

State Of Environment (SoE) Atlas – India

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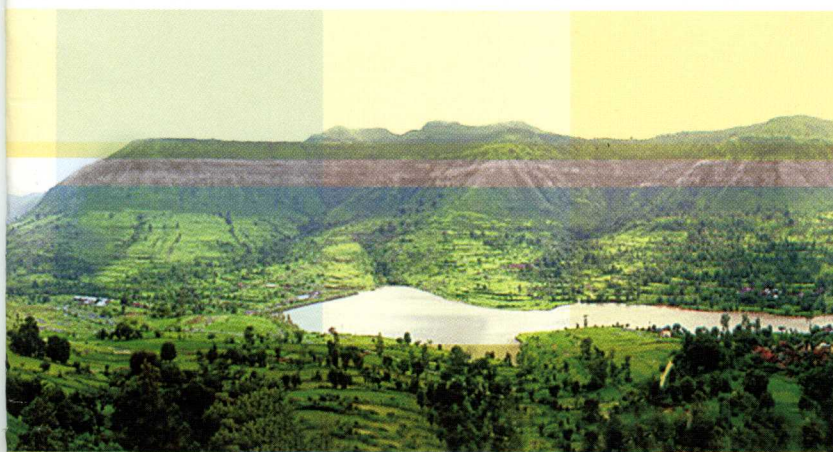
**Development
Alternatives**

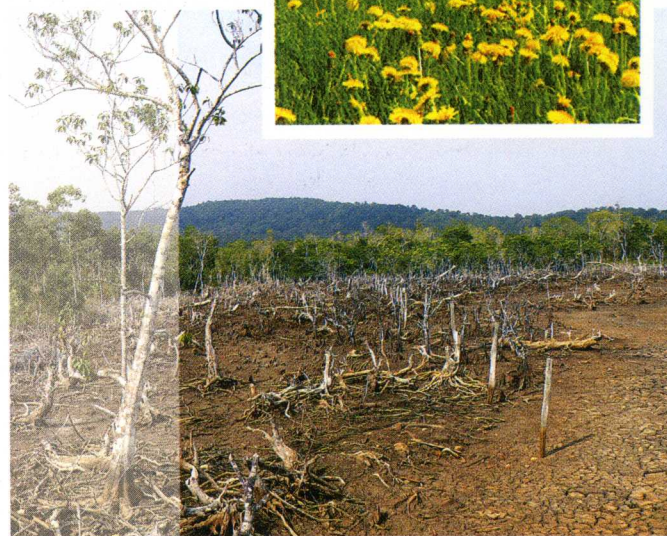
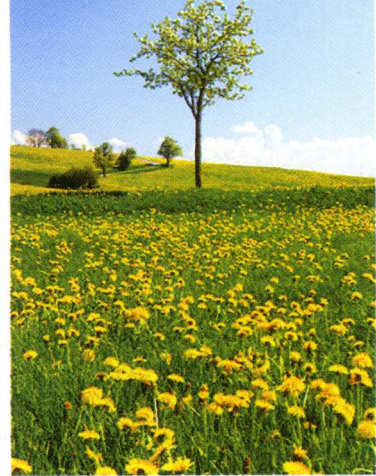
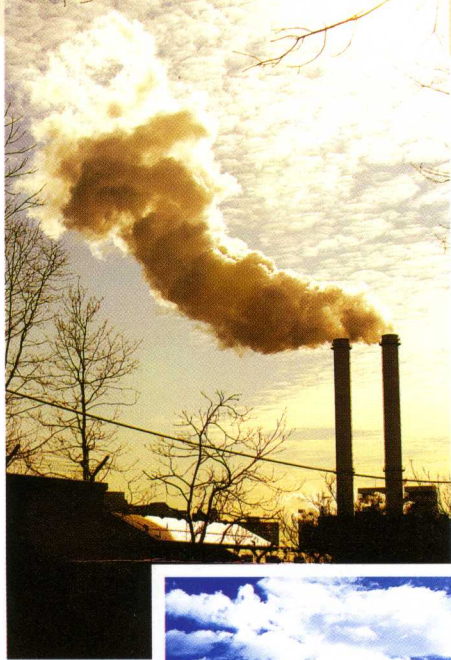


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State of Environment – India

Key Challenges

India is characterised by the variety of soils, climate, biodiversity and ecological regions it is endowed with. As a developing economy, the country depends heavily on its natural wealth; however, excessive use of natural resources is depleting the very resource base that sustains it.

