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ROLE OF JUDICIARY AND GOVERNMENT ON MAJOR POLLUTING INDUSTRIES IN INDIA

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INTRODUCTION

The penchant for comfort, competition, and culture led the human race to recurring crises, unmistakably the worst of which is the 'ecological crises'. The balance in nature is disturbed. The natural resources are about to be exhausted, members of different species are extinct, and many are endangered. The world, isolated in the limitless expanse of sterility, may no longer remain the abode of billions of life claims it supports now. The growing threat of global warming/cooling, and depleting layer of ozone in its stratosphere clearly foretell the destiny.

The direct impact of the environmental degradation has changed the attitude towards the life style, and the traditional values of India, and many other parts of Asia. Three decades back, if a person was asked to quantify the cost he/she prefers to spend for a glass of pure water, he/she could have been at loss but the story is something different today – even a child knows the cost of a pure mineral water bottle. A modern citizen in general of Indian subcontinent cannot quantify the amount he/she may like to spend for pure air to breathe. But the price tag has already been there. In any 5 star hotels, one may enjoy the service of oxygen parlour after the whole day work in a polluted city to get rejuvenate. It is sad but true, nothing is fresh from the garden, any fruit or vegetable is coated with toxic insecticides. The so-called sacred water of the river *Ganga* and *Yamuna* will be highly injurious to health if taken from Kolkata or Delhi.

The environmental problems in India are fast moving indeed. The continuous planned economic development along with high growth of population on its higher base is putting a strain on the *environment*, *economic infrastructure* as well as *human capabilities*, and the country's *natural resources*. Indubitably, industrial pollution, soil erosion, deforestation, rapid industrialization, urbanization, and land degradation are all serious issues.

The *Indian Penal Code* provides punishment for public nuisances both of general and specific nature. The *Criminal Procedure Code* gives power to the District Magistrate or Sub-Divisional Magistrate to abate public nuisances. The Factories Act, 1948, contains in Ch III, Sec. 11 some provisions for the cleaning of the factory, removal of garbage and refuse etc. The Motor Vehicle Act, 1939 prescribes rules to minimize the noise and emissions of the vehicles by making provisions for the regulation of use of horns, silencers, compulsory turning of the engine, catalytic converter, lead free petrol to preserve environment in the big cities. The Air (Prevention and Control of Pollution) Act, 1981 is a direct legislation for prevention, control and abatement of air pollution. The Act contains severe punitive action against the offenders. The Environment (Protection) Act, 1986 is another specific legislation for the abatement of environmental pollution as well as for providing the procedure for handling of hazardous substances in particular. The Public Liability Insurance Act, 1991 is passed to provide for the public liability insurance for the purposes of providing immediate relief to the persons (not worker) affected by accident occurring in the process of handling any hazardous substances and for other related matters. Evidently, the assault on environment in the cost of mindless development made in a hurry. Notwithstanding different legal provisions, the pollution could not be prevented, and Indian industries contributed most to it. *When polito-bureaucracy is not finding the way, the judiciary is using its powers and playing a decisive role in environmental management*.

Specialists opine that the pollution is a problem of scarcity in terms of the waste disposal capacity of the environment. The main focus in an economic analysis is scarcity of resources, and their optimum utilization. The economic aspect of environment is that the expected level of environment is pollution free environment, which is scarce. The supply of such environment is

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limited and is available only at a cost. Theoretically, the equilibrium will be attained and there will be equality between supply and demand at a specific price of environmental quality. This indicates that level of satisfaction out of degree of purity of environment is an increasing function of cost. Attainment of pollution free environment is an undisputed welfare objective, but it involves cost. In free market economy, consumers may not accept to pay more for a commodity for the sake of environment protection, and therefore, the procedures are not likely to take care of environment in the production process to reduce the burden of extra cost. Evidently, the *Government has a role to play in the prevention of environmental damage by taking various administrative and legal measures including ban on production of certain products*. The benefits of improved quality environment will be *distributed evenly* among individuals of the present generation, and also for the future generation. The cost will be borne by the people who may not get the major benefits. The distribution of economic well-being necessarily creates conflicts of interests between *potential gainers* and *potential users* from any specific environmental policy alternative.

The problem of externalities is a momentous aspect of quality of environment. The external effects of industrial outputs like injurious gases, and effluents affect the environment, and the population exposed to it bears the real opportunity costs. The costs are external to the firm and not included in the price of the commodity. These are borne by the society. The economic problem is thus, the optimal allocation of resources in the face of externalities, and restriction to those production activities *where the social costs are greater than social benefits*. Environment quality, from the viewpoint of economics, is a public good. Its consumption of a particular standard is available to all in equal amounts. Once the demand rises to a point where use of resources inflicts disadvantage to others, the efficiency suffered. In fact, as the environment resources are public goods, its exploitation and degradation proceed unabated to raise the level of pollution. *That is the returns become negative*. The negative user may get a return higher than the cost by polluting the environment but ultimately the total costs owing to damage in terms of well-being may exceed total benefits. The damage from pollutants is an external diseconomy or negative spillover. Externalities are indirect or unintended by-products of production or consumption process and represent costs or benefits, which are not considered for *production-decision or consumption-decision*.

NATURAL VERSUS ANTHROPOGENIC POLLUTION

The very nature of the pollution can be sub-divided into *three* substantive parts as placed below :

(i) *Environment* where it takes place *i.e. atmosphere* (air pollution); *hydrosphere* (water pollution); and *lithosphere* (soil pollution);

(ii) *Origin i.e. natural* (*e.g.* volcanic eruptions), or *anthropogenic* (*e.g.* industrial pollution);

(iii) *Physical nature of the pollutants i.e. gases* (gaseous pollution); *particulate matter* (dust pollution); *temperature* (thermal pollution); *noise* (noise pollution); *radioactivity* (radioactive pollution) etc.

A significant aspect of the notion of pollution is that ecological change must actually be demonstrated. If some potentially polluting substance is present at a concentration or intensity that is less than the threshold required to cause a demonstrable ecological change, then the situation would be referred to as *contamination*, rather than *pollution*. The very aspect of pollution can be illustrated by reference to the stable elements, *e.g.* cadmium, copper, lead, mercury, nickel, selenium, uranium, etc. All of these are consistently present in at least trace concentrations in the environment. Moreover, all of these elements are potentially toxic. However, they generally affect biota[1] and therefore, only cause pollution when they are present at water-soluble concentrations of more than about 0.01-1 parts per million (ppm).

