

**PROJECT REPORT**  
**ON**  
**ENVIRONMENTAL CONDITIONS IN PENINSULAR INDIA**



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## **Acknowledgement**

My project work with Nature Foundation (India), was an eye-opener, which gave me an insight into the existing environmental crisis, with special focus on the environmental conditions in Peninsular India.

I would like to sincerely express my gratitude to Mr Rajesh Dokwal (Chairman) for giving me the opportunity to work with Nature Foundation (India), an NGO which takes concerted, constructive and affirmative action to catalyze ecological, economic and social development thereby improving the overall well being of the individuals and societies with particular stress on Environmental Education.

To further their efforts in creating environmental awareness, Nature Foundation (India) is holding a workshop at NIT Trichy. I got the opportunity to construct a plan for the same. I have also prepared a Powerpoint presentation and designed a brochure on the workshop, besides preparing a detailed report on the Environmental conditions in Peninsular India.

I am indebted to Mr. Rakesh Khatri (Executive Director) for his support and continuous guidance throughout the project.

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## **Introduction**

### **Need For Creating Environmental Awareness – With Knowledge Comes A Responsibility To Act.**

Unnecessary and unwise encroachment on nature, excessive exploitation of natural resources, scientific advancement and resultant deforestation, fumigation and noise have totally polluted the entire environment on the earth. The pollution state of various resources has deteriorated to such an extent that survival of human life is at stake. People are creating a significant impact on the natural environment. As a global population continues to rise, humans exert pressure on a finite number of resources. Human environmental impacts can largely be attributed to consumption patterns. Thus, environmental awareness and protection is a snowballing global concern.

While collapsing financial institutions plunge wealthy nations into recession and developing countries grapple with surging food and energy costs, the once urgent need to fight global warming, pollution and climate change and to create environmental awareness seems to have taken a back seat.

But climate change and rapidly deteriorating environmental conditions aren't going to wait for the financial crisis to get resolved.

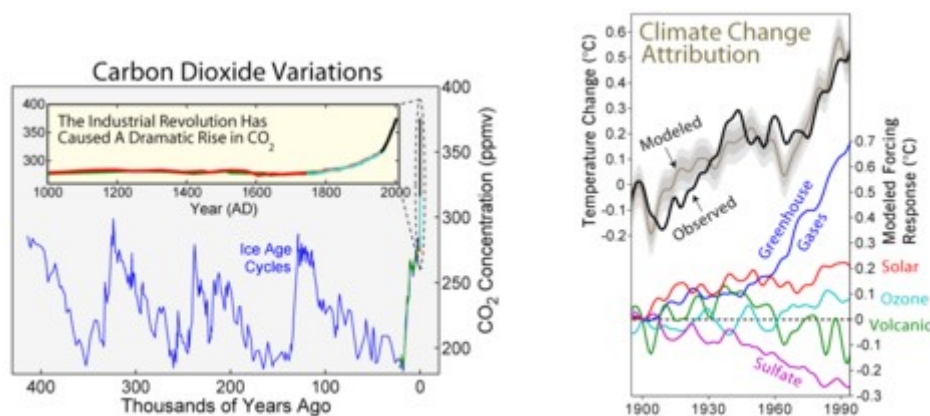
Nature Foundation (India), an NGO which aims at spreading awareness and implementing projects on social issues, is going to conduct a workshop at National Institute of technology (NIT), Trichy on February 12<sup>th</sup> and 13<sup>th</sup>, 2009 to bring the focus back to the existing environmental crisis.

This report gives an introduction to the current global environmental issues global warming, climate change, various types of pollution, loss of biodiversity, use of plastic bags and finally moving on to describe the environmental conditions of peninsular India.

## GLOBAL WARMING:

Global warming is one of the major issues we are being faced with. The term signifies an increase in the atmospheric temperature near the earth's surface, which is caused by various reasons. Scientists are of the opinion that a rise in the carbon dioxide levels will further aggravate the situation. The greenhouse effect causes the earth's heat to be trapped in the atmosphere, which results in the increase in temperature. Global warming has thus caused a change in the climate of the earth, causing temperatures to rise. This in turn has an effect on various species dependant on the basic laws of nature. A change in the same makes survival a difficult issue. A warmer earth also causes changes in the rainfall patterns and thus affects humans, plants and animals as well.

The major cause of global warming is the emission of green house gases like carbon dioxide, methane, nitrous oxide etc into the atmosphere. Human use of fossil fuels is the [main source of excess greenhouse gases](#). By driving cars, using electricity from coal-fired power plants, or heating our homes with oil or natural gas, we release carbon dioxide and other heat-trapping gases into the atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC), 2007, the atmospheric concentration of CO<sub>2</sub> in 2005 was 379 ppm<sup>3</sup> compared to the pre-industrial levels of 280 ppm<sup>3</sup>. Deforestation is another significant source of greenhouse gases, because fewer trees mean less carbon dioxide conversion to oxygen.



A rise in earth's temperatures can in turn root to other alterations in the ecology, including an increasing sea level and modifying the quantity and pattern of rainfall. These modifications may boost the occurrence and concentration of severe climate events, such as floods, famines, heat waves, tornados, and twisters. Other consequences may comprise of higher or lower agricultural outputs, glacier melting, lesser summer stream flows, genus extinctions and rise in the ranges of disease vectors

## **Impacts of Global Warming:**

- Ice is melting worldwide, especially at the Earth's poles. This includes mountain glaciers, ice sheets covering West Antarctica and Greenland, and Arctic sea ice.
- Researcher Bill Fraser has tracked the decline of the Adélie penguins on Antarctica, where their numbers have fallen from 32,000 breeding pairs to 11,000 in 30 years.
- Sea level rise became faster over the last century.
- Some butterflies, foxes, and alpine plants have moved farther north or to higher, cooler areas.
- Precipitation (rain and snowfall) has increased across the globe, on average.
- Spruce bark beetles have boomed in Alaska thanks to 20 years of warm summers. The insects have chewed up 4 million acres of spruce trees.
- Sea levels are expected to rise between 7 and 23 inches (18 and 59 centimeters) by the end of the century, and continued melting at the poles could add between 4 and 8 inches (10 to 20 centimeters).
- Hurricanes and other storms are likely to become stronger. Since warm ocean waters and warm, moist air fuel storms, global warming would increase the number and intensity of tropical cyclones.
- Species that depend on one another may become out of sync. For example, plants could bloom earlier than their pollinating insects become active.
- For most places global warming will result in frequent, longer and more intense heat waves.
- Floods and droughts will become more common. Rainfall in Ethiopia, where droughts are already common, could decline by 10 percent over the next 50 years.
- Less fresh water will be available. If the Quelccaya ice cap in Peru continues to melt at its current rate, it will be gone by 2100, leaving thousands of people who rely on it for drinking water and electricity without a source of either.
- Some diseases will spread such as malaria carried by mosquitoes. Global warming would increase smog pollution in some areas and intensify pollen allergies and asthma.
- Ecosystems will change—some species will move farther north or become more successful; others won't be able to move and could become extinct. Wildlife research scientist Martyn Obbard has found that since the mid-1980s, with less ice

on which to live and fish for food, polar bears have gotten considerably skinnier. Polar bear biologist Ian Stirling has found a similar pattern in Hudson Bay. He fears that if sea ice disappears, the polar bears will as well.

## **POLLUTION:**

Pollution is the introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the physical systems or living organisms they are in. Pollution can take the form of [chemical](#) substances, or [energy](#), such as noise, heat, or light energy. Pollutants, the elements of pollution, can be foreign substances or energies, or naturally occurring; when naturally occurring, they are considered contaminants when they exceed natural levels.

The major types of pollution are listed below along with the particular pollutants relevant to each of them:

[Air pollution](#), is the release of chemicals and particulates into the atmosphere. Common gaseous air pollutants include [carbon monoxide](#), [sulfur dioxide](#), [chlorofluorocarbons](#) (CFCs) and [nitrogen oxides](#) produced by [industry](#) and motor vehicles. Photochemical [ozone](#) and [smog](#) are created as nitrogen oxides and [hydrocarbons](#) react to sunlight. [Particulate matter](#), or fine dust is characterized by their [micrometre](#) size PM10 to PM2.5. Manmade pollutants from combustion, construction, mining, agriculture and warfare contribute significantly to air pollution.

[Water pollution](#), is caused by the release of waste products and contaminants into surface [runoff](#) into river drainage systems, leaching into [groundwater](#), liquid spills, [wastewater](#) discharges, [eutrophication](#) and littering.

[Soil contamination](#) occurs when chemicals are released by spill or underground leakage. Ordinary municipal landfills are also the source of many chemical substances entering the soil environment. Among the most significant [soil contaminants](#) are [hydrocarbons](#), [heavy metals](#), [herbicides](#), [pesticides](#) and [chlorinated hydrocarbons](#).