The country today faces key environmental challenges, especially because of the nexus of environmental degradation and economic growth. These challenges pertain to the state of environmental resources, such as air, land, water, flora and fauna.

To a large extent, the environmental degradation is caused by:

- Population growth
- Inappropriate technologies
- Poverty
- Intensive agriculture
- Polluting industries
- Unplanned urbanisation

Environmental degradation also perpetuates poverty, since it directly affects soil fertility, quantity and quality of water, air, forests, wildlife and fisheries.

Recognising the problem, the country has now been classified into agro-climatic, agro-ecological and agro-meteorological zones. The classification facilitates planning and implementation of various programmes and measures at the local level.

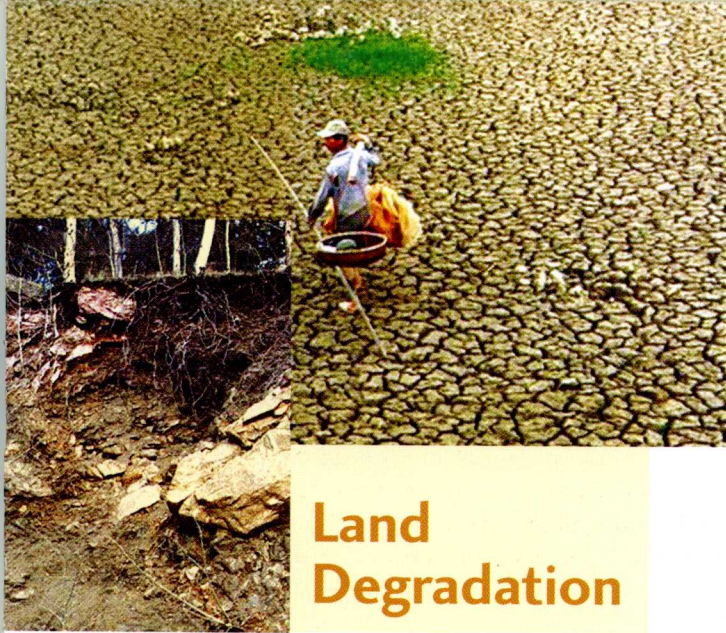
The State of Environment Atlas Initiative

The State of Environment Atlas (SoEA) of India is an innovative interactive Atlas. It allows the user to view the maps and data on green, blue and brown environmental issues. It's features and data can be accessed by general users as well as experts, and the Atlas is available both as a CD and as an interactive website.

The Atlas has categorised maps to indicate the status of the environment, along with brief write-ups on various sections while capturing priority issues in the Pressure State Impact Response (PSIR) framework. The unique feature of the SoEA is this framework analysis, where all the maps are presented and displayed in the PSIR framework.

Environmental challenges in India are enhanced by the nexus of environment degradation and economic growth.





Land Degradation

Integrated Efforts

Land degradation, caused by soil erosion, alkali-salinisation, water logging and pollution, is a major cause of concern in the country. Due to poor land-use practices and management, invaluable nutrients are lost and food grain production comes down drastically.

India shares 16 per cent of the world population, whereas its land is only 2 per cent of the total geographical area of the world. At present, approximately 68.35 million hectares of land are lying as wastelands. Of these, approximately 50 per cent are non-forest lands which can be made fertile again if treated properly.

Unprotected non-forest lands in the country have suffered the maximum degradation mainly due to the tremendous biotic pressure on it.

