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## From Editor's Desk

*Natural environment is a guarantee of flow of vital resources from nature to living beings as there is a close relationship between life and environment. Human mind, dominant of all, has to be duty bound to behave in the right earnest within an ethical framework. We need to plan and act with absolute, devotion, endurance and perseverance for environmental betterment. Our actions demand selfless service, that too, with a missionary zeal. For us, anything or any action reflecting even an iota of self-interest should be construed as abject rejection of environmental and social values. Time and again through this column, we have been striving to send across a message to the community as such for developing a humble mind-set towards nature and to sacrifice some of our pseudo charms and superfluous*

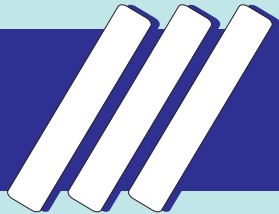
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Under The Aegis Of MoEF



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*comforts for the sake of a better and conducive environment. Such conditioning of mind is necessary so that all living creatures survive comfortably and sustainable equation of resource flow is maintained. This is to suggest that every action, not only from environmental point of view should be dealt with a fair amount of patience, honesty and transparency. Environment, ad- valorem, is a multi-dimensional with social, economic political, administrative and scientific actions, in terse a collective effort will constitute an effective mechanism for better environmental management.*

*I would like to re-iterate that environment can never be anybody's exclusive domain. It demands concrete actions by each and every segment of society and not just a mere formality by a few select ones.*

## Environment & Society

Throughout history humans have both affected, and been affected by, the natural world. While a good deal has been lost due to human actions, much of what is valued about the environment has been preserved and protected through human action., there is a realization that environmental problems are becoming more and more complex, especially as issues arise on a more

global level, such as that of atmospheric pollution or global warming.

The environment, while highly valued by most, is used



and altered by a wide variety of people with many different interests and values. Difficulties remain on how best to ensure the protection of our environment and natural resources. However, a well-managed environment can provide goods and services that are both essential for our well being as well as for continued economic prosperity.

The environment has become one of the most important issues of our time and will continue to be well into the future. The challenge is to find approaches to environmental management In order to face these challenges, students today will need more than superficial knowledge or awareness of disconnected environmental issues. A multi-disciplinary approach to learning can build upon the strengths of a wide range of fields of study, providing a deeper understanding of the technological, political, and social options and strategies for both studying and managing the relationship between our society and the environment.

### In editorial

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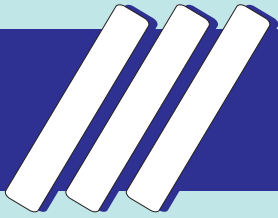
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## Environmental Pollution



The term Environmental Pollution refers to ways by which people pollute their surroundings, air with gases and smoke, poison the water with chemicals and other substances, and damage the soil with too many fertilizers and pesticides. Also pollute the surroundings in various other ways. Environmental degradation is a result of the dynamic interplay of socio-economic, institutional and technological activities. Environmental changes may be driven by many factors including economic growth, population growth, urbanization, intensification of agriculture, rising energy use and transportation. Poverty still remains a problem at the root of several environmental problems. The pollution is widespread in the country and can be broadly categorized as flux type of pollution and sink type of pollution. The former refers to the pollutants dumped into the environment, either to air or in water; while the later is caused by accumulation either in soil or river bed or also in ground water..

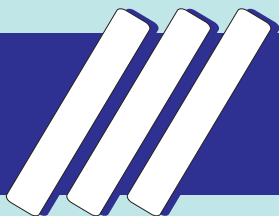
**Poverty** is said to be both cause and effect of environment degradation. The poor people, who rely on natural resources more than the rich, deplete natural resources faster as they have no real prospects of gaining access to other types of

resources. Poorer people, who cannot meet their subsistence needs through purchase, are forced to use common property resources such as forests for food and fuel, pastures for fodder, and ponds and rivers for water. Clean drinking water facility through taps is available to only 35 percent of urban households and 18 percent of rural households in India. Other residents use unsafe water sources like wells, ponds and rivers. Population pressure driven overexploitation of the surface and underground water resources by the poor has resulted into contamination and exhaustion of the water resources. Urban population is also using rivers to dispose of untreated sewage and industrial effluent. Moreover degraded environment can accelerate the process of impoverishment. Although there has been significant drop in the poverty ratio in the country from 55 percent in 1973 to 36 percent in 1993-94, the absolute number of poor have, however, remained constant at around 320 million over the years.

