SOCIO-ECONOMIC DEVELOPMENT AND ENVIRONMENTAL IMPACT OF AMBUJA CEMENT PLANT DARLAGHAT HIMACHAL PRADESH

Dr. Suneel Kumar* Dr. Ramlal** Ms. Krishna Kumari***

ABSTRACT

Industrialization is the backbone of economic development of any region all over the world. Any development strategy not only takes into consideration of resources availability whether natural or human but also the development cost such as the environmental degradation that the particular area is likely to incur. Development is often accompanied by some negative impacts as it has been pursued by the man in a very reckless manner i.e. it is carried without any regard to the environment. It is now realized that development should take place in a manner that it does not cause any irreparable damage to the environment. This realization has led to the emergence of sustainable development concept. The State of Himachal Pradesh has also witnessed all round development activities particularly in its socio-economic front ever since its existence. This development however has not been without a price in the form of environmental degradation. The present case study of Ambuja Cement Plant at Darlaghat tries to analyses that although enormous employment opportunities have been generated and able to transform the socio-economic condition of the State, however caused huge loss in the form of environmental degradation. Although, industrialization is a catalyst for socio-economic growth but it needs to be achieved by harnessing the environmental and geographical characteristics of an area both intensively and extensively to ensure a sustainable development. The study is based on both primary and secondary data and tries to find out nature of socio-economic development of the particular area and the environmental impacts accompanied by the development.

INTRODUCTION

Industrialization is considered to be the backbone of economic development of any region all over the world. It is one of the major contributors to the economic development in way that labour transformation takes place from the agriculture sector to industrial sector. It not only tends to increase the productivity in the industrial sector but also in agriculture sector. . Industrialization ensures optimum use of both the natural and human resources and diversifies the socio-economic development.

In the past economic policies mostly of the developing countries have been greatly influenced by the traditional theories of economic development that were based on the labour surplus and trickled own effect argument. The various problem relating to the development, whether due to the natural factors or by neglecting government takes considerably long time. Secondly, interventions were made without careful planning and taking into considerations timely checks and appraisals, and third related problem, the rapid growth in the population caused to neutralize the gains made by the development.

*Assistant Professor, Department of Commerce, Shaheed Bhagat Singh College, University of Delhi, Delhi.
**Research Scholar, H.P. University, Shimla
***Research Scholar, H.P. University, Shimla

Any development strategy not only takes into consideration the availability of resources but also the development costs such as the environmental degradation. It is pertinent to argue here that whatever policy perspective is adopted for harnessing the available resources, the actual needs of the people, the recovery of costs and the generation of more revenue also needs to be kept in mind. Every country in the world is striving to develop industrialization which is essential for the stability and security of the country and also it serves as the catalyst for the overall development. The nature and pattern of industrialization is different under different socio-economic conditions. It is considered as the synonym of economic growth. The economic development is dependent on industrial development. The effective industrial growth is essential for successful economic development (Shetty, 1963). Industrialization is a complex process. It depends both on the structural constraints like capital distribution and buying power in the market as well as on socio-psychological factors such as the supply as entrepreneurs and support system for them.

Cement is one of the most widely used substances on the earth. It is the 'glue' that binds together the constituents of concrete and mortar in our buildings, roads and infrastructure. Making cement is an energy and resource intensive process with both positive and negative local and global impacts. Ambuja cement plant has its employees on its roll that includes all type of workers ranging from lower level workers to the executive staff. The present study proposes to examine the various aspects of development that cement factory has brought about and its environmental impact on Darlaghat mini township and its surrounding areas. The industry refers to work progress that involves definite type of relationship between employer and employees. In view of this scheme it becomes imperative to carry out an empirical investigation into various aspects of industrialization in Himachal Pradesh with special reference to the cement industry to the rural areas. The state aims to evaluate the cost and benefits, analysis and to see how far the cement plant has transformed the socio-economic conditions of the area without seriously comprising the natural environment.

