



Environmental Issues in Punjab

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ABSTRACT

The word ‘Environment’ is most commonly used to describe ‘natural’ environment and means the sum of all living and non-living things that surround an organism, or group of organisms. The environment issues in Punjab become more serious every day. Four environmental dimensions of energy security—climate change, air pollution, water availability and quality, and land-use change—and the environmental impact of various energy systems on Punjab are discussed in this paper. Climate change threatens more land, people, and economies in Punjab. Air pollution takes a substantial toll on national health-care expenditures and economies in general. Regarding water availability and quality, hydropower, nuclear power, and thermal power account for 10% to 15% of global water consumption, and the volume of water evaporated from reservoirs exceeds the combined freshwater needs of industry and domestic consumption. In the domain of climate change, rising sea levels could contaminate freshwater aquifers possibly reducing potable water supplies. Changes in land use for fuel wood collection and biofuel production have resulted in deforestation. There is no shortage of government legislation protecting the environment but unfortunately it is never enforced due to flagrant abuse of power, corruption and lack of resources.

Keywords: Environment, issues, Pollution, impact of pollution, government legislation.

Introduction of Environment

Nowadays the word environment is often used by almost all people around us, on television and in newspapers. Everyone is speaking about the protection and preservation of environment. Global summits are being held regularly to discuss environmental issues. During the last hundred years, the mutual relationship among environment, social

organization and culture has been discussed in sociology anthropology and geography. All this shows the importance of environment. Besides, it is a fact that life is tied with the environment.

This study explores the intersection of environmental constraints, dimensions in Punjab. The following table shows the issues in Punjab.

Air	<ul style="list-style-type: none"> ▪ Factors affecting air quality in Punjab <ul style="list-style-type: none"> ○ Industrial pollution ○ Vehicular pollution ○ Agricultural pollution ○ Domestic processes ▪ 13070 red category industries(highly polluted) using coal or rice husk as fuel and contributing high levels of suspended particulate, oxide nitrogen and sulphur and other pollutant in the air. ▪ Massive growth of vehicles contributing to carbon monoxide , nitrogen oxide etc.
Water	<ul style="list-style-type: none"> ▪ Annual ground water deficit of 14.31bcm with ground water development of 170%. ▪ The number of tubewells in the state increased from 3 lacs in 1975 to 13.8 lacs in 2011 ▪ 11256 red category industries contributing as point source of pollution ▪ Heavy metals recorded from Sutlej, ghagger ▪ Other challenges of water sector include ever increasing demand, canal efficiency below their designated capacity.
Climate change	<ul style="list-style-type: none"> ▪ Annual mean maximum temperature is projected to increase with respect to the base line in all parts of punjab by 2021-2050. <ul style="list-style-type: none"> ▪ Spatial variations in precipitation across the years have been recorded with some years experiencing more than normal

	<p>rain fall and some years experiencing deficit rainfall.</p> <ul style="list-style-type: none"> ▪ Productivity of wheat the prime crop in Punjab likely to go down by over 8% by 2035 due to rising temperature ▪ Forest plantation of over 16000 km of area six districts in the kandibelt(lower shivaliks) of the state is expected to be grossly impacted by rising tempratures. ▪ Wet and dry spells to causes significant impact on standing crops psychologically insects /pest infestation and water availability ▪ Extreme events (example high rainfall/flood/heat wave/cold wave) to causes enormous losses of standing crops and live stock.
Land usage change	One factor that make Punjab a productive agricultural area is its fertile soil. The present forests in Punjab are 300 with 9 wasteculturable and has total cropped area 7932.

Air Pollution: Air pollution is contamination of the air by the discharge of harmful substances. Air pollution may be described as contamination of the atmosphere by gaseous, liquid or solid waste or by products that can endanger human health and welfare of plant and animals, attack materials reduce visibility. As some pollutants are released by natural sources like volcanoes, coniferous forests, hot springs, power and heat generation, waste disposal and the operation of internal combustion engines. The air pollution problem is both outdoors and indoors. The major pollutants which contribute to the indoor air pollution include radon, volatile organic compound, biological contaminant, nitrogen dioxide etc. The major pollutants which contribute to outdoor air pollution are sulphurdioxide, ozone etc.

Causes: The following are the main causes of air pollution

1. Emissions from industries and manufacturing activities
2. Burning fossil fuels.
3. Household and farming chemicals.
4. Other pollutants: Nitrogen Dioxide, Ozone, Volatile organic compounds, Ammonia, Sulphur Dioxide.