Some other elements can be present in very large concentrations, *e.g.* aluminium and iron, which are important constituents of rock and soil. Aluminium constitutes 8-10% of the earth's crust, and iron 3-4%. However, almost all of the aluminium and iron present in minerals are insoluble in water, and are therefore, not readily assimilated by biotic[2] community and cannot cause toxicity. In acidic environments, however, ionic forms of aluminium are solubilized, and these can cause toxicity in concentrations of less than one part per million. So to say, the bio-availability of a chemical is an important determinant of whether its presence in some concentration will cause pollution.

Most instances of pollution result from the activities of human. For example, *anthropogenic pollution* can be caused by :

(i) The emission of sulphur-dioxide and metals from a smelter, causing toxicity to vegetation and acidifying surface water and soil;

(ii) The emission of waste heat from an electricity generating station into a river or lake, causing community change through thermal stress;

(iii) The discharge of nutrient-containing sewage wastes into a water body, causing *eutrophication.*[3]

Most instances of anthropogenic pollution have natural analogues *i.e.* cases where pollution is not the result of human activities. For example, pollution can be caused by the emission of sulphur-dioxide from volcanoes, by the presence of toxic elements in certain types of soil, by thermal springs or vents, and by other natural phenomena. In many cases, natural pollution can cause an intensity of ecological damage *i.e.* as severe as anything caused by anthropogenic pollution.

An interesting case of natural air pollution is the Smoking Hills, located in a remote and pristine wilderness in the Canadian Arctic, virtually uninfluenced by humans. However, at a number of places along the 18.63 miles (30 km) of seacoast, bituminous shales in sea-cliffs have spontaneously ignited, caused a fumigation of the tundra with sulphur dioxide and other pollutants. The largest concentrations of sulphur dioxide (more than two parts per million) occur closest to the combustions. Further away from the sea-cliffs, the concentration of sulphur dioxide decrease rapidly. The most important chemical effects of the air pollution are acidification of soil and fresh water, which in turn causes a solubilization of toxic metals. Surface soils and pond water commonly have pH[4] less than 3, compared with about pH 7 at non-fumigated places. The only reports of similarly acidic water are for volcanic lakes in Japan, in which natural pH is as acidic as 1 persist, and pH less than 2 in water affected by drainage from coal mines.

There are many well-known cases where pollution is caused by anthropogenic emissions of chemicals. Some examples are placed below :

(i) Emissions of sulphur dioxide and metals from smelters can cause damage to surrounding terrestrial and acquatic ecosystems. The sulphur dioxide and metals are directly toxic. In addition, the deposition of sulphur dioxide can cause an extreme acidification of soil and water, which causes metals to be more bio-available, resulting in important, secondary toxicity. Because smelters are point sources of emission, the spatial pattern of chemical pollution and ecological damage displays an exponentially decreasing intensity with increasing distance from the source.

(ii) The use of pesticides in agriculture, forestry, and around homes can result in a non-target exposure of birds and other wildlife to these chemicals. If the non-target biota are vulnerable to the pesticides, then ecological damage will result.

(iii) The deposition of acidifying substances from the atmosphere, mostly as acidic precipitation and the dry deposition of sulphur dioxide, can cause an acidification of

surface water. The acidity solubilises metals, most notably aluminium, making them bio-available. The acidity in combination with the metals causes toxicity to the biota, resulting in large changes in ecological communities and processes. Fishes, for example, are highly intolerant of acidic water.

(iv) Oil spills from tankers and pipelines can cause great ecological damage. When oil spilled at sea washes up onto coastlines, it destroy seaweeds, invertebrates, and fishes, and their communities are changed by years together. Sea birds are very intolerant of oil and can die of hypothermia (a potentially fatal condition occurs when the body temperature falls below 95^0 *i.e.* 35^0C) if even a small area of their feathers is coated by petroleum.

(v) Most of the lead shot fired by hunters and skeet-shooters miss their target, and are dispersed into the environment. Waterfowl and other avian wildlife actively ingest lead shot because it is similar in size and hardness to the grit that they ingest to aid in the mechanical abrasion of hard seeds in their gizzard. However, the lead shot is toxic to these birds, and each year millions of birds are killed by this source in North America.

Human can also cause pollution by excessively fertilizing natural ecosystems with nutrients. For example, fresh water can be made eutrophic by fertilization with phosphorus in the form of phosphate. The most conspicuous symptoms of eutrophication are changes in species composition of the phytoplankton[5] community and especially, a large increase in algae biomass, known as *bloom*. In shallow water bodies there may also be a vigorous growth of vascular plants. These primary responses are usually accompanied by secondary changes at higher trophic levels, including arthropods, fishes, and water fowl, in response to greater food availability, and other habitat changes. However, in the extreme cases of very eutrophic water, the blooms of algae and other micro-organisms can be noxious, producing toxic chemicals and causing periods of oxygen depletion that kill fishes and other biota. Extremely eutrophic water bodies are polluted because they often cannot support a fishery, cannot be used for drinking water, and have few recreational opportunities and poor esthetics.

Pollution, therefore, is associated with ecological degradation, caused by environmental stresses originating with natural phenomena or with human activities. The prevention and management of anthropogenic pollution is one of the greatest challenges before the modern society.

CENTRAL POLLUTION CONTROL BOARD : AN INDIAN EXPERIENCE

The *Central Pollution Control Board* (CPCB) has identified 17 categories of major polluting industries in India.[6] The Tables 1 and 2 delineate the sector-wise summary status and the state-wise summary status of the pollution control in 17 categories of highly polluting industries respectively.

Table : 1

Sector-wise of Highly Polluting Industries (17 Categories)

S.No.	Industrial Sector	Complying	Defaulting	Closed	Total
1.	Aluminium	6	1	0	7
2.	Cement	193	23	20	236
3.	Chlor – Alkali	25	9	0	34
4.	Copper	3	1	0	4
5.	Distillery	195	35	41	271
6.	Dyes & Dye Intermediate	87	9	23	119
7.	Fertilizer	106	8	25	139
8.	Iron & Steel	30	9	1	40
9.	Oil Refineries	18	2	1	21
10.	Pesticides	97	10	9	116
11.	Petrochemicals	76	7	1	84
12.	Pharmaceuticals	379	134	58	571
13.	Pulp & Paper	120	31	38	189
14.	Sugar	428	65	95	588
15.	Tannery	96	15	18	129
16.	Thermal Power	128	54	8	190
17.	Zinc	4	1	1	6
	Total	1991	414	339	2744

