



# IMPACT OF HAZARDOUS ECONOMIC ACTIVITIES ON THE LIFE OF HUMAN BEINGS- A CASE STUDY OF ERNAKULAM DISTRICT, KERALA

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## Abstract

Man has exploited the natural resources in such a way that it led to over-exploitation and losing the balance in natural eco-system. Increased extraction of natural resources, accumulation of wastes and concentration of pollutants will overwhelm the carrying capacity of the biosphere and result in the degradation of environmental quality and a decline in human welfare, despite rising incomes. To save the environment and even economic activity from itself, eco-growth must make a transition to a steady-state economy. Kerala has a variety of mineral resources and quarrying dates back well into the pre-colonial times. In this respect, the SNA fails to measure or clearly segregate the economic cost of resource depletion and the cost of environmental and health degradation due to anthropogenic activities. This project attempts to show the degradation of the environment and health of the neighborhoods due to quarrying and allied activities.

**Key words** – Hazardous economic activities, SNA. Hazardous industries, Acid Mine Drainage.

## 1 INTRODUCTION

Exponential growth in population and resource use has drastically changed the face of the planet. Man has exploited the natural resources in such a way that it led to over-exploitation and losing the balance in natural eco-system. Indiscriminal dumping of toxic, nuclear and bio-medical wastes and environmental distaste of numerous scale have begun to cut deep scars into the earth's eco-system and its delicate ecological balance. Hazardous economic activities can have devastating short-long term impacts on the society and the economy of any country, adversely affecting progress towards sustainable development. This is especially true for highly vulnerable people and low income groups. To achieve rapid economic development, many countries resort to various activities which exploit natural resources or release effluents, both of which results in health and environmental degradation. Examples of such activities are

quarrying and chemical industries respectively. Increased extraction of natural resources, accumulation of wastes and concentration of pollutants will overwhelm the carrying capacity of the biosphere and result in the degradation of environmental quality and a decline in human welfare, despite rising incomes. To save the environment and even economic activity from itself, eco-growth must make a transition to a steady-state economy. As Beckerman puts it “the strong correlation between , and the extent to which environmental protection measures are adopted, demonstrates that in the longer run, the surest way to improve your environment is to become rich”.

Quarrying and ancillary work of Crusher units are viewed as one of the Natural hazardous economic activities in the economy. These activities have the potential of contributing to the development of economies but they also have some social, environmental and health impacts or costs on surrounding communities that has been a major concern to governments, the general public and stakeholder organizations and individuals. While the contributions of crusher activities to economic development of Kerala is well acknowledged, others contend that the gains from the quarrying sector and allied works to the economy is achieved at significant social, economic and environmental cost to the State. The economic significance of productive activities is measured through the system of National accounts or the SNA. However, such measure of economic performance is quite limiting when viewed from an environmental and sustainable development perspective. Kerala has a variety of mineral resources and quarrying dates back well into the pre-colonial times. In this respect, the SNA fails to measure or clearly segregate the economic cost of resource depletion and the cost of environmental and health degradation due to anthropogenic activities. This project attempts to show the degradation of the environment and health of the neighborhoods due to quarrying and allied activities.

## **2. Methodology of the study**

The study is a cross sectional survey conducted in Ernakulam district covering natural hazardous economic activity industries of quarrying and allied industries. Purposive sampling method is used for the present study to select the industry. Primary data is mainly used for the present study. Secondary data were found inadequate to explain the problems taken up in this study. However, secondary data are used for preparation of the background for the field survey and for an understanding of the dimensions of the problem involved. The study involves the combination of quantitative as well as qualitative aspects of different problems undertaken within the project.

### **2.1 Sampling Design**

#### **2.1.1 Study area**

The area of the study were Mazhuvanoor grama panchayath in Ernakulam district of Kerala. The selection of the panchayath justifies the proximity of the quarry units in the respective area. The sampling frame is the list of quarry permits in KunnathunadTaluk (2017-18) and the list from Pollution control Board regional office, Perumbavoor in Ernakulam District. Apart from other grama pachayaths in Kunnathunadu Taluk Mazhuvanoor shows some special characteristics which are almost same pattern of work to all the quarry

units situated in the area. The city of Ernakulam was selected for the study because it had the highest concentration of hazardous economic activity based industries in Kerala. It is also called the 'industrial hub' of Kerala. Further, several man-made as well as natural hazardous economic activities are involved in Ernakulam district and it would provide better description of the impact of hazardous activities and natural resource exploitation. Owing to these reasons, the selection of Ernakulam district is justified. The population of the study is confined to the workers working in the respective quarry units and the households living nearby the area. Mazhuvanoor panchayat has 20 stone quarries and 10 among them have crusher units. The respondents in Mazhuvanoor panchayat were chosen on the basis of their relative proximity to quarry sites and crusher units. 8 households located 1.5 to 2 km away from quarry sites were selected for questionnaire administration and 22 respondents were from the areas located 2-3 km away from the quarry sites. 30 respondents were taken from other areas, each located at a greater distance from the quarry containment points (i.e., 3 to 10 km). This was done to determine variation in responses regarding effects of quarrying on the localities by distance from quarry site. The units where they employed is the study units. To gather more information about migrant labourers, health problems, environmental problems, safety aspects, the present study conducted informal discussion with the trade union leaders, health inspectors, PHC doctors, labour officers, environmentalists and project supervisors of the respective industries. During the field survey a number of social activists, non-governmental organizations, medical practitioners, officials of labour office and academicians were contacted and discussed. Information on characteristics of the industry and the impact on different elements as well as the health and environmental hazards are collected from secondary sources.

