

Environmental Pollution: Problems, Concerns and Initiatives in the Context of Global Scenario with Special Reference to India

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ABSTRACT

Pollution affects not only the human health but also affects on environment. National development is also disrupted by the effect of environmental pollution. About one million people die each year because of water pollution and this is still largely because of traditional form of pollution which results from human dirt. It is estimated that at least 1 lakh people die each year from urban air pollution. Thus, at least one million or more will continue to die from pollution each year in India. This figure will rise to probably 2-3 million in a year with increasing the number of population. India takes some valuable steps to control the pollution. Some NGOs are playing very crucial role in order to reduce the environmental pollution. Along with these, few Educational institutions also have taken an important place through ensuring various programmes in the field of reducing environmental pollution. The present paper attempts to address the problems which originated due to the environmental pollution and also tries to focus on the role of educational institutions, NGOs and government in order to control this problem.

Keywords: Environment, environmental pollution, national development, role of educational institutions, NGOs and government

Now-a-days most of the countries give importance in healthy living. Because of recently our human life has become full of stress, anxiety and depression. Industrial activities, rapid growth of urbanization and modernization affect the human life very badly. Due to this fact, human life faces various incurable diseases. If we analyze main basis of this problem sincerely we can find that ecosystem of the environment has greatly damaged due to the pollution. In single words many harmful or poisonous substance change the natural environment or polluted the environment. Environmental pollution is one of the biggest problems of the world facing today. It is an issue that troubles us economically, physically and our everyday lives. Air and water pollution can cause death of many organisms in given ecosystem, including human being.

Many developed countries have introduced certain

laws to not only regulate various types of pollution but also the laws to mitigate the adverse effects of pollution. To keep the environment safe and healthy we should have to control the pollution levels every time. Without proper pollution control mechanism, environment will become very unhealthy for us as well as every living being in near future. Preventing the emergence of pollutants into some environment is the best way to protect environment from pollution.

Objectives of the Study

- (i) To identify the bad effects of environmental pollution on human health and environment.
- (ii) To find out the role of NGOs to control the environmental pollution.
- (iii) To identify the year wise establishment of NGOs in India and West Bengal.

- (iv) To highlight the different government plans and policies to control the environmental pollution in India.
- (v) To find out exchequer of country on public fund to reduce the bad effect of environmental pollution.
- (vi) To identify the role of educational institution for the improvement of healthy environment.
- (vii) To list out the existing programmes for checking the environmental pollution in India.

Ecosystem

An ecosystem is a community of living organisms in conjunction with the nonliving components of their environment (things like air, water and mineral soil), interacting as a system. These biotic and abiotic components are regarded as linked together through nutrient cycles and energy flows.

Environment

The sum total of all surroundings or conditions of a living organism like a person, animal or plant lives or operates that is called environment.

Pollution

The presence in or introduction into the environment of a substance which has harmful or poisonous effects is called pollution. In another word *Pollution is the introduction of contaminants into the natural environment that cause adverse change (*Merriam-Webster Online Dictionary, 2010*).

The word "Pollution" in dictionaries define as contamination; desecration; dirtying, soiling; spoiling, destruction. Contamination material can be explained as a component located where is naturally it should not been there or its concentration is higher than normal concentrations. Moreover, it would have adverse and harmful effects on living organisms (*Erfanmanesh, 2000*).

Environmental Pollution

The European Commission has defined pollution as- *"The discharge by man of substance or energy into the environment, the results which are such as to cause hazards to human health, harm to living resources and to ecosystems, damage to amenities or interference with other legitimate uses of natural resources"* (*Harrison, 1990*).

The most appropriate definition of environment pollution would be the introduction of different harmful pollutants into certain environment that make this environment unhealthy, uneasy, unpleasant place to live in. The common pollutants are usually chemicals, garbage, toxic and hazardous waste disposal, bad odour, haze, sewage, waste water etc. Actually, it is because of the natural environment durability in the ecosystems are being disturbed.

List of few Polluted Countries in the World

Environmental pollution is happening in many parts of the world, especially in form of air, sound and water pollution. The best example for air pollution is some of China’s cities, including capital Beijing, and the best example for water pollution is India with its Ganges river pollution problem. Germany is the best example for sound pollution with its aircraft and traffic.