In the hill state, like Himachal Pradesh the cost of production is comparatively higher as compared to the other parts of the country. Even, when the local material is used, still the cost of production is higher because of high transportation cost. On the other hand, the marketing facilities and the local demand is also a limiting factor, which increases the cost of production. Hence financial viability of the enterprise need to be estimated and the level of output, returns and effective cost rates may be indicated to the company entrepreneurs. Although a lot of advanced and highly scientific and comprehensive studies have been undertaken by different researchers and institutions regarding industry, yet unlike other industries the cement industries have been able to draw the attention of the researcher to any noticeable extent. Nevertheless, there exists a good deal of analytical material on some of the aspects like productivity, location, finance etc. of industrial development. In broad sense, the following may be considered as the essential indicators of development like, growth of per capita income; reduction of poverty; reduction of socio-economic disparities and unemployment; and structural change (i.e. growth of output "industry" and "service" sectors is relation to that of the "agricultural sector".

OBJECTIVES OF THE STUDY

1. To study the nature of socio-economic development.
2. To understand the environmental impacts assessment of cement industry.

3. To analyses the perception of local people about environmental impact and socio - economic development.

DATABASE AND METHODOLOGY

The present study is based on both the primary and secondary data. The primary data have been collected through personal observation and questionnaires. The secondary data have been obtained from various published and unpublished records of department of land records, statistical outlines of Himachal Pradesh, District Gazettes, and Census publications. Besides, publication of the Cement Controller Stock Exchange, Directorate Cement Manufacturer's Association, Bureau of cost & prices and department of company also has been made use of affairs. In the present study, spatial, ecological, and behavioral methods and approaches have been used to understand the environment of the state resulting from the changes in the land use and multifarious developmental activities. The spatial work has been done by the industrial development and environmental impact assessment of the study area for the year 1989-2009 in the respect of the land use. The behavioral approach has also been given due consideration as the people prescription of development/environmental impact have been delayed. The sample size for the present is 100 respondents which are selected with the help of simple random sampling method and the analyses is lay down with the help of data tabulation and simple percentage.

STUDY AREA

The study area for the purpose of this paper is Ambuja cement plant at Darlaghat in Solan district of Himachal Pradesh. This was created on 1st September, 1972 as a result of the reorganization of Shimla and Mahasu districts with the geographical area of 1936 square km. Darlaghat is newly carved out sub-tehsil of Solan district and also a small township which, has not yet been declare as urban center. The elevation of the Solan district ranges between 300 meters to 3000 meters above mean sea level and Darlaghat is situated at 1800 meters above mean sea level. As per 2011 census, solan district had a total population of 580320 persons. Solan town is the second largest urban center of the state after Shimla. The district occupies the top most position in the area of industrial development. According to 2011 census, (table 1) the sex ratio of the solan district were 880 females per 1000 males and the literacy rate was 85.02% (excluding 0-6 age group population). The percentage of main workers to the total population was 37.78%. The percentage of marginal workers was 13.70% percent which include 10.36% of males and 17.49% of females. The percentage of non-workers was 48.52% of the total population with 38.46% males and 59.96 females.

TABLE 1 DEMOGRAPHIC PROFILE OF SOLAN DISTRICT (CENSUS 2011)

Sr. No.	Population	Total Population	Males	Females
1	Total	580,320	308,754	271,566
2	Rural	478,173	249,736	228,437
3	Urban	102,147	59,018	43,129
4	Literacy rate	85.02%	91.19%	78.02%
5	Percentage of working Population	51.48%	61.54%	40.04%
6	I) Percentage of main worker	37.78%	51.18%	22.59%
	II) marginal workers	13.70%	10.36%	17.49%
	III) Non-workers	48.52%	38.46%	59.96%

Source : *Directorate of Census Operation Shimla, Himachal Pradesh.*

SOCIO-ECONOMIC DEVELOPMENT

The development process in Himachal Pradesh was started with first five year plan allocated fund rupees 5.27 crore to Himachal Pradesh in 1951. More than 50% of this expenditure was incurred in road construction since it was felt that without proper transport facilities, the process of planned development could not be carried out and also it hampered the process of economic and social advancement. The community development program launched in 1952, in certain selected area of Himachal Pradesh and was later extended to the entire rural area. The new farming techniques suitable to different areas and climatic zone were introduced and bringing a new awareness among the people about the production possibilities of their respective lands. Himachal Pradesh now ranks fourth in respect of per capita income among the state and union territory of India.