**Table 2.1**

**Classification of states based on Hazardous economic activity**

<b>Hazardous Economic Activity</b>	<b>Industry</b>	<b>District</b>	<b>No. of Units(as on 31<sup>st</sup> March 2018)</b>
		Thiruvananthapuram	201
<b>Mineral Extraction, Refining and Processing Storage and Use</b>	<b>Mining and Quarrying (Building Stone)</b>	Kollam	133
		Pathanamthitta	135
		Kottayam	191
		Idukki	65
		<b>Ernakulam</b>	<b>327</b>
		Thrissur	215
		Palakkad	213
		Vayanad	49
		Malappuram	298

		Kozhikode	228
		Kannur	158

Source: Mining and Geology Department as on March 31<sup>st</sup> 2018 and DICs of different States.

**Table 2.2**

**Classification of hazardous industries, District and panchayaths on the basis of hazardous economic activities**

Hazardous Industries	District	Grama Panchayath	No. of units
Mining and Quarrying	Ernakulam	Mazhuvanoor	20

Source: Mining and Geology Department and DIC of Ernakulam as on March 31<sup>st</sup> 2018

### 3. Results and Discussion

#### 3.1 Natural Resource exploitation and the Environmental Degradation

Mining and quarrying is concerned as a significant source of revenue and economic growth for many countries. Development of the quarrying sector is accompanied by serious social, economic and environmental impacts, especially the degradation of natural environment and water resources. The extraction methods such as blasting and drilling are crude and no effort is made to rehabilitated areas once minerals are exhausted, because reclaiming the land would cost more than the value of the minerals. The negative environmental impacts of mining involve the mining process itself and related activities, the elimination of waste, transportation and the processing minerals. Forest degradation and water pollution caused by mining not only affects the ecological system of an area, but the livelihoods of people who depend on these resources for sustenance. The three main methods of mining are damaging in different ways: open-pit mining for hard-rock metals, quarrying for industrial building materials, such as sand and gravel; and leach mining in which chemicals are used to separate metal, such as gold, from the rest of the minerals. In this area, the scale of impact may seem greatest with open-pit mines, where all vegetation and soil are removed, dynamite is used extensively and indigenous communities are often displaced. But quarrying leaves trenches in rivers alters the aquatic ecosystem, and is likely to affect the local people. Leaching involves the use of chemicals hazardous to the health of living organisms. Mining and quarrying activities also affect water but the loss of ground water that may affect the water table. There is a wide range of potential environmental effects caused by quarries such as noise and vibration, dust deposition and air quality, water supplies and ground water, natural heritage, landscape and traffic impact and waste management. Such impacts may arise during the development stage (e.g. earth stripping operation) or may endure throughout the life of the quarry, possibly over several

decades. Extractive industries are associated with many noise-generating activities-removal of top soil and overburden, excavation with machinery, drilling and blasting of rock crushing, and screening of aggregates, transport of raw materials and finished products within the site and on public roads etc.

### 3.2 Impact on Natural heritage

Quarry restoration cannot only replace, but may even add to, the diversity of plants and wildlife. On the other hand, natural habitats can be damaged or lose entirely as a result of quarrying and extraction and features such as hedgerows, stone walls and trees can be removed quarrying activities have the potential to impact on areas of valuable habitat. Habitats outside the quarry site can be inspected on indirectly by dust deposition. In each case, it is imperative that the developer has given appropriate consideration to designated habitats, and has designed the working in an environmentally sensitive manner.

### 3.3 Impact on Health and Sound

Quarrying activities have lots of environmental as well as health impacts in the area of study. This has emanated from the methods of operation by the quarrying companies, its effects on the natural environment as well as the people in the surrounding communities. The health cost of quarrying operations sometimes outweighs the benefits gained. The common disease observed among quarry and crusher workers are Asthma, silicosis and diseases of respiratory tracts. An attempt has been made to evaluate the air quality and noise pollution due to quarry blasting and crushing. Thirteen quarries were within plantations the main problem observed is dust settling on canopy, respiration problem to the crusher workers etc. The emission of particulates is quite outstanding from quarries. Generally, the effects of dust emission from quarries have both micro and regional dimension. Air pollution and ground vibration arising from blasting, crushing and emission of noxious gases have negative impacts on human health and well-being. Solid materials in the form of smoke, dust and also vapour generated during quarrying operations were shown a threat to the respondents. While observing the windows and the back of their main door dust particles and stone compositions stuck over there. This causes respiratory problems among 54% residents nearby by quarry and crusher units. Sound pollution is high nearby the metal crusher unit rather than quarry location. In granite building stone quarry noise level increases beyond permissible limit only during blasting time.

### 4. Conclusion

It is seen that economic and environment issues are two important but not absolute conditions for ensuring a sustainable development. Human beings and eco system or ecosphere are partners in ensuring a good quality of life. Therefore, protecting natural resources, their composition, structure and functions, is protecting humans and life of earth. Geographical decentralization is advisable, that means environmental protection comes from the very small units ie, from the neighbourhood level, village level and panchayath level. The first important step in mitigating hazardous events-vulnerability reduction- is to recognize the importance of “preventive concepts” rather than “responsive strategy”.

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