Table 1: Shows the name of some countries which are the best example of different type of pollutions (air, water, sound, soil, etc.)

Name of the Country	Type of Pollution
China	Air
India	Water
Germany	Sound
China	Soil
United State	Thermal
Los Angeles	Smog

Source: <https://en.wikipedia.org/wiki/smog> and <https://en.m.wikipedia.org/wiki/Thermal...>

Table 2: Shows the 10 Most Polluted Cities in the World

Sl. No.	Name of the Cities
1	Ahvaz Iran
2	Ulan Bator, Mongalia
3	Sanandaj, Iran
4	Ludhiana, India; Quetta, Pakistan
5	Kermanshah, Iran
6	Peshawar, Pakistan
7	Gaborone, Botswana
8	Yasuj, Iran
9	Kanpur, India
10	Lahore, Pakistan

Source: www.wonderslists.com>10 –most-polluted

Globally speaking problem of environmental pollution is much bigger than we think it is, even in many our cities these are problems with dirty air, or sound pollution from traffic and different other disturbing noises. The most severe environmental pollution is happening in developing countries of the third world because not only to they lack any form of sustainable management but also lack even the basic sanitation so you can imagine how bad is the environmental condition in these countries.

Pollution Effect on Eco-system

Pollution of the environment is causing great damage to ecosystem that depends upon the health of this environment. Air and water pollution can cause death of many organisms in given ecosystem, including humans. Water pollution according to some estimates cause 14000 deaths each day in the world, most of them in India. This is really no surprise when you look at the data that says that 700 million Indians do not even have access to a proper toilet, whether alone clean water.

Background and Perspective of Environmental Pollution

Pollution has always accompanied civilizations. Pollutions take a place in environment in prehistoric times when man created the first fires. According to a 1983 article in the journal *Science*, "stoop" found on ceiling of prehistoric caves which provide a spacious evidence of the high levels of pollution that was associated with inadequate ventilation of open fires. In the prehistoric time the pollution was comparatively small and could be handled by nature (Spengler and Sexton, 1983).

Forms of Environmental Pollution

Environmental pollution refers to the introduction of harmful pollutants into the environment. The major types of environmental pollution are air pollution, water pollution, noise pollution, thermal pollution, soil pollution and light pollution (On February 5, 2014 By Ankita Mitra Category : Blog, Environment).

Table 3: Shows the Major Forms of Pollution are listed below along with the Particular Contaminant Relevant to Each of Them

Forms of Pollution	Contaminants
Air	Carbon monoxide, sulphur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxides.

Light	Light trespass, over-illumination, astronomical interference
Noise	Roadway noise, aircraft noise, industrial noise, high-intensity sonar
Soil	Hydrocarbons, heavy metal, MTBE, herbicides, pesticides and chlorinated hydrocarbons
Radioactive	Nuclear power generation and nuclear weapons research, manufacture and deployment
Thermal	Use of water as coolant in a power plant
Visual	Overhead power lines, motorway billboards, scarred landforms (as from strip mining), open storage of trash, municipal solid waste or space debris
Water	Wastewater from commercial, industrial waste into surface waters, discharges of untreated domestic sewage, chemical fertilizers, pesticides, waste disposal, leaching into groundwater, eutrophication, littering
Plastic	Accumulation of plastic products

Source: en.m.wikipedia.org/wiki/pollution

How Environmental Pollution Effects on Human Health & Environment

A. Effects on Human Health

I. Effects of Air Pollution in Human Health

- (i) Reduced lung functioning
- (ii) Irritation of eyes, nose, mouth and throat
- (iii) Asthma attacks, chest pain
- (iv) Respiratory symptoms such as coughing, and wheezing
- (v) Increased respiratory disease such as bronchitis
- (vi) Reduced energy levels
- (vii) Headaches and dizziness
- (viii) Disruption of endocrine, reproductive and immune systems
- (ix) Neurobehavioral disorders
- (x) Cardiovascular problems
- (xi) Premature death

II. Effects of Water Pollution in Human Health

- (i) Typhoid, Amoebiasis, Giardiasis, Ascariasis, Hookworm, Rashes, Earache, Pinkeye