The degradation of land has several causes:

- Unsustainable grazing
- Excessive use of irrigation
- Loss of forest and tree cover
- Improper use of agricultural chemicals
- Diversion of animal wastes for domestic fuel and forest land
- Disposal of industrial and domestic wastes on productive land

Rajasthan has the highest component of degraded land, followed by Madhya Pradesh, Maharashtra, Uttar Pradesh, Gujarat, Andhra Pradesh and Karnataka. These states face the challenge of combating land degradation while investing in conservation of land.

The Soil and Water Conservation Division in the Ministry of Agriculture has been playing a key role in implementing the Integrated Wastelands Development Programme (IWDP). This programme battles soil erosion and improves land productivity in an integrated manner, based on village micro watershed plans.

Approximately 68.35 million hectares are wastelands in India. Of these, 50 per cent are non-forest lands which can be made fertile again.



Biodiversity

Protecting the Wealth

India is one of the 12 mega biodiversity countries in the world; its richness in biodiversity is a result of its diverse physiographic and climatic conditions.

Of the 18 unique biodiversity 'hot-spots', which contain about 20 per cent of the world's flora, two – namely the north-eastern Himalayas and the Western Ghats are located in India.

But its species are becoming extinct because of habitat loss and degradation caused by:

- Deforestation
- Agricultural activities
- Extraction (mining, fishing, logging and harvesting)
- Development (human settlements, industry and associated infrastructure)
- Decline in primary food species for wildlife
- Poaching of wildlife species
- Over exploitation of wildlife and resources
- Pollution of atmosphere, water and soil

- 18 unique biodiversity hot-spots in the world
- These hot-spots contain 7 per cent of world's flora and 7.28 per cent of world's fauna
- Two biodiversity hot-spots located in India

Endangered in India's hot-spots

- 75 species of mammals
- 73 types of birds
- 785 plant species

Combating the loss

- 5.2 per cent of India's land area is declared protected
- This area covers 156,933 sq kms
- It accommodates 90 national parks and 502 wildlife sanctuaries

However, the latest statistics and data on floral and faunal biodiversity in India have not been compiled and documented. Hence, it is important that the documentation of biodiversity in the country is undertaken soon.





Forests

Greening Efforts

Forests provide different environmental services, such as recharging mountain aquifers, conserving soil and preventing floods and drought. They also offer habitat for wildlife and the ecological conditions for flora and fauna to evolve. Even local communities can

benefit economically from sustainable eco-tourism.

The total forest cover of the country as per 2005 assessment is 6,77,088 kms and this constitutes 20.6 per cent of the geographic area of the country. There are four major forest types and 16 detailed forest types in India. Nagaland, Andaman & Nicobar Islands, Manipur, Kerala, Madhya Pradesh, Chhattisgarh and Assam have shown significant loss in forest areas, whereas a considerable gain in forest cover is seen in Mizoram, Arunachal Pradesh, Meghalaya and Tamil Nadu.



728 kms of forest cover lost since 2003 assessment

The main cause of forest loss is due to use of forests for:

- Agriculture
- Settlements
- Infrastructure
- Industry
- Illegal felling
- Grazing of cattle
- Commercial extraction of fuel wood

In order to conserve and preserve the forests, the innovative concept of Joint Forest Management (JFM) was introduced. It is aimed at developing partnerships between fringe forest user groups and the forest department through mutual trust. Under the JFM, both parties have defined joint roles and responsibilities to protect and develop forests.

Local communities are also being involved to evolve sustainable forest management systems.



Freshwater Resources

Saving Water

India's freshwater resources are the most important among its natural endowments, which enable its economy and human settlement patterns. These include the river systems, groundwater and wetlands.

The country receives about 4,000 cu km of water annually, of which about 1,869 cu km of surface water becomes available through precipitation. However, only 1,122 cu km of this water can be used beneficially because of topographical and other constraints, including surface run-offs.

The country's usable water resources amount to approximately 1,100 cu km. Surface sources, such as rivers, account for roughly 60 per cent and groundwater sources, such as wells, fall into the remaining 40 per cent.