Impacts of air pollution: A variety of air pollutants have known or suspected harmful effect on human health and the environment. Pollutants may not only prove a problem in the immediate vicinity of these sources but can travel long distances. The main impacts are:

Health & Environmental Effects of Air Pollution

Health Effects

Air pollution can harm us when it accumulates in the air in high enough concentrations. Millions of Americans live in areas where urban smog, particle pollution, and toxic pollutants pose serious health concerns. People exposed to high enough levels of certain air pollutants may experience:

- Irritation of the eyes, nose, and throat □ Wheezing, coughing, chest tightness, and breathing difficulties.
- Worsening of existing lung and heart problems, such as asthma.
- Increased risk of heart attack .

In addition, long-term exposure to air pollution can cause cancer and damage to the immune, neurological, reproductive, and respiratory systems. In extreme cases, it can even cause death.

Environmental Effects: Along with harming human health, air pollution can cause a variety of environmental effects:-

Acid rain is precipitation containing harmful amounts of nitric and sulphuric acids. These acids are formed primarily by nitrogen oxides and sulphur oxides released into the atmosphere when fossil fuels are burned. These acids fall to the Earth either as wet precipitation (rain, snow, or fog) or dry precipitation (gas and particulates). Some are carried by the wind, sometimes hundreds of miles. In the environment, acid rain damages trees and

causes soils and water bodies to acidify, making the water unsuitable for some fish and other wildlife. It also speeds the decay of buildings, statues, and sculptures that are part of our national heritage. Acid rain has damaged Massachusetts lakes, ponds, rivers, and soils, leading to damaged wildlife and forests.

Eutrophication is a condition in a water body where high concentrations of nutrients (such as nitrogen) stimulate blooms of algae, which in turn can cause fish kills and loss of plant and animal diversity. Although eutrophication is a natural process in the aging of lakes and some estuaries, human activities can greatly accelerate eutrophication by increasing the rate at which nutrients enter aquatic ecosystems. Air emissions of nitrogen oxides from power plants, cars, trucks, and other sources contribute to the amount of nitrogen entering aquatic ecosystems.

Effects on wildlife. Toxic pollutants in the air, or deposited on soils or surface waters, can impact wildlife in a number of ways. Like humans, animals can experience health problems if they are exposed to sufficient concentrations of air toxics over time. Studies show that air toxics are contributing to birth defects, reproductive failure, and disease in animals. Persistent toxic air pollutants (those that break down slowly in the environment) are of particular concern in aquatic ecosystems. These pollutants accumulate in sediments and may bio magnify in tissues of animals at the top of the food chain to concentrations many times higher than in the water or air.

Ozone depletion. Ozone is a gas that occurs both at ground-level and in the Earth's upper atmosphere, known as the stratosphere. At ground level, ozone is a pollutant that can harm human health. In the stratosphere, however, ozone forms a layer that protects life on earth from the sun's harmful ultraviolet (UV) rays. But this "good" ozone is gradually being destroyed by man-made chemicals referred to as ozone-depleting substances, including chlorofluorocarbons, hydrochlorofluorocarbons, and halons. These substances were formerly used and sometimes still are used in coolants, foaming agents, fire extinguishers, solvents, pesticides, and aerosol propellants. Thinning of the protective ozone layer can cause increased amounts of UV radiation to reach the Earth, which can lead to more cases of skin cancer, cataracts, and impaired immune systems. UV can also damage sensitive crops, such as soybeans, and reduce crop yields.

Crop and forest damage. Air pollution can damage crops and trees in a variety of ways. Ground-level ozone can lead to reductions in agricultural crop and commercial forest yields, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests and other environmental stresses (such as harsh weather). As described above, crop and forest damage can also result from acid rain and from increased UV radiation caused by ozone depletion.

Global climate change. The Earth's atmosphere contains a delicate balance of naturally occurring gases that trap some of the sun's heat near the Earth's surface. This "greenhouse effect" keeps the Earth's temperature stable. Unfortunately, evidence is mounting that humans have disturbed this natural balance by producing large amounts of some of these greenhouse gases, including carbon dioxide and methane. As a result, the Earth's atmosphere appears to be trapping more of the sun's heat, causing the Earth's average temperature to rise - a phenomenon known as global warming. Many scientists believe that global warming could have significant impacts on human health, agriculture, water resources, forests, wildlife, and coastal areas.

Water pollution: water pollution in simple terms can be defined as contamination of the water bodies when pollutants are released into the water without thorough treatment and removal of harmful components. It not only affects the environments and human well being but also disturbs the balance of eco system. Punjab ranks highest in the country, in level of water pollution caused by industries. Punjab is among the worst performing ranking states in the country when it comes to check water pollution. The state is among worst defaulters in the country with at least seven grossly polluting industrial units dumping their toxic waste directly into rivers and lakes.