## Pollution from Energy production and consumption in India

The environmental effects due to increasing consumption levels of fuels like coal, lignite, oil and nuclear etc. are of growing concern to various researchers. The combustion of these 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 production of coal and lignite has increased from 32.2 million tons in 1950-51 to 292.27 million tons in 1995-96, an increase of more than 9 times. The production of petroleum products registered an increase of more than 22 times, from 3.3 million





tons in 1950-51 to 74.7 million tons in 1995-96. 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. The production of electricity has increased from 5 billion KWH in 1950-51 to about 380 billion KWH in 1995-96. The shares of thermal power and hydropower changed substantially. The share of thermal power has increased from 51 percent in 1950-51 to about 79 percent in 1995-96 whereas the share of hydropower declined from 49 percent in 1950-51 to 19 percent in 1995-96. The share of nuclear power is nominal. This clearly indicates that burning of fossil fuels, especially coals, emits lot of carbon dioxide in the atmosphere and leads to global warming. The per capita commercial energy use in India has increased from 137 Kg of oil equivalent in 1980 to 248 Kg of oil equivalent in 1994 and it again increased to 476 Kg of oil equivalent in 1996 (World Development Indicators, 1997).

## Water Pollution

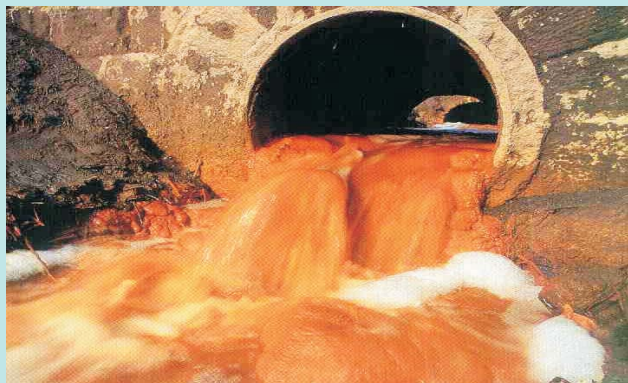
Inadequate water and sanitation coverage is one of the most serious environmental problems (Sumeet, p 123). It has been estimated that 80 percent of the diseases in the world are associated with water usage or poor environmental hygiene (Sumeet p. xvii). In India, water pollution comes from three main sources: domestic sewage, industrial effluents, and run-off from activities such as agriculture. The large scale use of pesticides may have revolutionized food production, but these chemicals are responsible for more than 2 million human poisonings every year with a resultant 20,000 deaths (WHO, 1986j).

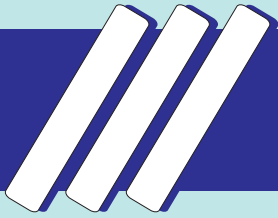
Broadly, the causes of water pollution can be attributed to Urbanization, Industrialization, Withdrawal of wastes, Agricultural run-off and improper agricultural practices, Religious and social practices

According to the scientists at the National

Environmental Engineering and Research Institute, a staggering 70% of the available water in India is polluted. Only five states, Maharashtra, Gujarat, Delhi, Uttar Pradesh and West Bengal, generate more than 63% of the total waste water' in India as they lack treatment facilities (Down to Earth, July 15, p.19). Sewage generated from 25 heavy polluting cities and towns account for about 75 percent of the pollution load in the river. The Yamuna with 200 million liters of untreated muck being dumped in it everyday by Delhi's Sewerage System has become one of the most polluted rivers in the world (Down to Earth, June 30, 2000, p.55).