- (ii) Respiratory infections
- (iii) Hepatitis, encephalitis, gastroenteritis, diarrhoea, vomiting, and stomach aches.
- (iv) Cancer, incl. prostate cancer, and non-Hodgkin's lymphoma.
- (v) Hormonal problems that can disrupt reproductive and developmental processes
- (vi) Damage to the nervous system
- (vii) Liver and kidney damage
- (viii) Damage to the DNA

III. Effects of Soil Pollution in Human Health

- (i) Causes cancers including leukaemia
- (ii) Hazardous for young children causing developmental damage to the brain
- (iii) Mercury can increase the risk of kidney damage; cyclodienes can lead to liver toxicity.
- (iv) Causes neuromuscular blockage as well as depression of the central nervous system
- (v) Also causes headaches, nausea, fatigue, eye irritation and skin rashes.

IV. Effects of Noise Pollution in Human Health

- (i) Induces hearing loss
- (ii) High blood pressure
- (iii) Stress
- (iv) Sleep disturbance

Lead and other heavy metals have been shown to cause neurological problems. Chemical and radioactive substances can cause cancer and as well as birth defects.

B. Effects on Environment

- ◆ Excessive ultraviolet radiation cause skin cancer in wildlife.
- ◆ Ozone in the lower atmosphere damage lung tissues of animals, prevent plant respiration by blocking stomata.
- ◆ Acid rain destroys fish life in lakes and streams, kills trees, and destroys the leaves of plants.
- ◆ Persistent organic pollutants (POPs) cause declines, deformities and death of fish life.
- ◆ Too much sodium chloride in water may kill animals, plants.

- ◆ Ozone can also decay plant cells directly by entering stomata.
- ◆ Water pollution disrupt photosynthesis in aquatic plants and thus affecting ecosystems.
- ◆ Plant kills by herbicides in water.
- ◆ Carbon dioxide emissions cause ocean acidification, the ongoing decrease in the pH of the Earth's oceans as CO₂ becomes dissolved.
- ◆ The emission of greenhouse gases leads to global warming which affects ecosystems in many ways.
- ◆ Nitrogen oxides are removed from the air by rain and fertilise land which can change the species composition of ecosystems.
- ◆ Smog and haze can reduce the amount of sunlight received by plants to carry out photosynthesis and leads to the production of tropospheric ozone which damages plants.
- ◆ Soil can become infertile and unsuitable for plants. This will affect other organism in the food web.
- ◆ Sulfur dioxide and nitrogen oxides can cause acid rain which lowers the pH value of soil.

Expenditure on controlling the Damage Caused by Environmental Pollution

Economic Cost

1. A World Bank study shows that welfare costs and lost labour income due to air pollution amounted to 8.5% of India's GDP in 2013, it further aggravate poverty.
2. Total welfare losses between 1990 and 2013 because of premature deaths from air pollution increased by 94%. We are second in world after China it cost 7.69% of its gross domestic product (GDP), in 2013.
3. The productive part of the population that gets impacted from air pollution in cities, hence loss in working hours.
4. Burden on our health sector which is already in dire need to fund as presently India is spending to 1.16% of GDP on health.
5. Big loss to company if any person with high post died because of air pollution.

6. Reduction in crop yields as a result of dirty air hence affecting our yield, problem of land degradation.
7. Indirect cost they have to put on air purifier even at home to monuments like Taj Mahal etc.

According to a World Bank report the annual cost of environmental degradation in India is about Rs. 3.75 trillion, or 5.7% of India's 2009 Gross Domestic Product (GDP). This report also said the impact of outdoor air pollution on GDP is the highest and accounts for 1.7% of the GDP loss. Indoor air pollution is the second-biggest offender and costs India 1.3% of GDP.

Different Plans and Policies taken by Govt. of India to Control the Environmental Pollution

- ♦ Environment Protection Act, 1986
- ♦ National Conservation Strategy and Policy Statement on Environment and Development, 1992
- ♦ Policy Statement for the Abatement of Pollution, 1992
- ♦ National Environment Policy, 2006
- ♦ Vision statement on Environment and Health
- ♦ Air (Prevention and Control of Pollution) Act, 1981
- ♦ Biological Diversity Act, 2002
- ♦ Environment (Protection) Act, 1986
- ♦ Forest Conservation Act, 1980
- ♦ Hazardous Waste Handling and Management Act, 1989
- ♦ Indian Forest Act, 1927
- ♦ National Green Tribunal Act, 2010
- ♦ Noise Pollution rule
- ♦ Protection of Plant Varieties and Farmers' Rights Act of 2001
- ♦ Public Liability Insurance Act, 1991
- ♦ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
- ♦ Water (Prevention and Control of Pollution), 1974

