PRINCIPAL AREAS OF ENVIRONMENTAL POLICY

There are various dimensions and areas of the deteriorating environment and equally numerous are the dimensions and areas of environmental policies. The main areas of environmental policy discussed in reference to India are enumerated below:

1. WATER

Water is one of the basic essentials of life. We, and all other living beings, use water directly or indirectly for survival on this planet. It produces food and fibre to meet the basic needs for human survival and well-being as well as helps to maintain the balance in the eco-system. It is a renewable but limited natural resource. Globally, water covers about 70% of the earth’s surface and fresh water accounts for only 2.7% of the earth’s surface. But nearly the entire volume of this is locked in the masses of ice-caps, glaciers and clouds. Thus, in spite of large amount of water on the earth’s surface, living organisms are left with only a limited amount of water. Moreover, much of what is left is often not potable and is unclean. The World Health Organisation (WHO) estimates that almost half of the world’s population is suffering from debilitating water-borne or water-related diseases, which account for an estimated five million deaths each year. In India too, the figure is not satisfactory. Barely 10-12% of the population get clean drinking water, 80% uses polluted water and the rest are left with no source. About 3 million people in India get affected with water- borne diseases.

The policies regarding water are not limited to its prevention from being polluted but it also includes its proper management, conservation, utilisation and distribution to all the people at all levels. The right to access water, maintenance of water quality and disposal of water waste are also a part of water related policies. However, more
notable policies in India have been made with focus on ways to prevent water from getting polluted.

Water pollution has been defined as, “the change in the composition of water in such a way, that it becomes not only safe but also wholesome for human consumption”.4 Section 2 (e) of the Water Pollution Act, 1974 defines water pollution as “contamination of water or such alteration of the physical, chemical or biological changes in water or such discharge of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may be the case, or is likely to create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses or to the life and health of animals or plants or of aquatic organisms.”5

The pollution of water has been so devastating that it has become a cause of diseases among 42% humans and animals.6 The effects of water pollution are not only devastating for people but also for animals, fish, birds and crops. Contaminated water destroys aquatic life and reduces its reproductive ability. Also, the heat released by industries upsets the natural balance of water ecosystem and destroys aquatic life. Moreover, farmers complain that the yields have gone down, earlier the land which used to give 6-7 tonnes of jowar, now produces only 1.8 to 2 tonnes.7 Apart from this, it cuts down the availability of the water resources of the country. The World Bank has warned that India is on the brink of a severe water crisis.8

Man has been polluting water since ages but the rapid growth of industrialisation, urbanisation and population has exceeded the boundaries of the replenishing process of nature. The main sources of water pollution are the sewage and industrial wastes discharged into rivers. Moreover, there are inadequate facilities to treat the waste water. According to scientists at the National Environment Engineering and Research Institute (NEERI), about 70% of the available water in India is polluted.9 And only about 10% of the waste water generated is treated; the rest is being discharged as it is into water bodies.10 Out of India's 3,119 towns and cities, just 209 have partial treatment facilities, and only 8 have full wastewater treatment facilities.11 Water pollution can affect both surface and groundwater; however surface water is more likely to be polluted, but the pollution of groundwater is not any less severe. The problem of groundwater pollution by heavy metals is such a
serious issue that it can be easily understood by the fact that the town of Ranipet, because of groundwater pollution, is in the list of ‘Top 10 Worst Polluted Places of the world’.  

All these problems related to water led the government of India to take steps, from time to time for preventing water pollution. Subsequently, a number of laws, Acts, and regulations have been undertaken by the government for the protection of water resources. The primary responsibility for issues of water belongs to individual states. Since the Constitution provides for the continuation of all laws in force at the time of its adoption, the scheme introduced in the Government of India Act, 1935, where water is a state subject, is still followed. Acts such as the 1931 Irrigation Act has been maintained in Madhya Pradesh. But now the Ministry of Water Resources (MOWR) is the principal agency responsible for water management in India. It oversees the implementation of water policies such as resource development, exploitation, interstate conflicts, water distribution and so on.

The two main Acts regarding water pollution passed by the Government of India are:


The Water (Prevention and Control of Pollution) Act of 1974 was the first and principal policy concerning the prevention and control of water pollution in India established under Article 252 of the Constitution of India. This Act was enacted “to provide for the prevention and control of water pollution and maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution, for conferring on and assigning to such Boards, powers and functions relating thereto and for matters connected therewith.” Further, the Act constituted and defined the functions and powers of the Central Pollution Control Board and State Boards; accounts, funds and audit; and penalties and procedures related to it. It has defined some significant terms such as pollution, stream, trade effluents, sewer, occupier, outlet and so on. The Act is supported and followed by the Water (Prevention & Control of Pollution) Rules, 1975 and the Water (Prevention &

The Water (Prevention and Control of Pollution) Cess Act of 1977 was adopted to provide funds for the central and state pollution control boards. The Act empowers the Central government to impose a cess on water consumed by industries listed in Schedule I of the Act. Industries and local authorities that are specified are subject to the cess if they use water purposes listed in Schedule II of the Act. Some of the industries which are applicable to the water cess are cement mills, sugar mills, thermal power plants, distilleries, fertilisers, oil refineries and many more. This Act was amended with the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003.

However, the issues of water are related not only to the prevention and pollution of water, there are number of other related issues as well such as, distribution, utilisation and sustainable management of water for which different policies have been formulated by the Government of India. There have been cases of conflict and communal violence regarding dams, distribution and access of water, water quality and displacements. Therefore, policies are made in these areas also. The other Acts relating to water are:

- Inter-State Water Disputes (ISWD) Act, 1956.
- River Boards Act, 1956.
- Brahmaputra Board Act, 1980.
- Inland Waterways Authority of India Act, 1985.
- The Indian Maritime University Act, 2008.


• The Betwa River Board (Amendment) Act, 1993.

• The Inland Waterways Authority of India (Amendment) Act, 2000.

The most important policy regarding water resources is the National Water Policy, 1987. It developed as a result of the growing demands of the increasing population, uneven distribution of precipitation, economic and development activities, unsustainable use and the importance of maintaining ecology. However, since the water policy, a number of new issues and challenges emerged regarding water resources. Therefore, it was revised in 2002. But it has been severely criticized by the environmental groups on the ground of not involving the local community in the management of water resources.

A number of international issues regarding water allocation and distribution have been surfaced with neighbouring nations. With Bangladesh, the Joint Rivers Commission was established in 1972 to solve water disputes. However, these treaties have not fully resolved the problems. The major water policies at international level are:

• The Indus Waters Treaty - India and Pakistan (1960).

Subsequently, these Acts have led to a number of measures by the government at the national and local levels in the sector of water. The government formed various water management systems and authorities in India. These include Central Water
Commission, Central Ground Water Board, National Water Development Agency, National Projects Construction Corporation Limited etc. for efficient water resource management. Though, 40% of the wastewater generated by Indian most polluting industries comes from small size industries, but these small scale industries cannot afford to install standard effluent treatment plants (ETP). So the government promoted common effluent treatment plants (CETPs) scheme, allowing small industries to gather in order to jointly treat their effluents. The first CETP in India was constructed in 1985 in Jeedimetla near Hyderabad, Andhra Pradesh. In 1999, 82 CETPs had been set up around the country. Further, the National River Conservation Directorate was formed with the charge of coordinating several river conservation plans. It covered rivers like Ganga, Yamuna, and Gomati etc. The Accelerated Rural Water Supply Programme (ARWSP) was introduced in 1972-73, renamed as the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991, was another mission introduced by the government to accelerate the pace of coverage of drinking water. The government also set up several water quality monitoring stations. There are 1,019 stations in 27 States and 6 Union Territories covering 200 rivers, 60 lakes, 5 tanks, 3 ponds, 3 creeks, 13 canals, 17 drains and 321 wells. Presently, the inland water quality monitoring network is operated under three-tier programme i.e. Global Environment Monitoring System (GEMS) and Monitoring of Indian Aquatic Resources (MINARS) and Yamuna Action Plan.

In the context of ground water, the central government established the Central Ground Water Authority to regulate and control development and management of groundwater resources. States have been slow to respond to water problems but recently a number of Acts were adopted. The pollution of coastal water has also attracted the attention of Central Pollution Control Board (CPCB). Under the programme, Coastal Ocean Monitoring and Prediction System (COMPS), the Department of Ocean Development is monitoring the coastal waters of the country, which identified some areas of concern which required continued intensive monitoring.

Furthermore, for effectiveness of policies, the government has fostered the involvement of local people in the irrigation and drinking water. Water User Associations Schemes (WUAs) have been introduced in different forms in different parts of the country. The Association offers and receives benefits. In addition to the setting up of WUAs, the Union government has proposed a scheme known as Swajaldhara, which proposes to foster new types of intervention to ensure better
drinking water availability in villages. The guidelines on Swajaldhara are the direct outcome of a World Bank-sponsored pilot project called Swajal and adopt the same philosophy.\footnote{21}

This existing legal framework concerning water is complemented by the aspect of human rights too. While the Constitution does not specifically recognize a fundamental right to water, court decisions deem such a right to be implied in Article 21 (right to life). In \textit{Subhash Kumar v. State of Bihar}, the Supreme Court recognised that the right to life ‘includes the right of enjoyment of pollution free water and air for full enjoyment of life’. In the \textit{Sardar Sarovar} case, the Supreme Court went even further and directly derived the right to water from Article 21. It stated that ‘[w]ater is the basic need for the survival of human beings and is part of the right to life and human rights as enshrined in Article 21 of the Constitution of India. However, its implementation through policies and Acts is not as advanced.’\footnote{22}

The Supreme Court in a judgment on public interest litigation on the right to safe drinking water, directed the central government to draw up and implement by 2015, a programme to interlink major rivers. Subsequently, Prime Minister Vajpayee announced the government’s decision to act on the Supreme Court directive and appointed a special task force to ensure implementation of the project by 2015.\footnote{23}

\textbf{Ganga Action Plan}

One of the worst cases of water pollution in India is that of Ganga river. The river has become so polluted, mainly because of sewage, that its survival seems difficult. According to environmentalists, about 90 per cent of pollution of the river is caused by sewage generation while only about 5 to 6 per cent can be blamed on bathing and other activities.\footnote{24} Kanpur alone dumped 274.3 million litres of new sewage into Ganga river every day. Drinking water supplied in eleven cities of UP was not fit for human or even animal consumption and specifically 98% residents of Varanasi were suffering from stomach ailments. Apart from one million litres of untreated water going into the river each day, 42000 bodies were cremated in Varanasi each year further deteriorating its quality. Another 3000 unclaimed bodies and 9000 dead cattle were being thrown into the Ganga every day from Varanasi alone.\footnote{25} According to a survey by a local group, the Eco-Friends Society, over 100 human and animal
bodies can be found floating, in various stages of decay, over a 10-km stretch near Kanpur at any given time.\(^26\)

Consequently, the Government of India announced the new plan of cleaning the Ganga in April 1985. The CGA (Central Ganga Authority) in February 1985, renamed as the NRCA (National River Conservation Authority) in September 1995, under the chairmanship of the Prime Minister was constituted to oversee the related policies and programmes.\(^27\) With the closure of the plan in 2000 and after an expenditure of roughly 50 crore rupees, the plan has been a failure. The pollution levels in the Ganga are as high as ever. Veer Bhadra Mishra, president of the Sankat Mochan Foundation, Varanasi said:

"20 years after we started our campaign, I still feel that we have not been able to achieve anything. Our aim is still what it was -- to clean the Ganga,"\(^28\)

It has been well said by U. N. Mahed I. S. E. (Retd.) in his book ‘Water Pollution and Disposal of Waste-Water on Land’ that "the crucial question is not whether developing countries can afford such measures for the control of water pollution but it is whether they can afford to neglect them.” There is an urgent need to take precautions for water pollution in order to attain development. Apart from this, the river water dispute has also become a matter of concern.