[Radioactive contamination](#), resulting from 20th century activities in [atomic physics](#), such as nuclear power generation and nuclear weapons research, manufacture and deployment.

[Noise pollution](#), which encompasses [roadway noise](#), [aircraft noise](#), [industrial noise](#) as well as high-intensity [sonar](#).

[Light pollution](#), includes light trespass, [over-illumination](#) and [astronomical](#) interference.

[Thermal pollution](#), is a [temperature](#) change in natural water bodies caused by human influence, such as use of water as coolant in a power plant.

## **Use of Plastic Bags and their impact on the environment**

- The manufacture of plastic bags add tonnes of carbon emissions into the air annually
- Between 500 billion and 1 trillion plastic bags are used worldwide each year
- Approximately 60 - 100 million barrels of oil are required to make the world's plastic bags each year
- Most plastic bags take over 400 to 1000 years to disintegrate.
- Plastic bags cause over 100,000 sea turtle and other marine animal deaths every year when animals mistaken them for food
- Plastic bags don't biodegrade, they photodegrade—breaking down into smaller and smaller toxic bits contaminating soil and waterways and entering the food web when animals accidentally ingest.

## **Ozone Depletion**

The ozone layer protects the Earth from the ultraviolet rays sent down by the sun. Ozone is present in the stratosphere. The stratosphere reaches 30 miles above the Earth, and at the very top it contains ozone. The sun's rays are absorbed by the ozone in the stratosphere and thus do not reach the Earth. The ozone layer in the stratosphere keeps 95-99% of the sun's ultraviolet radiation from striking the earth. Increased UV radiation in the lower atmosphere, called the troposphere, can result in increased amounts of photochemical smog. Photochemical smog is already a health hazard in many of the world's largest cities.

Chlorine was discovered to be a major cause of Ozone depletion. Human-made halocarbons are the biggest reason for Chlorine in the atmosphere. The process by which the Ozone depletes is that Oxygen is removed from the Ozone and leaves Chlorine unaffected. When the Chlorine is left in the Ozone, it basically destroys it, leaving holes for UV-B rays to pass through. Without Ozone, there is a potential for skin cancer and cataracts. Damage to crops and to plankton and the marine food web is also present without Ozone. When crops are decreased and plant life as well, carbon dioxide increases and Global Warming is a product of the Ozone thinning out.

## **Loss of Biodiversity**

The variety of life on Earth, its biological diversity is commonly referred to as biodiversity. The number of species of plants, animals, and microorganisms, the enormous diversity of genes in these species, the different ecosystems on the planet, such as deserts, rainforests and coral reefs are all part of a biologically diverse Earth. Biodiversity actually boosts ecosystem productivity where each species, no matter how small, all have an important role to play and that it is this combination that enables the ecosystem to possess the ability to prevent and recover from a variety of disasters.

An example of loss of biodiversity can be depicted by the destruction of Mangroves in India. Mangroves are salt-tolerant plants of tropical and subtropical intertidal regions of the world. The specific regions where these plants occur are termed as 'mangrove ecosystem'. These are highly productive but extremely sensitive and fragile. Besides mangroves, the ecosystem also harbours other plant and animal species.

Anthropological pressures and natural calamities are the enemies of the ecosystem. Growing industrial areas along the coastlines and discharge of domestic and industrial sewage are polluting these areas. Many studies have highlighted these problems and the conservation efforts are being considered.

Experiences have proved that the presence of mangrove ecosystems on coastline save lives and property during natural hazards such as cyclones, storm surges and erosion. When the tsunami struck India's southern state of Tamil Nadu on 26 December, for example, areas in Pichavaram and Muthupet with dense mangroves suffered fewer human casualties and less damage to property compared to areas without mangroves.

These ecosystems are also well known for their economic importance. They are breeding, feeding and nursery grounds for many estuarine and marine organisms. Hence, these areas are used for captive and culture fisheries. The ecosystem has a very large unexplored potential for natural products useful for medicinal purposes and also for salt production, apiculture, fuel and fodder, etc.

## **Hazardous Waste**

Hazardous waste presents immediate or long-term risks to humans, animals, plants, or the environment. It requires special handling for detoxification or safe disposal. In the hazardous waste is defined as any discarded solid or liquid that

- contains one or more of 39 carcinogenic, mutagenic, or teratogenic compounds at levels that exceed established limits (including many solvents, pesticides, and paint strippers);

- catches fire easily (such as gasoline, paints, and solvents);
- is reactive or unstable enough to explode or release toxic fumes (including acids, bases, ammonia, and chlorine bleach); or
- is capable of corroding metal containers such as tanks, drums, and barrels (such as industrial cleaning agents and oven and drain cleaners).

### **Who's Responsible?**

Businesses such as metal finishers, gas stations, auto repair shops, dry cleaners, and photo developers produce many toxic waste products. These by-products include sulfuric acid, heavy metals found in batteries, and silver-bearing waste, which comes from photo finishers, printers, hospitals, schools, dentists, doctors, and veterinarians. Heavy metals, solvents, and contaminated wastewater result from paint manufacturing. Photo processing also creates organic chemicals, chromium compounds, phosphates, and ammonium compounds. Even cyanide can be a by-product, resulting from electroplating and other surface-treatment processes.

## **Environmental conditions of peninsular India**

With its high population density, vulnerable ecology, extreme climate, and a significant number of people heavily dependent on natural resources, **India**'s environmental challenges are diverse and wide-ranging. India has one of the highest densities of economic activity in the world. Pressure on water, air, soil, and forests will become the greatest in the world by 2020. India suffers both "poverty-related" pollution and "growth-related" pollution.

**Peninsular India** is the area encompassing India's states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu as well as the union territories of Lakshadweep and Pondicherry. It lies in the peninsular Deccan Plateau and is bounded by the Arabian Sea, Indian Ocean and the Bay of Bengal in the west, south and east respectively. The geography of the region is diverse, encompassing two mountain ranges — the Western Ghats and Eastern Ghats and a plateau heartland.

The following report explores the environmental conditions in the Peninsular India. It also includes some recent news reports depicting the environmental issues faced by the people there.

### **TAMIL NADU**

#### **Biodiversity**

Tamil Nadu is endowed with a rich biodiversity. The main natural habitat types are forest, mountains, rivers, wetlands, mangroves and beaches. Tamil Nadu shares the Western Ghats with the states of Kerala, Karnataka, Goa, Maharashtra and Gujarat. It shares the Eastern ghats with the states of Andhra Pradesh and Orissa.

Habitat destruction, overexploitation, pollution, and species introductions are the major causes of biodiversity loss in Tamil Nadu. Other factors include fires, which adversely affect regeneration in some cases, and such natural calamities as droughts, diseases, cyclones and floods. Habitat destruction, decimation of species, and the fragmentation of large contiguous populations into isolated, small, and scattered ones have rendered them increasingly vulnerable to inbreeding depression, high mortality, and susceptibility to environmental stochasticity and, in the long run, to extinction.

An area of 307.85 sq.kms. i.e. 1.36% of the total forest area of Tamilnadu has been brought under National Parks. Further, an area of 2,602.07 sqkm. has been declared as wildlife sanctuaries. Tamilnadu has also the unique distinction of having two biosphere reserves, one in the Nilgiris and another in the Gulf of Mannar. A Tiger

Reserve under “Project Tiger” has also been established combining Mundanthurai and Kalakad Wildlife sanctuaries. The Arignar Anna Zoological Park at Vandalur near Chennai is a modern Zoological park with open moat enclosures formed over an area of 602 ha of reserved forests near Chennai. 4 Programmes have also been launched for scientific management and prudent use of fragile ecosystems. Specific programmes for management and conservation of wetlands, mangroves, and coral reef systems are also being implemented. National and subnational level committees oversee and guide these programmes to ensure strong policy and strategic support.

### **Marine and Coastal Environment**

The Tamil Nadu (including Pondicherry) coast is straight and narrow without much indentations except at Vedaranyam. It has a long coastline of 1076 kms. Fringing and patch reefs are present near Rameswaram and Gulf of Mannar. Ichavaram, Vedaranyam and Point Calimere have well developed mangrove systems. Mangrove wetlands mitigate the adverse impact of storms, cyclones and Tsunami in coastal areas. They reduce coastal erosion and on the other hand, gains land by accreting sea and adjacent coastal water bodies. They act as breeding, nursery and feeding grounds for many commercially important prawns, fish, crabs and molluscs. They enhance the fishery potential of adjacent coastal waters by providing them with large quantities of organic and inorganic nutrients. In Tamil Nadu about 46 rivers drain into Bay of Bengal forming several estuaries adjoining coastal lagoons. The Cauvery River and its tributaries form a large delta supporting extensive agriculture. The other landforms of the Tamil Nadu coast are rock outcrops of Kanyakumari, mudflats, beaches, spits, coastal dunes and strand features. Deposition is observed at Point Calimere, Nagapattinam, South Madras, etc., while erosion is reported at Ovari Paravarnattam, Mahabalipuram and North Madras near Ennore. Rich deposits of heavy minerals are available in Muttam-Manavalakuruchi coast.