Source : CPCB Report, December 31, 2007

Table : 2

Statewise/Union Territories/Cities Status of Highly Polluting Industries in 17 Categories

S.No.	State/UT/Cities	Complying	Defaulting	Closed	Total
1.	Andhra Pradesh	243	90	34	367
2.	Assam	10	3	5	18
3.	Bihar	25	4	19	48
4.	Chhattisgarh	18	5	2	25
5.	Goa	10	0	1	11
6.	Gujarat	263	61	21	345
7.	Haryana	73	31	23	127
8.	Himachal Pradesh	14	3	2	19
9	Jammu & Kashmir	8	0	3	11
10.	Jharkhand	8	7	6	21
11.	Karnataka	98	5	40	143
12.	Kerala	23	11	15	49
13.	Madhya Pradesh	60	4	15	79
14.	Maharashtra	454	42	69	565
15.	Meghalaya	8	0	0	8
16.	Orissa	38	12	2	52
17.	Punjab	53	31	17	101
18.	Rajasthan	94	9	8	111
19.	Tamil Nadu	175	42	3	220
20.	Tripura	10	0	0	10
21.	Uttaranchal	16	18	2	36
22.	Uttar Pradesh	234	13	27	274
23.	West Bengal	49	18	20	87
24.	Chandigarh	0	0	1	1
25.	Daman	1	2	0	3
26.	Delhi	2	3	0	5
27.	Pondicherry	4	0	4	8
	Total	1991	414	339	2744

Source : CPCB Report, December 31, 2007.

The *Central Pollution Control Board* was constituted as the Central Board for the Prevention and Control of Water Pollution (CBPCWP) on 22nd September, 1974 under the provisions of The Water (Prevention & Control of Pollution) Act, 1974, and later under The Water (Prevention & Control of Pollution) Amendment Act, 1988 (No. 53 of 1988) its name was amended as the *Central Pollution Control Board*. The main functions of the CPCB, as spelt out in The Water (Prevention and Control of Pollution) Act, 1974, and The Air (Prevention and Control of Pollution) Act, 1981, are :

(a) To promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution; and

(b) To improve the quality of air and to prevent, control or abate air pollution in the country.

The *Central Pollution Control Board* has been playing a key role in abatement and control of pollution in the country by generating relevant data, providing scientific information, rendering technical inputs for formation of national policies and programmes, training and development of manpower and organizing activities for promoting awareness at different levels of the Government and Public at large.

In addition to the main functions of promoting cleanliness of streams and wells, and improving the quality of air and to prevent, control or abate air pollution, the CPCB has been assigned the following functions :

(i) Advise the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air;

(ii) Plan and cause to be executed a nation-wide programme for the prevention, control and abatement of water and air-pollution;

(iii) Co-ordinate the activities of the State Boards and resolve disputes among them;

(iv) Provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water and air pollution, and for their prevention, control or abatement;

(v) Plan and organize training of persons engaged in programmes for prevention, control or abatement of water and air pollution;

(vi) Organize through mass media, a comprehensive mass awareness programme on prevention, control or abatement of water and air pollution;

(vii) Collect, compile and publish technical and statistical data relating to water and air pollution, and the measures devised for their effective prevention, control or abatement;

(viii) Prepare manuals, codes and guidelines relating to treatment and disposal of sewage and trade effluents as well as for stack gas cleaning devices, stacks and ducts;

(ix) Disseminate information in respect to matters relating to water and air pollution and their prevention and control;

(x) Lay down, modify or annul, in consultation with the State Governments concerned, the standards for stream or well, and lay down standards for the quality of air;

(xi) Establish or recognize laboratories to enable the Board to perform; and

(xii) Perform such other functions as and when prescribed by the Government of India (Prevention and Control of Pollution) Act, 1981 with respect to Union Territories to respective Pollution Control Committees under the local administration.

ROLE OF JUDICIARY : ENVIRONMENTAL LEGISLATIONS

There are various laws and statutory notifications related to environmental protection against various nuisances and pollution.[7] These are highlighted below :

Subject	**Legislation**
Water Pollution	The Water (Prevention and Control of Pollution) Act, 1974
	The Water (Prevention and Control of Pollution) Rules, 1975
	Central Board for the Prevention and Control of Water Pollution (Procedure for Transaction of Business) Rules 1975, amended 1976
	The Water (Prevention and Control of Pollution) (Procedure for Transaction of Business) Rules, 1975
	The Water (Prevention and Control of Pollution) Amendment Act, 1978
	The Water (Prevention and Control of Pollution) Amendment Act, 1988
	The Water (Prevention and Control of Pollution) Second Amendment Rules, 1976
	The Water (Prevention and Control of Pollution) Cess Act, 1977
	The Water (Prevention and Control of Pollution) Cess Rules, 1978
	The Water (Prevention and Control of Pollution) Cess (Amended) Act, 1991
	The Water (Prevention and Control of Pollution) Cess Amended Rules, 1991
	The Water (Prevention and Control of Pollution) Cess Amended Act, 2003
	The Water (Prevention and Control of Pollution) Cess Amendment Rules, 1992
Air Pollution	The Air (Prevention and Control of Pollution) Act, 1981
	The Air (Prevention and Control of Pollution) Rules, 1982
	The Air (Prevention and Control of Pollution) (Union Territories) Rules, 1983
	The Air (Prevention and Control of Pollution) Amendment Act, 1987
	The Air (Prevention and Control of Pollution) Amendment Rules, 1988
	The Air (Prevention and Control of Pollution) (Union Territories) Rules, 1989
Environment	The Environment (Protection) Act, 1986
	The Environment (Protection) Act, 1986 as amended in 1991

Environment	The Environment (Protection) Rules, 1986
	The Environment (Protection) (Second Amendment) Rules, 1998
	The Environment (Protection) (Third Amendment) Rules, 2002
	The Environment (Protection) (First Amendment) Rules, 2006 for Amendment of Schedule.
	The National Environmental Tribunal Act, 1995
	The National Environment Appellate Authority Act, 1997
	The National Environment Appellate Authority (Appeal) Rules, 1997
Public Liability	The Public Liability Insurance Act, 1991
	The Public Liability Insurance Rules, 1991 as amended on date
	The Manufacture, Use, Import and Storage of Hazardous Micro-organisms Genetically Engineered Organisms or Cells Rules, 1989
Hazardous Waste	The Hazardous Waste (Management and Handling) Rules, 1989
	The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
	The Chemical Accidents (Emergency Planning Preparedness and Response) Rules, 1996
	The Bio-Medical Waste (Management and Handling) Rules, 1988
	Notifications under The Water (Prevention & Control of Pollution) Act, 1974
	Notification for Constitution of Appellate Authorities
	Notification for Delegation of Powers of State Board by the Central Board to various Pollution Control Committees
	Notification of Central Water Laboratory
	Notification regarding Declaration of Air Pollution Control Areas under The Air (Prevention and Control of Pollution) Act, 1981
	Notifications Under the Environment (Protection) Act/Rules, 1986
Guidelines/ Notifications	Delegation of Powers and Functions by the Central Board to the Committees in Union Territories
	Water Quality Assessment Authority, 2001
	Uniform Protocol on Water Quality Monitoring Order, 2005
	Officers Authorized for taking cognizance of offences

