

**ECOLOGICAL DEGRADATION AND ITS AWARENESS --
A CASE STUDY**

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Abstract

Ecological degradation is the erosion of quality of natural environment caused, directly or indirectly, by human activity. Ecological degradation is not a new thing, it has been happening all over the world for centuries. The problem is that it is now occurring at a much faster rate, therefore not leaving enough time for the environment to recover. The greater demands placed on the environment by an ever increasing human population is putting strain and drain on the earth's limited natural resources. "The exploitation of mother nature just to meet our selfish ends in the name of so called economic development is nothing else but a step towards our own extinction from earth or in other words the collapse of the civilization once again". The one of the purposes of this research are to address the gaps in our knowledge regarding ecological and environmental degradation in the state of Punjab comprehensively. The study will also make an attempt to analyze the extent of awareness amongst the masses about environmental degradation and the measure being taken to save ecological environment. For the purpose of analysis, Factor Analysis has been employed on 23 variables on a sample of 150 respondents. The present study is expected to add the body of knowledge in management education significantly.

Key words: ecology, environment, degradation, exploitation, mother earth

INTRODUCTION

Ecological degradation is the erosion of quality of natural environment caused, directly or indirectly, by human activity. It is a situation in which a part of the natural environment is damaged. It used to refer to damage to the land, to water, to forest or the air and a loss of natural resources in an area.

Ecological degradation is not a new thing, it has been happening all over the world for centuries. The problem is that it is now occurring at a much faster rate, therefore not leaving enough time for the environment to recover. The greater demands placed on the environment

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by an ever increasing human population is putting strain and drain on the earth's limited natural resources. Ecological degradation is a serious threat to the lives of people, animals and plants. (Wikipedia encyclopedia)

“The exploitation of mother nature just to meet our selfish ends in the name of so called economic development is nothing else but a step towards our own extinction from earth or in other words the collapse of the civilization once again. Advanced nations are more to be blamed for the sorry state of affairs. Most of the world level conferences attended by presidents of different nations have not been able to cut much ice. The suggestions have either remained more or less on the paper or have been shamelessly vetoed against the common consensus of the nations by the countries which have been polluting the world most. President APJ Abdul Kalam sent a strong message to the nation and the world at large in favor of eco-protection by directing the concerned to plant trees ten times more. One can still find writing displayed at pingalwara, Amritsar by its founder Bhagat Puran Singh (also known by same as Mother Teresa of Northern India). In it Bhagat Puran Singh, who started spreading environmental awareness may decades ago states, “ In India alone 10.5 million hectares of green forest land is denuded every year, it is continues and a forestation or reforestation does not take place, India will become a man-made desert like the Sahara by the year 2010 AD.”

In 1924, the father of our nation Mahatma Gandhi drew our attention to this aspect and asked us to maintain a healthy balance between economic growth and ecological environment emphasizing that ecology and economy have common roots which need to be nursed by proper education. Noted environmentalist, Mr. S.L. Bahuguna of the Chipko Movement fame- a living legend, in the voice of ecological concerns the world over minces no words in stating that the question no longer is that of striking a balance between economic development and ecological degradation but is that of survival or extinction. Moreover true development is always need on a judicious balance between immediate and long term requirements. There is a growing recognition that the watch word should not be exploitation but conservation. Development can hardly be sustained when the natural resources of soil, water and vegetation, the basic economic capital of a country, are depleted recklessly.

Ecology is permanent economy in the view of international environmentalist Mr. Sunder Lal Bahuguna. Environment education becoming a part of other disciplines could prove very fruitful. There is a need to address most of these issues and provide knowledge about environment education which is the need of the hour. Hence there is a need to be environmentally educated; understand the implication of fast economic development and the

consequences of quickly depleting natural resources causing ecological imbalance: which may prove fatal for the civilization.” (Bhalla G.S. and Hema Khanna)

The World Commission on environment and development published a report in 1987 in which the definition of sustainability known as the “Brudtland definition” is included. This is the most internationally accepted definition and affirms that sustainability means “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable means to maintain the necessary and desired characteristics of people, their communities and their surrounding environment for the long term (indefinitely). Development in this context means to bring something to a fuller and better condition. It is a qualitative idea that should be distinguished from growth which is purely a quantitative physical increase.