Causes of water pollution:

- Agricultural run off
- Storm water run off
- Leaking sewer lines
- Mining activities
- Industrial discharges
- Construction activities
- Illegal discharges of waste
- Plastic material / waste in contact with water.



Impact of water Pollution: It can be divided into three categories;

1. Effects on Ecosystem

- Addition of oxygen not sufficient to support life.
- Addition of non-degradable broad spectrum pesticides, which cause mass destruction of aquatic life.
- Addition of oil destroys life by reducing oxygen and catching fine, destroying ecosystem.

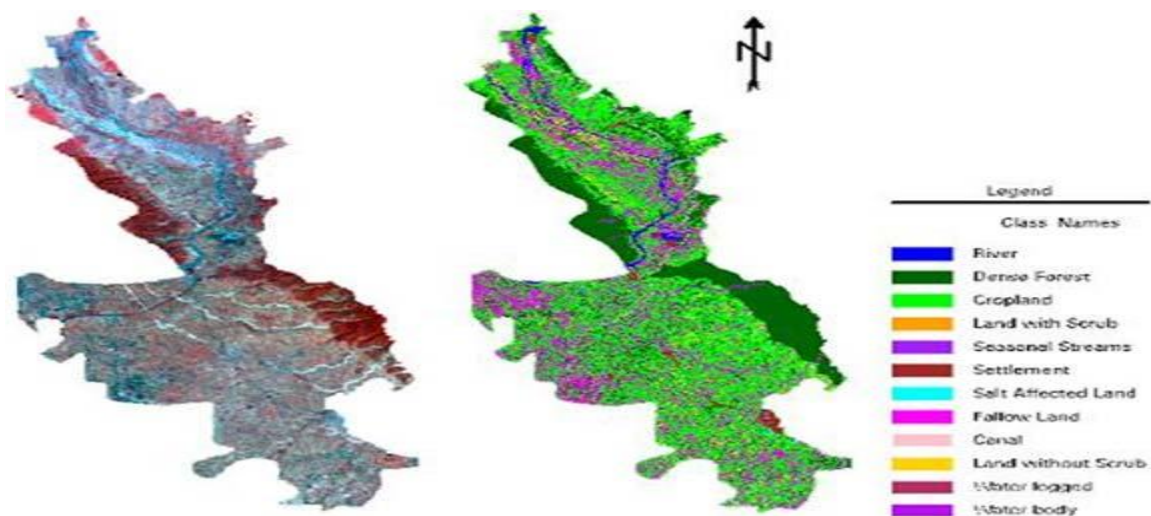
2. Effects on Animal Health

- Large scale death of aquatic and terrestrial animals.
- Reduced reproduction rate.
- Increased incidence of diseases.
- Imbalances created in secondary food chains.
- Accumulation of bio-accumulative and biodegradable pollutants in animal bodies.

3. Effects on human health

- Increased incidence of tumours, ulcers due to nitrate pollution.
- Increased incidence of skin disorders due to contact with pollutants.
- Increased incidence of constipation, Diarrhoea and infections to intestine.
- Dangerous effects on growing foetus in pregnant women.
- Reduced activity of immune system.
- Loss of memory power and reduced mental sharpness.
- Water borne diseases like jaundice, hepatitis will be more prevalent due to water pollution.
- Reduced bone development and muscular development.
- Reduced male fertility.
- Shifts in physiological cycles of human body.

