

# SAND MINING AND RURAL ECONOMY: AN ANALYSIS OF THE SOCIO-ECONOMIC STATUS OF LABOURERS ENGAGED IN SAND MINING IN THE RIVER CHALIYAR OF KERALA

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## ABSTRACT

**T**he present study is carried on to identify, analyze and evaluate social and economic impacts of sand mining on the labourers engaged in river sand mining. The study of socio-economic impact on the labourers engaged in river sand mining has been a subject of frequent discussions. In the discussions planners, academicians, policy makers, politicians etc. actively participate. Sand mining is an important economic activity in the rural area. It enhances the overall economic transactions in the rural economy. Mining is an important contributor to economic growth, employment, income and wealth generation, government revenues, and exports for developed and less-developed countries alike. The study was conducted by using structured Interview Schedule. The sample used is 200 registered labourers engaged in sand mining. Several statistical tools are used to analyze the changes in socio-economic conditions of labourers engaged in sand mining. The present study utilizes independent samples t-test, Chi-square test of independence and test for proportions. The survey results show that river sand mining has become the vital reason for the upliftment of the labourers engaged in sand mining in various ways. It has led to the improvement in the socio-economic status of the labourers. The improvement in the socio-economic status of sand mining labourers has become an important reason for the acceleration of growth in the rural economy.

**KEY WORDS:** Sand Mining, socio-economic status, public goods, rural economy

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## 1. INTRODUCTION

Sand has become a very important mineral for the construction work which leads to the expansion of society. Sand is a natural resource and a granular material composed of finely divided rock and mineral particles. River sand is one of the world's most plentiful resources (perhaps as much as 20% of the Earth's crust is sand) and has the ability to replenish itself. River sand is vital for human well-being and for the sustenance of rivers itself. In developing countries like India, Brazil etc. rapid pace of urbanization and accelerated rate of economic growth have necessitated construction of industrial, residential and commercial spaces. In India, the construction industry has accounted for around 40 per cent of the development investment during the past 50 years.

### **Sand Mining Process:-**

The process of the actual removal of sand from the foreshore including rivers, streams and lakes is referred to as Sand Mining. Sand is mined from beaches and inland dunes and also dredged from ocean beds and river beds. Mining of mineral sands, such as mineral deposits like diamond, gold and silver is also undertaken now a day. The sand is dug up, the valuable minerals are separated in water by using their different density, and the remaining ordinary sand is re-deposited. Mining is an important contributor to economic growth, employment, income and wealth generation, government revenues, and exports for developed and less-developed countries alike.

### **River Sand- An Environmental Resource:-**

Environmental resources are very good examples for public goods. A public good is often defined to be a good that is both non-rival and non-excludable in consumption. The non-rivalrous property holds when use of a unit of the good by one consumer does not preclude or diminish the benefit from another consumer using the same unit of the good. The non-excludable property holds when it is impossible to prevent others from jointly consuming a unit of the good once it is produced. This is fundamentally a

question of establishing effective property rights. Whether a good is excludable or non-excludable is a function of the cost of setting up and enforcing a private property right to the good. One particular type of good is common goods. Common goods are goods that are rival but not excludable. River sand could be included in this category. If we use more and more of the resource, it becomes rival, in the sense that the consumption of the good by someone will reduce the quantity available to others. Therefore, the unchecked mining of river sand will lead finally to its exhaustion. Garret Hardin's Tragedy of the Commons (1968) is worthwhile here. That is, if a natural resource is over utilized, it will be lost forever.

In this juncture, it is very much beneficial to have an analysis on the social, economic and environmental impacts of the natural resource extraction by the people. The well-defined goal of sustainable development by the Brundtland Commission's report "Our Common Future" (1987) is worthy of note. The father of the Nation, Mahatma Gandhi, exhorted that "Nature Provides Everything for Man's Need and not for His Greed." So the motto of the present generation should be "Nurture the Nature for the Future.

## 2. OBJECTIVES OF THE STUDY

To analyze the changes in socio-economic conditions of labourers engaged in sand mining.

## 3. HYPOTHESIS OF THE STUDY

There is significant improvement in the socio-economic conditions of the labourers engaged in sand mining.

## 4. METHODOLOGY

The study is based on primary source. The methodology used for the study is as follows.