	Authorized Officers/Agencies to enter the premises for inspection
Guidelines/ Notifications	Officers/Agencies Authorized to take samples
	Environmental Laboratories and Government Analysts recognized by the *Central Pollution Control Board*
	Delegation of powers to the State Governments under Section 5 of the Environment (Protection) Act, 1986
	Emission Standards for pollutants from various industries
	General Standards for Effluents, Noise Standards, Emission Standards for Vehicles, etc. (Schedule – IV) - Ambient Noise Standards - Vehicular Emission Standards - General Standards (Schedule VI) - National Ambient Air Quality Standards
	Notification on Doon Valley
	Prohibition on Handling of Azodyes
	Authorities created under the Environment (Protection) Act, 1986
	Coastal Regulation Zone (CRZ) and Coastal Zone Management Authorities
	Environmental Impact Assessment of Development Projects (EIA)
	Guidelines for seeking Environmental Clearance
	National Conservation Strategy and Policy
	Statement on Environment and Development, 1992
	Scheme of Labelling of Environment Friendly Products (Ecomark) & Ecomark criteria for 16 Product Categories
	Temperature Limit for Discharge of Condenser Cooling Water from Thermal Power Plant
	Environmental Standards for Gas/Naptha Based Power Plants
	Use of Beneficiated Coal with Ash content not more than 34% in Thermal Power Plants
	Restricting Use of Top Soil for manufacture of bricks and other building materials within specified radius of 50 km from coal/lignite based Thermal Power Plants to promote use of fly ash utilization

Guidelines/ Notifications	The Plastics Manufacture, Sale and Usage Rules, 1999 The Plastics Manufacture and Usage Amendment Rules, 2003
	The Municipal Solid Wastes (Management and Handling) Rules, 2000
	The Ozone Depleting Substances (Regulation and Control) Rules, 2000
	The Noise Pollution (Regulation and Control) Rules, 2000
	The Batteries (Management and Handling) Rules, 2001

Legal Actions Against the Polluting Industries

The legal actions against the polluting industries have been leading to closure of many units. While the environmental issues are important, the closure is taking towards negative growth.[8] Some of the very sensitive judicial orders/cases against pollution control are highlighted below :

(1) Prosecutions Launched, Conviction Secured and Directions given for Closure of Polluting Industries Pollution by Mining in Faridabad

A Writ Petition (Civil) No. 4677 of 1985, *M. C. Mehta* vs. *Union of India & Ors.* The matter relating to pollution by mining in village Khori, Jamalpur and in village Sirohi in the district of Faridabad, Haryana. The Hon'ble Supreme Court after considering the various aspects in the matter directed vide its order, dated 13.04.2006 as follows :

The Delhi Ridge Management Board has field on Interlocutory Application in the matter before the Hon'ble Supreme Court with the prayer that the Government of Haryana be directed to stop the mining activities and pumping of groundwater in and around the area upto five km from Delhi – Haryana Border in the Haryana side of the ridge to maintain the ecological balance of the environment and protecting the Asola Bhatti Wildlife Sanctuary and Ridge located in Delhi and adjoining Haryana. The Hon'ble Supreme Court vide its order, dated 13.04.2006 directed the Monitoring Committee to inspect the mining activity being carried out in the village Khori, Jamalpur and village Sirohi in Faridabad district. In its directions the Hon'ble Court directed that the report of the Monitoring Committee be filed on the impact of continuing mining activity on environment and the safeguards if any adopted to minimize adverse effect on environment and any other suggestions relevant to the issue of impact of mining activities on degradation of environment.[9]

The Hon'ble Court earlier on 18.03.2004 constituted a Monitoring Committee to monitor the overall eco-restoration efforts in the Aravalli Hills and to provide technical support to the implementing organizations. The Monitoring Committee after inspecting the area submitted their report before the Hon'ble Court. The matter is under consideration of the Hon'ble Supreme Court.

(2) Pollution in River Yamuna

A Writ Petition (Civil) No. 725 of 1994, News item 'HT' and *Quite Flow Maily Yamuna* vs. the *Central Pollution Control Board & Ors.*

The writ petition is related to the pollution in the river Yamuna in Delhi area. Pursuant to the directions of the Hon'ble Supreme Court, the *Central Pollution Control Board* submitted its monitoring reports to the Hon'ble Supreme Court. The monitoring report submitted by the *Central Pollution Control Board* is on the water quality of the river Yamuna at Palla, Agra Canal and at Okhla. The *Central Pollution Control Board* also monitoring the drains at the points prior to discharge into the river Yamuna for assessing the waste water quality and pollution load in river Yamuna. The

Central Pollution Control Board monitoring the river Yamuna for its water quality at *five* locations along with 25 drains in compliance to the directions of the Hon'ble Supreme Court. The *Central Pollution Control Board* has submitted the results of 106 round of monitoring since year 1999.

The Hon'ble Court on 21.03.2007 observed that the Government of Delhi has presented a Report as to how the Yamuna water could be cleaned. In the said Report it is suggested that sewerage flowing in small drains shall be intercepted before it enters the bigger drains and thereafter, it shall be confined to the nearest sewerage treatment plants through the interceptors along with three major drains. The Hon'ble Court again on 03.04.2007 after examining the new scheme prepared by the Delhi Jal Board directed that a committee should be constituted of some experts who are conversant with Public Works Engineering and requested the Director, Indian Institute of Technology, Delhi, Chairman, *Central Pollution Control Board*, Director, Central Water Commission, Chairman, Central Groundwater Board, and Director, Central Public Health Environmental Engineering to nominate one expert each to the committee to be formed for such purpose. The Hon'ble Court also directed that the Chief Executive Officer, Delhi Jal Board shall be the member convener of the committee. The Hon'ble Court directed that the study Report shall be submitted within a period of four weeks. The matter is under consideration of the Hon'ble Court.[10]

(3) The Taj Pollution Matter

A Writ Petition (Civil) No. 13381 of 1984, *M. C. Mehta* vs. *Union of India & Ors.* Air Quality Monitoring Stations at Agra.