River Systems

India's river systems originate in its mountain ecosystems and deliver a major part of the water to populations in the plains. As per the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2001), almost 67 per cent of the glaciers in the Himalayan mountain range have retreated in the past decade. This is bound to adversely impact flows in major rivers.

River degradation is caused by:

- Industrial effluents
- Agricultural run-offs
- Loss of forest and tree cover
- Siltation from sediment loads due to soil
- Pollution from human and animal waste
- Water withdrawals for agricultural and industrial use



Groundwater

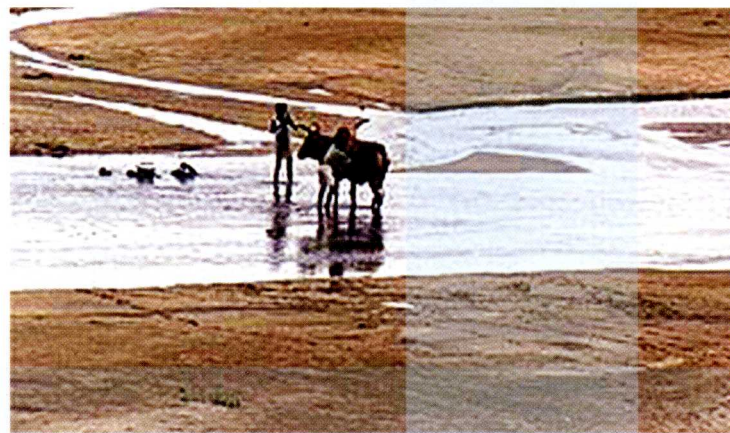
Groundwater is an important resource for meeting the requirements for irrigation, domestic and industrial uses. About 85 per cent of the rural population in India depends solely on groundwater. But heavy extraction and its limited recharge is depleting the groundwater at a fast rate, especially in Andhra Pradesh, Karnataka, Rajasthan, Madhya Pradesh, Orissa and Maharashtra.

Rapid growth in population is further leading to a decline in the per capita availability of fresh water. The water requirements of fast-growing urban centres and the agricultural sector are expected to double by 2025.

With such predicted water stress, anticipatory policy measures have to be taken up urgently. Integrated watershed management is essential for identifying the resource issues. Also required are the adoption of solutions that are environmentally, socially and economically sustainable.

85 per cent of the rural population in India depends solely on groundwater.

Heavy extraction and limited recharge is leading to rapid depletion of this resource.



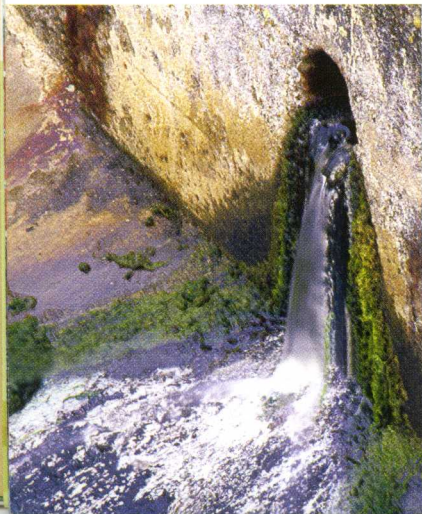


The World Bank estimates that 21 per cent of communicable diseases in India are water-related. Of these, diarrhoea alone causes 1,600 deaths daily. It is estimated that about 70 million people in 20 states are at risk due to excessive fluoride and around 10 million people are at risk due to superfluous arsenic in groundwater. As water levels fall, the growing concentration of chloride, TDS, nitrate and iron in groundwater becomes a matter of great concern.

A sustainable drinking water programme is crucial if these concerns are to be addressed. Resources are needed to treat the ever-increasing load of municipal sewage, most of which flows into the aquatic environment.

Water Pollution

Managing Water Resources



The results of water quality monitoring reveal that organic and bacterial pollution are crucial parameters of the condition of Indian aquatic resources. This is mainly because urban centres of the country discharge domestic wastewater mostly in an untreated form.