### **Sample of the Study:-**

The population of the study consists of the whole sand mining labourers in the River Chaliyar of Kerala, In order to conduct the study the researcher took a sample of 200 registered labourers engaged in sand mining from eight Panchayaths from Malappuram and Kozhikode districts in Kerala, which were selected at random.

### **Data Collection:-**

For the collection of data, the field survey is conducted using structured interview schedules. The data was collected and analyzed during the period from December, 2015 to March, 2016.

### **Tools used for the Study:-**

For collecting data a structured interview schedule was used. The interview schedule was used to collect data pertaining to the socio-economic status of labourers engaged in sand mining.

### **Statistical Techniques for Analysis:-**

To analyze the impact of sand mining on the socio-economic status of labourers engaged in sand mining the following variables were considered. a) Increase in income b) increase in the ownership of assets like communication devices, transportation devices and other consumer durables and c) improvement in consumption expenditure on seven items. Details are given in the tables.

Several statistical tools are used to analyze the changes in socio-economic conditions of labourers engaged in sand mining the present study utilizes independent samples t-test, Chi-square test of independence and test for proportions.

## **5. REVIEW OF LITERATURE**

As literature review is one of the means of demonstrating a researcher's knowledge about a particular field of study, including vocabulary, theories, key variables and phenomena, and its methods and history, it is an integral part of the research report. According to LeCompte & colleagues (2003) the literature review is a "legitimate and publishable scholarly document."

### **Related Studies:-**

Newport and Moyer (1974) and Langer and Glanzman (1993) examined the economic impacts of sand and gravel mining. In addition to this there existed many reviews on offshore sand mining and their effects as well.

A study on the "Impact of sand mining on river bed morphology and tidal dynamics in lower reaches and delta of the Dong jiang river" was conducted by Jia and Luo (2007).

The Staff Paper No. 565 "Frac Sand Mining and Community Economic Development" by Steven C. Deller and Andrew Schreiber (May 2012) summarised that mining, as an industry within the U.S., remained inherently unstable through the "flickering effect" but the level of instability seemed to be declining over time.

Sunil Kumar (2002) indicated the changes in the eco-biology of benthic communities due to sand mining in Achankovil River.

Sheeba and Arun (2003) carried out a study in Ithikkara River indicated the effect of sand mining on aquatic ecosystem. This is mainly due to the Habitat loss and decreased Humus or organic matter.

Rajendra et.al. (2008) reported a detailed study on sand extraction from agricultural fields around Bangalore. Several such studies related to river sand mining have been reported for the rivers of Kerala also. Targets of those studies were mainly evaluation of environmental, ecological and socio-economic impacts of sand mining.

A pioneer attempt was that of Thrivikramaji (1986). He highlighted the environmental consequences of sand borrowing from the Neyyar River, flowing through the Thimvananthapuram district.

Later, Padmalal (1995) carried out a preliminary study on sand mining in Pamba River between Cherukolpuzha and Kizhavara kadavu. In a study by Sunil Kumar study on : "The Impact of Sand and Gravel Mining on the Benthic Fauna of the Achankovil River", it was reported that sand mining from the Achankovil River over the past few decades had brought about notable changes in the eco-biology of benthic communities (2002)

## 6. ANALYSIS OF THE DATA

The analysis of the data is given below.

**Table 3.1: Income of Sand Mining Labourers (Monthly)**

Level	Mean Income	Standard deviation	t-value - 9.67 ( 0.00) <sup>xx</sup>
Before sand mining	11581.50	10202.42	
After sand mining	19744.75	6207.09	

Figure in brackets is p-value. xx indicates significance at 1% level.

Source: Field Survey (December, 2015)

The table shows that the monthly income of the laborers has increased after joining sand mining, since the t-value is significant at 1% level of significance.

**Table 3.2: Possession of Assets by Sand Mining Labourers**

Levels	Communication Devices		Transportation Devices		Other Durables	
	Possessed	Not Possessed	Possessed	Not Possessed	Possessed	Not Possessed
Number of labourers (Before sand mining)	3	197	3	197	5	195
Number of labourers (After sand mining)	170	30	188	12	191	9
X <sup>2</sup> P value	284.07 (0.000) <sup>xx</sup>		342.94 (0.000) <sup>xx</sup>		346.10 (0.000) <sup>xx</sup>	

Figures in brackets are p-values and x x indicates significance at 1% level.

Source: Field Survey (December, 2015)

All p-values for durable assets are significant at 1% level of significance. It explains the evidence for improvement in the possession of consumer durables by the laborers after joining sand mining.