2. **AIR**

Air is the most basic essentials of life without which, for even a few minutes, a man cannot survive. A man breathes around 22,000 times a day, inhaling 16 kg of air.\(^29\) Despite air being so essential for survival, man has not stopped himself from deteriorating it. Air pollution is more serious than water pollution as it tends to spread more easily over wide areas unlike water pollution which generally remains localised. Man has been polluting the air since ages, but due to industrialisation and urbanisation and the consequent rise of problems such as, acid rain, smog, ozone depletion and global warming, has led to the realisation of the grave situation. Air is a mixture of many gases and moisture but the inclusion of the injurious and unfavorable elements known as ‘pollutants’ have started the problem. The common pollutants of air are carbon monoxide, carbon dioxide, lead, sulphur oxides, nitrogen
oxides, dust, and many others. Some pollutants are directly injurious as they pollute the air we breathe while others obstruct or disturb the incoming and outgoing radiation or vapors causing global warming. Automobiles and industries are considered as the main polluters of air, while nuclear materials released in the air are found to be the most hazardous. Air pollution has deadly effects on humans, animals, plants and natural resources. They give rise to diseases such as lung cancer, bronchitis, emphysema and asthma. Three million premature deaths in the world take place each year due to outdoor and indoor air pollution, the highest number are assessed to occur in India. In the four metropolitan cities of India, Suspended Particle per Metre (SPM) is 360 mg/m$^3$ compared to the WHO standard of 150.

Therefore, in response to these problems, many Acts and regulations have been formulated with provisions for prevention and control of air pollution. While Air (Prevention and Control of Pollution) Act, 1981 deals exclusively with this issue, the other Acts contain some provisions for the prevention of air pollution in them. In all, the significant policies regarding air pollution formulated by the Government of India are as follows:-

- Air (Prevention and Control of Pollution) Act, 1981
- The Indian Boilers’ Act, 1923
- The Factories Act, 1948
- Motor Vehicles Act
- Local Municipal Acts
- Ozone Depleting Substances (Regulation and Control) Rules, 2000

**Air (Prevention and Control of Pollution) Act, 1981:**

This is the main law enacted for the prevention and control of air pollution in India. This Act came into existence under Article 253 of the Constitution of India i.e. to make laws implementing decisions taken at international conferences and in specific, United Nations Conference on the Human Environment in 1972. Since the British period, steps were taken by the government to control air pollution but these policies were not exclusively for the prevention of air pollution. The Acts that
were made with respect to factories, industries and municipalities failed to deal with them. Therefore, the need for a comprehensive policy regarding air pollution was felt and hence, enactment of Air (Prevention and Control of Pollution) Act in 1981. This Act was a major step in the direction of preservation of air quality and control of air pollution. This Act was subsequently amended in 1987.

Thus, the Air (Prevention and Control of Pollution) Act provides for the prevention, control and abatement of air pollution, for the establishment, with a view to carrying out the aforesaid purposes, of Boards, for conferring on and assigning to such Boards powers and functions relating thereto, and for matters connected therewith. The first chapter deals with the relevant definitions such as air pollutant, air pollution, approved appliances, automobiles, chimney, emission, industrial plants and so on. It defines ‘air pollutant’ as any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment; and defines ‘air pollution’ as the presence in the atmosphere of any air pollutant. Further, it adopts the Central Water Board and State Water Boards for its own purposes. Chapter 3 of the Act deals with the functions of the Boards such as advising, planning, coordinating activities, providing assistance, establishing standards for air quality and laboratories, inspect air pollution areas and many more related to air quality and pollution. Moreover, it directs against specified industries such as textile, power plants, coal industries etc. for pollution of air. Following this, The Air (Prevention and Control of Pollution) Rules, 1982 and The Air (Prevention and Control of Pollution) (Union Territories) Rules, 1983 were made.

It is through this Act, the Central Pollution Control Board notifies different standards such as the National Ambient Air Quality Standards in 1994, Ambient Air Quality Standard for Ammonia (NH3) in 1998 etc.

**The Indian Boilers Act, 1923:**

This policy came into existence before independence, with the aim to regulate the use of steam boilers and subsequently control explosion of boilers and control air pollution. It lays down standards of construction, maximum pressure, registration of
steam boilers and their regular inspection.\textsuperscript{35} It stipulates about the area of application, registration, production, transfer and renewal of certificates, provisional orders, powers of entry, reports of accidents, appeals to appellate authority and penalties, recovery of fees and other related issues, regarding boilers. It also provides policies for the appointments of different categories of inspectors who inspect the boilers. This Act has constantly been amended, the latest being in 2007 as The Indian Boilers (Amendment) Act, 2007. This Act provides for inspections also during manufacture and erection of boilers, to bring uniform standards as to avoid inter-state disputes and provide adequate trained manpower and laboratory facilities for inspection of boilers during their manufacture and use.\textsuperscript{36}

\textbf{The Factories Act, 1948:}

Since the factories are a major source of air pollution, there are some provisions in this Act regarding the prevention and control of pollution. It contains provisions for the approval, licensing, and registration of factories; dangerous dusts and fumes; artificial humidifiers; control of explosives and inflammable dusts, etc. Chapter 3 of the Act deals with ‘health’.\textsuperscript{37} Section 11 to 15 deals with the cleanliness; disposal of wastes and effluents; ventilation and temperature; dust and fumes; and artificial humidifications. Further, Chapter 11 of the Act deals with the penalties and procedures including offences, liability, limitations of prosecutions and jurisdictions of courts regarding pollution.

\textbf{Local Municipal Acts:}

Some provisions regarding air pollution are also provided in the legislations enacted at the local level. Some of the significant local bodies that have enacted such legislations are:

1. Delhi Municipal Corporation, 1957
2. Gujarat Municipalities Act, 1963
3. Punjab Municipal Act, 1911

Delhi Municipal Corporation Act, 1957, in this area, deals with the regulation of smoke in factories, workshop and trade premises. Section 206 and 221 of the Gujarat Municipalities Act empowers the municipality to deal with air pollution by giving notices to industries causing excessive smoke and indulging in trade activities that
pollute air. The Punjab Municipal Act, 1911 and Haryana Municipal Act, 1973 regulates trades which are hazardous to air.  

Since air pollution is mainly the result of industrialisation and urbanisation, the problems also tend to exist in all the major urban centers of the world including in India. Vehicular emissions and industrial and thermal power outlets are the major contributors to air pollution in India, therefore, most measures for air pollution have been taken by the Government of India in this area. Apart from this, the unplanned development, high influx of population to urban areas and increase in consumption pattern has further contributed to the problem. The response of Government of India in reducing air pollution can be discussed under the following headings:

**National Air Quality Monitoring Programme (NAMP):**

To control air pollution, the government, more specifically, the Central Pollution Control Board (CPCB) established National Ambient Air Quality Monitoring Programme (NAMP) in 1982. Since then, the number has increased to 342 stations spread over 127 cities/towns distributed over 26 states and 4 Union Territories. The main purpose of the NAMP is to determine the status and trends in the ambient air quality. The monitoring is being carried out with the help of Central Pollution Control Board; State Pollution Control Boards; Pollution Control Committees; and the National Environmental Engineering Research Institute. At the state level, many state boards have setup for their own Ambient Air Quality Monitoring (AAQM) programme. The monitoring is carried out round the clock (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week, to have 104 observations in a year. A total of 33 Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed in Delhi (5), Bangalore (5), Chennai (5), Sholapur (1), Hyderabad (1), Kolkata (2), Mumbai (2), Chanderpur (1), Durgapur (1), Haldia (1), Howrah (1), Ahmedabad (1), Pune (1), Ghaziabad (1), Lucknow (1), Cuddalore (1), Ranipet (1), Tuticorin (1), Vadodara (1).
**Action Plan for 16 Cities:**

On the orders of the Supreme Court, sixteen cities have been identified for preparation of Action Plans for improvement of the ambient air quality.\(^\text{43}\) Out of these, Action Plans for seven cities, namely, Ahmadabad, Kanpur, Sholapur, Lucknow, Bengaluru, Chennai and Hyderabad are being analyzed by the Environment Pollution (Prevention & Control) Authority (EPCA). Action Plans for Kolkata and Mumbai are being analysed by the respective High Courts/State Pollution Control Boards. The Action Plans for the remaining seven cities, namely, Agra, Jharia, Varanasi, Faridabad, Patna, Jodhpur and Pune are being reviewed by the Ministry of Environment & Forests.\(^\text{44}\)

**Source Apportionment Study:**

Due to the complexity of air polluting sources, apportionment of contribution to ambient air pollution from these sources is important for planning cost effective pollution control strategies. In view of this, a study on “Air Quality Assessment, Emission Inventory/Source Apportionment Studies for Indian Cities” has been undertaken by the government. The objective of the frame work for Source Apportionment Studies (SAS) include preparation of emission inventory, emission profile monitoring of ambient air quality, assessment of data and its authentication and source apportionment of RSPM (PM\(^{10}\)) using factor analysis and reception modelling. Source apportionment studies have been initiated in six cities viz. Delhi, Bengaluru, Pune, Kanpur, Mumbai and Chennai involving institutions such as; National Environmental Engineering Research Institute (NEERI) in Nagpur, the Energy and Resources Institute (TERI) in New Delhi, Indian Institute of Technology (IIT) in Chennai, Automotive Research Association of India (ARAI) in Pune and Indian Institute of Technology (IIT) in Kanpur. Further, for guidance, a National level Steering Committee under the chairmanship of Secretary (MoEF) has been constituted.\(^\text{45}\)
**Industry:**