Review of Literature:

This section belongs to the relevant studies which described below in chronological order as **Sunder Lal Bahuguna (1983)** observed that the viable answer to the ecological imbalances was to adopt a new development strategy in which man and nature co-existed in harmony. This in his view was possible only if small communities were allowed to meet their own basic needs themselves and system of centralized production was avoided to the extent possible. The chipko leader added that the question no longer is that of striking the balance between ecology and economy but that of survival or extinction. He went on to add that the solution is that of plant and perish.

B.B. Vohra (1986) emphasized that the highest priority should be given to restore forest cover with 33 percent of the geographical area of the country being brought under forests from the present level of 23 percent. Measure should be intensified to restore forest cover to the full where it is at present degraded, though the area is normally shown as under forests.

World Commission on Environment and Development (1987) ensconcing its attention on the global and interlocking process of population growth, food production, ecosystem protection, energy use, industrialization and urbanization defined sustainable development as “to meet the needs of the present without compromising the ability of future generations to meet their own needs.”

Edward O, Wilson (1987) emphasized that the rapid destruction of tropical forests and other species’ habitats around the Earth, both animal and plant species are vanishing at an extraordinary speed. According to an entomologist, the global loss from tropical deforestation

alone could range from four to six thousand species a year, a rate ten thousand times greater than the natural background rate of extinction prior to the advent of human beings on earth.

Dewan (1990) conducted a study which emphasized that environmental awareness is the prerequisite for effective tackling of environmental degradation. He viewed that educational policies play a vital role in bringing environmental awareness through setting up an appropriate curricula syllabus, etc. In India also, there is a need of creating environmental consciousness. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process.

Gurdip Singh (1995) remarked that the establishment of the Commission on Sustainable Development was a significant step but its success lies on many factors. The Commission will have to rely on political rather than legal authority to integrate global environment and economic politics. Its success will depend heavily on the quality of participation from various national governments. If the consensus on global sustainable development goals can be build up and if the developed as well as developing nations reinforce that consensus through their national and international efforts, the Commission can in turn greatly strengthen their collective capacities to tackle environmental and development problems.

Barry Buzan (1997) emphasized that it is not surprising to know that a strong feeling is growing that environmental security is a national security concern. Although many scholars viewed that environmental security is part of the economic agenda, the concept of national security has been tackled on to environmental debates, because it has a mobilization potential.

Vyas and Reddy (1998) emphasized that the environmental problem faced by third world countries is a lot more complex than usually understood. Most of these countries are grappling with the problems of trade-off between environment and development while struggling to get out the low level equilibrium trap. They found that the problems of global environment could be solved only through co-operation and mutual trust between the rich and poor countries. In order to achieve sustainable growth, there should be a balance between environment and development.

Eco News (1998), mentioned that India today is facing the double environmental threats of ecological poverty and land degradation, on the one hand, and rapidly growing toxification and pollution arising out of industrialization and economic growth, on the other hand. It further remarked that all most all countries are conscious of financial deficit but very few countries count ecological deficit in their national programmes.

Sidhu, A.S. and Sidhu, M.K. (2001) in their study concluded that judicial actions can play an important role by protecting natural resources of a country like India, where industrial sector is more concerned with financial performance rather than sustainable performance. The study strongly advocated that enactment of more legislations for the preservation of natural resources and their compliance was an important way to act in a country like India in the era of globalization where the pressure to exploit the natural resources due to the free entry of multinational companies will further increase.

Ivan Tomasell (2006) conducted a study on funding and finance flows for forestry and the forest-based sector worldwide. The study concluded that lack of funds has been a critical matter especially for developing countries and tropical nature forests. Investments in sustainable forest management are below the needs (estimated to be around only 30%). This is linked to the fact that the private sector is not willing to assume the high associated risks and the low returns. The study strongly advocated that there has been a strong need for the several countries and international organizations throughout the world have been developing some innovative financial mechanisms and instruments for sustainable forest management in recent years.