The rich coastal habitats are being threatened by pollution especially from land based sources, development projects such as ports, dams, tourism, deforestation, natural disasters, over fishing and destructive fishing practices. Depletion of fishery resources due to pollution is a major environmental concern for Tamil Nadu.

### **Water Resources**

The State gets relatively more rainfall during north east monsoon, especially, in the coastal regions. The normal rainfall in south west and north east monsoon is around 322 mm and 470 mm which is lower than the National normal rainfall of 1250 mm. Similarly, the per capita water availability of the State is 800 cubic meters which is lower than the National average of 2300 cubic meters. There are 17 river basins in Tamil Nadu of which the Cauvery is the largest. Most of the surface water is harnessed in 61 major reservoirs and about 39000 tanks, 60% of the ground water has also been put to use. There are also serious water quality problems in some of the basins due to industrial pollution.

Deforestation and poor land use practices in the catchments, which disturb topsoil and vegetative cover resulting in decreased infiltration rates, increased runoff, sediment transport and deposition in rivers and storage reservoirs. Over abstraction of surface water sources at the upstream reduces the minimum flow required in the downstream sections for the sustenance of ecosystems and mangroves.

Over pumping of groundwater induces saline water intrusion into fresh water aquifer resulting changes in groundwater quality. Water pollution due to discharge of untreated/partially treated industrial and municipal wastewater into water sources deplete dissolved oxygen and affects fish and other aquatic life. Agricultural drainage, which is carrying residues of chemical fertilizers and pesticides, affects the water quality, promoted weed growth and renders the water resources unfit for other uses. Encroachment of agricultural land and water sheds for urbanization and industrial development has impact on wetlands and important watershed areas and affects recharging areas and reservoir capacities. Excess abstraction of water for domestic and industrial supply and agricultural uses without proper planning and priorities will adversely affect the surface water. The ground water table is being depleted year after year due to the failure of monsoon.

### **Industrialization**

Tamil Nadu is at the top in terms of number of factories. There are more than 3000 industrial units in TamilNadu which have been classified under the highly polluting or 'red' category. The total effluent generated is about 6 lakh litres per day of which more than 5 lakh litre (85 percent) is generated by large industries. About 400 units discharge directly into rivers. Of particular concern are the nearly 1000 tanneries which are located in Vellore, Kancheepuram, Dindigul and Erode districts. There are five main industrial complexes in Tamil Nadu: Manali/Ennore, Ranipet. Cuddalore, Mettur and Tuticorin which have chemical, petro-chemical and other industries. These complexes have also become environmental hotspots. There are cement units, distilleries, sugar, sago, paper, dairying, electroplating, chemical and fertilisers (Agro chemicals), mining industries, ores/mineral processing industries and a variety of other industries which are water consuming and also generate large quantities of effluent. Some of the industries have also provided the treated effluent for irrigation with some degree of success. However, other industries, particularly a pulp plant faced serious problems when the effluent used for irrigation contaminates the surrounding wells.

With active support and encouragement, industrial units in Tamil Nadu have switched over to cleaner technologies such as adoption of membrane cell instead of mercury cell in caustic soda manufacturing, adoption of dry process instead of wet process to reduce air pollution in cement factories, adoption of double conversion and double absorption technology in sulphuric acid manufacturing, gas carburizing instead of cyanide salt in heat treatment and cyanide free electroplating.

### **Pollution**

In Tamil Nadu air pollution is widespread in urban areas where vehicles are the major contributors and in a few other areas with a high concentration of industries and thermal power plants. The driving force for pollution includes industrialization, rampant increase in vehicular population and indiscriminate burning of garbage and refuse. In Tamil Nadu, rapid increase in urban population has resulted in unplanned urban development, increase in consumption patterns and higher demands for transport, energy, other infrastructure, thereby leading to pollution problems in many places of the State. Tamil Nadu Pollution Control Board is monitoring the ambient air

quality in Chennai (3 stations), Coimbatore (3stations), Tuticorin (3 stations), Madurai (3 stations) and Salem (1 station) under the National Ambient Air Quality Monitoring Programme. Highly polluting industries have been directed to establish their own continuous air quality monitoring systems. For controlling vehicular emission, cleaner fuel like unleaded petrol, petrol with 3 per cent benzene and low sulphur fuel (0.05 per cent ) have been introduced in Chennai Metropolitan Area.

Most of the water bodies in the State are affected due to sewage, chemicals, oil, industrial effluents and undesirable extraneous matters. The discharge of domestic sewage and industrial effluents into natural watercourses such as rivers, streams and lakes of Tamil Nadu results in physical, chemical and biological changes leading to undesirable conditions. The major activities that are responsible for coastal pollution in Tamil Nadu are discharge and disposal of untreated domestic and industrial wastes, discharges of coolant waters, harbour activities such as dredging, cargo handling, dumping of ship wastes, spilling of cargo's chemicals and metal ores, fishing activities etc<sup>3</sup>. In Tamil Nadu out of the 151 Municipalities and 5 corporations, only 15 Municipalities and 4 Corporations have partial under ground sewerage system. The river water is used downstream for irrigation or drinking by people/livestock, contamination of the river has increasingly become a serious problem in many of the river basins of the State. River basins like Palar, Tamiraparani, Cauvery, Noyyal, Bhavani and Amaravathy face serious pollution problems due to sewage.

For attaining high water quality the Board is constantly watching the inland water quality through two major programmes, namely Monitoring of Indian National Aquatic Resources System and Global Environmental Monitoring System.

### **Urbanisation**

Tamil Nadu ranks first in urbanisation among the 15 major States in the country. A rapid increase in urban population results in the problems of straining or breaking-down of sanitary facilities and other infrastructure in cities and towns. In Tamil Nadu underground drainage system has been provided only in major urban centres, like Salem, the municipal corporations of Chennai, Coimbatore, Tiruchirapalli, Tirunelveli and Madurai An increasing urban population has been creating a huge gap between demand and supply of water every year. Solid waste is generated in almost all parts of the urban areas and solid waste management becomes complicated in bigger cities. Strict enforcement of town planning rules and strengthening of urban local bodies is needed to ensure availability of basic services such as drinking water, sanitation and solid waste management. A high influx of population in urban areas, increase in consumption patterns and unplanned urban and industrial development has led to the problem of air and water pollution.

### **Waste Management**

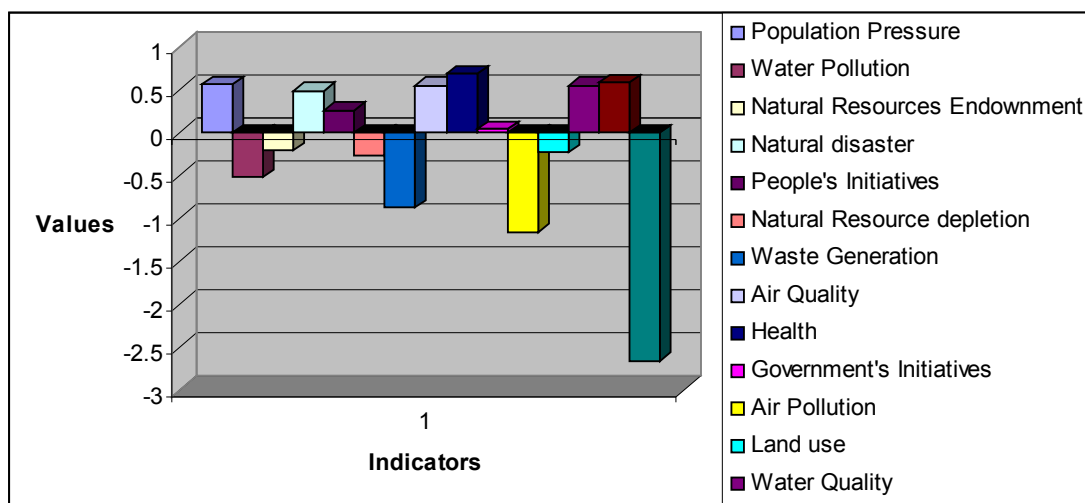
At present, around 181,856.699 Metric tonnes of hazardous wastes are generated in the State of which nearly 42,916.982 Metric tonnes are recyclable, 128,984.214 Metric tonnes are disposable and 10,072.612 Metric tonnes is incinerable waste. In Tamil Nadu, the unsegregated municipal solid wastes generated are collected and are either disposed in low-lying areas or water bodies or disposed along the roadside and

are set on fire causing air pollution. The leachate from the dumped solid wastes has caused water pollution, odour nuisance are mainly caused due to the putrefaction of the organic matter present in the unsegregated municipal solid wastes.