The CPCB has laid down the maximum permissible limits for different pollutants for many categories of industries that contribute to air pollution as notified by MoEF under the Environment (Protection) Act 1986. Submission of an environmental statement by polluting units to the concerned State Pollution Control Boards has been made mandatory under the Environment (Protection) Act, 1986. Further, a district-wise Zoning Atlas Project has been taken by the CPCB in order to delineate the areas that are suitable for industrial activities. Various pollution prevention technologies and less waste or no waste technologies are being developed and recommended to the industries by the government to reduce pollution.\(^{46}\) 24 critically polluted areas have been identified. In all Action Plan has been formulated for restoration of environmental quality in these areas. The Ministry of Environment and Forests has made it mandatory for thermal power plants located beyond 1000 kms from the coal pithead or in urban, ecologically sensitive or critically-polluted areas, to use beneficiated/ blended coal containing ash not more than 34%, with effect from June 2002.\(^{47}\)

**Transport:**

The Government of India has also taken measures in transport sector to reduce air pollution as this is a major source of pollution. A Delhi based NGO, Centre for Science and Environment has depicted that the emissions of carbon dioxide on Indian roads is expected to reach a value of 1,212 million tonnes during 2035 from a value of 208 million tonnes during 2005.\(^{48}\) The Ministry of Petroleum and Natural Gas has been involved in policies regarding pollution from automobiles. The mass emission standards for new vehicles were first notified in the year 1991 in India under the Environment Protection Act of 1986, the Motor Vehicles Rules, and the Air Act. It was introduced in 1996. Diesel and gasoline fuel quality with respect to environment related parameters was notifies for the first time in April 1996. On 1st April 1999, the specifications for 2T oil became effective. Sale of loose 2T oil was banned from December 1998 in Delhi and Kolkata. CNG vehicles were introduced in Delhi and Mumbai. Presently, there are 80,000 vehicles in Delhi and 23,000 in Mumbai. Idling emission norms have been notified for in-use vehicles. Pollution Under Control (PUC) certificates are issued for adherence to idling norms every 3-6 months.
The Ministry of Petroleum and Natural Gas enunciated an Auto Fuel Policy (2002) which aims to comprehensively and holistically address the issues of vehicular emissions, vehicular technologies and auto fuel quality in a cost-effective manner while ensuring the security of fuel supply. As per the Policy, Bharat Stage-II norms for new vehicles have been introduced throughout the country from April 1, 2005.49 However, in the case of the NCR, the norms were brought forward on 1 June 1999 and 1 April 2000 for Euro I and Euro II, respectively.50 EURO-III equivalent emission norms for all new vehicles, except 2-3 wheelers, have been introduced in all major cities from April 1, 2005. To meet Bharat Stage-II, EURO-III and EURO-IV emission norms, matching quality of petrol and diesel is being made available.51 Other measures include bans on commercial vehicles of more than 15 years old, a ban on the registration of new auto-rickshaws with front engines, replacement of all pre-1990 autos and taxis with new vehicles using clean fuels; and the removal of 8 year old buses from the roads unless they use CNG or some other clean fuel. It is also planned that all buses in Delhi are to switch over to CNG instead of diesel by 31 March 2001.52

At the international level, the pollution of the air has led to the development of problems globally such as climate change, global warming and ozone layer depletion. India has accepted Kyoto Protocol in August 2002 with the objective to fulfill requirements of Clean Development Mechanisms (CDMs) i.e. to reduce emissions of Greenhouse Gases by an average of 5.2% below 1990 levels during 2008-2012. Under this initiative a National Clean Development Mechanism has been created in 2003 by the Cabinet.53 The Government of India is also involved in implementing a range of policies to mitigate as well as adapt to climate change. The National Action Plan on Climate Change (NAPCC) was released by Prime Minister Manmohan Singh on 30th June 2008 to outline a strategy to adapt to climate change and enhance the ecological sustainability of India’s development.54 Recently, National Workshop of the Indian Network for Climate Change Assessment (INCCA) was held on 11 May 2010 attended by over 82 scientists and chaired by the Minister for Environment & Forests, Jairam Ramesh.55 A Report of India’s GHG Emissions was released, providing the fact that GHG emissions fell by 30% during 1994-2007, making India to become the first developing country to publish such updated numbers.56
Judiciary Intervenes:

The Supreme Court has been playing a significant role in the prevention of air pollution. The passing of the order by the Supreme Court for converting all public transport vehicles of Delhi to compressed natural gas in July 1998 was an important measure to control air pollution in Delhi. It set 31 March 2001 as the deadline for converting the entire fleet with single-mode CNG kits. Further, the SC gave directives that more than 2000 pre-1990 modules of taxis and auto-rickshaws had to be phased out by 31 March 2000 and an equal number of post-1991 models had to be phased out by 31 March 2001.\(^\text{57}\)

As a result of these measures taken by the government, some cities have witnessed decline in air pollution levels. According to a World Bank study, Delhi, Mumbai, Kolkata, Ahmadabad and Hyderabad have seen about 13,000 less premature deaths from air pollution related diseases.\(^\text{58}\)

3. **NOISE**

Ours is a noisy age, everything is done with pomp and show, making a lot of noise. From traveling, to social functions and celebrations, every activity is done sans silence. When we travel, our mode of transportation makes noise, when we attend any gathering such as marriages, parties; programmes such as *akandpaths*, and celebrate in discos, all kinds of loud noises are made. Paradoxically, man cannot live without sound for it is a source of communication. But when these sounds becomes unwanted and disturb the normal routine functioning of man, then it is termed as noise. In other words, noise is sound but without agreeable quality, or as an unwanted or undesired sound \(^\text{59}\) or a wrong sound at wrong place at the wrong time.\(^\text{60}\) Even a pure musical tone can be perceived as a noise when it is loud or of high pitch.\(^\text{61}\) In all, the major sources of noise pollution are industries, construction work, road traffic, trains, loudspeakers, festivals and aircrafts. However, noises cannot be measured in terms of annoyance or disturbance. For instance, a particular loud music may be considered melodious by an appreciative listener, but at the same time, it may irritate the other listener.\(^\text{62}\) Thus, when the sound becomes irritating or annoying or unbearable, then it is termed as noise pollution. Unlike other forms of pollution which can be measured through the amount of material introduced in the
environment, there is no such criterion to measure the harmful levels of noise. The only loose criterion is decibels. WHO has fixed 45 decibels as the safe noise level for a city, though the four metropolitan cities of India usually registered an average of more than 90 decibels, while Mumbai is rated as the third noisiest city in the world.\(^6^3\)

Noise impairs the health of people psychologically, physiologically and behaviorally. It affects the hearing capacity, efficiency, concentration, sleep and nervous system of the person. But in our country the problem of noise pollution is not taken seriously. Public Interest Litigations (PILs) can and have been filed by citizens and lawyers concerned with noise pollution but it is still not much popular among citizens.

Noise was included as a pollutant in the Air (Prevention and Control of Pollution) Act, 1981 when it was amended in 1987. The laws relating to the noise pollution are Factories Act, 1948, The Bihar Control of the Use and Play of Loudspeakers Act, 1955, Motor Vehicle Act, 1988. However, these Acts indirectly deal with the noise pollution. The main Act of noise pollution was passed in India only in 2000.

**Motor Vehicles Act, 1988**

This Act contains some provisions for containing and controlling noise created by automobiles like horns and silencers. It provides that the horn should be in good working condition and should be sounded only when necessary. The muffler also should be in good working condition and in constant operation in order to prevent excessive or unusual noise. Moreover, no person should make unnecessary or loud noises from engines, exhaust systems, braking systems or from the contact of the tires with the roadway.\(^6^4\)

**Factories Act, 1948:**

It indirectly contains a provision for the control of noise pollution which says that every factory shall be kept clean and free from effluents arising from any drain, privy or other nuisance. The term ‘other nuisance’ can be referred to the noise pollution and menace arising from factories.\(^6^5\)
Noise Pollution (Regulation and Control) Rules, 2000

Until 2000, there was no principal policy for noise pollution. However, the need was felt and this Rule came into existence under the Environment (Protection) Act, 1986. This rule defines important terms such as area/zone, authority, court, educational institution, hospital etc. Further, it stipulates regarding the ambient air quality standards in respect of noise for different areas/zones, restrictions on the use of loudspeakers and public address systems, responsibility of the authority and complaints in reference to noise pollution, and consequences of any violation in silence areas. The states and UTs all over the country have been asked to categorize all areas falling under their jurisdiction into industrial, commercial and residential and silence zones to enable implementation of noise standards during day and night. This rule has been amended in 2002, 2006 and recently, in 2010.

Noise Pollution (Regulation and Control) (Amendment) Rules, 2010

This is the latest amendment rule regarding noise pollution in India published in the Gazette of India on 11 January 2010. The significant elements of this amendment rules include the following guidelines. The stress has been laid to make night calm and quiet. The night has been defined (10.00 pm to 6.00 am) and restrictions have been imposed on the use of horns, sound emitting construction equipments and bursting of fire crackers during night time and in silence zones. Public place has been defined and the occupants of a public place would restrict the volume of public address systems etc. so that noise emitting from its activity would not exceed the noise limits to more than 10 db (A), as applicable. Similarly, the occupants of a private place would restrict the volume of music systems, etc so that noise emitting from its activity would not exceed the noise limit of 5 db (A). A duty have been cast upon the concerned State governments to specify in advance, the number and particular days on which two hours exemption would be operative. State would be the unit of such an exemption.

Apart from these Acts, the Indian Penal Code also has provisions to control the noise pollution. Section 268 of the Indian Penal Code recognizes noise as public
nuisance. Under Section 133 of the Criminal Procedure Code, the magisterial court has been empowered to issue orders to remove or abate nuisance caused by noise pollution. Section 290 of the Code deals with the punishment for those cases of nuisance which have not been specifically covered under the specific provisions of the Code, therefore noise pollution can be covered under this Code. However, the maximum punishment under this Section is only two hundred rupees which is too mild by any standard. Also under law of torts, a civil suit can be filed under certain conditions, claiming damages for the nuisance including noise pollution.

One of the earliest rulings of the court in reference to noise pollution dates back to 1952 when Bombay High Court asked authorities to regulate the use of loudspeakers during nights when the Ganesh and Navratri festivals were being celebrated. The High Court of Himachal Pradesh made observations that it is the duty of the police to take action on their own initiative in such cases (noise pollution) without waiting for the citizen to come forward to lodge a formal complaint. The courts have also taken note of an instance where the noise generated by setting up of a flour mill resulted in interfering with the physical comfort of certain people living in the area. The court considered setting up of the mill as a nuisance and issued prohibitory orders restraining the owner of the flour mill from running it in the locality which was already considered to be too noisy (Radhey Syam v Geer Prasad, AIR 1978 Allahabad, 86).