**Table 3.3: Changes in Consumption Expenditure of Sand Mining Labourers**

Items	Observed	Hypothesized	Z- Value	p-value
Food	0.995	0.5	14	(0.000) <sup>xx</sup>
Clothing	0.995	0.5	14	(0.000) <sup>xx</sup>
Housing	0.915	0.5	11.74	(0.000) <sup>xx</sup>
Education	0.89	0.5	11.03	(0.000) <sup>xx</sup>
Health	0.93	0.5	12.16	(0.000) <sup>xx</sup>
Recreation	0.945	0.5	12.59	(0.000) <sup>xx</sup>
Miscellaneous	0.96	0.5	13.01	(0.000) <sup>xx</sup>

Figures in brackets are p-values and x x indicates significance at 1% level.

Source: Field Survey (December, 2015)

The table shows that there is significant improvement in the consumption expenditure of sand mining laborers.

## 7. FINDINGS

It is found that there is significant increase in the income of the labourers after entering into sand mining (Table 3.1). The independent samples t-test reveals that t-value is significant at 1% level of significance. From the study it is clear that the asset distribution of the labourers engaged in sand mining has been considerably increased. The Chi-square values of all variables (communication devices,

transportation devices and other consumer durables) are significant at 1% level (Table 3.2). The result of test for proportions shows that the consumption expenditure on 7 variables like food, clothing, housing, education, health etc. of more than 50% of the labourers engaged in sand mining has been considerably improved. All p-values are significant at 1% level (Table 3.3)

## CONCLUSION

From the findings of the study we can reach into the following observations. Sand mining is an important economic activity in the rural area. It enhances the overall economic transactions in

the rural economy. The survey results show that river sand mining has become the vital reason for the upliftment of the labourers engaged in sand mining in various ways. It has led to the improvement in the socio- economic status of the labourers. The improvement in the socio-economic status of sand mining labourers has become an important reason for the acceleration of growth in the rural economy.

## REFERENCES

1. Binoy, Varghese, S., & Paul, K. (2013), *River Sand Inflow Assessment and Optimal Sand Mining Policy for Development. International Journal of Emerging Technology and Advanced Engineering, Vol. 3, Issue 3, pages 305-317.*
2. Bromley, W.Daniel: *The Handbook of Environmental Economics; Blackwell (1995)*
3. CESS. 2001. *Sand Mining from Kerala Rivers, Consequences and Strategies. Centre for Earth Science Studies, Thiruvananthapuram. 14p.*
4. CWRDM. 1999. *Sand Mining in Kerala with Special Reference to Periyar, Centre for Water Resource Development and Management, Calicut. 61 p.*
5. Dinesan, V. (2012). *Why Bharathapuzha Goes Dry. Kerala Calling, Vol 33, No 5 Pages 28-33.*
6. *Down to Earth. (2012). A Line Drawn in Sand. Down to Earth, April 16-30, Pages 28-29.*
7. *Down to Earth. (2012). Elusive Economics. Down to Earth, 26-27.*
8. Gujarati Damodar. (1995). *Basic Econometrics, New York; Mc Graw – Hill Inc.*
9. Hardin, Garrett (1968). "The Tragedy of the Commons." *Science 162, pp.1243-48.*
10. John, E. (2009). *The Impact of Sand Mining in Kallada River ( Pathanapuram Taluk), Kerala. Journal of Basic and Applied Biology, Vol 3, Issue I &2, page 108-113.*
11. Kolstad, Charles D.,(2000) "Environmental Economics" *Oxford University Press.*
12. Lahiry, S.C (1997). *Sustainable Economic Development. Article Published in*
13. Kurusheaa, p. 39.
14. "Our Common Future": *The World Commission on Environment and Development, Oxford University Press, Delhi 1987*
15. Saviour, M. N. (2012). *Environmental Impact of Soil and Sand Mining: A Review. Internatonal Journal of Science, Environment and Technology, Vol. 1, No 3 Pages 125-134.*
16. Shaji, J., & Anilkuar, D. R.(2014). *Socio-Environmental Impact of River Sand Mining: An Example from Neyyar River, Thiruvananthapuram District of Kerala, India. IOSR Journal of Humanities and Social Science (IOSR- JHSS, Vol 19, No 1 pages 01-07.*
17. Thomas Janet.M & Callan scott J: *Environmental Economics, Cengage Learning India Private Limited (2009).*