

ENVIRONMENT AND DEVELOPMENT: PUBLIC AWARENESS AND PERCEPTION OF RESIDENTS OF SIKAR DISTRICT

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Abstract: *There is a close relationship between environment and development. They are not only related with each other, but also affect each other. Ecological imbalance has become a major issue of concern today. An attempt has been made in this article to analyze various aspects related with the population, environment and developmental problems of Sikar district of Rajasthan. Demographic data provide basic information about population dynamics of the study area. The population and environment are interlinked. As the population increases the needs for its survival also increases. These continuous growing requirements of population are directly or indirectly fulfilled by the surrounding ecosystem. As a result growing population has direct impact on our environment, but developmental activities are indispensable for meeting the day by day growing needs of mankind. Therefore, all development processes has to take up with the safety, protection and conservation of natural as well human resources for substance of an ecosystem. To maintain the quality of life optimum management of population is also essential.*

Keywords: Environment, Development, Biodiversity Issues and People's Perception.

Introduction

United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, and the International Conference on Population and Development, held in Cairo in 1994, a consensus was reached that population, environment and development were inextricably linked. It was also recognized that bringing about a sustainable relationship between human numbers, resources and development required activities at the local, national, regional and global levels. The centre of this consensus was the realization of the global nature of most salient environmental issues. The key environmental challenges that the country faces relate to the nexus of environmental degradation with poverty in its many dimensions, and economic growth. These challenges are intrinsically connected with the state of environmental resources, such as land, water, air, and their flora and fauna. It is increasingly evident that poor environmental quality has adversely affected human health. This issue has also been greatly realized by every segment of population. We cannot ignore the population from the environment and the process of development as these two are very intimately related with human civilization. Man lives within the environment and get the better quality of life from the process of development. Environmental degradation has a serious impediment to economic development and the eradication of poverty in the developing world. Mankind's relationship with the environment has passed through several stages, commencing with primitive time in which human beings lived in a stage of symbiosis with nature, followed by a period of growing mastery over nature up to the industrial age and culminating into material intensive growth patterns of the present century.

In India, population, environment and development issues remain, as chronic problem with the process of development could not pace with the growth of population. India, for decades has been facing the adverse consequences of gradual degradation of environment in the form of drought, flood, rainfall, ill health and pollution etc. Slow development processes and rapid growth of population pressurized the huge population to exploit the available resource more that resulted in to the environmental degradation. It is found predominant in urban areas because of the rapid growth of urban population due to migration from rural to urban areas and because of the process of industrialization. Thus, the environmental degradation in India can be attributed to the process of rapid population growth. Here one attempt has made to see the relationship among population, environment and development in India. Here the attempt has been made to see the complex relationship of different demographic and developmental indicators viz. population growth, deforestation, urbanization, industrialization, health, land use pattern and globalization with the environment in Indian context.

Study Area

For the present study, Sikar district was selected as the study area which is located in the north eastern Rajasthan between 27^o 21' to 28^o 12' North Latitudes and 74^o 44' to 75^o 25' East

Longitudes. It is bounded by Churu and Jhunjhunu districts in the north, by Jaipur district in the east, by Nagaur and Jaipur districts in the south and in the west by Churu and Nagaur districts of Rajasthan. Sikar is situated midway between Bikaner and Jaipur on national highway number 11. Sikar is located in the Shekhawati region of Rajasthan. There is still no broad gauge railway track in the district. It is connected through meter gauge to Delhi, Jaipur, Rewari, Bikaner, Sri Ganganagar, Churu, and Jhunjhunu. However the district is well connected by roads.

Objectives

The study was conducted by undertaking following main objectives:

- To make an assessment of environmental degradation and its ecological impacts in Sikar district.
- To highlight the causes of environment degradation due to increasing population in the district and also to suggest various measures to control over them.
- To examine the impacts of environmental pollution on the various aspects of life, and social impact.