Latest, one of the major orders of the Supreme Court under noise pollution is when a writ petition was filed in September 2000, asking for restrictions on firecrackers. Subsequently, the Supreme Court issued orders in favour of the petitioner and ruled out that, citizens can light firecrackers only from 6pm to 10pm and no firecrackers can be lit between 10 pm till 6 in the morning. Any firecracker that emanates a sound of over 125 decibels, four metres from the spot it is lighted, has been banned from production. Garlands of firecrackers that comprise 50, 100 or more numbers should not cross the decibel levels of 115, 110 and 105 respectively.

The Government of India Notification on the subject mentioned inter-alia, a) Industrial activity b) Construction activity c) Generator sets d) Loudspeakers e) Public address systems f) Music systems g) Vehicular horns, and h) Other mechanical devices, as the sources of noise, having deleterious effects on
human health and the psychological well being of the people.\textsuperscript{75} Further, the notification by the Ministry of Environment and Forests on 30 December 2002 described certain noise limits for vehicles at the manufacturing stage from the year 2003 and was applicable from 2005.

The Central Pollution Control Board has been advised for revisiting the national ambient noise standards and prepare a blue print to have national ambient noise monitoring network in place. A beginning to monitor ambient noise would be made during 2010-11 in accordance with National Environment Policy of 2006.\textsuperscript{76}

Even after the noise pollution regulation was notified, there was no systematic mechanism to monitor noise. Now the government will be providing infrastructure for the noise regulations. An ambient noise monitoring network, anchored in the CPCB and involving the state boards, will be established. Over the next two years, 160 ambient noise monitoring stations will be set up in 25 cities, entailing a cost of Rs 10 crore. By September, 10 stations each will be set up in seven cities — Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru and Lucknow.\textsuperscript{77} It will be extended to another 18 by 2011 at a cost of Rs. 120 crores.\textsuperscript{78}

4. **SOIL**

Soil is another basic necessity for human life as it is the primary means of food production for the people. Over 90% of the world’s food comes from soil and less than 10% comes from both inland water and the ocean.\textsuperscript{79} It is also important to sustain as it takes a long time to form i.e. 1 cm of top soil may take 50 years to form.\textsuperscript{80} In spite of being essential for the survival of whole mankind, its quality is constantly declining. The production of crops is becoming more demanding and pricey as the fertility, water holding capacity and depth of the soil is declining. Wastelands, desertification and floods are becoming more perceptible. It is estimated that large land amounting to 146.82 million hectares in India is suffering from serious degradation, area subject to water and wind erosion.\textsuperscript{81} The land degradation are caused by loss of top soil, loss of organic matter, depletion of nutrients through repeated harvest, use of fertilizers and insecticides, water-logging and salinisation, acidification, compaction, mining, pollution of groundwater and both decline and rise of groundwater tables.\textsuperscript{82}
All these problems have gained the attention of the government and are, therefore, taking measures to improve and maintain the quality of the soil so as to feed the burgeoning population and develop the economy of the country. The Government of India however, has been involved in land upgradation before the independence of the country. Way back in 1883, Land Improvement Loans Act was made to provide loans by the government for agricultural improvements. Another law was the Destructive Insects and Pests Act of 1914 which dealt with the insect, fungus or other pests, which was or may be destructive to crops. The other policies in this area include:

- The Bihar Wastelands (Reclamation Cultivation and Improvement) Act, 1946.

Although, there is no principal policy in India till now that deals exclusively with the protection of soil, however, excluding the laws, the Government of India has been involved in the conservation of soil primarily through the Department of Land Resources under the Ministry of Rural Development, created in July 1992 to tackle the problem of degradation of lands, restoration of ecology and to meet the growing demands of fire wood and fodder. The Department earlier started as National Wasteland Development Board in 1985 under the Ministry of Forests and Environment. The Board was reconstituted in August 1992 and was made responsible mainly for the development of wastelands in non forest areas in totality by involving local people at every stage of development; and was finally renamed as Department of Land Resources in 1999.

Moreover, the National Bureau of Soil Survey and Land Use Planning, the Central Soil and Water Conservation Research and Training Institute and the Indian Council of Agricultural Research, have jointly initiated the preparation of maps of soil erosion affected areas in different states using the components of Universal Soil Loss Equation. Moreover, the All-India Soil and Land Use Survey, Ministry of
Agriculture, is engaged in generating spatial and non-spatial information on the soils of India and preparing thematic maps like land capability classification, hydrological soil grouping, irrigability classification, hydrological soil grouping, irrigability classification, etc. The government has also created National Land Use and Conservation Board (NLUCB) with the objective to serve as a policy planning, coordinating and monitoring agency at the national level for issues concerning the health and scientific management of land resources of the country. The Programme for reclamation of Alkali soil (RAS) was launched in the Seventh Five Year Plan for reclamation of soils, which were suffering from alkainity. Since its origin, till its end in 2004-05, an area of 6.59 lakh hectare has been reclaimed under this programme. Then there is a Programme on Soil Conservation for Enhancing the Productivity of Degraded Lands in the Catchments of River Valley Project and Flood Prone River. Since the beginning of this programme till the end of the IX Plan, an area of 62.58 lakh hectare has been treated. This programme is being implemented in 53 catchments having a total catchment area of 110.11 Mha covering 27 states.

In addition, there are other programmes also for the conservation of land. There is Integrated Wastelands Development Programme under implementation since 1989-90 to strengthen the natural resources base and to promote the overall economic development of the resource-poor and disadvantaged sections of people inhabiting the programme areas. There is Drought Prone Areas Programme (DPAP) with the purpose to minimise the adverse effects of drought on production of crops and livestock and productivity of land, water and human resources ultimately leading to drought proofing of the affected areas. Currently, DPAP was in operation in 972 blocks of 185 districts in 16 States. Another is Desert Development Programme to minimise the adverse effect of drought and control desertification through rejuvenation of natural resource base of the identified desert areas. It covers an area of about 45.7 Mha in 235 blocks of 40 districts in 7 states.

The states also individually make policies according to the prevailing activities in their region. For instance, in Punjab it was found that the kiln-owners were digging out soil for manufacture of bricks after taking land on lease. However, legally they are permitted to extract soil only from barren lands. Subsequently, the Punjab government became the first state to introduce “Cleaner Production Technology” in
over 2000 brick-kilns out of a total of 2500 kilns in the state. At the same time this policy facilitates the brick-kiln to save up to Rs 3 lakh worth of coal every day apart from being the reduction in pollution level as per the specifications of the Central Pollution Control Board (CPCB). Also, the Government of Punjab constituted a task in September 2006 for formulation of a policy to mitigate the problem generated due to severity of burning of agricultural waste in the open fields after harvesting, and its consequent effects on soil, ambient air and health of living organisms.

5. **FORESTS AND WILDLIFE:**

(A) **Forests**

Forests cover about one quarter of the world’s land area outside Greenland and Antarctica. They are home to ninety percent of the species on the earth and serve the important functions of producing oxygen for the planet and of acting as “sinks” for greenhouse gases. They are the essence of the ecological balance of the earth. But in recent years, the demand for trees has led to the deforestation at a very fast speed. Large industrial needs in the form of raw materials, types of agriculture produce such as; slash and burn cultivation, grazing of cattle, development of cities, industries and buildings, mining; all have led to deforestation. The production of paper has also been a major source of deforestation. In India, about half of the city dwellers depend on firewood brought in from the forests for cooking fuel. The rural communities depend on forests for fuel, fodder, and building material. Thus, with so much dependence of man on forests, the importance of forest is discernible. According to the State of Forest Report, published by the Forest Survey of India (FSI) in 1997, India has a recorded forest area of 76.5 million hectare or 23.3% of the total geographic area of the country. But the actual forest cover is 63.34 million ha (19.27% of the country's area) of which 26.13 million hectares are degraded. Currently, the forest cover of the country as per 2007 assessment is 690,899 km$^3$ which is 21.02 percent of the geographical area.

Most of the policies governing forests in India were formulated before independence in 1947. Perhaps, it was the only area of environment, the British were really concerned with. However, this concern was to fulfill their selfish interest of
amassing wealth. The first forest policy was enunciated in 1894 with the purpose of public benefit. It further suggested the preservation of climatic and physical conditions. After independence of India, the Constitution placed the forests under the state list of the Seventh Schedule. Subsequently, the Forty-Second Amendment Act, 1976 transferred forests from the State List to the Concurrent List of the Constitution i.e. the central government became empowered to control and manage forests of the nation. Today, the Ministry of Environment and Forests is the main body to deal with the issue of India’s green cover. Despite the concern for forests after independence, it still continued to degrade at a very fast rate. For economic development of the nation, forests were replaced with agricultural lands, industries, hydro-electric projects, settlement of displaced persons, foreign refugees etc., this was effecting the habitat of the wildlife. Altogether, some 45% of the forest land has been lost since independence. In total, the principal policies in the sector of forests framed by the Government of India are:

**Forest Act, 1865:**

This was the first Act drafted in the history of India regarding environmental protection by the Government of India under British rule. This Act came out as a result of excessive cutting of trees, especially with the introduction of railways. This law was revised in 1878 and was modified again in 1927.

**Indian Forest Act, 1927:**

This Act placed the forests, public as well as private, in the State list of the Constitution. The public forests were divided into; reserve, village and protected forests. Under the reserve forests, an individual or community rights were taken for the forests. To approach these forests and its products, the permission of the government had to be taken. Access to these forests became a privilege. Village forests were those reserve forests that were assigned to particular villages, i.e. people of a particular village had the right to use the resources of the forest as well as to provide protection. These were those parts of the forests that were banned for
everyone except the government. The government could utilise any part of the forest products according to needs.\textsuperscript{98}

**National Forest Policy, 1952:**

This was the first forest policy after the independence of the country. It laid down that ‘it would be the duty of the forester to awaken the interest of the people in the development, extension and establishment of tree lands wherever possible, and to make them tree-minded.’

**Forest Conservation Act, 1980:**

This Act followed the 42\textsuperscript{nd} Amendment of the Constitution which brought forests under the Concurrent List and introduced the Article 48-A which ensures; ‘protection and improvement of environment and safeguarding of forests and wildlife’. This Act strictly restricts and regulates the de-reservation of forests or use of forest land for non-forest purposes without the prior approval of central government. Clearing of trees within the forest even for reafforestation cannot be done without the approval of the central government. This Act was amended in 1988.\textsuperscript{99}

**National Forest Policy, 1988:**

This policy aims at maintaining a minimum of 33% of the country’s geographical area under forest and tree cover. The policy focused on the maintenance of environmental stability through preservation and restoration of ecological balance, conservation of the natural heritage of the country by preserving the remaining natural forests and protecting the vast genetic resources for the benefit of posterity; meeting the basic needs of the people and maintaining the intrinsic relationship between forests and the tribal and other poor people living in and around the forests by protecting their customary rights and concessions on the forests.\textsuperscript{100}

In 1985, the subject of Forestry and Wildlife was shifted from Ministry of Agriculture to a new Ministry of Environment and Forests (MoEF) to ensure a more focused attention to emerging forestry issues. In 1990, the MoEF issued detailed guidelines for people’s involvement in forest conservation and management through an appropriate village level organisation.\textsuperscript{101} The forest policy of 1988 set the stage
for participatory forest management in India. Joint Forest Management (JFM) programme was recognised in 1990. In 2002, the MoEF issued a circular to strengthen the JFM programme. The JFM is one of the successful forest policies of India. In 2002, there were 14.26 million hectares of forest lands in the country being managed and protected by around 64,000 Committees. Besides, there are also a large number of Self-Initiated Forest Protection Groups managing forests in India on the principle of participatory forest management. Recently, the Ministry has been announced that "forest satellite" will be launched as part of its efforts to monitor the country’s green cover.