Maathai Wangari (2007) at the Rajiv Gandhi Memorial Lecture in New Delhi remarked that human survival is directly proportionate to the amount of carbon-dioxide absorbed by ten trees. Those who have not planted ten trees in their lifetime are breathing off somebody else's trees. Nobel Prize winner for peace drew on this interdependence to communicate the message: Humans need forests while forests can do without humans. She said that the major world conflicts are about control of limited natural resources including water and grazing ground. The trend validates the intrinsic link between environment, democracy and peace. She emphasized that the generations responsible for destroying environment are not the ones that pay the price and called for a worldwide movement to create awareness and sensitivity. Explaining the Greenbelt movement launched in 1977, she said it began with seven trees and has grown to more than 40 million today. She is now trying to plant one billion trees worldwide.

Rakesh k. Jaiswal (2007), observed that Ganga today is more polluted than when the Ganga Action Plan was first initiated by the late Prime Minister Rajiv Gandhi in 1986. The fast shrinking glaciers, dams, barrages, canals and alarmingly high volume of pollution pose an ever increasing threat to the health and life of the river. The state U.P. alone is responsible for over 50% of the pollutants entering the river along its entire journey to the sea. He further felt that the Ganga Action Plan has not achieved any success despite expenditure of

approximately 2000 crore rupees. Even though the government claims that the scheme under the Ganga Action Plan have been successful, ground realities tell a different story. The failure of the GAP is evident but corrective action is lacking.

The Tribune (2011) quoted that the Punjab and Haryana High Court issued notices to the Tikshan sood, former forest minister and current minister of local bodies and industry of Punjab. Notices have been issued to Ministry of Environment and Forests, Department of forest and wild life, Delhi, and principal chief Conservator of forests RR Kakkar on a petition by Gunraj Singh Saini, former honorary wildlife warden, Hoshiarpur. “The entire Scam entails the misuse of State government Funds, Central government funding as well as international funding for saving the forests as enumerated in the petition”, Advocate APS Shergill said. The petitioner has demanded that a Corruption case be registered by CBI against all the people involved in the Scam. They said Kakkar and others were able to thwart action against them and indicated for misusing their official position for personal gains. The court was told that the forest mafia was hand-in-glove with Kakkar and Sud, who were beneficiaries in the large-scale financial irregularities.

Objectives Of The Study

The present study has been planned with the following research objective:

- To study the extent of ecological degradation in the Punjab state of India and the measures being taken to overcome it.

Research Design

▶ **Sample Design:** The study has been conducted in Amritsar district of Punjab and a sample of 150 respondents has been taken under consideration. Some of the questionnaires were found defective and finally 86 questionnaires were found in order which have been used for analysis and results.

Data Collection Instrument: For the purpose of examining the objectives of the study under reference both primary as well as secondary data has been used.

▶ Primary data have been collected with the help of a structured and pre-tested questionnaire. The respondents were given 23 variables and were asked to rate those on 5 point Likert scale ranging from 5 to 1, 5 for ‘Strongly Agree’ and 1 for ‘Strongly Disagree’.

▶ The secondary sources of data has been collected from the budgets of the state govt., reports of Comptroller, Auditor General of India and the minutes and reports of the ministry

of environment and forestry. The data will also be collected from the relevant ministry of Central government, and the State government of Punjab.

Statistical Techniques used for Analysis: Commensurate with the objectives of the study Factor Analysis has been used to analyse the data and get inferences. Factor Analysis has been deployed to identify the significant factors influencing the ecological degradation.

Table 1 shows the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity.