Pursuant to the directions of the Hon'ble Supreme Court, the *Central Pollution Control Board* has established *four* Air Quality Monitoring Stations and *one* Central Analytical-cum-Calibration Laboratory at Agra.[11] The *Central Pollution Control Board* monitoring the Ambient Air Quality at Taj Mahal, Etmad-Ud-Daula, Rambagh and Nunhai. The data generated from the Air Quality Monitoring Station located in Agra are being submitted to the Hon'ble Supreme Court and also displayed at the Taj Mahal.

(4) Matter Relating to the Widening of Roads in Agra

An Interlocutary Application has been filed by the Public Works Department (PWD), Agra regarding construction of roads in Agra. The PWD prayed before the Hon'ble Supreme Court that approximately 2332 trees may be permitted for removal which requires widening/construction of roads in Agra. Pursuant to the directions of the Hon'ble Court the *Central Pollution Control Board* has submitted their response through an affidavit, dated 07.03.2007 before the Hon'ble Court.[12] In its response, the *Central Pollution Control Board* submits the following facts for the consideration of the Hon'ble Court :

(i) Although widening of road will certainly help reducing the pollution by decongesting the traffic and increasing the average speed of vehicles, yet to accomplish this, a large number of trees are proposed to be cut down.

(ii) It is important to identify the areas at this juncture itself where the compensatory plantation will be done to ensure that the compensatory plantation will discharge the functions carried out by the existing trees, or do even better by a suitable mix of species and by stipulating their number to be enhanced suitably.

(iii) Since most of the area where road widening is undertaken falls in the area where plantation was earlier done for developing green belt under the orders of the Hon'ble Supreme Court, it is crucial that a quick environment impact assessment is carried out, before cutting the trees and undertaking compensatory afforestation.

(iv) Monitoring committee constituted by the Hon'ble Court could be requested for conducting a quick environmental impact assessment for this work.

The matter is under consideration of the Hon'ble Court.

(5) River Ganga Pollution Matter

A Writ Petition (Civil) No. 3727 of 1985, *M. C. Mehta* vs. *Union of India & Ors.* Mercury Pollution in Singrauli Area.

An Interlocutory Application has been filed by *Shri M. C. Mehta* in the matter and alleged that in the Singrauli Industrial area in Uttar Pradesh large number of industries, power plants, aluminium industries, chemical industries, cement industries, and industries relating the Hydrocarbon causing large scale mercury pollution thereby drinking water and all forms of agricultural operations are seriously affected.[13] It is also alleged that the mercury content in the drinking water and edible substances are in high percentage and causes serious health hazards to the inhabitants of the area. Pursuant to the directions of the Hon'ble Court, the *Central Pollution Control Board* has filed a status report through an affidavit, dated 06.10.2006 and also a study report on mercury balance in Thermal Power Plants in Singrauli area. The Hon'ble court after considering the report of the *Central Pollution Control Board* on 20.02.2007 directed that the U. P. Pollution Control Board shall carried out inspection of Singrauli area and submit the present status of the mercury pollution level. The matter is under consideration of the Hon'ble Supreme Court.

(6) Pollution by Slaughter Houses

A Writ Petition (Civil) No. 309 of 2003 *Laxmi Narain Modi* vs. *Union of India & Ors.*

A Petition has been filed as a Public Interest Litigation in the Hon'ble Supreme Court regarding incineration of all animal wastes to be made mandatory at all abattoirs, slaughter houses and meat processing units in the country and make use of animal wastes like meat and bones as poultry/ animal feed. The Hon'ble Supreme Court after considering the status report filed by the *Central Pollution Control Board* issued notices on 03.10.2005 to the states of Madhya Pradesh, Kerala, Karnataka, and Tamil Nadu.[14] The Hon'ble Court on 08.09.2006 after considering the response filed by the Kerala State Pollution Control Board directed the Ministry of Environment & Forests to submit their response in relation to the implementation of the various provisions of the Environment (Protection) Act, 1986 and rules framed there under and parameters to be compiled with under the said Act, and also steps taken to create awareness among the general public. The matter is under consideration of the Hon'ble Court.

(7) Pollution in Jeedimetla and Pattancheru of District Medak in Andhra Pradesh

A Writ Petition (Civil) No. 476/2005, *Jeedimetla Effluent Treatment Ltd.* vs. *Andhra Pradesh Pollution Control Board & Ors.*

The Petition has been filed by M/s Jeedimetla Effluent Treatment Ltd. and 40 other industries before the Hon'ble Supreme Court against the directions, dated 05.08.2005 issued by the Andhra Pradesh State Pollution Control Board. The Hon'ble Supreme Court has issued notice to the *Central Pollution Control Board* along with other Respondents. In order to ascertain the present status and to assess the functioning of the CEPTs and Jeedimetla and Pattancheru and also the combined waste water quality and Amberpet Sewage Treatment Plant (before and after treatment) as well as water quality of receiving water body (Musi river canal). The *Central Pollution Control Board* inspected the area and submitted their status report before the Hon'ble Court by its affidavit, dated 06.07.2006. The Hon'ble Court after considering the response of the *Central Pollution Control Board* directed on 12.03.2007 that the matter be listed for final hearing on 17.07.2007 and in the meantime the *Central Pollution Control Board* and the *State Pollution Control Board* shall meet to sort out the problem if

possible. Pursuant to the directions of the Hon'ble Court, the *Central Pollution Control Board* has taken steps to sort out the problems of Jeedimetla and Pattancheru area.

(8) Pollution by Sewage Treatment Plant in Rourkela Steel Plant Township

Writ Petition (Civil) No. 285 of 1991 *Rourkela Shramik Sangh* vs. *Union of India & Ors.*

An Interlocutary Application (IA) has been filed by Rourkela Shramik Sangh in the matter. In its IA the Rourkela Shramik Sangh alleged that the authorities of the Rourkela Steel Plant has closed down its sewage treatment plant resulting in drainage of sewage water directly into the river Koel without any treatment. It is also stated that the entire residents of the Steel Township of Rourkela Steel Plant are dependent on the water of river Koel for their daily needs including drinking water. The Hon'ble Court after hearing the IA of the Rourkela Shramik Sangh directed the *Central Pollution Control Board* to inspect and submit the Report whether sewage treatment plant is working properly or not. The Hon'ble Court also directed that if any further measures are required, suggestions in that regard shall also be made. Pursuant to the directions of the Hon'ble Court, dated 11.03.2006 the *Central Pollution Control Board* and the Orissa State Pollution Control Board jointly inspected the sewage treatment plant at Rourkela Steel Plant Township on 12.09.2006 and submitted their inspection report through an Affidavit, dated 10.10.2006. The matter is under consideration of the Hon'ble Court.