21 per cent of communicable diseases in India are water-related – World Bank.

Air Pollution

Fighting the Invisible

The problem of air pollution has aggravated with more and more countries becoming industrialised. The primary causes are:

- Growing cities
- Increased traffic
- High concentration of industries
- Rapid economic development
- Higher levels of energy consumption

In India, vehicular emissions and factories contribute extensively to the total air pollution load in many urban areas.

The current gross CO₂ (Carbon Dioxide) emissions in India is 0.2 tonnes, one-sixth the world average of 1.2 tonnes per year. At present, coal accounts for about 60 per cent of fossil fuel use, followed by liquid petroleum at 30 per cent and natural gas at 10 per cent.

Air pollution needs to be controlled because of the damaging effects on human health. These include premature death, as well as increase in chronic heart and lung diseases.

The government has formulated a number of legislations, policies and programmes to protect the environment:

- Air (Prevention and Control of Pollution) Act, 1981
- Environment (Protection) Act, 1986
- Adoption of Male Declaration on Control and Prevention of Air Pollution
- National Air Quality Monitoring Programme (NAMP), consisting of 308 operating stations covering 115 cities/towns in 25 states and four union territories

Gross CO₂ emissions in India are 0.2 tonnes per year, one-sixth the world average.



Municipal Solid Wastes

On Solid Grounds

India has seen a significant increase in the generation of MSW (Municipal Solid Waste) over the last few decades. This is largely a result of rapid population growth and economic development in the country.

The rising urban population has been matched by an increase in urban poor. Swelling numbers of slum dwellers and civic apathy is causing tremendous pressure on basic urban services and infrastructure, making solid waste management a major environmental issue in India.

Presently, 0.1 million tonnes of municipal solid waste are generated in India everyday. This adds up to approximately 36.5 million tonnes of solid waste per annum. Urban local bodies spend Rs 500 to Rs 1,500 per tonne on collection, transportation, treatment and disposal of solid waste.

Out of the total municipal wastes collected, approximately, 94 per cent is dumped on land while only 5 per cent is composted.



Need for Strategy

The composition of solid waste is useful in assessing the type of treatment to be adopted. However, the unsystematic disposal of solid waste is leading to serious environmental and health consequences.

It has become imperative to draw up a comprehensive urbanisation policy/strategy to implement projects in cities in a mission mode. Recognising the challenge of an acute urban crisis, the Jawaharlal Nehru National Urban Renewal Mission has been established by the Ministry of Urban Development (MOUD) with the objective of improving urban infrastructure and basic services like those of solid waste management in selected 62 cities in India.



India generates:

- 0.1 million tonnes of municipal solid waste everyday
- Approximately 36.5 million tonnes annually

State of Environment Atlas (www.soeatlas.org)

The State of Environment (SoE) Atlas of India comprises categorised thematic maps on green, blue and brown environmental issues to aid policy makers, development practitioners and the public. Available in the form of a CD ROM and an interactive website, the SoE Atlas enables flexibility and versatility for users to visualise environment data using simple GIS functionalities.

Development Alternatives

Development Alternatives is a not-for-profit research, development and environment action organisation established in 1983 under the Societies Registration Act with the mission to create sustainable livelihoods in large numbers.