Table 1
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.521
Bartlett's Test of Sphericity approx. Chi-Square	434.320
Df	253
Significance	.000

Table 1 depicts the KMO value to be .521 and Bartlett's Test of Sphericity as 434.320 (significant at 1%, $p < 0.000$). For the justification of usage of Factor Analysis, correlation matrix had been computed which exhibited high inter correlations among variables.

After calculating the inter correlations, the factors have been extracted by using Principal Component Method with Varimax rotation, on the basis of Eigen value not less than one for any factor.

Total Variance Explained is 67.230

Table 2
Principal Component Analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.156	13.723	13.723	3.156	13.723	13.723	2.253	9.794	9.794
2	2.251	9.789	23.511	2.251	9.789	23.511	2.099	9.124	18.919
3	1.998	8.685	32.196	1.998	8.685	32.196	1.833	7.969	26.887
4	1.796	7.810	40.007	1.796	7.810	40.007	1.650	7.172	34.059
5	1.509	6.563	46.569	1.509	6.563	46.569	1.609	6.996	41.055
6	1.356	5.897	52.467	1.356	5.897	52.467	1.530	6.653	47.708
7	1.201	5.223	57.689	1.201	5.223	57.689	1.526	6.633	54.341
8	1.181	5.137	62.826	1.181	5.137	62.826	1.498	6.514	60.856
9	1.013	4.404	67.230	1.013	4.404	67.230	1.466	6.375	67.230
10	.914	3.974	71.205						
11	.851	3.700	74.905						
12	.766	3.330	78.235						
13	.710	3.089	81.323						
14	.649	2.821	84.144						
15	.611	2.658	86.802						
16	.583	2.533	89.335						
17	.466	2.026	91.360						
18	.461	2.003	93.364						
19	.429	1.866	95.229						
20	.381	1.656	96.886						
21	.281	1.221	98.106						
22	.227	.988	99.094						
23	.208	.906	100.000						

Extraction Method: Principal Component Analysis.

Table 3: Factors Influencing Ecological Degradation

S.No.	Factor wise dimensions	Factor loadings	Eigen value	% of variance explained	cumulative % of variance explained
F1	Lack of political will				
a	failure of Ganges action plan	0.667	3.156	9.794	9.794
b	lack of political will	0.8			
c	real worth of single tree runs into enormous	0.7			
F2	Factors affecting by pollution				
a	Indian rivers are highly polluted	0.768	2.251	9.124	18.919
b	breathing air is highly polluted	0.735			
c	many species of birds, fishes and animals are becoming extinct	0.66			
F3	Role of various parties in protecting eco-environment				
a	role of government has been satisfactory	0.763	1.998	7.969	26.887
b	role of judiciary has been satisfactory	0.716			
F4	Pollution is major environmental hazard				
a	industrial pollution is major environmental hazard	0.826	1.796	7.172	34.059
b	motor vehicle contribute to air pollution	0.635			
F5	Environmental awareness amongst the masses				
a	media spread environmental awareness	0.737	1.509	6.996	41.055
b	chipko movement has spread environmental awareness	0.524			
F6	Protecting ecological imbalances				
a	NGOs play major role	0.712	1.356	6.653	47.708
F7	Up gradation is a farce				
a	awareness about consequences of ecological degradation	0.737	1.201	6.633	54.341
b	work regarding eco up-gradation is farce	0.715			
F8	Work regarding protection of ecological environment				
a	pollution taxes an effective tool to control pollution	0.811	1.181	6.514	60.856
b	international community protect eco-environment	0.589			
F9	Present eco-laws				
a	decline water table of earth is of great concern	0.627	1.013	6.375	67.23
b	eco laws sufficient to deal with eco-degradation	0.776			

Table 3 shows the results of the Factor Analysis by depicting the factor loadings of variables, Eigen values, percentage of variance explained by the factors extracted and

cumulative percentage of variance explained, taking all the factors together. Nomenclature of the factors extracted has been given on the basis of highest factor loadings of the variables loaded onto a particular factor. Nine factors have been identified by the factor analysis i.e. Lack of political will, Factors affecting by pollution, Role of various parties in protecting eco-environment, Pollution is major environmental hazard, Environmental awareness amongst the masses, Protecting ecological imbalances, Up gradation is a farce, Work regarding protection of ecological environment, Eco-Laws . The Nine factors together explain 67.23% of the variation in data. Following is the brief explanation of the factors derived:

F₁ - Lack of political will: This factor is the most important factor on which 3 variables have loaded and it explains 9.794% of the variance with the Eigen value of 3.156. It deals with the Failure of Ganges action plan, Lack of political will, real worth of single tree into enormous amount.