Kodungaiyur and Pallikaranai in Chennai are the standing example for municipal solid waste dumping sites<sup>2</sup> Most biomedical waste generated from health care facilities are at present, collected without segregation into infectious and non-infectious categories and are disposed in municipal bins located either inside or outside the facility premises. Since the infectious waste gets mixed with municipal solid waste, it has potential to make the whole lot infectious in adverse environmental conditions.

Government of Tamil Nadu has issued instructions to all Urban Local bodies to establish waste processing and disposal facilities and has taken effective steps towards management of hazardous chemicals and hazardous wastes in an environmentally friendly safe manner. The environment problems arising due to indiscriminate use and disposal of throw away plastic items have been recognised and the Tamil Nadu Pollution Control Board has embarked upon an intensive awareness campaign focused on preventing the use of throw away plastics as well as eco friendly substitutes to plastic items.

### State of Environment in Tamil Nadu:



Note: Values are in a scale of -3 (worst) to +3 (best) and 0 means average

Source: Based on a study conducted by IFMR in 2008

## **ANDHRA PRADESH**

### **Biodiversity**

Andhra Pradesh with its varied topography from the hilly regions of Eastern Ghats, Nallamalais to the shores of Bay of Bengal, support varied vegetation, enriched by a variety of fauna. The hills (Eastern Ghats being prominent), the wetlands (millions of them with wetland systems like Kolleru and Pulicat being very large), and manmade systems like the Nagarjunasagar and Srisailem Reservoirs), mangroves (Coringa being an important one) Deccan and Central plateaus of Telangana and regions of Rayalaseema, rivers (mainly Krishna, Godavari and Pennar), the coasts, estuaries and forests, which are largely dry deciduous with variations from near moist deciduous of Eastern highlands to the scrub of Rayalaseema. There are also smaller groves which are sacred or protected.

Increase in population, problem of submergence of tribal habitat under hydroelectric projects, irrigation projects, displacement due to mining projects, and wildlife sanctuary projects etc, have resulted in increased pressure on land for agricultural needs. This leads to encroachments into the reserve forest area. Over exploitation of natural resources, which has a direct bearing on the habitats and resources is the major threat to the biological wealth. The flora includes a wealth of medicinal plants. Among the floral diversity available in the State, 40 species are brought under red list species, and 43 animals are stated as threatened.

### **Coastal and Marine Ecosystems**

The marine environment in the State, which has a long coastal line, includes both the coastal zones (terrestrial) as well as the seas of Bay of Bengal. Mangroves are part of the coastal ecological zone. The mangroves were neglected and subjected to developmental pressures like shrimp aquaculture. The coastal environment is being altered at ever-increasing rates, often without looking ahead at future consequences. The coastal zone receives a vast quantity of sewage waste, dredge spoils, industrial effluents and river runoff. These markedly affect the composition and quality of coastal environment, causing marine pollution. Visakhapatnam harbour and Kakinada Bay have been considered to be the potential areas of pollution i.e. hotspot areas of Andhra coast. Besides industrial and domestic wastes, the port-related operations at Visakhapatnam & Kakinada and intensive aquaculture along the coast are the potential sources of coastal pollution. The studies conducted by the National Institute of Oceanography (NIO), Regional centre, Visakhapatnam, concluded that the impact of the anthropogenic inputs such as industrial effluents and domestic sewage has resulted in deterioration of water quality, causing mass mortality of fish due to asphyxiation.

### **Climate Change**

From 1994 onwards, the frequency of severe heat wave and the duration of heat wave spells have significantly increased. In May 2002, the heat wave conditions especially in the Coastal districts of Andhra Pradesh were markedly severe. Another interesting feature noticed is that the highest maximum temperature, which used to be recorded hitherto in the interior districts of Telangana, has remarkably shifted to coastal districts of the State, in recent years.

### **Water Resources**

The State's (surface and ground) water resources are estimated to be 108.15 BCM (3820 TMC), out of which about 62.29 BCM (2200 TMC) are currently being utilised for drinking, agriculture, industry and power generation. The per capita annual water resources work out to be slightly more than 1400 Cu. M, and utilisation is about 800 Cu. M. Godavari, Krishna, Vamsadhara and Pennar are important among the 40 major and minor rivers in Andhra Pradesh. Krishna and Godavari alone contribute almost 90% of the State's surface water resources. The current percentage withdrawal of available water in Andhra Pradesh is 58%.

The decline of ground water tables in some of the regions has become alarming in the recent years resulting in the widespread phenomenon of desertification. Agro-chemicals and urbanisation are rendering ground water and surface water bodies like tanks unusable for drinking as well as irrigation purposes. Increased population, industrialisation, agriculture intensification and other activities like aquaculture have contributed to increased waste discharge into the surface water bodies especially in rivers.

Indiscriminate tapping of groundwater in the State by too much drilling and construction of deep tube wells and bore wells, followed by unregulated pumping of wells have resulted in over exploitation and depletion of groundwater resources in certain areas. The trend of the depth to water level from 1998 – 2002 indicates an average fall of 2.97 M in the State. Fluorosis is widespread in Andhra Pradesh. It has reached endemic proportions in Nalgonda, Ranga, Reddy, Kurnool, Karimnagar and Prakasam districts. The studies conducted by CGWB revealed that the bulk drug industries located in and around LB Nagar, Uppal, Bolarum, Jeedimetla, Sanathnagar and Balanagar areas are polluting groundwater.

The AP Pollution Control Board is implementing pollution prevention and control measures for achieving and sustaining water quality in watersheds of high population concentrations by encouraging municipalities, industries, research and educational Institutions and conducting various environmental awareness programmes.

### **Industrialization**

There are 3126 large and medium scale industries in the State. The increase in industrialisation, employment and consequently inward migration adds to the pressure on natural resources of land, air and water. In Desaipet area of Warangal there are a number of leather industries/tanneries. They use hard chemicals to clean leather. After cleaning and bleaching, the waste material is let in to a local tank called Bhadrakali Cheruvu. As a result of the dumping of chemicals in the open fields, agriculture lands in the surrounding area have been severely affected. In Metpally of Karimnagar district there are parboiled rice units. They let out wastewater into the open, creating fertile ground for breeding mosquitoes.

To encourage the industries to reduce waste at source both in terms of volume and load, the APPCB is providing both Financial and Non-financial Incentives to the industries.

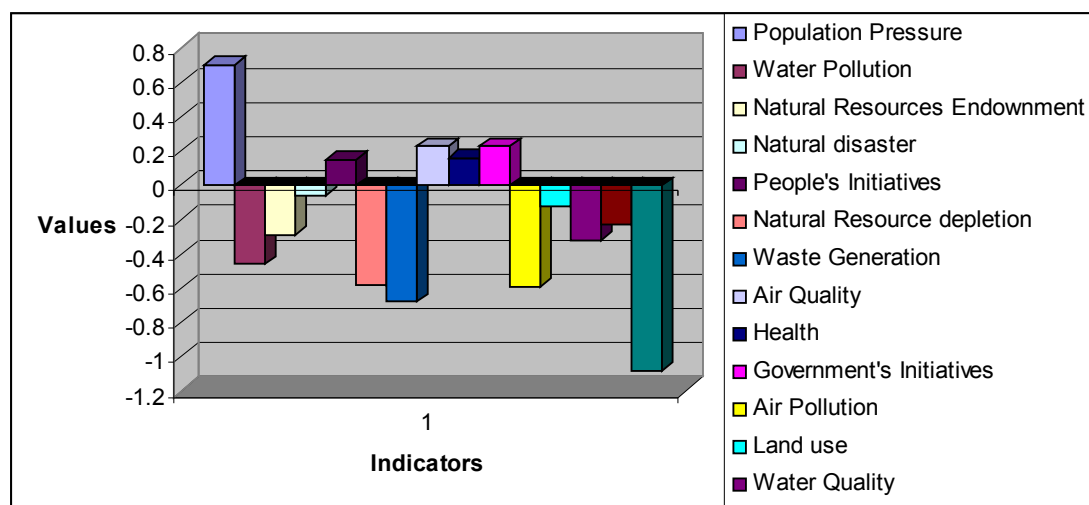
### Mining

The State with 42 industrial minerals and vast resources of building materials is making all out efforts to exploit and optimise mineral production, establishment of mineral-based industries and undertake value addition. The mining sector is poised to grow at a robust rate of 12% annually. The State will have strong mineralbased industries like cement, alumina and granite. Andhra Pradesh has the potential of being India’s cement and granite powerhouse and will continue to be a dominant producer of coal in South India. The new prospects of gas in Krishna-Godavari basin have enhanced the scope for establishing gas-based industry along the coastal tracks of the State.