The Forest Survey of India has been involved in the assessment of the forest cover in India on a two-year cycle and is publishing the findings in the India State of Forest Report. So far 11 cycles of forest cover assessments have been completed since 1987. Moreover, a National Forestry Action Programme (NFAP) in 1999 has been formulated as a comprehensive strategic long-term plan for the next 20 years. The objective is to bring one-third of the area of the country under tree/forest cover and to arrest deforestation. In addition, the Centrally Sponsored Intensification of Forest Management Scheme aims at strengthening forest protection machinery of the State/Union Territories governments and providing support for area-specific forest management interventions. The allocation for the year 2009-10 for the scheme was Rs.76 crores.

The Ministry of Environment and Forests has notified Forest (Conservation) Rules, 2003 to supersede the rules made in 1981. The special features of the new rules are simplified format for application for forestry clearance, further simplified format for cases of renewal, fixation of time limit of 90 days at the level of State government and 60 days at the level of central government for taking a decision and empowerment of regional officers to process the cases of forest land upto 40 hectares from the earlier limit of 20 hectares. The MoEF has created a Sustainable Forest Management (SFM) Cell in the Ministry in 2006 to enhance forest sustainability.

Forestry research is also being carried out by the Indian Council of Forestry Research and Education (ICFRE) of the Ministry of Environment and Forests and State Forest Departments. For the development and management of forest
plantations on the islands of India, the government created a public sector undertaking in 1977 known as; Andaman and Nicobar Islands Forest and Plantation Development Corporation Limited (ANIFPDCL).  

The judiciary’s role in the protection and conservation of forests has been very significant. It had to deal with such cases which often involved a conflict between a dire need to preserve the forests and the needs for development activities, need for mining and the preservation of forests, claims of adivasis and retaining the reserved forests free from their encroachments and so on.

The Supreme Court of India in a landmark judgement has banned all non-forest activities in the forest areas and directed that Forest Conservation Act, 1980 be applied to all forest areas irrespective of ownership or classification. The Supreme Court has also issued a ban on transportation of timber and cutting of trees from the North-East to the rest of the country. In another case, the Supreme Court of India restrained the state governments and its functionaries from cutting any tree/trees till further orders, even if it is found to be a diseased tree.

In October 2002, the Supreme Court upheld the plan by the Centre to constitute a Compensatory Afforestation Management and Planning Agency (CAMPA) for managing funds provided to compensatory afforestation programmes. Agencies diverting forest lands for other uses were required to pay the Net Present Value (NPV) of the diverted lands to the respective State governments, which in turn would transfer the funds to the CAMPA. Further, Supreme Court has also appointed an expert committee on 26 September 2005 on this issue. Until May 2006, there was no conclusion on the matter and the CAMPA had not been set up. Therefore, on 5 May 2006, the Supreme Court directed that an ad hoc CAMPA be constituted, and all the money collected by States and Union Territories on behalf of the CAMPA should be transferred to this ad hoc body. The 2008 Bill in Parliament observed that following this order, over Rs.5000 crores have since been placed under the ad hoc CAMPA, and deposited in nationalised banks.

At the international level, a workshop on ‘Development of National Level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia’ was held at the Indian Institute of Forest Management (IIFM) in Bhopal in 1999 of FAO and
UNEP in collaboration with the ITTO, the United States Department of Agriculture Forest Service. Now referred to as the ‘Dry Forest in Asia Process’, ten Asian countries jointly developed a regionally applicable set of national-level criteria and indicators relevant for dry forests in the region. The Asia regional initiative was endorsed by the ‘National Task Force on Sustainable Forest Management’, appointed by the MoEF. Sustainable Forest Management (SFM) Cell has been created by the MoEF in 2006 and discussions are also in an advanced stage to create SFM Cells in each State.  

(B) Wildlife and Animal Welfare

Wildlife has been defined as the sum total of the animals and plants, excluding domesticated or captive animals and cultivated plants grown for human purposes. The most serious threat to this wildlife is their habitat destruction. Expanding agriculture, industry and urbanisation as also unavoidable defence needs are the causes of this situation. The plants are also a useful part of environment. There is a famous saying of our ancient physicians that a ‘useless plant is yet to be found.’ Besides, it is realised that with the extinction of one plant species, 10-30 others such as insects other plants and micro-organisms which in a balanced economic-system are dependent on it in one way or the other, also become endangered and may be lost.

The protection of the animals like forests also gained attention in the British period itself before the independence, the first being the Elephants’ Preservation Act of 1879 in the reserved and protected forests. The Indian Forest Act of 1927 also included provisions for hunting restrictions in reserved or protected forests and authorized the establishment of sanctuaries. However, earlier, the main concern was for the wildlife, but now the protection of other animals in the cities, roads, homes and zoos has also gained currency.

Wildlife (Protection) Act, 1972

This was the most comprehensive Act involving the protection of wildlife in India with the objective of effectively protecting the wild life of this country and to control poaching, smuggling and illegal trade in wildlife and its derivatives. It provides for the establishment of wildlife advisory boards and appointment of
wildlife wardens and other staff to implement the Act. This was enacted by Parliament under article 252, after 11 State Legislatures passed the required resolutions. By 1991, amendment to the Wildlife Act, Parliament extended to the whole of the country except Jammu and Kashmir. Under this Act, the state may declare any area of adequate ‘ecological, faunal, floral, geomorphological, natural or zoological significance’ a sanctuary or a national park. In both sanctuaries and national parks, public entry is prohibited and the destruction of any wildlife of habitat is prohibited. The Act was amended in January 2003. The punishment and penalty for offences under the Act have been made more stringent.

Other laws related to wildlife are:


Besides these laws, the Government of India has established various institutions, boards, plans and projects to assist the Ministry in the conservation of wildlife. The Indian Board for Wildlife (IBWL) is the apex advisory body headed by the Prime Minister for the conservation of wildlife. The Wildlife Institute of India was established in 1982 under the Ministry of Agriculture and subsequently brought under the Ministry of Environment and Forests to impart training, carry out research
and advise on matters of conservation and management of wildlife. National Wildlife Action Plan (NWAP) has been adopted by the Government of India for conservation of wildlife. It was first constituted in 1983 and revised Wildlife Action Plan (2002-2016) has been adopted. To strengthen the Wildlife Division in the Ministry of Environment and Forests, Central Sector Scheme was launched in 1986. Further, it supports the research activities envisaged in the National Wild Life Action Plan (2002-2016). With the 2006 amendment to Wildlife (Protection) Act of 1972, a Wildlife Crime Bureau has been established to combat wildlife crimes.

Central Zoo Authority was established in 1992 under the provisions of Wildlife (Protection) Act, 1972 to check the mushrooming of ill planned and ill conceived Zoos, monitor and evaluate the existing Zoos and to suggest ways and means for improvement of Zoos. About 90 mini zoos were closed down in 2002. The Authority has also been assigned the responsibility for the creation of rescue centres, for rehabilitation of circus animals, and ban on performance of wild animals in circuses. National Zoological Park was established in New Delhi in 1955 to foster understanding, knowledge and appreciation for wildlife through education, research and caring of animals in simulated conditions. About 89 National Parks and 500 Wildlife Sanctuaries covering an area of 1.5664 lakhs km² has been developed for the wildlife. Apart from this, workshops, conferences and laboratory have been taken up for their protection. During the year 2009-10, 5 large, 5 small and 30 mini zoos and rescue centres have been evaluated as zoos. The Central Zoo Authority has assigned responsibility of preparing and maintaining the study-books for 14 endangered species to Wildlife Institute of India.

Moreover, the Government of India has implemented projects for the protection of specific animals, the popular being the Project Tiger and Project Elephant. Project Tiger is being implemented since 1973 to ensure a viable population of tigers in India for scientific, economic, aesthetic, cultural and ecological values and to preserve areas of biological importance as natural heritage for the benefit, education and enjoyment of the people. In 2006, the project had 29 tiger reserves covering an area of 38,620 km². Latest technologies are being developed for better conservation. In April 2010, the government launched a hi-tech monitoring system to ensure transparency in tiger protection in the country.
The Project Elephant was launched in 1992 covering 12 States to assist them to have free ranging populations of wild elephants to ensure long term survival of identified viable populations of elephants in their natural habitats. An amount of 7.66 crore was released for the project in the year 2002 alone. Moreover 14 elephant reserves were set up in 2002 itself. In October 2010, the government declared the elephant as National Heritage Animal of India to ensure their survival and security. There are also other conservation projects for individual endangered species started by government like Hangul, Lion, Crocodile and Brown-antlered Deer. Recently, Ministry of Environment and Forests notified the Ganges River Dolphin as the National Aquatic Animal in May 2010 which has been recognized ‘highly endangered’ in Schedule I of the Wildlife Protection Act, 1972.

Since the broader aspects of wildlife includes all types of animals, therefore, if we discuss it in its broader perspective, then the other policies relating to animals are:


In order to prevent the infliction of unnecessary pain or suffering of animals, the Animal Welfare Division was made part of Ministry of Environment and Forests in July 2002. It provides schemes for construction of shelter houses, dispensaries, for ambulances and vehicles in connection with treatment and transportation of sick, injured and rescued animals, and also for immunization and sterilization of stray dogs. In the annual report of 2002-03, it was mentioned that 225 animals were seized from circuses and transported to Rescue Centers. 307 Societies for Prevention of Cruelty to Animals have been constituted. The National Institute of Animal Welfare has been developed to provide teaching courses in the field of animals. Apart from these, Animal Welfare Board of India which is a statutory body under Section 4 of the Prevention of Cruelty to Animals Act 1960 advises the government on animal welfare issues, and creates awareness for animal welfare. The Board gives assistance to eligible Animal Welfare Organisations for shelter houses, model gaushalas etc. Committee for Purpose of Control & Supervision of Experiments on Animals (CPCSEA) is another statutory body under Section 15 of Prevention of Cruelty to Animals Act, 1960 which registers and monitors the animal breeders and institutions conducting experiments on animals. So far 731 units have been registered with this Committee. The Committee also conducts workshops for the protection of animals. Recently, the Ministry came out with the Draft Animal Welfare Act, 2011, for comments, and when it is passed, it will replace the existing Prevention of Cruelty to Animals Act, 1960, and shall provide for clearer definitions of animal abuse and enhanced penalties.

