduced to 40 percent in the granite export in the country because of the restricted policies adopted by the state.

34. Major colour of granites found in the state are multi colour, pink, brownish porphyry, green, grey, yellow, black, granite porpheries etc. of which 60 percent constitutes multi-coloured granite, followed by grey granite (29 percent), porphyry (6 percent) and pink granite 3 percent and others 2 percent.

35. Export promotion of granite are through seminars, fairs and exhibitions both national and International level are held periodically, priorities are accorded in granting mining leases, use of standard equipment for improving and maintaining quality standards suiting the requirements of the foreign buyers and efforts are made to develop ports specifically to facilitate export of granites.

36. The production of ornamental stones between 1990-91 and 2001-01 accounted for 16,000 cum and 1,62,000 cum respectively. Similarly, the royalty was Rs. 133 lakhs and Rs. 2,430 lakhs during the above reference period.

37. The outlay and expenditure of industries and mining in the budget of Five Year Plan in Karnataka was during the First Five Year Plan the outlay and expenditure accounted for Rs. 206 lakhs and Rs. 130 lakhs respectively and enhanced to Rs. 1,02,600 lakhs and Rs. 20,343 lakhs during Ninth Five Year Plan in the State.
38. There are certain constraints in export of granites in the country are open top containers are in that supply, delay in positioning the containers at ICDS, movement of containers, high freight charges, more ports, Insurance of the containers and container shifting and unloading by the professionals to avoid damage.

39. There are different types of sophisticated / crude machines are used in the excavation of granite stones in the respective quarries. The machines are like cranes, the Hitachi, Air compressors, LG 450 Air compressors are used in the quarries. The labourers generally use small tools for cutting, drilling and shaping the stone.

40. There are two types of workers employed in the quarries i.e., piece rate labourers and daily wage labourers. The first category is mainly from Tamil Nadu and almost all of them belong to Bhovi (Stone cutters) community, which is one of the scheduled castes. They stay in rented houses in the semi-urban areas nearer to the quarry. These labourers do not get the benefits / facilities like food, shed and others provided by the quarry owners. In an average the wages per labourer accounted for Rs.200 to Rs.250 per day. Only male workers migrate to the quarry places, however, their family members stay in villages of Tamil Nadu.

41. Quarry workers are not been given formal training to handle various operations in the quarry.

42. The perceptions of the workers are hike in wage rates, working hours to be reduced, need medical facilities, insurance facility, periodical health check up, drinking water, establishment of grocery shop nearer to quarry
place, Provident Fund and ESI facility, housing and credit facilities through nationalized banks.

43. Quarry owners reported that they are in need of basic infrastructure facilities like better roads, electricity supply, adequate water supply etc. There is also need for other facilities like reduction in royalty rates, adoption of insurance policy and provident fund facilities through state interventions.

44. In an average 300 days of employment is generated for both male workers and female workers in the respective quarries. Child labourers are working as helpers, cleaners and supplying materials for the day to day quarry work.

45. The field evidences reveals that the quarry labourers usually go to their natives on the special occasions of Festivals like Pongal, Deepavali, Ayuda Pooja and New Year.

**POLICY IMPLICATIONS:**

- The quarry owners intend to have lease period scheme 25 and 30 years, this is because the processing of the mining operation initially takes longer duration to reach the mining site.

- Lessees are of the opinion that mining policies viz., leasing, quarrying, exporting, needs to be simplified.
But of the total work force, more than 90 percent belong to non-local areas; preference should be given to the locally available labour force by imparting appropriate training that needs mining activities in the country.

Regarding health aspect of the mining workers, if not opening separate health centres, preference should be given in the government hospitals, mobile health vans, and health insurance needs to make mandatory for the labour force in the granite industry.

Government should appoint Special Task Force to avoid misuse of policies related to granite industry in the form of unauthorized quarry and illegal transportation of granite stones.

It is evident that majority of the lessees are absentee quarry owners, while sanctioning quarry, genuine quarry licences are to be identified and strict monitoring of quarry operations needs to look into from time to time.

While transporting the granite slabs, the trucks was permitted to carry maximum of 10 tonnes, instead transported more the limit fixed, which damage the infrastructure facilities like road and avoid payment of tax to the government.

While sanctioning or permitting the quarry licences weightage needs to be considered for all the communities, which enables to restore social equality in the society.
It is observed in the field that the workers are over burdened with quarry work (without fixed hour of work). Appropriate welfare labour legislations are warranted immediately to safeguards the lives of vulnerable bottom income of the society and exploitation and harassment by the quarry owners.

It is witnessed through the field experiences that piece rate quarry work is more prevalent in the study area. To facilitate to utilize optimum services of the labour force. Loan facilities through financial institutions needs to be devised by the government by drafting new programmes / schemes.

To lift the excavated granite slabs, government permits the lessees for a period of 2 days and 7 days for local and non-local, respectively. This time period may be extended to one week and two weeks in the event infrastructure damage like road, strikes etc.