### Waste Management

Littering of garbage due to unorganised collection, unsatisfactory establishment of storage facilities like dustbins or other facilities and their operation and insufficient lifting frequency of garbage as well as non-synchronised transportation system with storage facility, lack of garbage processing etc are the main causes for the generation of potential sources of air and water pollution. Hyderabad, Visakhapatnam and Tirupati are the potential areas for hazardous waste generation. To bring forth effective implementation of the Hazardous Waste Management (HWM) Rules, the APPCB has proposed to take the initiative to commission three TSDFs (Treatment, Storage, Disposal facilities), one in each of the regions. the Alternate Destruction Technologies (ADT) programme which proposes to identify economically viable technologies for treatment/disposal of wastes that could not be disposed of in a landfill or which do not have economic recovery value. This component of the project is in progress.

### State of Environment in Andhra Pradesh:



Note: Values are in a scale of -3 (worst) to +3 (best) and 0 means average

Source: Based on a study conducted by IFMR in 2008

## **KARNATAKA**

### **Biodiversity**

The state of Karnataka is a part of the highly biodiversity rich regions of India. The state is endowed with great diversity of climate, topography & soils. It spans the seacoast with rich aquatic biodiversity and mangrove swamps at the mouth of estuaries. Karnataka supports 10% of total tiger population and 25% of total elephant population of the country. The state has around 4500 species of flowering plants, 600 species of birds, 160 species of mammals, 160 species of reptiles, 70 species of frogs and 800 species of fish. Biodiversity is under constant pressure in all the major ecosystems of Karnataka due to unsustainable harvests of living resources, habitat destruction and fragmentation, impacts of pollutants and competition with colonizing, often exotic invasive species.

The state has initiated a number of biodiversity conservation measures in the past. Karnataka has declared around 16% of the total forest area under protected area network. Similarly some of the aquatic hotspots of biodiversity have also been declared as sanctuaries. Due to the intensive conservation methods, there has been appreciable increase in the wildlife population in the state over the years.

The growing demand for industrial and urban development and major naval facilities in the coastal areas of Karnataka, are putting pressure on the natural coastal habitats. There has been degradation of beaches and mangrove forests along the coast.

### **Coastal and Marine Environment:**

Karnataka's coastline extends over a length of 320 km. 14 rivers drain their water into the shore waters of Karnataka. Coastal erosion is more severe in Dakshina Kannada and Udupi coasts as compared to Uttara Kannada coast. The near shore and estuarine waters are subjected to pollution due to inadequate sanitation measures in adjacent areas, port activities, effluent discharge from industries, dumping of fish wastes etc. the intrusion of saline water in wells near shores also poses a problem for drinking water availability. The non-acceptability and non-compliance of the coastal regulation zone rules and lack of integrated management has caused significant environmental degradation. Destruction of the mud flats/tidal flats, mining of sand near estuaries and removal of topsoil has caused imbalances in the natural environment.

### **Water Resources**

Karnataka is subjected to repetitive droughts. The mean annual rainfall in the state is 1355 mm. Annual rainfall variations across agro-climatic zones in the state are too wide, ranging from 585mm in the northern dry zone to 3893mm in the coastal zone. There are 7 river systems in the state namely, Krishna, Cauvery, Godavari, west flowing rivers, North Pennar, South Pennar and Palar. There is gross inefficiency in use of water in the agriculture and domestic sectors. Farmers often misuse water from

canals and tanks by over application and also violate the prescribed cropping pattern. Depleting groundwater is a major problem in many parts of the state. Kolar, Bangalore Rural and Tumkur are districts where ground water depletion has reached critical levels. Quality of water is affected by the excessive use of pesticides and fertilisers in agriculture, dumping of sewage and industrial effluents into water bodies without treatment. Reservoirs and tanks in the state are losing their storage capacity due to heavy siltation. This in turn causes inadequate supply of water and also recurrent floods in some areas. Scarcity of water in urban areas has made water an economic commodity and has led to the emergence of unregulated private water market.

## **Pollution**

The Karnataka State Pollution Control Board has been carrying out ambient air quality monitoring at Bangalore, Belgaum, Bellary, Bidar, Chickmagalur, Chitradurga, Davanagere, Dharwad, Gadag, Gulbarga, Hassan, Hubli, Karwar, Mangalore and Raichur. The resident of these cities are likely to experience pneumoconiosis (respiratory allergies, asthma and lung diseases)The transport sector in urban areas has caused major air pollution problems of high particulate matter due to rapid growth of motor vehicles, poor road quality, inadequate road space leading to traffic jams, old technology vehicles, fuel quality and adulteration of fuel. Vehicular emissions contribute significantly to carbon mono oxide, hydrocarbons and suspended particulate matter in the air. Industries causing problems of high particulate matter emissions and sulphur include the power generating, cement, iron and steel, sugar, stone crushing units and industries using diesel generators. In Karnataka, diesel consumption is around 5 times the consumption of petrol. The presence of sulphur in diesel contributes to fine particulate emissions through the formation of sulphates, both in the exhaust stream and later in the atmosphere.

## **Industrialization**

Karnataka is home to many industries, specifically, in the sectors of iron and steel, pulp and paper, cement, chemicals, fertilizers, silk, textiles, mining, machine tools and pharmaceuticals. The environmental problems that arise due to industrial activities are water pollution, air pollution, generation of hazardous waste and noise pollution. Among the various industrial sectors, a substantial portion of effluents containing heavy metals are generated from electroplating (nickel, zinc, copper), tanneries (chromium), textiles and chemical industries while organic pollutants are mainly generated from distilleries, sugar, pulp and paper, food processing, textile, pharmaceuticals, dye and dye intermediates and tannery industries. Certain categories of industries like power looms and tiny fabrication units which are in large numbers in the state, pose serious problems of noise pollution to the surrounding areas as these are located in residential areas. Many small scale industries are reluctant to install noise abatement systems due to the additional cost burden. As per the Karnataka State Pollution Control Board, stretches of Bhadra river at Kudremukh and Bhadravathi, Tungabhadra river, at Harihar and Kali river at Dandeli receive treated trade effluents directly. Many industries in Karnataka, mainly belonging to refrigeration and air conditioning sector, and others belonging to sectors of foam, fire extinguishers, solvents and aerosols, consume, ozone depleting substances in their manufacturing

processes. To ascertain the problem of water pollution in the State, river water quality monitoring is being carried out at 55 stations for different stretches of rivers. The common chemical pollutants harmful to human health, found in ground water, due to industrial discharges are chlorides, nitrates, heavy metals and organic matter which cause miscarriages, birth defects, skin problems and neurological problems. The main causes of industrial pollution include unregistered small scale units, lack of pollution control systems, lack of common treatment facilities, lack of economically viable treatment technologies, lack of awareness.

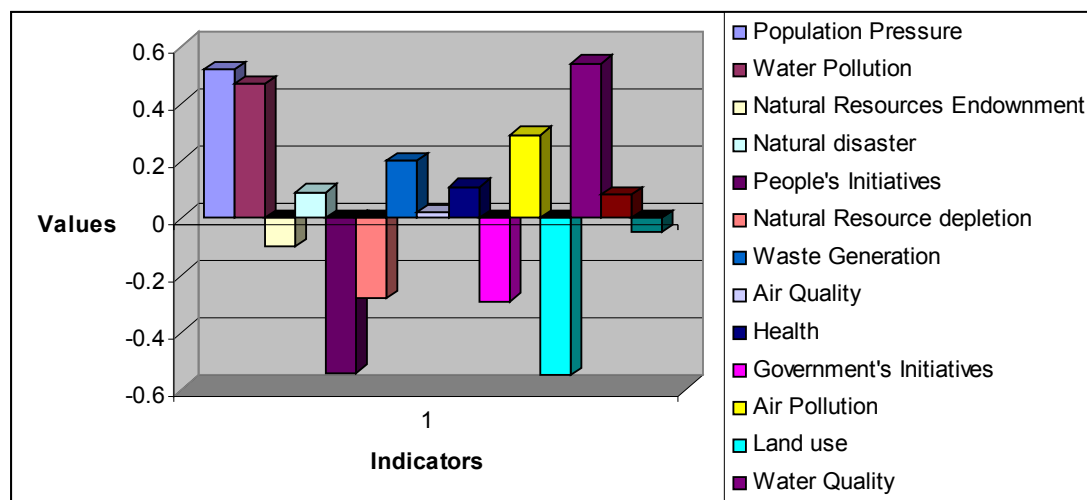
## Mining

Karnataka, being one of the mineral rich states of the country, mining provides substantial non tax revenue to the state. Of the states total area of 1,92,000 square kilometres, more than 40, 000 square kilometres of green stone belts, are known to contain vast mineral deposits of gold, silver, platinum, copper, diamond, iron, manganese, chromite, limestone etc. Stone and sand quarrying causes damage to property, depletion of ground water, loss of fertile top soil, degradation of forest land, adverse effect on the aquatic biodiversity and public health. The key environmental problems and impacts of mining/quarrying are land degradation, degradation of forests, loss of biodiversity, air and noise pollution, surface water pollution, and ground water pollution.