(9) Pollution by Cement Plants in Meghalaya

Writ Petition (Civil) No. 314 of 2006 *Meghalaya Adventures*' *Association* vs. *Union of India & Ors.*

The Petition has been filed by the Meghalaya Adventures' Association regarding pollution being caused by cement plants to the biggest cave systems which have been discovered in Meghalaya and also damaging the forest and human habitation near Lumshnong. The Hon'ble Supreme Court after hearing the matter on 24.07.2006 issued notices to the Respondents including the *Central Pollution Control Board*. In its reply, the *Central Pollution Control Board* has submitted that the clearance for manufacturing cement through 'Single Window' system was granted by the State Government of Meghalaya for two cement plants namely, M/s Meghalaya Cements Ltd. and M/s Cement Manufacturing Company Ltd. The Jaintia Hills Autonomous District Council, Jowai and the Division Forest Officer, Jaintia Hills Division, Jowai while granting *No Objection Certificate* for setting up of a cement plant have taken care to prevent any damage to the cave system by incorporating specific condition that "No Extraction of Limestone or Clay is allowed within a distance of one km from the banks of Lunar and Lukha rivers and half km from any cave of historical interest." The *Central Pollution Control Board* has submitted their response which is under consideration of the Hon'ble Court.

(10) Action Plan for Management of Silt in Bhakra Beas Management Board Projects in Himachal Pradesh

A Civil Writ Petition No. 777 of 2003, *Bhakra Beas Management Board* vs. *Himachal Pradesh State Environment Protection and Pollution Control Board & Ors*. pending in the High Court of Himachal Pradesh at Shimla. Petition has been filed by the Bhakra Beas Management Board, Chandigarh in the High Court of Himachal Pradesh at Shimla, and challenged at applicability of the provisions of the Water (Prevention and Control of Pollution) Act, 1974. The Hon'ble High Court of Himachal Pradesh directed the Ministry of Environment & Forests and the *Central Pollution Control Board* to examine the entire issue in coordination with the Petitioner, Bhakra Beas Management Board and the Himachal Pradesh State Environment Protection and Pollution Control Board. Pursuant to the Hon'ble High Court of Himachal Pradesh directions the *Central Pollution Control Board* has constituted an Expert Committee for examining the whole issue. The *Central Pollution Control Board* has submitted the final report of the Expert Committee before the High Court of

Himachal Pradesh. The Hon'ble High Court of Himachal Pradesh has accepted the final report of the Expert Committee on 29.12.2005 and directed the concerned parties to start its implementation. The Hon'ble High Court on 06.06.2006 also directed that dredging operations during the monsoon of year 2006 and thereafter in monsoons in succeeding years shall continue to be monitored by the Expert Committee as done before. The *Central Pollution Control Board* has submitted the report of the Expert Committee vide its Affidavit, dated 30.01.2007 which is under consideration of the Hon'ble High Court of Himachal Pradesh.

ROLE OF THE GOVERNMENT : POLLUTION CONTROL IN MAJOR POLLUTING INDUSTRIES

The *Central Pollution Control Board* has declared 17 categories of highly polluting industries which are especially monitored by them. Those seventeen categories of industries identified by the Ministry of Environment & Forests, Government of India as highly polluting and covered under the Central Action Plan. The status of these industries is continuously obtained from the State Pollution Control Boards, collected, compiled and reported regularly to the Ministry of Environment & Forests. The summary status of industries (sectorwise/statewise) in 17 categories are already presented in the Table : 2.

A comprehensive programme for conducting surprise inspection of the polluting industries has been initiated in December 1999. A total of 96 polluting industries were visited in various States/ Union Territories by the *Central Polluting Control Board* team during the year 2006-2007, the status of which is placed below in the Table : 3.[15]

Table : 3
Summary Status of Environment Surveillance Squad Inspection Sectorwise/Zonewise 2006-2007

S. No.	Industrial Sector	ZO-Bhopal	ZO-Bangalore	ZO-Shillong	ZO-Vadodara	ZO-Kolkata	ZO-Lucknow	Total
1.	Cement	2	2	1	-	-	-	5
2.	Copper	-	1	-	-	-	-	1
3.	Chlor-Alkali	-	3	-	3	1	-	7
4.	Distillery	1	7	-	1	1	10	20
5.	Dyes & Dye Intermediates	-	-	-	4	-	-	4
6.	Fertilizers	-	1	-	-	-	-	1
7.	Iron & Steel	2	-	-	2	3	-	7
8.	Pesticides	-	-	-	1	-	1	2
9.	Petrochemicals	-	2	-	1	-	-	3
10.	Pharmaceuti-cals	-	-	-	2	1	-	3
11.	Pulp & Paper	1	6	-	-	1	12	20
12.	Refinery	-	1	-	-	-	-	1
13.	Thermal Power Plant	1	3	-	7	9	-	20
14.	Zinc	-	1	-	-	-	-	1
	Total	7	27	1	21	16	24	96

Out of the 96 industries inspected by the *Central Pollution Control Board*, 57 industries were major defaulters, 29 were minor defaulters, 9 industries have been found complying with the norms while one industry was closed. The inspection reports have been forwarded to the State Pollution Control Boards/PCCs for implementation of the findings and the action against the units has also been taken directly by the *Central Pollution Control Board* wherever necessary. The intensive and regular surveillance needs to be undertaken at the State/Union Territories level to ensure proper operation and maintenance of the pollution control systems by the industries, Joint inspection of industries by the *Central Pollution Control Board* & Ministry of Environment and Forests.

A total of 76 industries were jointly inspected by the *Central Pollution Control Board* and MoEF for monitoring of Compliance of Environment Clearance Conditions during the year 2006-07 is placed below[16] (Table : 4).

