
Health & Environment

Module 6 • i2P • Expedition India



Source: [Orval Rocheforth](#)

Take Home Points

- The environment we live in has a profound impact upon human health
- Environmental degradation driven by climate change, industrialization and overpopulation are impacting human health

“The earth, the air, the land and the water are not an inheritance from our fore fathers but on loan from our children. So we have to handover to them at least as it was handed over to us.”
- Mahatma Gandhi



TOPIC

There is a direct link between the environment we live in - both natural and man made - and human health

THE ENVIRONMENT

All human beings are dependent upon the natural world to sustain life. We breathe air and drink water, we feed on plants and animals. We build shelter and make clothing to keep us warm and safe.

The environment we live in can be divided into two categories; the natural environment and built, or man-made environment. If either of these environments are altered

contaminated or polluted this can have an adverse effect on human beings; factors from air quality to climate change can



Figure 1: Terraced rice fields in Yunnan Province, China. An excellent example of a built environment in a natural setting (source: [JialiangGao](#))

have a profound impact on human health.

ENVIRONMENTAL DEGRADATION

Human beings are dependent upon the natural environment for a steady supply of clean water, air and food. Yet human activity is compromising the very supply of these resources we need to remain healthy. There are many ways that the environment can be degraded or altered that adversely effects human health, including:

- Air pollution
- Water pollution
- Climate change
- Creation of toxic chemicals and radiation
- Habitat destruction
- Overpopulation and overcrowding
- Destruction of biodiversity
- Substandard housing



figure 2: Industrial air pollution (source: [wikimedia](#))

INDIA

India is one of the most populous and fastest developing countries in the world. All of this development has had a significant impact on the environment, making India an excellent place to investigate the effect of environmental change on human health. Rapid urbanization and industrialization; expansion and intensification of agriculture; the destruction of forests; and uncontrolled environmental pollution are among the most serious problems faced by the people in India. A recent study ranked India as seventh in a list of most environmentally hazardous countries in the world. The following statistics demonstrate the impact of the environment of the health of Indians:

Did You Know?

The population of India is:

1,210,193,422

Only China has more people

- According to the World Health Organization, 900,000 Indians die each year from drinking contaminated water and breathing in polluted air.
- 1,000 Indian children die of diarrhial sickness every day.
- The Ganges Hinduism's sacred river contains 60,000 faecal coliform bacteria per 100 millilitres, 120 times more than is

considered safe for bathing.

- In many cities, around 50% of children suffer from asthma, attributed to road dust and car emissions.
- One of the biggest causes of air pollution in India is from the transport system. Hundreds of millions of old diesel engines are continuously burning away diesel which has between 150 to 190 times the amount of sulphur that European diesel has.

School Exercise

For information on health and biodiversity see:

[health & Biodiversity](#)

CLIMATE CHANGE & BIODIVERSITY

Climate change and the loss of biodiversity are impacting human health both in India and around the world.

In India climate change is driving increased glacial melt, which may decrease fresh water resources. Increased temperatures are predicted that will change crop cycles and affect food production. Rising sea levels threaten coastal mangroves which will endanger fisheries. These among other climate related factors will have a direct impact on the health of the people of India.



Figure 3: The retreat of glaciers due to climate change, as seen in this series of photos from a glacier in the Swiss Alps (1979, 1990, 2002) is causing fresh water supplies to dry up. In this manner the population of some areas of India are threatened by the loss of water supply from the glaciers of the Himalayas (source: [zuecho](#))

When in India the i2P team will be visiting the Thar desert in Rajasthan. According to the World Wildlife Federation, the Thar is the world's most densely populated desert. The population has grown because of increased agricultural capacity as a consequence of the Indira Gandhi Canal - which delivers water for agriculture to one barren soil. This development is degrading the local biodiversity. The Thar Desert ecosystem is witnessing the replacement of many palatable perennial species with inedible annual species (Hawkins 1986), thus changing the vegetation composition and the ecosystem dynamics. Together with recent climatic changes, these pressures combine to degrade and destroy the fragile desert ecosystems.