## Waste Management

Rapid urbanisation and industrial diversification has led to generation of considerable quantities of municipal, plastic, hazardous and biomedical waste. Improper disposal of waste often results in spread of diseases and contamination of water bodies and soils. In Bangalore, Belgaum, Gulbarga, Hubli-Dharwad, Mangalore and Mysore cities, solid waste is being dumped on open sites outside the cities since many years. Used plastic often gets mixed with municipal solid waste or gets into the drains causing soil pollution and clogging of storm water drains.

## State of Environment in Karnataka:



Note: Values are in a scale of -3 (worst) to +3 (best) and 0 means average

Source: Based on a study conducted by IFMR in 2008

## **KERALA**

### **Nature and Biodiversity**

The total forest area in the state is about 10185 km<sup>2</sup> which accounts about 22% of the total area. The mangrove forest area in the coastal belt is about 420 ha. The degrading of natural forests is due to factors such as unregulated / illegal harvest, forest fire, weeds, diversion for non-forest purposes, soil erosion, harmful effects on management and poor regeneration. The Western Ghat region is one of the 24 biodiversity hot spots in the whole world. The state contains more than 4500 species of flowering plants. The major causes for the loss of indigenous agriculture and domesticated biodiversity is due to the degradation of native agri-ecosystems, large conversion of agricultural land, introduction of exotic crops, mechanised farming etc. There are 102 species of mammals, 476 species of birds, 169 species of reptiles, 89 species of amphibians and 202 species of fresh water fishes, reported from Kerala. With the high density of population for any state in the country, with limited natural resources the pressure on the Environment in the State is on a very high side. When it is combined with the numerous pockets of ecologically fragile areas and biodiversity hot spots, this assumes greater significance.

### **Water Resources**

Apart from the copious rainfall compared to the national average, the State has 44 rivers in which 41 flow through the State with an annual yield of 70300 Mm<sup>3</sup> in which the utilizable yield is 42000 Mm<sup>3</sup>, only 60% of the annual yield. Kerala has brought out a State Water Policy in 1992 for effective management of water resources. The state has ten completed major/medium irrigation projects and the total irrigation capacity of the state is about 4.5 ha including other sources like, lift, tanks, ponds, wells etc. There exists a wide gap between supply and demand. Dug wells are the major extraction structures with a density of 200 wells per square km. In spite of the above, Kerala has one of the lowest percapita fresh water availability states in India. Although the Aruvikkara and Peppara reservoirs were built for drinking water supply alone, only Malampuzha and Peechi irrigation projects have drinking water component. It is estimated that 17.2% of the villages in Kerala do not get any benefit of protected water supply and 69% is only partially covered.

As per the national norms, Kerala does not have any single major river and has only four medium rivers, the combined discharge of which is less than half of that river Krishna. The remaining 40 rivers are only minor ones and the combined discharge is only about one – third that of Godavari. Monsoon flows contribute to almost 90% of the annual yield, leaving only about 10% during the lean flow period. The major environment problems in the state are associated with water resources are flood, drought, land slides, salinity intrusion, water logging and pollution. The hydrologic modification of wetlands and over exploitation of groundwater also pose challenges in many part of the state. The major water quality problem associated with rivers and open wells is bacteriological pollution. The dumping of solid waste, bathing and discharge of effluents also create problems. Low pH, high iron etc., are common in

well waters in the laterite covered midland areas. High concentrations of fluoride over the permissible levels have been reported from certain parts of Palakkad and Alleppey districts. The salinity level is frequently high in the coastal belt.

### **Marine and Coastal Environment**

The coastal area is about 16.4% of the state's total area, extending over a length of 580 km. The 41 west flowing rivers of Kerala carry nearly 45,060 Mm<sup>3</sup> of water per year into the sea. There are about 27 estuaries and 7 lagoons or kayals. Kerala is well known for the occurrence of mud banks which is a unique phenomenon. Almost 30% of the total population live in the coastal area. Besides, many industries are situated in the coastal stretches. The population is the most prominent driving force which exert pressure on the marine and coastal environment. The average marine fish production from Kerala is about 25% of India.

A sizeable area in the coastal belt is under urban administration. About 300 medium and large scale and about 2000 small scale industries are discharging effluent directly into marine or fresh water bodies. It is estimated that about one million m<sup>3</sup> of sewage is generated per day in the coastal areas and about 30000m<sup>3</sup> of this reaches the surface water bodies. Over exploitation of resources such as mangroves, fisheries, Sand and landscape is evident. Infrastructure development including Ports and Harbors, Sand Mining for industrial and construction purposes, siting of industries recreational activities and house holds have contributed to coastal erosion.

The record growth in tourism is imposing tremendous pressure on the environment. A major port at Cochin and 14 minor ports and fishing harbours are situated in this coastal zone. The fisheries sector is in the coastal zone. The fisheries sector is facing pressure arising out of the excess fishing fleet, habitat degradation, over fishing and juvenile fishery. The major schemes like Thanneermukkam and Thottappally spill way are constructed in the Coastal Zone with a view to achieve agricultural development in the Kuttanad area which have created environment problems.

### **Climate Changes**

The entire state of Kerala is classified as one meteorological subdivision for climatological studies. The state experiences humid and tropical monsoon climate, with seasonal heavy rainfall, followed by hot summer. Due to the pressure of population, forest areas are under threat which leads to higher concentration of carbon dioxide in the atmosphere. It is vital that more people begin to recognize the seriousness of these issues and start taking personal responsibility for the environment. Similarly, coconut husk retting which is a major activity in the coastal areas of the state generates methane (second important green house gas) along with the hydrogen sulphide. Fluxes from wetlands are influenced by human activities like aquaculture, discharge of sewage and domestic wastes. Methane emission from various sources when converted to equivalent CO<sub>2</sub> in terms of global warming potential accounts for about 16% and Nitrous Oxide contributes another 2%.

Together, they contribute more than 93% of the warming potential of the green house gas emissions from Kerala. The study of the average annual mean maximum and minimum temperatures in Kerala from 1961 to 2003 confirms the raising trend of maximum, minimum and average temperatures of the order of respectively 0.80C, 0.20C and 0.50C.

## **Air Quality and Noise Pollution**

The major causes of air and noise pollution in the state are due to automobiles and industries. Vehicular emission and noise from these vehicles are severe in the three major cities of Kerala, viz., Thiruvananthapuram, Kochi and Kozhikode. The pollution from industries are mainly contributed by the four major industrial areas of the state, three in Ernakulam (Eloor, Ambalamughal and Udyogamandal) and one in Kanjikode at Palakkad. Bulk of the major/medium industries and the maximum number of vehicles are in Ernakulam which has naturally resulted in an adverse impact in the air quality. The Kerala State Pollution Control Board (KSPCB) has brought out 592 large/medium and 2700 SSI units under the consent regime of Air(Prevention Control of Pollution) Act. The ambient air quality monitoring, being carried out by the KSPCB at 11 stations in the state, has reported that Suspended Particular Matter (SPM) and Respirable Suspended Particulate Matter (RSPM) levels exceed the ambient air quality standards. However,SO<sub>2</sub>&Nox levels are within the stipulated standards.

The shift in focus in the energy sector from hydel sources to fossil fuel also contributes to an increase in air pollution. The unplanned urban growth also augments the air quality and noise pollution considerably. Indiscriminate use of loud speakers contributes to the sound pollution problem in the state.

To control air pollution, unleaded petrol and desulphurised diesel have been introduced to reduce emission of lead and sulphur respectively. Use of air horns has been banned. The accelerated renovation of road network would help to reduce vehicle emissions and noise levels created by them. Incentives, subsidies and tax benefits are extended to industries by the Government to help them implement the latest pollution control measures.

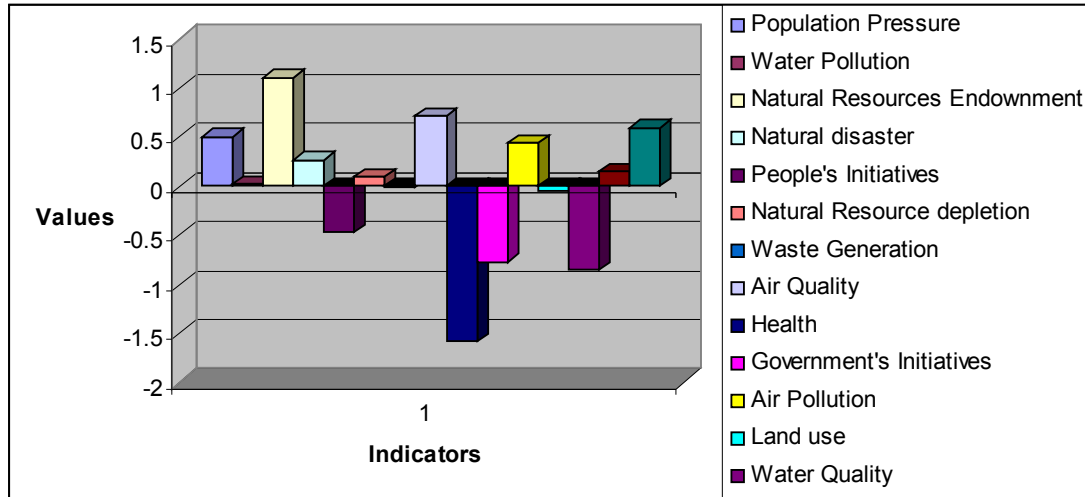
## **Waste Management**

The average waste generation per capita in Kerala is high compared to the national average. About 26% of total health care institutions in India are located in Kerala and the total quantity of hazardous waste generated and handled in the State is about 82724 tons/year. The quantity of recyclable hazardous waste is 10725 tons/year, incinerable hazardous waste is 10725 tons/year, incinerable hazardous waste 2596 tons/year and for land disposal is 60538 ton/year. About 1.5 lakhs ton/day of solid waste is being generated from the hospitals and other health care establishments. The quantity of garbage generated in the state is about 6000tons/day. Kerala is having the highest number of (5095) health care institutions. There are 600 about 12000kg per bed. The Government of Kerala has brought out a vision document on biomedical waste management in which it is proposed to have three common biomedical waste treatment and disposal facilities in the State.