Table : 4

Summary Status of Joint Inspections (Sectorwise/Zonewise) during the year 2006-07

S. No.	Industrial Sector	Bangalore	Bhopal	Lucknow	Shillong	Kolkata	Vadodara	Total
1.	Aluminium	-	-	-	-	1	-	1
2.	Asbestos	-	-	1	-	1	-	2
3.	Battery	-	-	-	-	1	-	1
4.	Cement	3	2	-	-	-	-	5
5.	Chemicals	-	-	-	-	2	-	2
6.	Chlor-Alkali	-	-	1	-	-	-	1
7.	Detergents	-	-	-	-	1	-	1
8.	Distillery	-	-	10	-	-	-	10
9.	Electropla-ting	-	-	-	-	1	-	1
10.	Fertilizer	-	1	2	-	1	-	4
11.	Foundry	-	-	-	-	7	-	7
12.	Iron & Steel	-	-	-	-	2	-	2
13.	Mining	3	-	-	-	-	-	3
14.	Paints	-	2	-	-	-	-	2
15.	Petro-chemicals	-	-	-	-	2	-	2
16.	Pharma-ceuticals	-	-	3	-	-	-	3
17.	Pulp & Paper	-	-	1	1	-	-	2
18.	Refinery	-	-	-	-	2	1	3
19.	Tannery	-	-	1	-	-	-	1
20.	Thermal Power	2	5	6	5	3	2	23
	Total	8	8	28	6	23	3	76

Out of the 76 industries jointly inspected during the year 2006-07, 32 industries have been found as major defaulters and 33 industries were minor defaulters. Three industries were closed. Only eight industries were found complying with all the norms.

Again the following directions have been issued under Section 5 & Section 18(1)(b) of the Environment (Protection) Act, 1986.

A total of 101 Directions under Section 5 of the E(P) Act have been issued during the year 2006-07, of which 27 are for improvement and 74 are for closure.

Directions under Section 18(1)(b) have been issued to the SPCBs/PCCs under Air/Water Act during the 2006-07.

Industrial Pollution Control along the Rivers and Lakes

A programme was initiated by the *Central Pollution Control Board* in 1993-94 to identify polluting industries along the rivers in India for priority actions for control of industrial discharges into rivers. While this process of inventorisation continued, the National River Conservation Authority (NRCA) in its meeting held on July 12, 1997 under the Chairmanship of the Hon'ble Prime Minister, decided that the polluting industries which are discharging their effluents into rivers and lakes should be directed to install the requisite effluent treatment systems within three months, failing which closure notices should be issued. Accordingly, the Chairman, *Central Pollution Control Board* at the instance of MoEF issued directions under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974, to all the SPCBs/PCCs on July 14, 1997, requiring them to inventorise the list of Grossly Polluting Industries [industries discharging 100 kg per day or more of Biochemical Oxygen Demand (BOD)] and take necessary action against the defaulting industries. The programme is being continued since then, and the monitoring of the progress includes feed back from the SPCBs/ PCCs and direct action against the industries by the *Central Pollution Control Board* in cases needing special attention.

The statewise status of grossly Polluting Industries discharging their effluents in rivers and lakes are summarized in the Table : 5.

Table : 5

Status of Grossly Polluting Industries Discharging Effluent in Surface Water Bodies

S.No.	State/UT	Complying	Defaulting	Closed	Total
1.	Andhra Pradesh	16	17	6	39
2.	Assam	1	Nil	6	7
3.	Bihar	10	Nil	4	14
4.	Chhattisgarh	Nil	Nil	1	1
5.	Gujarat	11	1	5	17
6.	Haryana	52	8	14	74
7.	Karnataka	10	3	7	20
8.	Kerala	18	11	7	36

9.	Madhya Pradesh	Nil	1	Nil	1
10.	Maharashtra	3	Nil	3	6
11.	Orissa	16	2	2	20
12.	Pondicherry	3	Nil	Nil	3
13.	Punjab	21	9	4	34
14.	Tamil Nadu	248	Nil	118	366
15.	Uttar Pradesh	320	59	112	491
16.	Uttaranchal	17	Nil	2	19
17.	West Bengal	29	4	23	56
	Total	775	115	314	1204

Source : CPCB Report, December 31, 2007.

Industrial Pollution Control along the River Ganga

The programme for pollution control along the river Ganga was initiated in the year 1985 as Ganga Action Plan Phase – I (GAP-I) and 68 polluting industries were identified along the river Ganga. Subsequently, 119 grossly polluting units were identified during 1997 for priority follow-ups in regard to the commissioning to the effluent treatment facilities by these industries in Ganga Action Plan Phase – II (GAP-II).[17] The Statewise summary status of the industries in GAP-I and GAP-II is presented in the Table : 6.

Table : 6

Statewise summary status of the industries in Ganga Action Plan Phase – I & Ganga Action Plan Phase – II

State	GAP (Phase – I)		Total	GAP (Phase – II)		Total	Grand Total (Phase I + PhaseII)
	ETP Installed	Industry Closed		ETP Installed	Industry Closed		
Uttaranchal	1	0	1	0	1	1	2
Uttar Pradesh	17	16	33	41	41	82	115
Bihar	3	2	5	2	1	3	8
West Bengal	19	10	29	29	4	33	62
Total	40	28	68	72	47	119	187

Action Taken Against Industries under the Environment Surveillance Squad (ESS)

The *Central Pollution Control Board* carried out inspection of four tanneries located in Sonepat during January 2006, to investigate possible sources of pollution affecting the water quality of river Yamuna at Wazirabad water works in Delhi. Based on the inspection/observations, Show Cause Notices, under Section 5 of the Environment (Protection) Act, 1986, were issued to these industries for not complying with the standards and 15 days time period was given to the industries for file reply. The responses received from the industry and action taken by the *Central Pollution Control Board* are presented in the Table 7 :

Table : 7

Summary of Response and Action Taken Under Environment Surveillance Squad (ESS) Against the Industries Located at Sonepat

Industry	Response from the Industry	Actions Taken
M/s Galaxy Leathers, Sonepat	The industry did not send any response.	CPCB confirmed the Directions. Thereafter, HSPCB sealed this unit during August 2006.
M/s Indian Leathers, Sonepat	The industry informed that modification of the ETP is under progress and requested CPCB to re-examine after two months.	A team from CPCB revisited the industry on September 19, 2006 and collected waste water samples. Inspection report has been forwarded to Haryana State Pollution Control Board for necessary action.
M/s Bharat Leathers Manufactures, Sonepat	The industry has informed that corrective measures have been taken and requested CPCB for re-sampling.	A team from CPCB revisited the industry on September 19, 2006 and collected wastewater samples. Inspection report has been forwarded to Haryana State Pollution Control Board for necessary action.
M/s Kiran Overseas Export Ltd., Sonepat	The industry informed that they have approached National Productivity Council for performance evaluation and adequacy run of ETP and the report would be forwarded to CPCB.	A team from CPCB revisited the industry on September 19, 2006 and collected wastewater samples. Inspection report has been forwarded to Haryana State Pollution Control Board for necessary action.