- ♦ Wild Life (Protection) Amendment Act, 2002
- ♦ Wildlife Protection Act of 1972

Source: (https://en.m.wikipedia.org/wiki/List_of_environmental_law_by_country)

An independent Department of Environment was established by the Government of India in 1980 to impart environmental awareness by encouraging research on environmental problems. Besides this, the parliament of India has passed a number of laws to control pollution and to protect the environment for instance.

1. The Water (Prevention and Control of Pollution) Act, 1974.
2. The Air (Prevention and Control of Pollution) Act, 1981.
3. Wildlife Protection Act, 1972.
4. The Forest (Conservation) Act, 1980.
5. The Environment (Protection) Act, 1986
6. The Motor Vehicles Act, 1988

Source: www.yourarticlelibrary.com/law/environment-protection-law-in-india-explained-with-diagram/29342/.

Role of Educational Institutions and NGO's in controlling Environment Pollution

1. Role of Educational Institutions in controlling Environment Pollution: The ever increasing population and changing lifestyles are making the environmental problems more troublesome. Higher educational institutions can play a crucial role to solve this situation. Universities are the apex bodies in higher education system and can provide environmental education through its curricular design, research and other educational activities. Many Universities can play a significant role in environmental sustainability through various activities.

Universities can help to establish the sustainable development through following aspects:

- ♦ Teaching programmes.
- ♦ Research.
- ♦ Outreach

(a) Teaching Programmes

To give necessary information about environment issues framework of the curricula played a vital role in teaching programmes. Through this the

pupils should get acquainted with all the skills and information related to environment. The curriculum should motivate the pupils to participate and solve the environmental problems.

In teaching programmes formal and non formal both education are one of the important part of environmental education. According to the research report in the field of Environmental Education have shown that teaching and learning outside the classroom as a part of extracurricular activities or of non-formal educational activities provides opportunities to develop environmental awareness environmental consciousness and environmental responsibility which all in turn increase in environmental attitudes and motivation to take responsible environmental behaviours. In teaching programme young students have take too much responsibilities to aware the people about the present status /condition through street plays, rallies, exhibitions etc.

According to Hon'ble Supreme court directives in 1991, Environmental Studies has become compulsory for all faculties at undergraduate degree level in India. Those students who cannot attend the classroom studies, distance learning is a good option for them. Distance Learning programmes can also play a crucial role in spreading the message of environment. There are various programmes includes for environmental awareness that are applied research projects, lecture series; documentary shows celebration of environmental days, competitions, exhibitions, nature visits, nature clubs, seminars and conferences etc.

(b) Research

Research is one of the integral parts of higher education. It is based upon observable experience or empirical evidence. Through research we are getting new and valid information or looking for new and innovative ideas for the development of man and the society. Higher education research is seen all over the world as one of the most powerful instruments known for environmental development, especially, in the propagation of a healthy environment, sustainability of renewable resources and conservation of non-renewable resources for the benefit of the society and mankind. Higher education research has the potential to influence governmental development that would

prepare man for a sustainable life. There are different National level Research Institutes in India like UGC, NEERI, NCL, NIO, IIT, DST, MoEF, DBT, DRDO, etc. are working to solve many environmental problems as well as some of them work as funding agencies to give funds for environmental projects.

(c) Outreach

The purpose of outreach program is to create enduring partnerships between academic institutions and communities in order to build capacity to solve a suitable solution of the problem in society and to enhance the research and teaching capacity of participating colleges and universities. Such activities by higher education institutions play an important role in shaping communities' development. It is necessary for higher education institutions to involve themselves in community outreach-based research to contribute to a strong knowledge-based economy in their country. These activities can lead to raise wages and productivity, allowing countries to make impressive step in enhancing social, economic, scientific, technological and political advancements. Such institutions can increase students' competence and familiarize them with their societies' needs favourable for sustainable development.