The Government such set up the State Pollution Control Board in 1984 to address issues arising out of pollution of air and water as well as hazardous wastes. Several sectoral departments such as forest and wildlife, water resources and local self government have been addressing issues relating to forest and wildlife, to river pollution and solid waste management respectively. The Clean Kerala Mission has

been set up by the Government of Kerala with the objective of having a litter free state. A Coastal Zone Management Authority has been set up to administer issues relating to Coastal Regulation Zone notification. Recently, State Biodiversity Board has been set up to the Government in accordance with Biodiversity Act, 2003.

**State of Environment in Kerala:**



Note: Values are in a scale of -3 (worst) to +3 (best) and 0 means average

Source: Based on a study conducted by IFMR in 2008

## Environment Sustainability Index for Indian States

ESI 2008

Source: IFMR

The Environmental Sustainability Index (ESI) provides a gauge of a society's natural resource endowments and environmental history, pollution stocks and flows, and resource extraction rates as well as institutional mechanisms and abilities to change future pollution and resource use trajectories.

The Environmental Sustainability Index (ESI) maps the performance of the 28 Indian states in terms of natural resource stocks and flows, pollution and environmental governance. Based on secondary data collected from official and other credible databases, the ESI ranks the 28 states. The best performing state in the current ranking is Manipur, followed by Jammu & Kashmir and Tripura. The lowest ranking states are Gujarat, Punjab and Haryana. The ESI reveals that most Indian states are facing population pressure, unsustainable levels of consumption of some natural resources and pollution problems. Most states have done well on some issues and poorly on others

States	ESI Score	ESI Rank
Manipur	100.00	1
Sikkim	90.99	2
Tripura	85.81	3
Nagaland	82.08	4
Mizoram	81.58	5
Arunachal Pradesh	75.45	6
Chhattisgarh	74.09	7
Orissa	71.88	8
Uttaranchal	71.18	9
Assam	70.15	10
Meghalaya	66.79	11
Jharkhand	64.33	12
Himachal Pradesh	61.26	13
Karnataka	55.79	14
Kerala	53.71	15
Bihar	51.98	16
Jammu and Kashmir	48.73	17
Goa	45.16	18
Madhya Pradesh	43.01	19
Maharashtra	37.28	20
West Bengal	35.72	21
Tamilnadu	33.75	22
Andhra Pradesh	32.55	23
Rajasthan	26.52	24
Haryana	25.59	25
Uttar Pradesh	21.40	26
Gujarat	10.46	27
Punjab	0.00	28

## NEWS REPORTS

### 1) The pumped-out Palar drinking water in Rajeswari Nagar, Selaiyur.



TAMBARAM: The supply of Palar drinking water, allegedly contaminated by mixing of sewage, has affected several dozen families in East Tambaram. Residents living in a few streets of Rajeswari Nagar and Rajeswari Nagar (Extension) in Selaiyur coming under Tambaram Municipality told *The Hindu* that the water they had stored in huge vessels and underground sumps was dark grey in colour and had a pungent, foul smell. Residents said that they received Palar water only once in 10 days or a fortnight. Whatever little quantity of Palar drinking water they received on Tuesday and Wednesday this week was contaminated. Complaints to the Tambaram Municipality did not evoke any positive response, they said.

It is a common practice for the residents to turn on the taps round the clock so that sumps get full whenever water is supplied. P. Kumar, a resident of Fourth Cross Street, Rajeswari Nagar, said that the residents were shocked to notice sumps filled with foul-smelling water.

Enquiries revealed that a portion of the street was dug up and this resulted in sewage flowing in the open to get contaminated with the drinking water supplied to the residents of Rajeswari Nagar.

The problem was restricted to Rajeswari Nagar (that comes under Ward No. 19 of the municipality) but also in neighbouring Eswari Nagar of Ward No. 18.

Councillors attributed the problem to discharge of sewage in the open from huge apartment complexes and commercial establishments and moreover, most localities lacked proper drainage facilities.

**2) KOCHI:** The demand for cleaning up the Kurur canal in Kothamangalam, which is in a bad condition due to the dumping of garbage for several years, gained national importance after hundreds of NCC cadets from various colleges in the country staged a rally seeking immediate action to restore the canal.

The cadets and officers from Jammu, Haryana, Punjab, Himachal Pradesh, Rajasthan, Tripura, Nagaland, Mizoram, Assam, Delhi, Bihar, West Bengal, Madhya Pradesh, Tamil Nadu, Karnataka, Orrissa and Kerala participated in the rally.

The canal had turned into a bad shape after it got clogged by the heavy dumping of waste and scrap.

Though the residents have been demanding the authorities concerned to take steps to restore the canal, their plea has not been addressed so far.

The residents, in association with the Centre for Water Resource Development and Management (CWRDM), the Pollution Control Board (PCB) and the Centre for Earth Science Studies (CESS), have organised various symposiums and seminars to highlight the issue

3) **ERODE**: State Minister for Public Works Department Durai Murugan has said that the Department, to arrest pollution in Kalingarayan Canal, would construct a concrete wall on the right bank.

Talking to journalists after inspecting a portion of the Canal on Sunday morning, he said the Department would construct the wall in about a year-and-half's time, so that effluents from tanneries and dyeing units did not enter the Kalingarayan Canal.

He pointed out that the effluents that entered the water had not only affected cultivation on 20,000 acres but had also caused skin problems and cancer in people living nearby.

The Minister said the 100 tanneries and 600-plus dyeing and bleaching units that had come up on the right and left banks of the Canal respectively, had so far managed to circumvent all steps the State Government had put in place to check pollution. He added that the State Government would continue its action against polluting industries and a part of the step was his visit to the area.

4) **CUDDALORE**: The width and depth of the Paravanar have been reduced to less than half its original size owing to accumulation of silt and encroachments.

*Encroachments have reduced width of the Paravanar from 80 ft to 36 ft.* This led to frequent floods, affecting lives of farmers and residents along its course.

One of the reasons being attributed to the recurring phenomenon is the discharge of slush-filled water from the Neyveli lignite mines directly into the Paravanar and the Wallajah tank.

During the "Water Walk" organised recently by Collector Rajendra Ratnoo in the places such as Pinnalur, Ambalpuram, Thalaikulam, Uthur, Jayankondam and Marudur, residents said that dumping of slush in water sources should be stopped. Owing to continuous sedimentation, the level of the Paravanar bed had risen above the land level, resulting in breaches of banks and inundation.

Encroachments had reduced the width of the Paravanar from 80 ft to 36 ft., and the span of the bridge built across the river had fallen short of its width. This obstructed water flow and the excess water inundated farms and habitations. The residents also sought restructuring of old sluices.

The Wallajah tank never suffered any breach prior to 1990. Later, breaches became too common and the primary reasons were build-up of silt and reduction in the number of sluices from 17 to 14.

Through rough sketches drawn on the soil, the residents explained to the Collector how all 12 canals branching out from the Wallajah tank and joining the Paravanar had shrunk. The culverts across the canals too had become too small to match the flow.

Local leaders also said that despite heavy rain, the lakes at Parudhampattu, Kumudimoolai and Kothavacheri were only 10 per cent full. If these were desilted and deepened, the storage could be increased manifold and the flood situation averted.

They also sought linking of the Thalaikulam canal to the Thitta Vaikkal, construction of a sluice bridge at Kolakudi and widening of all bridges.

Responding to their demands, Mr. Ratnoo said that the Neyveli Lignite Corporation was implementing a Rs. 25-crore project to take the water evacuated from the mines to the sea.

Other suggestions would be incorporated in the report which would be submitted to the Cabinet sub-committee on flood control measures, he added.