The labourers doing the place work for eight hours a day would be paid the same wages as that is paid to other workers doing the same type of job. In the case of daily wage earners, the monthly wages would be divided by 26 days and for which purpose calculations should be made in such a way that it should cover the wages of four weekly holidays. For women child and teenage workers, wage payment should be equal to the wages paid to the male workers if the type of work is similar for all. The wages paid to a worker who is working for four hours or less than four hours per day with only one holiday in a month, he should be paid half the salary that is fixed to that particular category of labour. For child labour is eligible for 60 percent of wages paid for the particular category of labour.
Economic development of a country should necessarily lead to human development particularly of those who are the essential participants in economic growth. In a developing economy, these particular granite workers come from vulnerable sections of the society and they suffer from inadequate wages, low level of education, lack of proper housing etc. Therefore these workers are provided with minimum amenities essential for well-being of their families, it would certainly improve their productivity. But, the economic conditions of the employers as well as inadequate technical development and the peculiar nature of the granite industry render it difficult to provide the basic minimum facilities. However, what is strange to note is that even elementary facilities like canteen, crèches etc., are not made available to these establishments.

Assured lease for 20 years and further guaranteed to two renewals for each of 20 years without any restriction on area; Standardise uniform levels on royalty and dead-rents; Better encouragement for processing factories; Unrestricted free movement of blocks to any part of the country; Allowing granite dimensional block exports to continue on the pattern of the import market conditions; For patta lands, there should be no restrictions on lease period; Grant of captive leases to factories located any where in the country; Easy method of granting leases within four to six weeks for all lands and coloured granite in the district level itself; Equal treatment for both public sector and private sector units in lease and all other terms in imports and exports; Easy import of capital goods for quarrying, processing and for the consumables, tools and spares under open general licence with concessional rate of custom duty; Special treatment for transport of granite blocks on all India basis
to facilitate transport of bigger blocks weighing over 10 to 35 tonnes from quarry sites to factory and to the ports; Cash compensatory scheme to be fixed for blocks 10 percent and private sector units in lease and all other terms in imports and exports; Easy procedure for transport permits and for fast transportation without harassment to checkposts; Reduction of port duties; Compiling of datas and participation in the international exhibitions and fairs.

It is observed that granite industry pays higher wages to the local labour force than what they could expect in agricultural sector. The minimum wages to the workers in particular will be fixed only if there are more than 100 workers working in that particular unit, since that industry will come under the organized sector. Otherwise, this will be considered as a unorganized sector and the minimum wage cannot be enforced accordingly. Fixation of minimum wage has come into force since December 1988, when granite industries were influenced under the schedule of minimum wage Act. The minimum wage to the workers working in the granite industry fixed by the government of Karnataka.

It is not argued here that the quarrying industry need not take any note of environmental aspects. What is stressed is that both quarrying activities and environment preservation are important and that environment preservation should not be at the cost of quarrying industry by completely abandoning quarrying or mining activities. A balance between the two must be worked out. Environment management, reclamation, restoration or rehabilitation programmes, preventive measures are to be adopted so that impacts on environment are minimized. In the concluding session of the National Symposium on “Development of India’s Mineral and Fuel Resources, Geological and
Environmental Aspects” held in 1987 at Dhanbad, India the following recommendations have been made.

(a) The protection of environment should go in hand with the development of mineral resources of an area, proper planning and budgetary provisions for it should constitute integral part of a feasibility report and subsequently at all stages of development and mining of a mineral deposit.

(b) The best stages for environment baseline data generation are the period during which the deposit is explored.

The environmental considerations that have been suggested at different stages of large mining and quarrying projects are :-

(1) Exploration stage
(2) Project planning
(3) Project construction stage
(4) Project operation stage.

- Protection of forest cover, development of alternative sources of firewood in the open areas in the neighbourhood of quarries; Quarrying should not be allowed in reserve forest area; Proper disposal of overburden and waste; Controlling noise and dust pollution by using appropriate equipments or by other means such as creating a green belt around quarries; Continuous reclamation of land commensurate with quarrying; Simultaneous afforestation if any deforestation is involved; Wherever necessary, artificial ponds to be constructed to arrest silting of any streams or rivers flowing nearby; Minimizing the risk of land
slides; Control of pollution of the water sources by seepage and leaching of waste; The fertile top soil to be stocked and re-used either at the spot when quarry is abandoned or use it in the adjoining cultivable lands.

Mining and quarrying does not contribute for environmental degradation, the picture is not very gloomy. The extent of degradation is very low compared to other factories; it can be well managed at low cost. It will not be an exaggeration if we conclude that the air, water and noise pollution due to automobile factories in urban areas is far greater than the impacts of mining and quarrying.

Finally, for the development of mining sector in general and granite industry in particular both at macro level and also at micro level the above mentioned policy alternatives may be examined and devise appropriate strategies for the sustainable development of the granite industry in the country.