Himachal Pradesh has an impressive record in the field of demographic and social development.

Its education system is well established. Its agriculture is nearing self- sufficiency; its horticulture sector is a new name in the country and even abroad. Its transport infrastructure system have emerged as the best among the hill states. The infrastructure for its industrial development is being well laid out. Its rich forests being augmented and above all, the increasing attention of Government of India towards exploiting its hydroelectric potentials are the guarantees for its bright future. It has already become an ideal to follow in respect of development all hill area of the country. The following economic factors are responsible for the socio economic development of the state.

Natural Resources: Natural resources are the principal factor affecting the development of any area. It includes land, forests, minerals, and climate & water resources. The possession of resources is not sufficient, their proper utilization through improved technology and knowledge is also equally important for the development of the state.

Industrialization: This is an important tool for achieving socio-economic development of a region. Industrial activity tends to develop the region, as it results in the creation of more jobswhich reduced unemployment and help increasing the income level and improve the living standard of the people which lead to development of the region. The urbanization is an essential product of industrialization due to increase migration from another area for more employment opportunities. In this process more skilled labour come to be used which is very helpful in the development of region.

Communication Facilities: Good communication facilities help to deal with in the socio-economic development of a region. They are very helpful for increasing the mobility of population. It also helps in the easy transportation which helps every sector of the economy and society. Thus it is considered as an important factor of development of communication facilities therefore help in the progress of the region.

Financial Facilities: The availability of the sufficient funds is a prerequisite for the progress of the region. The liberal flow of funds is essential for rapid and sustained growth of industry and availability of financial services helps in the capital formation which leads to exploitation of essential resources for development. The banking industry attracts saving which can be used for development purposes in a region.

SOCIO- ECONOMIC DEVELOPMENT AT DARLAGHAT AREA

The levels and the parameter used to assess the status of socio-economic development at Darlaghat are as follows:-

(a) Level of infrastructural development

(b) Levels of industrial development

(a) Level of Infrastructural development

The availability of basic amenities and facilities is an important factor for sustaining growth momentum. It is an overhead capital, which helps to strengthen the interaction between agriculture sector and industrial sector. Hence assessing the level of infrastructure development is important and for that purpose of village connectivity, percentages of villages with drinking water, number of primary schools per thousand populations, number of higher education institutions, number of banks, and percentage of settlement of population of 500 or more etc. parameters have been considered. After the assessment of these parameters reveal that Kasauli, Arki, and Solan town has high level of infrastructure development followed by Nalagarh and Kandaghat tehsils, which have medium level of development. The high level of development in Kasauli, Arki,and Solan tehsils is because these tehsils are industrially developed and have better amenities, road connectivity of villages is highest in these tehsil (80%), have 7 out of 9 urban areas of the district, better education facilities such as ITI, Horticulture University, Schools and more computer centers and Polytechnic colleges, and high order of health facilities (Annual report 2012-13).

(b) Level of industrial development:

In Solan district, tehsil wise data have been analysed with the help of percentage of non primary sector workers to total main workers and percentage of large, medium and small scale industries. The development level in Arki, Kasauli and Nalagarh tehsil is high because out of ten industrial areas and estates eight, 82% of large and medium units and 55 % of small scale units are situated in these areas. The company has reported an increase in the cement production from 16.9 million tons in 2007. The higher cement production was due to higher blending ratio in 2007 as well as commissioning of new grinding facilities. The clinker production was marginally lower at 11.6 million tones as compared to 11.7 million tons in the previous year.

ENVIRONMENT IMPACT ASSESSMENT

The two major criteria i.e. the project should maximize economic return and should be technical feasible, are no longer considered adequate to decide the desirability or even the visibility of the project. It is now widely recognized that a development effort should take into account not only the economic benefits, but also undesirable consequences. In order to achieve a sustainable development an impact assessment must be a mandatory step so any development project must ensure that it achieves socio-economic benefits through; minimum environmental degradation and prevention of long term environmental adverse effect by incorporating suitable alleviate measures. The environmental impact assessment process involves evaluation of environmental implications and incorporation of necessary safeguard for these activities having a bearing on environmental quality. The evaluation of beneficial and adverse effect of development projects on the eco-systems is attempted both qualitatively and quantitatively.