F₂– Factors affecting by pollution: This is the second important factor having Eigen value of 2.251 and explains 9.124% of variance. 3 variables have loaded onto this factor and highest loading is for the variable Indian rivers are highly polluted (.768) followed by Breathing air is highly polluted (.735), many species of birds, fishes & animals are becoming extinct (.600).

F₃ – Role of various parties in protecting eco-environment: Two variables are loaded on this factor i.e. Role of government has been satisfactory, Role of judiciary is satisfactory and it explains 7.969% of variance and has Eigen value of 1.998.

F₄ - Pollution is major environmental hazard: This factor on which 3 variables have loaded explains 7.172% of the variance with the Eigen value of 1.796. It deals with the industrial pollution is major environmental hazard and motor vehicles are main contributors to air pollution.

F₅– Factors affecting by pollution: This is the fifth important factor having Eigen value of 1.509 and explains 6.996% of variance. It shows media is playing a desired role to spread environmental awareness amongst the masses and chipko movement has spread environmental awareness.

F₆ – Protecting ecological imbalances: one variable is loaded on this factor. It shows Non government organizations have a major role to play in protecting ecological imbalances. It explains 6.653% of variance and has Eigen value of 1.356.

F₇ - Up gradation is a farce: This factor has loaded 2 variables and it explains 6.633% of the variance with the Eigen value of 1.201. It shows that more and more nations are becoming

aware of the consequences of ecological degradation and most of the work regarding eco-up gradation is a farce.

F₈– Work regarding protection of ecological environment: This is the other important factor having Eigen value of 1.181 and explains 6.514% of variance. 2 variables have loaded onto this factor and highest loading is for the variable pollution taxes can prove to be an effective tool to control the level of pollution in a country (.811) followed by international community is doing enough to protect ecological environment over the globe (.589).

F₉– Present Eco-Laws: Two variables are loaded on this factor i.e. the decline in water table of the earth is of deep concern and India's present eco laws are sufficient to deal with ecological degradation and it explains 6.375% of variance and has Eigen value of 1.013.

Conclusion

It has been found that despite the enforcement of Forest Conservation Act, 1980 substantial portion of the forest area had been diverted for non-forest use. It has been found that a large percentage of the Indian masses are unaware about the advantages of forests and the related demerits of deforestation activity. Ban on the use of plastic bags and other non-biodegradable products must be strictly implemented. Every possible step should be taken to create awareness about eco-degradation and its adverse effect. Before the initialization of any project, its Environmental Impact Assessment should be made a mandatory policy. Nobel Prize should be awarded to environmentalists as it was awarded to Wangari Maathai, a Kenyan environmentalist in the year 2004 for her Green Belt Movement for 40 million tree plantings to show across Africa. Most of the work to save the ecological environment remains on paper only. In spite of numerous regulations passed in various world level conferences, summits and meets, hardly any implementation takes place.

Limitations of the Study

Any study based on consumer survey through a pre-designed questionnaire suffers from the limitation, no matter how carefully the questionnaire has been designed and field of investigation conducted. The limitations have been listed below:-

- ▶ The study is confined to the city of Amritsar only. The findings of the study may not be applicable to the other parts of the country, because of social and cultural differences.
- ▶ Lack of time and financial resources prevented an in depth study of the problem.
- ▶ The study may suffer because of the biases of the respondents of questionnaire and there is no way of checking back on respondent's responses.
- ▶ The sampling technique may not be fully representative because the sampling technique used was convenience sampling.

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