Methodology

In order to make the study comprehensive and more analytical, both empirical and statistical methodologies have been applied for different aspects of the study. For this 32 sampled villages i. e. four villages in each development block (Panchayat Samiti) were studied. The selection of villages was based on stratified random sampling. At the micro level the study was conducted with the help of a questionnaire through personal interview method with the residents of villages and farmers. There were 50 household interviewed from each village. Thus, a total of 1600 respondents were interviewed from 32 villages.

Figure 1: Maps showing the Location of the Study Area



Demographic Profile

According to the census 2011 Sikar district has a population of 26,77,333 of which male and female were 13,74,990 and 13,02,343, respectively. In addition to this, 79.35 percent population live in the rural areas, while 20.65 percent reside in urban areas of the district. The percentage of scheduled caste and scheduled tribes population are 14.85 and 2.73 respectively. The sex ratio in the district (i.e. 947) is significantly higher than the state sex ratio (i.e. 928). The literacy rate in the district is 71.9 percent which is higher than the state average (66.1 percent) and it ranks 4th among the other districts of the state. Gender gap of the literacy rate is 26.9 percent in the district. The scheduled caste and scheduled tribe population in the district is 15.6 percent and 2.8 percent respectively whereas the state percent of scheduled caste and scheduled tribe population is 17.8 and 13.5, respectively. The economy of the district is mainly dependent on agriculture as 58.5 percent workers in the district are either cultivators or agricultural labourers. However, the district percentage of such workers is lower than the state average of 62.1 percent. Work participation rate (WPR) of the district has recorded 37.6 percent and gender gap in WPR is 21.0 percent points. In the district among the workers the percentage of cultivators, agricultural labourers, workers in household

industry and other workers (category of workers) are 49.8, 8.7, 2.3 and 39.2 percents, respectively.

Increasing Population

As we all know that population is increasing day by day very fast, due to which a number of problems are increasing such as environmental pollution, unemployment, poverty, fast consumption of natural resources, migration, urbanization, slums and so on. The following table shows that 77.19 percent people are positive in response of regarding increasing of population. About 26.50 persons reported that they don't know whether population is increasing or not. The following table shows the response of people about increasing population.

Table 1: Population Increasing

Category	Response	
	Number	Percent
Yes	1176	73.50
No	424	26.50
Total	1600	100

Source: Field Survey

Educational Profile

The following table illustrates the education profile of the respondents in the 32 study area villages. The following table shows that there are 18.13 percent comes under illiterate and 33.81 come under formally literate category. The graduates and post graduate are only 4.69 percent and 1.31 percent respectively.

Table 2: Respondent's Educational Level

Educational background	Number	Percentage
Illiterate	290	18.13
Literate	541	33.81
Primary	234	14.62
Middle school	176	11.00
Secondary	165	10.31
Sr. Secondary	98	6.13
Graduate	75	4.69
Post Graduate	21	1.31
Total	1600	100

Source: Field Survey

Inter-linkages between Environment and Population

It is now well accepted that population, poverty, the economy and environment are interconnected. Poverty and general lack of access to capital, resources and technology contribute to deforestation. The population pressures can leads to resource degradation and poverty. There is a growing emphasis that economic policies also affect poverty and environment, be it direct or indirect, bearing on the availability as well as utilization of natural resources. The growing population has forced poor villagers to deforest and cultivate the deforested land for agricultural purposes and to meet their livelihood needs. The poor are both agents and victims of deforestation. Undoubtedly, clearing of forests for agricultural purposes will increase income but this is not without any other side effects. The continuing need for family labour supports high fertility and rapid population growth. Continued deforestation will have grave consequences for the health of both humans and ecosystems. The consequences of unrelenting population growth on natural resources depletion and environmental degradation are not easily dealt with. The lack of knowledge is a problem. Thus, there is a need to promote public awareness of the linkages between population, poverty and environment. Environmentalists and economists increasingly agree that efforts to protect the environment and to achieve better living standards can be closely linked and are mutually reinforcing. Slowing the increase in population, especially in the face of rising per capita demand for natural resources, can take pressure off the environment and buy time to improve living standards on a sustainable basis (Green, C.P., 1992). The following table shows the link between population and environment. About 62.38 percent respondents reported that environment and population are interlinked. If the population will increase the environment will affect in negative way. About 37.62 percent persons reported that there is no any link between environment and population. The following table shows the details of respondents.