The environment impact assessment is a concept that evolved in the search for ways to render development and protection of the environment compatible in the complex and independent world. The speed, scale and character of contemporary technological and

economic development, which has permitted material standards of living to reach high levels has also led to unforeseen effects on the every environment assets that constitute the basics for sustained socio-economic development. To be really meaningful impact assessment has to be taken up at the project inception stage so that the selection of site, choice of process technology, selection of appropriate layout and building material can be done to ensure the safety of environment. The social component which remains neglected and often adversely affects the section of society whenever rehabilitation is involved there is a need to ensure the quality of life for the affected people is improved after the introduction of the development project rather than bringing them more misery. The department of environmental, Government of India is responsible for the environmental appraisal of these types of project.

ENVIRONMENTAL IMPACT OF CEMENT INDUSTRY

It is evident that for producing one ton of the cement requires about two tons of raw materials of shale and lime stones. The process releases approximately one ton of Carbon dioxide, about three kg an air contaminant that contribute to ground level smog and 0.4 kg an air borne particulate matter that is harmful to the respiratory tract when inhaled. After aluminum and steel, the manufacturing of Portland cement is the most energy intensive process as it consumes four grid generation of energy in electricity, process heat and transfer. The global release of Carbon dioxide from all sources is estimated at twenty three billion ton a year in which the Portland cement production accounts about seven percent of total carbon emissions. However, in recent years the cement industries has made significant progress for reducing Carbon dioxide emissions through improvements in the process and efficiency, but further improvements are limited because Carbon dioxide production is inherent to the basis process of calcinations limestone. The cement industry does not fit into the contemporary concept of sustainable development because it uses the raw material and energy that are non-renewable. It extracts its raw material through mining and manufactures a product that cannot be recycled. The limestone mining has an adverse impact on land use patterns, local water regimes and ambient air quality. The blasting for this purpose causes problems of vibration cracks and fly rocks. Dust emissions during cement manufacturing have been one of the main issues and industry handles millions of ton dry material, even if 0.1% of this is lost to the atmosphere, it can cause havoc environmentally. Fugitive emissions are therefore huge problems, compounded by the fact that there is neither an economic incentive nor regulatory pressure to prevent the emissions.

PERCEPTION OF LOCAL PEOPLE ABOUT ENVIRONMENTAL IMPACT

The demand for cement in India is increasing day by day as a result increasing the needs and wants of a growing population. In spite of tremendous growth in cement production there is still a large defect, mainly due to growing demands and to bridge the gap between demand and supply various cement plants have been set without giving much thought to the ecological implications. The process involves in the building of infrastructural facilities like roads, building township etc. are considered as environmental degradation elements. The indigenous population in the project area invariably gets affected in various ways as the construction of cement plants affects a large geographical area directly or indirectly.

Deforestation

A large tract of forests land has been converted into the non forest purposes as a result of setting up the two cement plants at Darlaghat area in Solan district of Himachal Pradesh; hence there is an urgent need to compensate the loss of forests. A compensatory forestation programme has been prepared by the Solan forest department and it is clear that majority of

respondent i.e. seventy nine percent are literate having educational qualification till eighth standard. The distance of the project sites from their residence varies less than 0.5 km to 2 km and the impact of project on the local people and environment varies as per the distance.

TABLE 2 ENVIRONMENT IMPACT OF PROJECT AS PER LOCATION OF THE SITE

Sr. No.	Age group of Respondent	No of Respondent
1	0-20	9
2	20-40	28
3	40-60	37
4	Above 60	26
	Total	100

Source: - Primary Prove

Only one fourth (Table 2) of the respondents were in age group between 20-40 years and 32% of the respondents mentioned that these projects were restrictive to forests in the surrounding area. Many of the respondents were not certifying about deforestation due to lack of awareness and illiteracy. However, majority of the respondent i.e. 46% were of the opinion that these projects were not hazardous to the forests in the surrounding area of the projects.