The increasing river water pollution is the biggest threat to public health. causing **cholera, diarrhoea, hepatitis, typhoid amoebic and bacillary, dysentery, guinea worm, whereas scabies, leprosy, trachoma and conjunctivitis** are some of the diseases associated with water scarcity. More than one million children died due to diarrhoea and other gastrointestinal disorders in 1990s. In addition, around 90 lakh cases of acute diarrhoeal diseases have been reported in India, Uttar Pradesh reporting the highest number of cases (Central Bureau of Health Investigation, 1996). It is estimated that 73 million workdays are lost every year due to water related diseases. The cost of treating them and the loss in production amount to Rs. 600 crore a year (Citizen's Report, 1982)

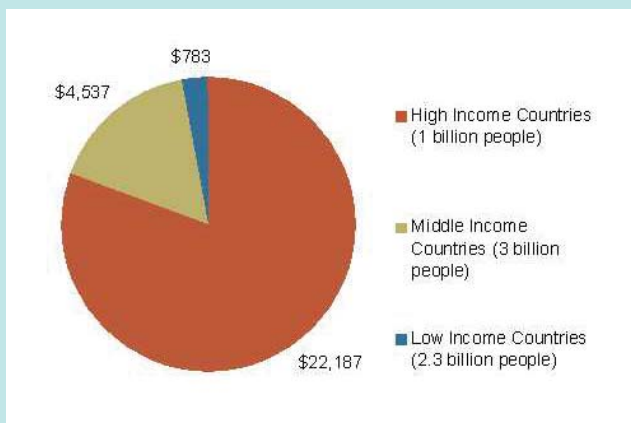




## EarthTrends: How much of the world's resource consumption occurs in rich countries?

About once a month, one of our users sends an e-mail to EarthTrends with a variation of the above, usually with an emphasis on resource consumption in the United States. Resource consumption can be tricky to measure. Is monetary expenditure a good proxy for consumption? What about the quantity of objects consumed? How do we account for recycling, or expenditures in the service sector? We'll consider a few different angles on the consumption question below.

In monetary terms, most consumption still occurs in industrialized nations; according to the World Bank, the 2.3 billion residents of low-income countries accounted for less than 3% of public and private consumption in 2004, while the 1 billion residents of high-income countries consumed more than 80% of the global total (See Figure 1.) In this same year the United States accounted for 4.6 percent of the world's population and 33 percent of global consumption--more than \$9 trillion U.S. dollars.



Source: EarthTrends, 2007.

Monetary expenditure alone is an incomplete measure, though, because in more developed economies there is a strong service sector--should money spent on services count as consumption?--and a U.S. dollar or its equivalent spent in a rich country typically equates with less consumption than in a poor country.

When comparing consumption of actual commodities, then, the picture is not quite as skewed, but still shows significantly greater consumption by rich countries (see figure 2). The average American, for example, consumes around twenty times more meat and fish and sixty times more paper, gasoline, and diesel than the average Indian.

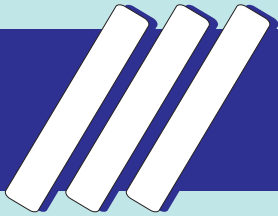
## Major environmental challenges of 21st century (UNDP)

The year 2000 marks a defining moment in the efforts of the international community to ensure that the growing trends of environmental degradation that threaten the sustainability of the planet are arrested and reversed.

Environmental threats resulting from the accelerating trends of urbanization and the development of mega cities, the freshwater crisis and its consequences for food security and the environment, the unsustainable exploitation and depletion of biological resources, drought and desertification, and uncontrolled deforestation, are all issues that need to be addressed.

Opportunities however exist that can redress this situation. Technological innovation and the emergence of new resource-efficient technologies, in which the private sector plays a major role, provide a source of great hope and increased opportunities to avoid the environmentally destructive practices of





the past including through clean technologies.

✍ It is necessary that the environmental perspective is taken into account in both the design and the assessment of macro-economic policy-making, as well as practices of government and multilateral lending and credit institutions such as export credit agencies.

✍ The trends of globalization in the world economy, with the attendant environmental risks and opportunities, require international institutions to adopt new approaches and to engage the major actors involved in globalization in new ways. We should encourage a balanced and integrated approach to trade and environment policies in pursuit of sustainable development, in accordance with the decision of the Commission on Sustainable Development at its eighth session.

✍ The role and responsibility of nations based on the Rio Principles, as well as the role and responsibility of the main actors including Governments, the private sector and civil society, must be emphasized in addressing the environmental challenges of the twenty-first century.

## Climatic Changes (IPCC forth report)

### Solar variation

Variations in solar activity during the last several centuries based on observations of sunspots and beryllium isotopes.