Table 3: Environment and Population Interlinked

Category	Response	
	Number	Percent
Yes	998	62.38
No	602	37.62
Total	1600	100

Source: Field Survey

Poverty and Environment

During the recent decade, poverty and environmental degradation have been increasingly linked. The poor have not only suffered disproportionately from environmental damage, but have they become major cause of ecological stress. Pushed into fragile lands due to population growth and inequitable income distribution patterns many of the poor have over-exploited local resource base. Short-term strategies such as abbreviated fallow periods, depletion of topsoil, and deforestation permit survival in the present but place enormous burdens upon future generation. In this context, there is a clear danger of India's continuing to show a pattern of divergent development, with parts of the country making progress in many fronts, and other parts stagnating. The following table shows that 67.25 percent respondents accept that poverty and environment are interlinked and both are result of over population. The details are given in the following table.

Table 4: Poverty and Environment

Category	Response	
	Number	Percent
Yes	1076	67.25
No	524	32.75
Total	1600	100

Source: Field Survey

Impact on Land

The table 4 shows the regularity of forest committee members meeting. Only 22.19 percent villagers of the study area reported that regular meeting of forest committee is held. About 68.06 percent people of reported that forest committee meeting is not held regularly. Whereas 9.75 percent villagers have not given any response or said don't know about the forest committee meeting.

Table 5: Impact on Land

Category	Response	
	Number	Percent
Yes	355	22.19
No	1089	68.06
No Response	156	09.75
Total	1600	100.0

Source: Field Survey

Impact on Water Resources

The water resources, indiscriminate use and mismanagement have caused resource degradation to the extent that the quality and quantity of available water has been affected. Shortage of water is experienced during winter months (November to March) and when we expect good quality water. The fast growing population has pressurized the food production base and to satisfy their need the people have misused the water resources. The region, though having sufficient water in aggregate, cannot boast of adequate quantities of water for its people at all places and during all the seasons. Population growth, caused water, land and environmental degradation and in many cases irreversible damage to water resources. The social sanctions and belief system maintained a balance between resource potential and their utilization for a long time, but with the increase in population and indiscriminate use of water resources, imbalance has been created. The important issue is to promote conservation and sustainable use of resources which allow long-term economic growth. The following table shows the increasing population and its impact on water. About 70.75 percent respondents reported that water resources are seriously affected by increasing population. Due to increasing population the demand of water is increasing in agricultural and domestic purposes. Only 18 percent respondents said that there is no any negative impact on water due to increasing population. Whereas 11.25 percent persons have not given any response or they don't know about the impact on water due to increasing population.

Table 6: Impact on Water

Category	Response	
	Number	Percent
Yes	1132	70.75
No	288	18.0
No Response	180	11.25
Total	1600	100

Source: Field Survey

Rain Water Harvesting

Harvesting of roof water is an age-old practice to obtain safe drinking water, which is being revived and emphasized now. In ancient times, houses in western Rajasthan were constructed with stone and lime and roof water was diverted to *tankas*. Harvesting of roof water is being neglected because of pipe-borne water supplies even in rural areas, which is essentially based

on groundwater withdrawal locally or in the vicinity. Roof water harvesting is now becoming the order of the day in towns as well as in rural areas due to the alarming rate of groundwater depletion. If harvesting of roof water is revived on a large scale, it will alleviate the scarcity of drinking water and also reduce the rapid depletion of groundwater. Roof water harvesting for the recharging of groundwater can also be recommended for areas having suitable aquifers. This approach requires harvesting and channelizing roof water to either existing wells, tube wells, bore wells or specially designed wells. It is most suitable for urban housing complexes or institutional buildings located in drought-prone arid and semi-arid regions. The following table shows that 78.44 percent people are aware about importance of rain water harvesting. Most of them are having rain water harvesting structure either in house or field. Whereas 12.19 percent respondents reported that rain water harvesting system is not common in the study area in recent years. Only 9.37 percent reported that they don't know about the harvesting system is regular or irregular.