Source : CPCB Report, December 31, 2007.

CONCLUDING OBSERVATIONS

A close link between minimum environmental standards and a new development style is a well-accepted fact. The fast moving industrial growth led to an increasing anxiety about environmental degradation on a large-scale accompanied by massive resource depletion. Such lack of control is detrimental to future productivity indeed. Therefore, a cause for environmental protection ought to be a part of any comprehensive programme of industrial development. The development

planners must incorporate some form of environmental accounting into decision making and control. There is an open and often excited debate about various judicial orders that are issued to shut down many polluting industries to protect environment though such orders are effectively larger implications of economic growth.

To take action against the Indian polluting unit, the *Central Pollution Control Board* has been closing many industries either *through direct method or through judiciary*. This has a tremendous impact in the economy as a whole. While examining the position of the above 17 polluting industries through Annual Survey of Industries (ASI),[18] development planners get different picture. The share and contribution of these seventeen polluting industries in the Indian economy have been studied on the basis of five years data of Annual Survey of Industries for Net Value Added (NVA), which reveals the contribution of these industries in the *national income*. The growing contribution will definitely lead to problem in case of closures owing to legal orders.

Regular scientific accounting of such effect and general statistical indicators to pin-point the remedial measures on aggregate level are not readily available in the Indian economy. Be it so, one have to statistically quantified the contribution of major polluting industries in the economy, and fitted models to predict the potentiality of various economic parameters responsible for economic growth. The accounting of loss can be scientifically predicated in case of closure. To prevent such loss, an ideological public policy is required. The development planners often argued for the imposition of taxes on generators of pollution. As the social cost of pollution is always better than the private cost to the polluter, the government should intervene with a tax or cess to make pollution most costly to the polluted so that the polluter will produce less pollution to save cost. Such tax is often debated against subsidies for the polluters who cannot afford to pay tax. However, the subsidy results in excess production in the polluting industry in both the short and the long run. *To work out on the social choice for tax or subsidy, there must be knowledge on the target group of the industries*.[19]

The environmental accounting is in preliminary stage in India, and whatever shows in the accounts in this regard is more or less compliance of relevant rules and regulation in the Act. As such, unless common people are not made aware towards the environmental safety, development of accounting will take the back seat. The rising concern is that corporate prepares a firm environmental policy, take steps for pollution control, comply with the related rules and regulations, and mention adequate details of environmental aspects in the annual statements. For *sustainable development* of the country, an ideological environmental policy as well as normal follow-up, and regular accounting procedure is a must.

In the same vein, the government should make it compulsory for every polluter to submit environmental audit report being done by a certified environmental auditor. The government may prescribe qualifications and experience for issue of such a certificate. Such a report will provide a great help to control over pollution. Finally and particularly, it is suggested that the management should follow the policy of "prevention is better than cure".[20]

To make the *environmental accounting an integral part of the overall accounting system*, the following outlines can be suggested :

(i) Study the various Acts applicable to the company, analyze the rules and regulations regarding environment applicable to the company;

(ii) Briefly analyze the requirement of various laws regarding environmental issue. Also analyze the various impacts on environment due to the working of organization. Prepare an environmental policy accordingly;

(iii) Prepare of short-term as well as long-term environmental budget for both revenues and capital nature;[21]

(iv) Prepare list of various elements causing for pollution of various types and show what types of action have been taken for control over the same. This type of statement should be an integral part of annual accounts;

(v) A separate statement should be prepared showing investment in the various equipment for pollution control along with benefits to the environment from such equipment. Such a benefit should be measured either in quantity or money;

(vi) Environmental accounting should be a part of management accounting. Therefore, environmental management accounting information system should be developed;

(vii) Environmental responsibility centres should be decided so that actions can be taken against defaulter managers if there are deviations from standard pollution limits;

(viii) Environmental indicators should be calculated for evaluation of environmental aspects and the same should be disclosed properly in annual accounts;

(ix) Incentive and punishment policy should be linked with environmental issue.

As the nation is on 'Drive to Maturity Conditions', the degraded state of India's natural environmental situation cannot escape comment or analysis. Experts do believe that the deterioration in the environment is of such magnitude that all development process must cease for the planet to survive. Others dismiss the entire environmental movement as comprised of loony trouble makers who have no right to interfere with the sanctity of private property and private enterprise. Still others berate the environmental movement for being an exclusively middle-class movement that is irrelevant altogether.

To signal the fact, the present policy framework for environmental management are contained in the *National Forest Policy*, 1988; the *National Conservation Strategy and Policy Statement on Environment and Development*, 1992; and the *Policy Statement on Abatement of Pollution*, 1992. Some sector policies such as the *National Agriculture Policy,* 2000; the *National Population Policy*, 2000; and the *National Water Policy*, 2002; have also contributed towards the environmental management.[22] All these public policies have recognized the need for *sustainable development* in their specific contexts, and formulated necessary strategies to give effect to such recognition. The *National Environment Policy* seeks to extend the coverage, and fill in the gaps that still exist, in the light of present knowledge, and accumulated experience. It does not displace, but builds on the earlier macro-economic policy agenda.

NOTES & REFERENCES

1 Biota : The combined flora and fauna of a region.

2 The living component of an ecosystem, *i.e.* all kinds of plants, animals, and micro-organisms are called BIOTIC component and several non-living physical items like sunlight, air, water, warmth, etc. collectively called ABIOTIC components.

3 Eutrophication is the process of depletion of oxygen from waterbody occurring either naturally or due to human activities.

4 pH is a measure of the relative strength of acidic or basic nature of solution. It is a measure of finding acidic or basic nature of a liquid. The range of pH is from 0-14, solution with pH 7 is neutral. pH less than 7 indicates acidic nature, whereas a pH greater than 7 indicates basic nature.
Pollution can change water's pH, which in turn can harm animals and plants living in the water. For instance, water coming out of an abandoned coal mine can have a pH value upto 2, which is very acidic and would definitely affect any creature living in it.
pH can be studied with the help of pH meter. pH value can also be read by matching the wet paper with a standard printed colour scale.

5 Planktons are floating sea plants and animals that live up to the depth of 200m from sea-level. Plant planktons, called as *phytoplanktons* produce food through the process of photosynthesis with the help of sunlight, water and atmospheric carbon dioxide and thus, they are primary producers known as autotrophs. Algae and diatoms are most important members of this community.

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