The sun is the ultimate source of essentially all heat in the climate system. The energy output of the sun, which is converted to heat at the Earth's surface, is an integral part of shaping the Earth's climate. On the longest time scales, the sun itself is getting brighter with higher energy output; as it continues its main sequence, this slow change or evolution affects the Earth's atmosphere. Early in Earth's history, it is thought to have been too cold to support liquid water at the Earth's surface, leading to what is known as the Faint young sun paradox.

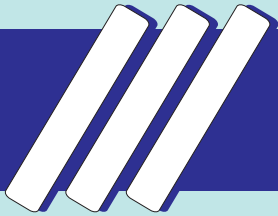
On more modern time scales, there are also a variety of forms of solar variation, including the 11-year solar cycle and longer-term modulations. However, the 11-year sunspot cycle does not manifest itself clearly in the climatological data. Solar intensity variations are considered to have been influential in triggering the Little Ice Age, and for some of the warming observed from 1900 to 1950.

### Human influences on climate change

Anthropogenic factors are acts by humans that change the environment and influence climate. Various theories of human-induced climate change have been debated for many years. In the late 1800s,

The biggest factor of present concern is the increase in CO<sub>2</sub> levels due to emissions from fossil fuel combustion, followed by aerosols (particulate matter in the atmosphere) which exerts a cooling effect and cement manufacture. Other factors, including land use, ozone depletion, animal agriculture and deforestation also affect climate





### Climate Change and biodiversity

The life cycles of many wild plants and animals are closely linked to the passing of the seasons; climatic changes can lead to interdependent pairs of species (e.g. a wild flower and its pollinating insect) losing synchronisation, if, for example, one has a cycle dependent on day length and the other on temperature or precipitation. In principle, at least, this could lead to extinctions or changes in the distribution and abundance of species. One phenomenon is the movement of species northwards in Europe. This picture has been mirrored across several invertebrate groups. Drier summers could lead to more periods of drought, potentially affecting many species of animal and plant. For example, in the UK during the drought year of 2006 significant numbers of trees died or showed dieback on light sandy soils. Wetter, milder winters might affect temperate mammals or insects by preventing them hibernating or entering torpor during periods when food is scarce..

### Changes in the atmosphere

· "Carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values."

- ✍ The amount of carbon dioxide in the atmosphere in 2005 (379 ppm) exceeds by far the natural range of the last 650,000 years (180 to 300 ppm).
- ✍ The amount of methane in the atmosphere in 2005 (1774 ppb) exceeds by far the natural range of the last 650,000 years (320 to 790 ppb).
- ✍ The primary source of the increase in carbon dioxide is fossil fuel use, but land-use changes also make a contribution.
- ✍ The primary source of the increase in methane is very likely to be a combination of human agricultural activities and fossil fuel

use. How much each contributes is not well determined.

- ✍ Nitrous oxide concentrations have risen from a pre-industrial value of 270 ppb to a 2005 value of 319 ppb. More than a third of this rise is due to human activity, primarily agriculture.

### Scientific criticism

Scientific criticism can broadly be broken down into criticism that the report is too conservative or to overstates the dangers of climate change. In this case, the view that the IPCC is conservative means the IPCC did not go far enough, it understated the state of the science or the consequences of global warming. Conversely, those who view the IPCC as alarmist, think that the IPCC overstated the state of the science and oversold the consequences of global warming. In addition, some scientists are concerned about potential biases of IPCC lead authors, who have been shown to favor their own research at the expense of opposing views.

## **DAM SAFETY**

**28 August 2007** - On 23 August a Himachal Pradesh-based citizen journalism website *Him Vani* reported that the whole of Spiti valley had plunged into darkness following the collapse of a dam at the Rangtang Hydropower project. The dam had been rebuilt just three years ago, after an earlier round of being washed away. This news marked the fourth such incident this monsoon, and follows closely on the heels of similar news reported by the *Deccan Herald*.

On 4 September 2005 an underground labyrinth pipe in unit IV at the 1500 MW Nathpa Jhakri hydropower project in Himachal Pradesh burst. The bursting of the pipe led to backflow of water from the tail pool submerging the lower portion of the powerhouse. Two storeys of the seven-storey cavern housing the powerhouse were submerged. The engineers could not do anything, as the pumping machinery installed at the bottom was first to be submerged. It took officials 14 days to pump out the water and silt from the plant.

**Himanshu Upadhyaya**  
28 Aug 2007