Figure 4: Indira Gandhi Canal passing through the Thar Desert(source: [Shemaroo](#))

PESTICIDES

Currently, India is the largest producer of pesticides in Asia and ranks twelfth in terms of pesticide use. The majority of the population in India is engaged in agriculture and is therefore exposed to the pesticides used in agriculture. Although the Indian average consumption of pesticide is far lower than many other developed economies, the problem of pesticide residue is very high in India. Pesticide residue in several crops has also affected the export of agricultural commodities in the last few years.

Rajasthan has a very high widespread application of pesticides in agriculture, public health, industry, and in the home. This results in the accumulation of pesticides in the

environment. For example, a survey was conducted from 1993 to 1996 to investigate the magnitude of contamination of bovine milk with organo-chlorine pesticide (OCP) residues in Jaipur City, Rajasthan, India. Milk samples, from both dairy and buffalo milk, were collected seasonally, and pesticide residues were assessed. The results indicate that all the milk samples were contaminated with dichlorodiphenyltrichloroethane (DDT a synthetic pesticide that has been linked to cancer).

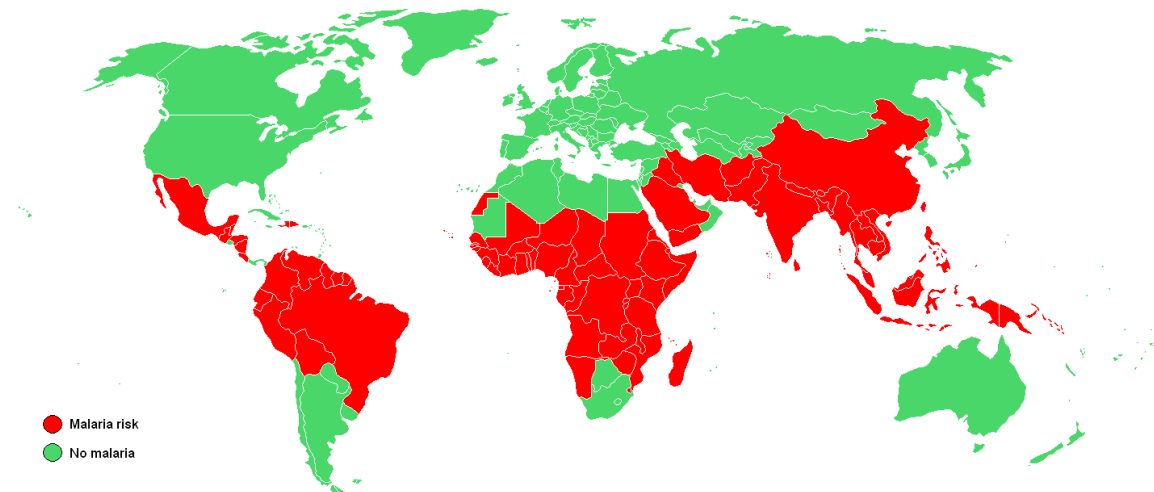


Figure 5: Countries where malaria is known to have occurred as of 2003. Malaria is usually restricted to tropical and subtropical areas and altitudes below 1,500 m (source: [petaholmes](#))

MALARIA

Since the 1960s malaria has increased in the State of Rajasthan becoming near epidemic in some regions, particularly the Thar. It has been suggested that the outbreak has been caused by the development of canal-based irrigation. Three major canal systems have been introduced into the desert regions of Rajasthan, the Gang canal, the Bhakra Sirhind feeder canal and the Indira Gandhi canal, running over 10,000 km in length. Consequently, the physiography of the land has changed a great deal in its soil composition, landscape, potential for water retention and climate. As a result, some areas, especially those in the vicinity of the canalized irrigation, have become perennial breeding sites for vectors and are regularly experiencing outbreaks of malaria. Periodic malaria epidemics between 1983 and 1994 claiming hundreds of lives are proof of the changing pattern of disease in the Thar Desert region. It is believed that poorly maintained canals provide perfect breeding ground for mosquitoes and that this has contributed to the spread of malaria.