TABLE 3 RESIDENCE OF RESPONDENTS AND THE PROJECT SITES

Sr. No.	Distance from the residence	No. Of Respondent
1	Less than 1 km	20
2	1-2 km	18
3	2-3 km	9
4	above 3 km	53
	Total	100

Source: - Primary Prove

It is evident (Table3) that 47% of the respondents are leaving near by the project sites less than 3 km and also facing problems like environmental pollution, noise pollution and due to these problems they are shifting to other places. The increase in the traffic after coming up of the cement plant and generation of dust due to various activities such as open blasting in quarry sites have led to the air pollution in Darlaghat area. Similarly the plant area has come quarry sites have led to the air pollution in Darlaghat area. Similarly the plant area has come to experience noise pollution due to blasting, quarrying, heavy machinery, trucks and other movements. The increases in the noise and air pollution both are detrimental to the health of local public. The project activities have also led to the water pollution and its availability has also been greatly affected in two villages, respondent told about the problem regarding drinkable water in summer. Whereas 53% of the respondents are residing at a distance of more than 3 kilometer from the project sites as shown in figure.

LAND DEGRADATION

Land degradation is caused by multiple forces, including extreme weather conditions particularly drought, and human activities that pollute or degrade the quality of soils and land utility negatively affecting food production, livelihoods, production and provision of other ecosystem goods and services. Land degradation occurs slowly and cumulatively and has long lasting impacts on rural people who become vulnerable (Muchena 2008). In case of Darlaghat the agricultural land is much affected due to cement industry and people may shift to secondary sector because the production cost is much higher than the yield.

PERCEPTION OF LOCAL PEOPLE ABOUT SOCIO-ECONOMIC IMPACT

The natural resources of the Himalayas have been threatened largely because of human negligence and unplanned activities. The geological instability interacting with a complex set of problems including the population pressure, waterscarcity, outward migration of people and poverty all impact upon the fragility of the Himalayan ecosystem in form of road and transportation, agriculture impacts and employment and job facilities. Of course when we are talking about the setting up of these types of cement plants then they have to study both aspects positive as well as negative. In other words we can say they have positive and negative impact. Among the positive impact of Darlaghat cement plant, is the provision of trucks for the transportation of cement and open 30% job to local people, establishment of a new hospital, and construction of new roads. On the other hand among the negative impact include the loss of good cultivable lands, environmental degradation like landscapes, a congestion over burdening, hygiene problems, pollution of water, air, noise, garbage, quarrying activities, deforestation and destruction of flora & fauna, quarrying, generation of suspended particle matter from the factory and heavy traffic jam in and around Darlaghat cement plant area.

CONCLUSION AND SUGGESTION OF THE STUDY

In India cement industry constitutes an important segment of the modern industrial economy. It plays a vital role in the economic life of the country. In view of its crucial position, it is imperative to have a comprehensive study of this Industry. However, while on one hand, the industry is critical to the socio-economic development, on the other hand it is not without huge costs in the form of environmental degradation and land use change. The study area has come to experience both positive and negative impact. However, the positive impact overweighs the negative ones. The negative impact includes environmental degradation in the form of loss of good cultivable land, which is irreversible loss. A part from the loss of good cultivable land, the Cement Plant has also brought about some permanent land use change. This land use change has resulted in the areas which are being used for mining purpose. Secondly, the air pollution which happens as a result of mining activities, blasting of rocks, smoke thrown into the atmosphere by the Cement Plant and traffic congestion etc. The study tells us all about the causes of socio-economic impact, new technologies, changes in laws, changes in the physical environment like degradation of environment, deforestation by the quarrying activities, setting up of conveyer belts, ecological change and loss of good cultivable land. The company road in Darlaghat there are always remain overcrowded and frequent traffic jams of trucks which has become a common phenomenon. It is not, however, the negative impact that the study area has come to experience. The area has undergone various positive changes as well. One very important development that the area has come to experience is that it has witnessed a significant expansion in road and transportation network and also responsible for the upliftment of standard of living of the local people. It is substantiated that industrialization is a catalyst for the socio-economic development of any area. Yet such socio-economic growth should not be achieved at the cost of irreparable damage to the environment and irreversible change to the land use. It is the perception and suggestion identified during the field survey that for the establishment of such types of ventures state and national government must ensure the development efforts will be sustainable. Secondly, the state government must create an infrastructure whereby local people can take technical training so that skill labour is available to the projects locally itself. Then only the socio-economic development will take place in real sense.

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