The schemes carried out for the protection of animals include Scheme for Provision of Ambulance Services to Animals in distress, Scheme for Animal Birth Control and Immunization of Stray Dogs, Scheme for Relief to Animals during Natural
Calamities and Unforeseen Circumstances and Scheme for Provision of Shelter Houses for Animals.

At the international level, India has been one of the two countries of the world, apart from Denmark which ratified all major international conventions governing wildlife, including the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora, (CITES), Ramsar Convention on Wetland of International Importance, Convention on the Conservation of Migratory Species of Wild Animals (1979) and International Convention for the Regulation of Whaling (1979).\textsuperscript{136}

However, sometimes the animals themselves become a nuisance as in the case of monkeys in Himachal Pradesh. In Shimla alone, there are 1600 monkeys threatening the people as well as tourists. To counter this menace, the centre has submitted a comprehensive action plan to the Supreme Court of India for their rehabilitation elsewhere.\textsuperscript{137}

6. **BIODIVERSITY**

Biodiversity simply means the variety of life-forms that exist on planet earth ranging from the smallest and practically invisible microbes to the largest of mammals and sea-creatures.\textsuperscript{138} However, it also includes the biological and geographical region in which they live. The Biological Act of 2002 in India defines biological diversity as “the variability among living organisms from all sources and the ecological complexes of which they are part and includes diversity within species or between species and of eco-systems”.\textsuperscript{139} Thus, the term biological diversity has more than one facet. It refers to the sum of genetic, taxonomic and ecosystem diversity. Genetic diversity embraces the variation in genetic material, such as genes and chromosomes. Taxonomic diversity includes the variation among and within species. Ecosystem diversity concerns with the variation in bio-geographic regions, landscapes and habitats such as biosphere reserves, wetlands, coastal areas, mangroves and coral reefs.\textsuperscript{140} All the facets are interconnected and the best way to save species is to save their habitat.\textsuperscript{141}

India is one of the world’s 12 mega-diversity centres. Some 45 000 plant species and over 89,000 species of animals have been documented. The faunal diversity
comprises *inter alia* 2,500 fishes, 150 amphibians, 450 reptiles, 1,200 birds, 850 mammals and 68,000 insects. Pertaining to ecosystem diversity, India has four ‘Hot spots’ out of the 18 identified in the world. However, it also has two of the world's most threatened ‘hot spots’, the Eastern Himalayan region and the Western Ghats. At least 10 per cent of India's recorded wild flora and possibly more of its wild fauna are on the list of threatened species; many are on the brink of obliteration. Of the wild fauna, 80 species of mammals, 47 of birds, 15 of reptiles, three of amphibians and a large number of moths, butterflies and beetles are endangered. Out of 19 species of primates, 12 are endangered. The cheetah and the pink-headed duck are among species that have become extinct.

With this bio-diversity and its endangerment in India, and subsequently after being signatory party to the Convention on Biological Diversity (CBD) in 1992 and Cartagena Protocol in 2000, the Government of India realised the necessity of measures for conservation and enacted the Biological Diversity Act in 2002. The Biological Rules were notified thereafter in 2004, giving effect to the provisions of the Convention on Biological Diversity. The Act is implemented through a three-tiered institutional structure i.e. National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs). NBA has been set up in 2003. Twenty states have established SBBs, and BMCs are in the process of being set up in some states. The Government of India has taken initiatives to achieve the objectives of Convention of Biological Diversity, through creation of an institutional structure, through traditional Knowledge Digital Library (TKDL), an important initiative by India to fight against bio-piracy globally and through the People Biodiversity Register (PBR) to document the oral knowledge on biodiversity. Further, the government has started recognising and rewarding contributions of rural and tribal families in the field of genetic resources conservation through Genome Saviour Award. Recently, the Ministry of Environment and Forests sponsored along with others, the 30th Annual Symposium on Sea Turtle Biology and Conservation with a strong call by participants for increased scientific monitoring and protection of marine turtle habitats from developmental threats.
The Botanical Survey of India under the Ministry of Environment and Forests was reorganised in 1954 to include various new areas pertaining to biodiversity conservation like inventorying of endemic, rare and threatened plant species; evolving conservation strategies; studies on fragile ecosystems and protected areas like wildlife sanctuaries, national parks and biosphere reserves; multiplication and maintenance of endemic and threatened plant species, wild ornamentals, etc., in botanic gardens and orchidaria and so on.\textsuperscript{150} The scheme on Assistance to Botanic Gardens, Botanic sections in popular gardens and Centers of Ex-Situ Conservation was initiated in 1992 to augment facilities for ex-situ conservation of rare, endangered, threatened and endemic plants.\textsuperscript{151}

Coastal Regulation Zone Notification (CRZ) 1991 was notified in the year 1991 under the Environment (Protection) Act of 1986 with the purpose of protection of Indian coasts from degradation. The CRZ Notification also places restrictions on industries, operations and processes in the CRZ areas. The CRZ notification issued is the only law that explicitly outlaws, coral mining in India.\textsuperscript{152} Further for regulating coastal activities, the coastal stretches within 500 metres of High Tide Line on the landward side are classified into four different categories- CRZ I, II, III and IV. Recognising that the seas have generally been treated as ‘commons’ available to everyone, even within a country’s boundaries, Marine Protected Areas (MPAs) have been developed of specific boundaries with ‘permitted and non-permitted uses within [them].’ There are 36 MPAs in India of which twenty are entirely coastal areas (intertidal, mangroves, coral reefs, estuaries, beaches), and thirteen have major marine ecosystem components. There are a total five coral reef MPAs in India.\textsuperscript{153} The Ministry has highly regarded conservation and management of mangroves and coral reefs in the country. As per the State of Forest Report 2005 published by Forest Survey of India, the mangrove cover which was 4448 km\textsuperscript{2} in 2003 has reduced to 4445 km\textsuperscript{2} in 2005. The National Environmental Policy of 2006 adopted more comprehensive approach to Integrated Coastal Zone Management for mangroves. Measures are taken by the Government to rehabilitate degraded mangrove areas and enhance mangrove cover by re-plantation in the open mud flats etc. Financial assistance is given to coastal State Governments/Union Territories for implementation of Management Action Plan on Mangroves.\textsuperscript{154} The National
Committee has also been duly reconstituted by the Ministry on September 19, 2007. The project entitled “Mangroves for Future (MFF): a strategy for promoting investment in Coastal Ecosystem Conservation” is being coordinated by World Conservation Union (IUCN) covering, initially, six tsunami affected countries including India.\textsuperscript{155} Two tier system at national and state level are in operation for effective coordination to implement the Scheme on Mangroves & Coral Reefs.\textsuperscript{156} To provide a cross-sectoral approach for coral reef conservation and management, the Indian Coral Reef Monitoring Network and the Indian Coral Reef Initiative were established in 1990s. Government of India has also set-up a National Committee to protect and manage the coral reefs sites and has included the corals in the Schedule-I list of the Wild Life Protection Act, 1972 to provide them legal protection.\textsuperscript{157} Even the Indian judiciary has to show sensitivity and awareness towards the nature of corals and the threat they face. A recent case of Madras High Court, which allowed the local fishermen to collect dead corals ‘washed ashore’, shows how the courts need to wake up to the impact of degradation of corals.\textsuperscript{158}

Wetlands are also an important part of biodiversity. They are the transitional zones between permanently aquatic and dry terrestrial ecosystems. They help recharge aquifers, support local food production, function as habitat for indigenous and migratory birds, and are effective in flood and erosion control, apart from being a major source of national and international ecotourism. Wetlands constitute 18.4\% of the country’s area. However, due to human as well as non-human activities, they are under threat.

Subsequently, the Government of India has given high priority in the National Environment Policy of 2006. Since 1985-86, India’s National Wetlands Conservation Programme is supporting conservation activities and, is currently providing financial support to 115 wetlands. At the international level, India has been a member of the Standing Committee of the Ramsar Convention and part of the Supervisory Council of Wetland International. The central government has identified a number of wetlands for conservation and management under its conservation programme and provides financial and technical assistance to the state governments or union territory administration for various conservation activities through approval of the Management Action Plans. Further, a multi-disciplinary
expert group has been set up in the Ministry to formulate a structure for regulatory framework for the conservation of wetlands.\textsuperscript{159}

Another sphere of biodiversity is Biosphere Reserves which are areas of terrestrial and coastal ecosystems internationally recognised within the framework of UNESCO’s Man and Biosphere (MAB) programme.\textsuperscript{160} India has been divided into ten Bio-geographic Zones and these zones together consist of twenty five Bio-geographic provinces. The aim is to designate one representative site as Biosphere Reserve in each Bio-geographic province for long term conservation.\textsuperscript{161} 16 sites have been designated as Biosphere Reserve (BR) in different parts of the country. Apart from 16 sites already designated, a number of potential sites have been identified. The Ministry provides financial assistance to the respective State/UT governments for conservation and management of the designated biosphere reserves. The Indian National Man and Biosphere (MAB) Committee constituted by the Ministry of Environment and Forests is an apex body to oversee the programme, provide policy guidelines and review the programme.\textsuperscript{162} Also, realising the importance of lakes, Ministry of Environment and Forests has launched National Lake Conservation Plan (NLCP) to restore the water quality and ecology of the lakes in different parts of the country.\textsuperscript{163}

7. URBAN PROBLEMS

The growth of urban areas not only in India but around the globe has been taking place at a very fast pace. In 1800, only 2\% of the world population was urbanised and by 2030 and it is estimated that 61\% of the world population will be living in urban areas.\textsuperscript{164} In India, out of total population, 285 million Indians live in cities i.e. 26.39\% of the population (as on 1 March 2001). In comparison to last census of 1991, the growth in urban population had been 31.2\% in India.\textsuperscript{165} Projections indicate that the urban population would have grown to 331 million people by 2007 and to 368 million by 2012.\textsuperscript{166} However, urbanisation has led to a number of problems in its areas. Some urban problems are general in nature, like habitat loss, deforestation, soil erosion etc while some problems are specific to urban areas like traffic congestion, mushrooming of slums, building regulation, and lack of clean air,
The urban problems are many but pertaining to the environment, they are discussed as follows:

**Housing:**

The lack of acute housing problems in cities has given rise to the slums, *jhuggies* and illegal colonies. With growing population in the cities, these inadequate spaces are also increasing in number. These are consequently leading to other problems like sanitation, drainage system and disposal of solid wastes. In Delhi, about 49% of the total population lives in slum areas, unauthorised colonies and JJ clusters. There are also 20,000 *jhuggies* and according to a rough estimate, about five persons stay in each *jhuggi* besides a sizable population is living in unplanned areas. Only 5% of the Delhi population lives in authorised colonies. And about 12.04 million (7.87 %) urban households do not have access to latrines and defecate in the open. The main ministries dealing with urban problems are Ministry of Housing and Urban Poverty Alleviation and Ministry of Urban Development.