2. Role of NGO's in Protecting the Environmental Pollution: ENGO's are non-governmental organisations working in the field of environment. They can also act as a good networking system and data collector. They can provide trained manpower and knowledgeable expertise to solve critical environmental problems. Higher educational institutes as well as NGO's can jointly work together in environmental protection and awareness. The educational institutions can share their knowledge to solve the environmental problem. At the same time the ENGO's can spread the information about the solution to the needed society. Both of them are integral part of developmental process and can act as buffer between local people and governing body. University has organised many workshops and national International Conferences related to environmental issues and works in collaboration with environmental NGO's like Nisargmitra, etc. to solve different environmental issues like biodiversity conservation, Ganga River Pollution, Plastic Pollution, Plantation Programme, etc.

The students have participated in the anti-Dolby movement, plastic ban, Ganga river pollution rally, anti idol immersion, etc. through different street plays with ENGO's. Different rallies, workshops, cleanliness drives, bird watching camps are organized in nearby areas.

Ramkrishna Mission Lokashiksha Parishad Belur Math Belur West Bengal: Its mission is to uplift the rural people with a view to making them self-reliant. It works in 11 districts covering about 4000 villages. It has been carrying out programmes for the development of the wasteland areas restoration of bundhs in the Sundarbans riverine areas to protect the land from saline water. It has been promoting the use of smokeless chulhas, sanitary toilet linked biogas plants, solar energy; extensive tree plantation; preservation of the Sundarban biosphere; promoting eco-friendly farming. It is also working in the area of environmental education.

There are some NGO's which help in the improving awareness and consciousness in field of environmental issues:

Table 4: Shows the different NGOs and their Place & Year of Establishment in the improving Awareness and Consciousness in Field of Environmental Issues

Name of NGO's	Place	Year of Establishment
Kerala Sastra Sahitiya Parisad	Kerala	1962
Indian Association for Environmental Management (IAEM)	Maharashtra	1963
Uttarkhand Seva Nidhi	Uttar Pradesh	1967
World Wide Fund for Nature (WWE)	New Delhi	1969
The Energy and Resources Institute (TERI)	New Delhi	1974
Gandhi Peace Foundation- Environment Cell	New Delhi	1979
Orissa Environmental Society (OES)	Bhubaneswar	1982
Ladakh Ecology Development Group (LEDG)	Jammu and Kashmir	1983
Indian National Trust for Art and Cultural Heritage	New Delhi	1984
Rajasthan Environment Preservation Society	Jaipur	1985

Narmada Bachao Andalon	Maharashtra	1986
Green Future Foundation	Maharashtra	1987

Source: edugreen.teri.res.in/explore/ngos.htm

Existing Programmes for Removing Environmental Pollution

Various Schemes and Programmes prevailing in India at Present:

- ◆ National River Conservation Plan
- ◆ Ecomark Scheme of India (ECOMARK) - Ecomark Labelling
- ◆ National Afforestation Programme: A Participatory Approach to Sustainable Development of Forests
- ◆ National Action Programme to Combat Desertification
- ◆ Grants-in-aid Scheme for Voluntary Agencies

Suggested Ideal Programmes for controlling the Environmental Pollution:

- ◆ The government can at least see that future factories are set up at a distant place, an industrial complex far away from the township.
- ◆ Researcher may find out how to avoid harmful smoke from running vehicles.
- ◆ Deforestation should be stopped.
- ◆ Discharge of factory wastes in rivers should be the river water free from pollution.
- ◆ The World Health Organization also set up an international network for the monitoring and study of air pollution on a global scale and for deriving possible remedies.

CONCLUSION

Today environmental pollution issues are getting more attention in India. After above discussion it can be concluded that environmental pollution affects human life, human health, and environment very badly. ENGO's plays crucial role to spread the environmental awareness. Most of the ENGO's established in New Delhi. After independence various plans, laws and policies are made by Indian legislatures and government for control the environmental pollution. 7.69% GDP spend to fulfil the damages caused by environmental pollution.

Educational Institutions are also playing a vital role to create a healthy environment through various teaching and outreach programmes and research activities. There are some programmes taken by Indian Govt. for controlling the various harmful effects of the environmental pollution.

Although govt of India has taken different laws regarding to control the environmental pollution but it is not well maintained at all. That's why the problem of environmental pollution is not totally removed. So we are all have to generate adequate level of consciousness within us about our environment, otherwise we may have to face very dangerous and unavoidable situation in near future inspite of taking so many initiatives by the government.

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