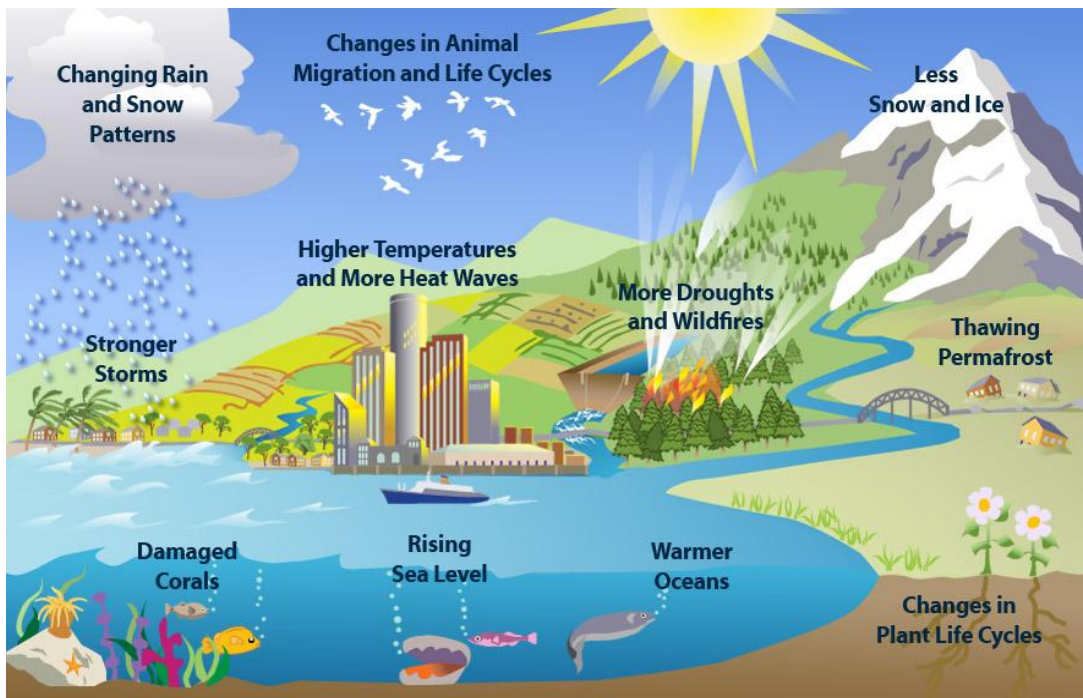
Land usage change: Land forms such as hills, valleys, plains, river basins and wetlands include different resource generating areas that the people living in them depend on. Many traditional farming societies had ways of preserving areas from which they used resources. The roots of trees and grasses bind the soil. If forests are depleted or grasslands overgrazed, the land becomes unproductive and wasteland is formed.



CAUSES OF LAND USE CHANGE:

- Proximate cause and underline cause
- Climatic variations
- Natural variability
- Forest conversion to crop land

CLIMATE CHANGE: It is a change in the statistical distribution of weather patterns when that change lasts for an extended period of time. Climate change may refer to a change in average weather conditions, or in the time variation of weather around longer term average conditions.



Causes of climate change:

- Biotic processes.
- Variations in solar radiations received by earth.
- Volcanic eruptions.
- Greenhouse gases.
- Aerosols.

Impacts of climate change:

- High temperature.
- Earth's water system thrown off balance.
- Threat to agriculture.
- Polluted air affects our health.
- Infrastructure and transportation are at risk to

Government Legislation for environmental issues

The division of environment assists the state department of environment, Govt. of Punjab in technical matters pertaining to environment, identification of major areas of ecological concerns, creating awareness and promoting environment education, training & research. It is also implementing projects and programmes related to environment for the international bodies like, UNESCO, UNDP, UNIDO, UNU-IAS, etc. as well as, programmes of the ministry of environment & forest at the national level. Following are the various current projects:

1. **National Green Crops Programme:** Ministry of environment & forests, Govt. of India has initiated National green crops programme for implementing through the mechanism of eco-club set up in schools from class V-XII all over the country.

Objectives of the scheme are:

- To make children understand environment and environment problems.
 - To provide environment opportunities for school children.
 - To involve children in action based programme related to environment in their surroundings.
 - To bring children into direct contact with the environmental problems facing the society they live in and make them think of solutions.
2. **Conservation & management of wetlands:** The wetland is facing problem of siltation as vast areas along the right side of the river Beas falling under villages Chambakalan, kamboh Dhaiwala, Kirrian are degraded with deep cuts due to formation of ravines over the years. Various conservation measures were initiated. It includes:
 - Survey and mapping.
 - Plantation.

- Fencing.
 - Construction of mounds.
 - Shallow water ponds.
 - Demarcation and watch towers.
3. **National Environment Awareness Campaign:** The objective of the scheme is to create mass awareness among general public, students and other target groups about environmental problems and to take measures for environment protection. The scheme was initiated by Ministry of environment & forests, Govt. of India in 1986. PSCST is acting as Regional agency for Punjab, Chandigarh & Uttarakhand.
4. **Punjab ENVIS centre:** Punjab ENVIS centre in PSCST is a working on status of environment & related issues.

Objective of the scheme are:

- To identify and highlight the state Environment issues.
- Creation of database covering all aspects of environmental issues of Punjab state.
- Publishing Newsletters, Books, etc. on state environment issues.
- Monthly compilation of environment related news items and events.
- Establishing linkages with information users and providers from among Govt., academia, general public, NGOs etc.

5. State level strategy and action plan on climate change: Punjab state council for science & Technology is coordinating the programme for preparation of state level strategy and action plan on climate change as per the framework of ministry of environment & forests, Govt. of India in line with National Action Plan on climate change.

6. OTHERS

- Regional centre for expertise Chandigarh on education for sustainable development.
- Status of environment reporting project for Punjab and Chandigarh
- UNIDO project on management of biomedical waste
- Project with UNESCO

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