As a result, various policies and laws are being implemented by the government to solve this problem. The National Urban Housing and Habitat Policy was formulated in 2007 to focus on urban issues like urban planning, affordable housing, increase flow of funds, special provision for women, SC/ST/OB/Minorities/Disabled, employment generation, public-private partnerships etc. The first Act for sanitation was the Slum Areas (Improvement and Clearance) Act of 1956. Then, the Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993 was passed to solve the problem of sanitation. The government has targeted to make India slum-free in the coming five years with the launch of the Rajiv Awas Yojana (RAY) during the 11th Five Year Plan, including upgradation of 1000 slums and construction of 10 lakh houses. Moreover, to get the exact number of slums, government has embarked on a plan of remote mapping. The Ministry has also asked states to develop a Slum Information System and the Centre has provided them funds for the purpose. As many as 1,327 projects of affordable housing and basic amenities to the urban poor with an outlay of more than Rs 34,791 crore have been approved. To solve the problem of sanitation, Ministry of Urban Development has launched National Urban Sanitation Policy in 2008 with the overall goal to transform Urban India into community-driven, totally sanitized, healthy and liveable cities and towns.
Transport:

The cities face problem of congestion on the roads and streets because of ever increasing number of vehicles. The air pollution has reached unprecedented heights because of increasing number of vehicles every day. Road accidents have also increased due to this. Urban transport is expected to grow by 2.6 times by the year 2016 in the large and medium-sized cities of India, thus culminating into increased and compound vehicular pollution.¹⁷³

National Urban Transport Policy of India was adopted by government in 2006 which advocated public transport and recommended to promote road transport, which are energy efficient, conserves environment and meets social demand. It noted that it is needed to promote public transport to reduce negative externalities, like air pollution and congestion. Metropolitan cities like Delhi and Kolkata have introduce metro rail system to control traffic congestion and pollution. The Government of Maharashtra also prepared a master plan for the Mumbai Metro suggesting implementation in 3 phases over nine corridors. To provide better public transport and ease congestion, proposals for Bus Rapid Transit System (BRTS) has been improved in Ahmedabad, Bhopal, Indore, Jaipur, Pune, Rajkot, Vijayawada and Vishakhapatnam under JNNURM with a total estimated cost of Rs. 2,740 crores.¹⁷⁴

Land policy:

Due to increasing commercial value of lands, the open spaces are thinning, leading to lack of clean and fresh air for the people to breathe. As a result, the Government of India is involved in zone planning and building regulations. As a result, National Commission on Urbanisation of India (NCU, 1988) recognized the need for adequate supply of land, efficiency and equity in allocation of land and promotion of flexibility in land use in cities. The Eleventh Five Year Plan judges that urban planning tools like master planning, zoning and regulations are not enough for the requirements of land supply for rapid urbanisation. It calls for a flexible land policy which will make conversion from one use to another, cost efficient and promote equity. National Commission on Urbanisation (NCU) of India (1988) recommended low-rise high density (LRHD) built-form for Indian cities. It explains that such form is less expensive to maintain and has the advantages of security of neighbourhood
protection. The problem has also been addressed somewhat by Jawaharlal Nehru Urban Renewal Mission in India.\textsuperscript{175} To encourage urban municipal bodies in their work, the CRISIL Awards are being launched in partnership with the Ministry of Urban Development \textsuperscript{176}

These problems are specific to urban areas only. But there is a plethora of other problems faced by cities common to the rest of the country such as waste management, air and water pollution, available of safe drinking water and so on. Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in December 2005 to counter urban pressures like water supply, sewerage and solid waste management, construction and improvement of drains and storm water drains, parking lots and spaces, development of heritage areas and so on.\textsuperscript{177} To manage solid wastes, the Ministry of Environment and Forests notified the ‘Municipal Solid Waste (Management and Handling) Rules, 2000, making it mandatory for urban local bodies to improve the systems of waste management.\textsuperscript{178} In addition, a Centrally Sponsored Accelerated Urban Water Supply Scheme was included in the VIII Five Year Plan to provide safe and adequate water supply facilities.\textsuperscript{179}

Moreover, innovative, low-cost, and environmentally sustainable technologies have been initiated to solve the urban problems. Three major initiatives in this regard are the techniques of low-cost sanitation, low-cost housing and rainwater harvesting. Under the low-cost sanitation scheme, during the decade of 1990 since its beginning, 90,000 low-cost sanitation units have been constructed. Under the low-cost housing, the Government of India stimulates production of low-cost building materials by exempting the Building Centres’ production of materials and components from excise duty.\textsuperscript{180}

**Delhi**

Since Delhi is the capital of the country and one of the largest metropolitan cities of India, with being the most urbanised, various policies and laws have been passed from time to time in various sectors for the city itself. According to Census of India (2001), Delhi’s population has reached the figure of 13,782,976 making it the most urbanised and populated city of India.\textsuperscript{181} The Master Plans by Delhi Development Authority from time to time are engaged in the planning and development of the city
of Delhi. In context of land policy, Delhi Land Holdings (Ceiling) Act, 1960 was passed.

For abatement of pollution in Delhi, till now, 2800 crore had been spent on cleaning the Yamuna river. 18 effluent plants were to be set up but have not been completed.\textsuperscript{182} 21 major wastewater drains of NCT-Delhi are being monitored regularly by Central Pollution Control Board on a monthly basis. Sound Detection and Ranging System is in continuous operation at Central Pollution Control Board which measures the mixing height at Delhi. The Central Pollution Control Board regularly monitors Respirable Suspended Particulate Matter (RSPM) in ambient air of Delhi.\textsuperscript{183} The National Productivity Council in New Delhi coordinates the activities pertaining to Waste Minimisation Circles (WMCs) of small and medium industries.\textsuperscript{184} To ease and decongest the traffic problem, the Supreme Court of India on 11 February 2005 approved the construction of an expressway around Delhi.\textsuperscript{185}

8. **NUCLEAR AND RADIATION POLLUTION**

The nuclear and radiation pollution has been the result of the use (or misuse) of hazardous substances and the formation of its wastes. Hazardous waste and substances mainly of toxic nature, in turn, are the result of industrialisation, urbanisation and modernisation. The growth of industries and technology has led to increased used of substances that are detrimental to health of man and society as a whole. Today, there is limitless list of substances that are polluting the environment like use of chemicals in the industries, agriculture, nuclear and petroleum fuels by-products, heavy metals such as lead, mercury, production of radioactive, municipal and solid waste, etc., all these types of substances and wastes have led to the nuclear and radiation pollution around the globe as well as in India.

Section 2(e) of the Environment (Protection) Act of 1986 defines “hazardous substance” as ‘any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organisms, property or the environment.’

‘Waste’ is typically taken to mean anything that can be discarded. Almost every human activity produces some kind of waste. Waste can be categorized as households waste, municipal waste, waste produced by industrial and manufacturing
sites produce solid and hazardous waste, animal waste, radioactive waste, and medical waste. Mumbai generates 5000 tonnes, New Delhi 4600 tonnes, Kolkata 3500 tonnes, Chennai 3500 tonnes, Bangalore 1800 tonnes and Hyderabad 2800 tonnes of solid waste daily. The latest problem regarding waste includes the disposal of e-waste including obsolete computers, servers, printers, mobile phones, TVs, refrigerators and washing machines, DVDs, CDs, floppies, chips and processors and plastic waste. The excessive amount of these wastes has led to the shortage of land for disposal. According to a survey done by International Resource Group, India on its own generates about 146,000 tonnes of e-waste every year. The problem is also that India has become one of the favored grounds for many countries for dumping their highly toxic e-waste, making land pollution more serious in India. Therefore, the Government of India in concerned for the regulation of hazardous substances and waste including its management, mishandling, distribution, ban on the sale and import, proper disposal and clean up of the sites of the concerned substances and wastes.

**Hazardous (Management and Handling) Rules 1989:**

This is the first comprehensive policy to deal with the hazardous and toxic waste in India framed under the provisions of the Environment (Protection) Act of 1986. The Rules applied to specified categories of wastes and excluded wastes as specified in Schedule such as radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962, wastes arising from ships under Merchant Shipping Act, 1958, bio-medical wastes covered under the Bio-Medical Wastes (Management & Handling) Rules, 1998, wastes covered under the Municipal Solid Wastes (Management & Handling) Rules, 2000, and many others.

Routinely, it defines some of the major relevant terms of the Act such as applicant, auction, authorisation, export, import, exporter, disposal and many more. Further it stipulates the responsibility of the occupier for handling of wastes, grant of authorization for handling hazardous wastes, power to suspend or cancel an authorization, packaging, labelling and transport of hazardous wastes, inventory of disposal sites, records and returns, accident reporting and follow-up, import of
hazardous wastes and the concerned appeals. Further, the schedule divides the waste into different categories. This law was amended in 2008 as the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

In addition, other policies concerning the hazardous substances and wastes are included in the following Acts:

- Insecticides Act, 1968.
- The Explosive Substances Act, 1908.
- The Inflammable Substances Act, 1952.