#### **5) Arsenic Pollution in Ground water in Andhra Pradesh:**

Patancheru industrial development area is about 40km away from Hyderabad, Andhra Pradesh and is situated on Hyderabad Bombay highway. About 320 industries manufacturing pesticides, chemicals, pharmaceutical products and steel are located in this area. A Common Effluent Treatment Plant (CETP) is installed by about 110 industries that bring their effluents in tankers for treatment purpose. After treating these effluents, wastewater is discharged in a water stream called Peddavagu, which meets the main stream Nakkavagu flowing through Patancheru area. This Nakkavagu finally meets the river Manjira that is one of the main source of drinking water for Hyderabad City.

The trace metals like arsenic present in the soil form complexes with the organic acids such as fomic acid which help these pollutants to migrate faster through the soil and contaminate the aquifers. The decomposition rate of organic matter is very high in India as being a tropical country.

Arsenic present in the Peddavagu, which is released by Common Effluent Treatment Plant, migrates vertically and horizontally and contaminates the ground water in the wells of adjoining villages which is indicated by the high values of arsenic in well water. The studies reveal that arsenic is released by the industries in CETP through tankers. This arsenic is passed on to the water stream Peddavagu after so called treatment which takes care of COD, BOD and TDS and can not reduce the toxic metals present in the effluents. As CETP was trusting the industries that they will be checking the effluents before bringing to CETP and was not having any facilities with them to check the effluents for heavy metals, all the metals were passed on to the water stream. Patancheru is having 3-10meters of alluvial soil and arsenic was transported to the ground water. Once the aquifer is contaminated, it is very difficult, if not impossible to clean it. The well water in some of the villages is not suitable for drinking or agriculture purpose due to high concentration of arsenic and some other toxic metals

#### **6) Warning against burning of waste on Bogi festival**

DINDIGUL: Stern action will be initiated against persons who engage in burning of tyres, plastic and rubber items during Bogi festival, the penultimate day of Pongal festival. Unrestrained burning of tyres and plastic items would produce dense smoke and toxic fumes polluting air, water and soil, Collector R. Vasuki said here on Sunday.

Several toxic fumes released at the time of burning of tyres have the capacity to cause considerable damage to health and might even lead to cancer.” In the past two decades, we had the habit of burning all wastes, including plastic and rubber wastes in the house for Bogi festival.

Burning tyres, tubes and plastic items would produce deadly chemicals, damaging the health of people and environment.

Tyres, when burnt, released many chemicals that caused respiratory diseases to humans, she added. "Violators can be sued under section 15 of Environment (Protection) Act 1986.

They can even be arrested and imprisoned under this section."

Emission from burning tyres and plastic items in an open area was more toxic than any another kind of emissions. Carbon monoxide, sulphur oxides, oxides of nitrogen, dioxins, hydrogen chloride, benzene and metals such as arsenic, nickel, chromium and zinc would be released from it.

It would certainly cause chronic health hazards to nearby residents. Smarting of eyes was another problem, she said.

With an effective awareness campaign, several people had abandoned such a practice in the past five years. All must follow it this year also, keeping in mind that it would pose a serious environmental and health hazard, she added.

The police, Pollution Control Board officials, fire service personnel and local bodies would be monitoring whether people were engaged in the burning exercise.

Community participation alone would conserve natural resources and protect the environment, she added.

#### **7) Sound and fury signifying a lot - *Sound of mills, generators, vehicle horns ... city's noise pollution level going up***



#### **The generator sets at some mobile phone towers contribute to noise pollution. —**

CHENNAI: Right from the sound generated by flour mills to the sputtering of diesel generators that more commercial establishments use in the backdrop of frequent power cuts, the noise of vehicle horns, the hum of air-conditioner units, everything is adding to the increase in noise levels in the city.

Since the beginning of 2008, the Tamil Nadu Pollution Control Board (TNPCB) has received a total of 133 complaints related to noise pollution from different localities in the city alone.

Several residents complained of noisy diesel generators, particularly those used at mobile phone towers and air-conditioners installed in office complexes.

Since the towers are necessary for ensuring better coverage, the telecom service providers have erected towers all over the city.

Residents, who live next to the towers, have to live with the constant noise of the diesel generators and inhale the exhaust. While the permissible noise level for residential areas is just 55 dba (during daytime) and 45 dba at night, the noise from these generators would be around 60 dba, according to an official of the TNPCB. "In most areas the towers are situated atop the building and there is no problem due to

this. But in places where the towers are at ground level, neighbours have to bear the brunt. Though the diesel generators manufactured after 2003 have in-built acoustic reduction devices, owing to constant vibration and wear and tear, the noise generated is irritating. We received complaints from residents in Royapettah and Triplicane. After we asked the [telecom] companies to take steps to reduce the noise level, they complied,” TNPCB District Environmental Engineer E Kannan told *The Hindu*. The Board has received complaints from the T. Nagar and Adyar areas too regarding the noise and thermal pollution caused by air-conditioner’s compressor units in commercial complexes located in residential areas.

Since there is not much space between the buildings in many areas, the noise from 30 to 40 compressors can be a problem. “In such cases we advise companies to install the compressors on the terrace,” he added.

Large diesel generator sets in BPOs and IT firms also contribute to noise pollution in residential areas. The constant movement of vehicles and people on the road at night are also disturbances, said a resident of Chetpet. “We have complaints from R.A.Puram and Chetpet and the companies have been asked to take steps to cut down the noise,” the official said.

#### **8) Greening India project on Sandhavasal hills**



***AFFORESTATION Drive: Saplings kept ready in a nursery in Kalpattu for being planted in Kalpattu and Ananthapuram village panchayats in Tiruvannamalai district under the Greening India project.***

TIRUVANNAMALAI: About 50,000 tree saplings will be planted in Kalpattu and Ananthapuram village panchayats on Sandhavasal hills in Tiruvannamalai district at a cost of Rs.13.5 lakh under the Greening India project being implemented by the National Afforestation Eco Development Board. The Srinivasan Services Trust (SST), a non-governmental organisation being run by Sundaram Clayton Ltd and TVS Motor Company, has been chosen for executing the three-year project beginning 2007-08.

A visit to Kalpattu revealed that nurseries of various forest tree species have been raised for the project, while the work of planting the saplings has commenced recently. K.S. Krishnan, consultant of the SST told *The Hindu* that 44 hectares in Kalpattu panchayat and 13 hectares in Ananthapuram panchayat would be covered under the project. Village Forest Committees (VFCs) have been formed in both the villages for implementing the project.

The hills in this region, forming part of the Eastern Ghats, have been specially covered under afforestation schemes since the Eastern Ghats has been susceptible to degradation owing to deforestation and man-made fires

## **Conclusion**

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It is difficult to identify the single greatest threat to the environment, mainly because experts have different opinions on the subject and new scientific information is always coming to light. There are some problems that rank high on any list of environmental issues among these are global warming, over development and exploitation of natural resources. Transforming the global economy and developing new, climate-friendly sources of energy will not be easy; commitment and action is needed at all levels—individual, community, and government

India, one of the most populous democracies of the world, is facing a crisis situation. The environmental conditions are deteriorating, the population is growing at a rather rapid pace, trees are cut in thousands each day, the industrial development has polluted the air as well as water and the growing number of automobiles has littered the place with noise pollution. All these degenerating factors have a tremendous impact on the social, political and economic conditions prevalent in the country. Environmental law is a relatively new discipline in India, but one already substantial and complex. The Environment (Protection) Act, 1986 was enacted by the Indian Government in addition to pre-existing environmental laws to provide for the further protection and improvement of environment.

Individuals as well as companies have realised the importance of environmental protection. Large numbers of programmes are relayed on television channels that emphasize the need to have a clear, greener and better environment. Recycling is a practice that has become popular worldwide and in many countries it is mandatory to recycle plastics, cans and other products. Moreover there are various legislations and rules passed to prevent the immense amount of air pollution that is caused from polluting cars and large factories. For eg. In India it is compulsory that every vehicle must undergo the "Pollution Under Control" Test at regular intervals. Moreover laws have been passed to prevent hunting and poaching of animals in several countries. Many campaigns have been held worldwide to reduce the consumption of leather and woolen articles as the manufacturing of these articles cause tremendous harm to animals.

Though over the past few years efforts have been made for conserving our forests, land, water and air, better efforts are expected. Merely the enactment of laws is not sufficient. They must be adequately enforced. While the ecosystem has some abilities to correct or heal itself, the limitations on the damage it can sustain are quickly approaching.

In the age of globalisation and liberalisation, economic benefits drive organisations. In other words, anticipation of potential economic benefits makes organisations across the world proactively change their policies and strategies of doing business. Hence, if organisations are made to see that the age-old concept of inverse relation between economics and environmental benefits is obsolete, they will proactively move towards environmental friendly practices. It is vital that more people begin to recognize the

seriousness of these issues and start taking personal responsibility for the environment.

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