Table 7: Rainwater Harvesting

Category	Response	
	Number	Percent
Yes	1255	78.44
No	195	12.19
No Response	150	9.37
Total	1600	100

Source: Field Survey

Forest Conservation

Rural development through participatory forestry is a dynamic process for promoting the economic, social and environmental growth, increased agricultural productivity, and enhancing the prospects of basic needs and services in rural areas. Forestry promises a vast potential to achieve the indigenous rural development through the integrated management of natural resources. The achievement of the aims of rural development to a large extent depends upon the availability and use patterns of natural resources including land, forests, soils, water and trees etc. The following table shows the progress of forest conservation work in the study area. About 72.25 percent respondents reported that forest conservation work has been increasing for last ten years. The increasing population effect on forest is not too much. Whereas 15.94 percent respondents emphasis that there is not progress in forest conservation work. Whereas 11.81 percent reported that they are not able to say anything on this issue.

Table 8: Forest Conversation

Category	Response	
	Number	Percent
Yes	1156	72.25
No	255	15.94
No Response	189	11.81
Total	1600	100

Source: Field Survey

Impacts of Population and Development on the Natural Environment

The following table shows that about 67.32 percent people are very well aware about negative impact of population on environment and development. They agreed that high growth of population will affect the environment in negative way. They will require more resources and it will create more pollution. About 23.56 percent villagers are not aware regarding the impacts of population growth and development on the environment. About 9.12 percent respondents did not have given any response.

Table 9: Impact of Population on Environment and Development

Category	Response	
	Number	Percent
Yes	1077	67.32
No	377	23.56
No Response	146	9.12
Total	1600	100

Source: Field Survey

Declining Per Capita availability of Land under Forest Agriculture

The population growth has resulted in a downward trend in per capita availability of forest and agricultural land. Per capita availability of forests in India is much lower than the world average. The growth of population is expected to be faster than hoped for improvements in forest cover as well as quality. Over the last ten years, despite governmental initiatives of joint forest management, tree grower's co-operative movements and other efforts tangible results are still to be observed, and forest depletion and degradation is still increasing. Similarly, the

per capita availability of agricultural land in rural areas has decline consistently. About 56 percent people said that per capita forest land and agricultural land is decreasing due to increasing population.

Habitat Destruction and Loss of Biodiversity

Protection of earth's biological diversity is an important goal in its own right. Biodiversity has direct consumptive value in food, agriculture, medicine, industry etc. It also has the aesthetic and recreational value. The greatest threat to biodiversity is not destruction of plants and animals, but rather the destruction of their habitat. India is one of the 12 mega-biodiversity countries of the world. From about 70 percent of the total geographical area surveyed so far 46,000 plant species and 81,000 animal species representing about 7 percent of the world's flora and 6.5 percent of the world's fauna have been described. Population growth leads to expanding human settlements and increasing demand for food, fuel and building materials. Modernization of agriculture also threatens potentially valuable local crops. Biodiversity the world over is in peril because the habitats are threatened due to such development programs as creation of reservoirs, mining, forest clearing, lying of communication and transport networks etc. It is estimated that in the worldwide perspective slightly over 1000 animal species and sub-species are threatened with the extinction rate of one per year, while 20,000 flowering plants are thought to be at risk (Compendium of Environment Statistics, 2000). The people of the study area have the same thought. They emphasize that, due to over population our habitat is disturbing very fast and loss of biodiversity is also very high. About 56.90 percent respondents agreed that, loss of biodiversity is increasing day by day due to high pressure of population.