Ministry of Environment and Forests

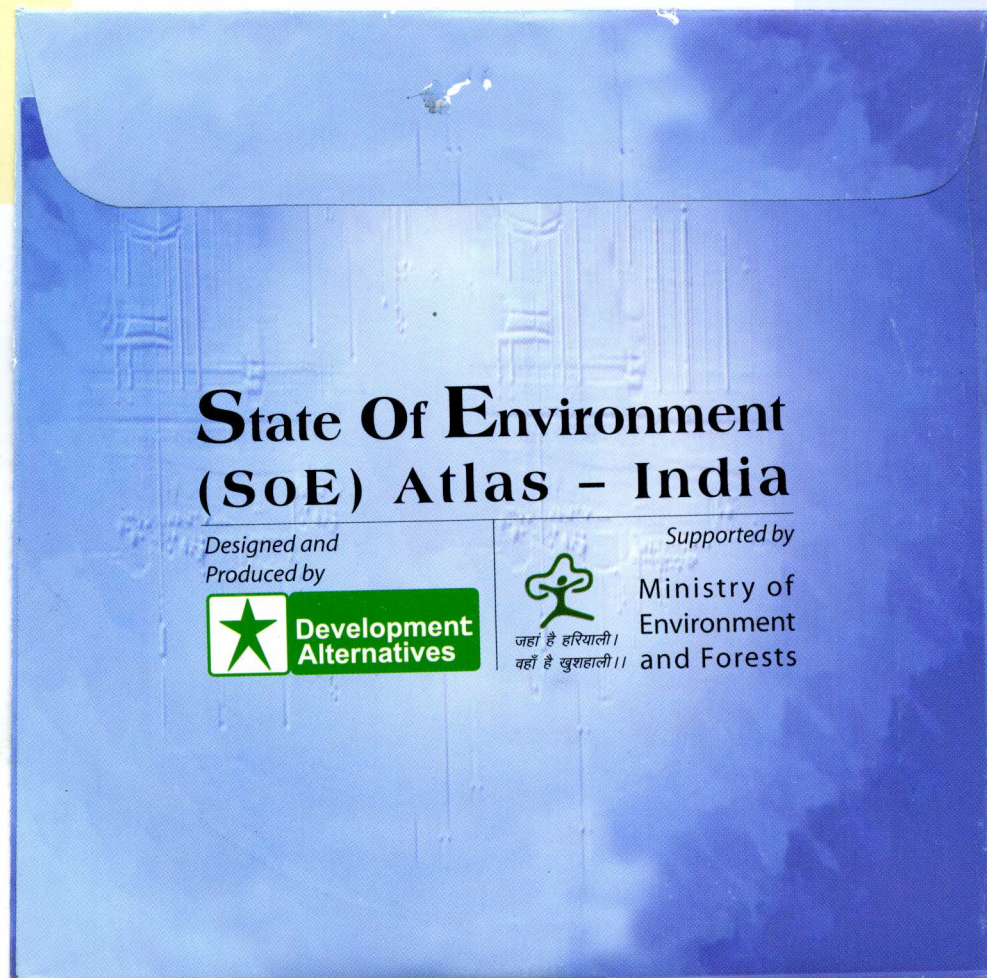
The Ministry of Environment and Forests is the nodal agency in the administrative structure of the central government for planning, promotion, coordination and overseeing the implementation of environmental and forestry programmes.

Disclaimer

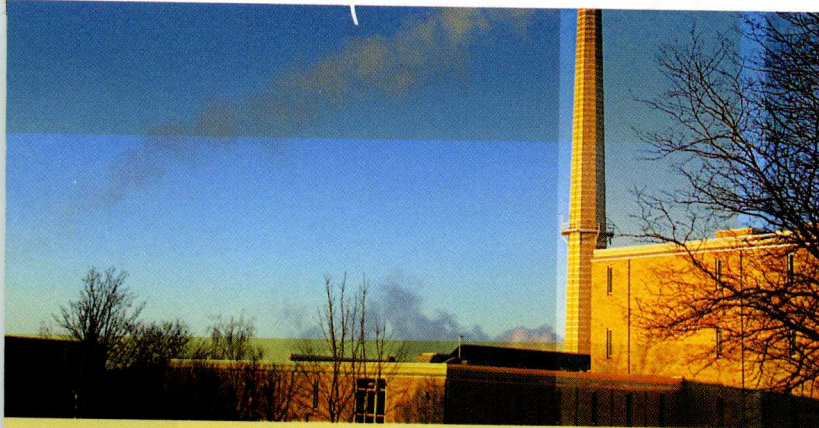
The data in the Atlas brochure has been culled from various government sources.

Feedback

Your feedback is always welcome. Please contact us at:
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