Apart from these, Common Bio-Medical waste Treatment Facilities (CBWTFs) have been created in various cities for treatment of bio-medical waste generated in various hospitals and nursing homes. Presently, there are 177 CBWTFs operational in India. But in spite of these policies, there has been an uncontrolled importing of hazardous material. This is due to the lack of any agency to check the toxicity of the imported material. India has a liberal import policy for metal scrap being a cheap raw material for steel industry. However, alarmed over the import of hazardous material, the Centre, on 9 October 2004, made the import of waste and scrap more stringent. A notification issued by the Director General of Foreign Trade said that the import of metallic waste and scrap would be allowed only after a major inspection at major ports and the Inland Container Depot at Tughlaqabad. The Government of India in its decision on 15 October 2004 made pre-shipment inspection certificate for import of scrap mandatory. Ministry of Commerce and Industry at its meeting held on 15 October 2004 reviewed the import policy for scrap and metallic waste. Recently, the Minister for Environment and Forest announced that the Government will come out with a set of rules to manage electronic waste (e-
waste). He said the new rules will have public-private partnership (PPP) and focus on recycling of useful material and destroying toxic waste.\textsuperscript{192}

The latest incident of radiation occurred in Delhi’s Mayapuri Bazaar on 8 April which killed 1 person points out the threat posed by carelessly handling radiological sources.\textsuperscript{193}

**Bhopal Gas Leak Case of 1984**

The Bhopal disaster which took place around midnight on 3 December 1984 is the worst case of industrial accident not only in India but around the globe. Forty tonnes of highly toxic methyl isocyanate (MIC) which was manufactured and stored in Union Carbide’s chemical plant, leaked into the atmosphere and killed over 3500 people and affecting 2,00,000 people.\textsuperscript{194} Barely 100 yards from his office, thousands of people lay dead and dying. Tens of thousands more were crippled for life. Even today, tens of thousands of survivors are suffering from chronic illnesses; the persistent presence of poisons in the soil and water, there is alarming rise in cancers and congenital problems among children born to exposed people.\textsuperscript{195}

To ensure that claims arising out of the disaster were dealt with speedily, and in alarm over the onslaught of American personal injury lawyers that flocked to Bhopal immediately after the gas leak; Parliament enacted the Bhopal Leak Disaster (Processing of Claims) Act in March, 1985. The Bhopal Act conferred the exclusive right on the Indian Government to represent all claimants both within and outside India. In April 1985, the Indian Government sued Union Carbide in the United States. With time, the Supreme Court rejected the rule of strict liability and its place applied its new doctrine of “absolute liability”. In January 1991, Parliament enacted the Public Liability Insurance Act (PLIA), giving statutory recognition to no-fault liability. On July 19, 2004, the Supreme Court directed the Welfare Commissioner of Bhopal to disburse the unspent amount of Rs. 1503 crore in the Settlement Fund on a pro-rata basis to all the (5,70,000-odd) victims who had been awarded compensation for death and injury.\textsuperscript{196} The Madhya Pradesh government, which has a dedicated Ministry for Bhopal Gas Tragedy Relief and Rehabilitation, claims that over a million people have already been compensated. Under a five-year action plan that began in 1990 and was extended in 1995, six 650-bed government hospitals
were set up. These cater to 36 of the 56 municipal wards in Bhopal. In addition, the government also opened 18 ancillary clinics. According to documents available with the Bhopal Gas Tragedy and Rehabilitation Department, the medical expenditure incurred to date is Rs.512.09 crore, and 64 per cent of the city’s population at the time of the tragedy in 1984 has been given compensation. 

However, the response of government in this case has been a failure. A period of 25 years has passed and still the people of Bhopal are waiting for their justice Warren Anderson, former Union Carbide chairman and the prime accused in the industrial disaster case, who lives in New York, has still not been punished. Dow Chemicals refuses to take up the responsibility of cleaning up the site. Union Carbide Corporation (UCC) continues to flee from the ongoing criminal case in India which relates to the leakage of deadly MIC from its pesticide factory in Bhopal. The web site maintained by UCC on Bhopal still claims that the

“...incident was caused by a disgruntled employee who introduced a large volume of water by connecting a water hose directly to the tank.”

9. ENERGY

Conservation of energy is also a very important issue to be considered for the protection of environment. The conservation is significant particularly in India because the energy consumption is increasing at a very fast pace with the burgeoning population and economic growth. Around 57 percent of the rural households and 12 percent of the urban households i.e., 84 million households in the country (over 44.2% of households) did not have electricity which is one of the most convenient forms of energy in 2000. In context of environment, the conservation of energy is indispensable as its consumption is degrading the quality of the environment and is intensifying insecurity for the future generation. Thus, the purpose for energy policy pertaining to environment is that;

1. there is sustainable production and development of energy resources
2. the energy supply corresponds to the demands
3. to encourage use of renewable and everlasting energy resources
4. There is use of cleaner technologies for resources to check pollution and maintain the quality of environment.

With these purposes, the Government of India is also involved in policies pertaining to energy resources. The major policies regarding energy resources are:

- Oil Fields (Regulation and Development) Act, 1948.
- Indian Copper Corporation (Acquisition of Undertaking) Act, 1972.
- Oil and Natural Gas Commission (Transfer of Undertaking and Repeal) Act, 1993.
- Indian Nuclear Cooperation Promotion Act, 2006.


**Energy Conservation Act 2001:**

This policy of Government of India is the general and the principal policy regarding the efficient use of energy and its conservation in India. This Act established the Bureau of Energy Efficiency with the primary objective to reduce energy intensity in the Indian economy through adoption of result oriented approach. Besides this, it empowers Government of India to establish and specify energy consumption norms and standards, prohibit manufacture, sale, purchase and import of notified non-conforming equipment and appliances, prescribe energy conservation building codes for efficient use of energy and its conservation in new commercial buildings and so on.

The concept of a National Energy Policy found impetus in India after the first oil crisis of 1973-74, the Planning Commission had set up a Fuel Policy Committee in 1971. Jawaharlal Nehru recognized the importance of energy and set up a Power and Energy Committee, way back in 1962. This committee submitted its report entitled ‘Energy Survey of India’ in 1965, which was the first Report of all energy resources in the country. On 24 December 2004 Manmohan Singh launched the National Campaign on Energy Conservation, under which various measures, activities are being undertaken during 2005 by Bureau of Energy Efficiency, industries, Schools, State governments and Designated Agencies, Public Sector units of Ministry of Power, etc. The National Energy Conservation Award scheme has motivated industries to conserve energy. In EC Award 2005, 311 participating industrial units saved Rs. 9891 million per year against an investment of Rs. 13161 millions, on account of implementation of various energy conservation projects.

To ensure sustainable development and energy security, the Ministry of Non-conventional Energy Sources support the implementation of a large broad-spectrum programme covering the entire range of new and renewable energies. Concessions are available to the non-conventional energy sector under the Income Tax Rules. The Electricity Act of 2003 enables provision to promote co-generation and generation of electricity from renewable sources of energy and also favours power systems based on optimal utilization of resources such as coal, natural gas, nuclear, hydro, and renewable sources of energy. In 2005, the Government of India adopted
the Bio-diesel Purchase Policy to prescribe that oil marketing companies in the public sector purchase bio-diesel of prescribed Bureau of Indian Standards (BIS) specification from registered authorized suppliers at a uniform price, to be reviewed every six months. The Government of India is also implementing National Biomass Gasifier Programme. National Solar Mission was launched by Government of India to promote country’s development and address climate change.

An Energy Conservation Building Code (ECBC) was launched in May 2007 to address the design of new, large commercial buildings to optimize the building’s energy efficiency. Nearly one hundred buildings are already following the Code, and compliance with it has also been incorporated into the Environmental Impact Assessment requirements for large buildings. In March 2007, the conduct of energy audits was made mandatory for large energy-consuming units in nine industrial sectors.

10. MISCELLANEOUS

There are certain areas of environment policy that cannot be included in any group. Therefore, they are discussed separately and are the following:

Dams

Dams have become the indicators of economic development. Their construction is considered the path towards economic and social progress including, increase in the irrigation potential to foster food security, to generate power, and, in many cases, to provide drinking water. But at the same time, it has become controversial for human displacement and environmental degradation including submersion of soils, forest, death of fishes, disturbance of aquatic ecosystems etc. In India too, dams have been controversial since the first major post-independence irrigation project of the Bhakra dam. The other controversial dams are Tehri and Narmada. The opponents called the Sardar Sarovar dam as “India’s greatest planned human and environmental disaster.” It has been rightly said by Kamta Prasad that “There are a lot of still unaccounted, unexplored and unidentified benefits and costs of the big dams which need to be analysed to make the debate on the big dams more objective and based on concrete facts.”
Subsequently, the Government of India took measures to check the negative consequences of dam. Guidelines for Environmental Impact Assessment of River Valley Projects were first established in 1985. Consequently, more comprehensive Notification on Environmental Impact Assessment of Development Projects came in 1994 and then in 2006. For human displacement, a Draft National Policy on Resettlement and Rehabilitation for Project Affected Families of 2004 was proposed, followed by the more progressive Draft National Development, Displacement and Rehabilitation Policy of 2005. This was superseded by the National Rehabilitation and Resettlement Policy of 2007.\textsuperscript{209}

However, dams are again being proposed as an alternative to carbon-based sources of energy in order to mitigate climate change.\textsuperscript{210}

**Fisheries**

India’s fisheries act dates back to 1897. This Act makes fishing by poisoning of water and use of explosives a penal offence. Another Act relating to fishing was the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981.

India is the third largest producer of fish and second largest producer of fresh water fish in the world.\textsuperscript{211} Though, like other common resources, it also suffered overexploitation. The first national policy for managing marine fisheries was announced by the Government of India in 2004.\textsuperscript{212} The 2004 Policy provides for reviewing the existing legal framework for regulating the fishing operations. It envisages the introduction of additional legal instruments in such areas as operation of Indian flag vessels in the EEZ, introduction of new fishing units, ensuring conservation of marine resources, especially in limited access fisheries, and fishery harbor management.\textsuperscript{213} National Fisheries Development Board has been set up in September 2006 with its headquarters at Hyderabad to realize the untapped potential of fisheries sector, fish culture, processing & marketing of fish, application of modern tools of research & development for optimizing production and productivity in fisheries.\textsuperscript{214} Under macro-management approach, a centrally sponsored scheme on Development of Inland Fisheries and Aquaculture is being implemented through the State governments /UT administrations. This scheme covers all inland fishery resources available in the country.\textsuperscript{215} Moreover, Central Institute of Fisheries
Nautical & Engineering Training (CIFNET) was established in 1963 at Cochin for organizing suitable fisheries training system at the national level. Integrated Fisheries Project (IFP) was set up in Kochi to envisage processing, popularisation and test marketing of unconventional varieties of fish.

Since fisheries is a State subject, different States have their own State policies governing fishing resources. At the state level, the government of Kerala has been taking pioneering measures for fisheries. There are two apex organisations in Kerala at the state-level, Kerala State Cooperative Federation for Fisheries Development Ltd., and the South Indian Federation of Fisheries Societies that are engaged in organising and assisting fishermen’s co-operatives in the states.

Rock Deface

Apart from these, there are other sectors in which the government is involved in environmental protection. The rock deface and commercial vandalism is also a popular environmental degradation in India. For commercialization, the rocks are painted by the multinational corporations. In this sector, the judiciary has played an important role. For instance, the Supreme Court in 2002 imposed a fine of Rs. 2,00,000 on Pepsi and Coca-Cola and Rs. 1,00,000 each on other organisations for repairing the damage caused by them by painting rocks with their advertisements in the Kullu region of Himachal Pradesh. In the same year, the Supreme Court imposed another 1 crore rupees on eight companies for painting on eco-fragile rocks along the Manali-Rohtang road.

Food Security

For the security of food, policy was created with the aim of self-sufficiency of food to all the people at affordable prices. With this purpose, Food Corporation Act, 1964 was passed. The National Food Security Mission has been launched to increase production and productivity of wheat, rice and pulses on a sustainable basis so as to ensure food security of the country.

The contamination of food and drinks has nowadays become a major cause of concern. Various food stuffs, vegetables, fruits and drinks as well as drugs are contaminated by chemicals, pesticides and other substances making it harmful, rather deadly, for humans.
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