Changing Consumption Patterns

The economic and industrial development is inevitably accompanied by changing patterns of consumption. The number of registered motor vehicles in India provides one useful indicator of expanding consumption and economic growth. The increasing vehicles in country, producing more air pollution, fuel consumption, traffic jams and demands for road construction-often at the cost of agricultural land. The population of India in 2000 was just over 1 billion, and there were about 10 motor vehicles for every 1000 people, or a total of roughly 10 million motor vehicles in the country. In 2020, the population of India will be about 1.3 billion, and there will be about 44 motor vehicles for every 1000 people, making a total of 57 million vehicles (Energy Information Administration, 2001). An increase in vehicular pollution is associated with a number of environmental problems like air pollution and global warming. In most urban areas, air pollution has worsened due to traffic congestion, poor housing, poor sanitation and drainage and garbage accumulation. The environmental effects of fuels like oil and petroleum products are of growing concern owing to increasing consumption levels. In study area the numbers of all types of vehicles are increasing in rural and urban areas. This is also due to social symbol of having a vehicle. The people of study area reported that due to development environmental problems are also increasing. The situation is worst in urban area in comparison to rural areas. About 68.77 percent respondents agreed on this issue.

Rising Demand for Energy

The environmental effects due to increasing consumption levels of fuels are of growing concern to various researchers. About 77.59 percent respondents agreed on this issue. The combustion of fuels in industries has been a major source of pollution. Coal production through open cast mining; its supply to and consumption in power stations and industrial boilers leads to particulate and gaseous pollution, which can cause pneumoconiosis, bronchitis and respiratory diseases. The bulk of commercial energy comes from the burning of fossil fuels viz. coal and lignite in solid form, petroleum in liquid form and gas in gaseous form. In addition to emission of greenhouse gases, the burning of fossil fuels has led to several ecological problems and associated with health problems like cancer risk, respiratory diseases and other health problems. Burning of traditional fuel adds a large amount of carbon-dioxide into atmosphere and increases air pollution. The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption, and this trend can only be expected to accelerate in the future. A considerable amount of air pollution results from burning of fossil fuels. Moreover the resources for fossil fuels are also limited thus exploration of alternate energy resources would provide the way out.

Sources of Fuel Wood

The main source of fuel wood reported as 80.13 percent from their own field. While 9.13 percent reported that they collect fuel wood from other person field in the absence of owner. Some time it creates problems for themselves. About 7.12 percent said that they purchase fuel from *gram panchayat* (local governing body), other villagers etc.

Use of Fertilizers in Agriculture

The use of chemical fertilizers is high in comparison of bio fertilizer in the study area. About 49.25 persons reported that they are using chemical fertilizer, while 27.19 persons are using

bio fertilizers. There are 18.12 persons reported that they are using both bio and chemical fertilizers.

Table 10: Use of Fertilizers

Category	Response	
	Number	Percent
Chemical Fertilizer	788	49.25
Bio Fertilizer	435	27.19
Mix (Bio & Chemical)	290	18.12
Other	87	5.44
Total	1600	100

Source: Field Survey

Conclusion

The parallel consequences of increasing population are increasing population density, increasing population below poverty line and human pressure on available natural resources. Altogether contributes to environmental degradation through over exploitation of natural resources. The present study of Sikar district reveals that, rapid population growth in the district continues to be a matter of concern for the country as it has manifold effects, most important being land degradation and soil erosion, deforestation and declining per capita land availability, forest and water resources. Growing population has direct impact on our environment, but developmental activities are indispensable for meeting the day by day growing needs of mankind. From the various effects of human beings on environmental degradation, it appears that if human beings want to exist on earth, there is now high time to give top priority to protect natural resources and environment. In order to increase green cover and to preserve the existing forests, afforestation and social forestry programs should be implemented at the local level. There is a need for preventive and curative measures to control water pollution due to chemical fertilizers, pesticides and other wastes.

Moreover, it is also must to understand that, the act of the environmental protection is not a responsibility of government alone, but the local communities and political leaders too should be also be encouraged in making dedicated efforts to solve the environmental problems. Special efforts should be made by educating them about the adverse effects of high population growth through specially designed Informational, Education and Communication (IEC) activities. More emphasis should be laid on compulsory environmental education at the school level in order to make people aware of the environment protection. There is a need of a holistic understanding across the disciplines, which is needed in order to accommodate the still evolving concept of sustainability. A key ally in this endeavor is environmental education. Professionals should be engaged in environmental education to work together with other disciplines of humanities and social sciences.

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