UNIT-IV

The parliament of India has passed a number of laws to control pollution and to protect the environment for instance.

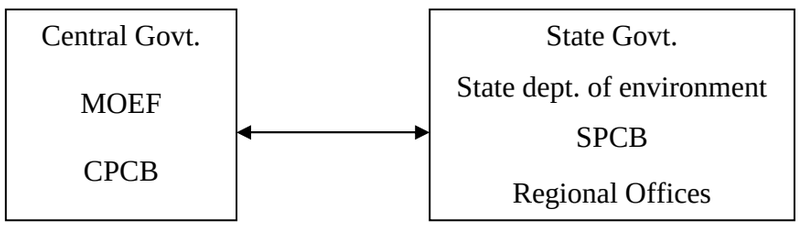
1) The water (Prevention and control of pollution) Act, 1974
2) The air (Prevention and control of pollution) Act, 1981
3) Wild life protection act, 1972
4) The forest (conservation) act, 1980
5) The Environment (protection) Act, 1986

India makes provisions for environmental protection in constitution in the chapters on
a) Fundamental Rights
b) Fundamental Duties
c) Directive principles of state policy- (Efforts are to be made in improving a) the nutrition value of food taken by people and b) their health conditions)

Article 48-A: "The state shall endeavor to protect and improve the environment and to safeguard the forest and wildlife of the country".
Article 51-A (g) "To protect and improve the natural environment including forest, lakes, rivers and wildlife and to have compassion for living creatures"

The Regulatory Structure: Ministry of Environment and Forest, Govt. of India (MOEF), monitoring and enforcing the regulations for control and prevention of pollution.

Structure



Functions of Ministry of Environment and Forest, Govt. of India:
a) Environmental policy planning and research
b) Implementing legislation and monitor/control pollution
c) Environmental clearance for projects
d) Promotion of environmental education, training and awareness
e) Forest conservation, development and wild life protection
f) Bio-sphere reserve programme
g) Co-ordination with concerned National and international agencies

Central Pollution Control Board (CPCB):
Central Pollution Control Board, a statutory organization constituted in September 1974 under the water(Prevention and control of pollution) act. Further it was entrusted with the powers of Air(Prevention and control of pollution) act, 1981.

Functions of Central Pollution Control Board:
a) Advise the Central Government on matters relating to pollution;
b) Provides technical assistance to Ministry of Environment and forests.

c) Coordinate the activities of the State Boards;
d) Provide Technical assistance to the State Boards, carry out and sponsor investigations and research relating to control of pollution;
e) Plan and organize training of personnel;
f) Collect, compile and publish technical and statistical data, prepare manuals and code of conduct.
g) To lay down effluent standards. Till now effluent standards for 37 categories of industries and Emission standards for 31 categories of industries have been evolved. Guidelines also have been framed separately for hospital waste management.
h) To plan nation wide awareness programmes on pollution control.

Functions of the State Pollution Control Boards:
a) To advise the State Government on matters relating to pollution.
b) To plan programme for pollution control;
c) To collect and disseminate information;
d) To carry our inspection;
e) To lay down effluent and emission standards;
f) To issue consent to industries and other activities for compliance of prescribed emission and effluent standards
g) Performing such functions as may be entrusted by central board or state governments

1. The water (Prevention and control of pollution) Act, 1974

Objectives of the act:
This act has been passed to provide for the following objectives
A) Prevention and control of water pollution
B) Maintaining or restoring the wholesomeness of water
C) Establishment of boards of the prevention and control water pollution

Definitions:
Pollution: Defined as the contamination of water, or alteration of the physical, chemical or biological properties of water, or the discharge of any sewage or trade effluent (whether directly or indirectly) which is likely to render such water harmful or injurious to
a) Public health or safety
b) Domestic, commercial, industrial, agricultural or other uses.
c) Life and health of plants, animals or aquatic organisms

Functions:
(*Write the functions of central board and state as mentioned earlier by adding "water" term where-ever necessary and add the following important points related water pollution*.)

Features of water act:
a) The assessing authority under the act Levies and collects cess based on the amount of water consumed by the industries. The rate is also determined by the purpose for which the water has been used.
b) The concerned industries are required to install standard water meters for measuring the water consumed.
c) This act also provides 25% rebate on cess payable to those industries which follow the prescribed norms.

Powers of the state government
a) Power to take samples
b) Power of entry and inspection
c) Power of prohibition on disposal of polluting matter into a stream or well
d) Power to obtain information – regarding process, treatment, quantity, test etc

Penalties:
a) in case of failure to give information by a person discharging effluents into stream or well or regarding construction or establishment of a disposal system the penalty is imprisonment upto 3 months or fine upto Rs. 10,000/- or both. If the omission continues, the penalty is an additional fine upto 5,000/- and if it continues beyond one year the penalty is imprisonment of two to seven years on conviction (belief).
b) In case of destroying or damaging the property of the board, obstructing the performance of the Board's function, failure to furnish information about accidents, giving wrong information or making false statements to get board's consent (permission), the penalty is imprisonment upto 3 months or fine upto Rs. 10,000/- or both.

2. The Air (Prevention and control of pollution) Act, 1981

This act was formulated inline with the decisions taken at United Nations Conference on the Human Environment held in Stockholm in June 1972.

Objectives:
This act has been passed to provide for the following objectives
1) Prevention, control and abatement of air pollution
2) Maintaining or restoring the quality of air
3) Establishment of boards of the prevention and control air pollution

Definitions
Air-Pollution: means the presence of any air pollutant in the atmosphere
Air-Pollutant: means 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 creature or property or environment.

Functions:
(Write the functions of central board and state as mentioned earlier by adding "air" term where-ever necessary and add the following important points related air pollution.)

Powers of the state government
a) Power to take samples
b) Power of entry and inspection
c) Power of prohibition on disposal of polluting matter into atmosphere
d) Power to obtain information – regarding process, treatment, quantity, test etc
e) Power to declare air pollution control area
f) Power to establish standards for emission of air pollutants

Penalties:
a) In case of failure to give information by a person discharging effluents into stream or well or regarding construction or establishment of a disposal system the

penalty is imprisonment upto 3 months or fine upto Rs. 10,000/- or both. If the emission continues, the penalty is an additional fine upto 5,000/- and if it continues beyond one year the penalty is imprisonment of two to seven years on conviction (belief).

b) In case of destroying or damaging the property of the board, obstructing the performance of the Board's function, failure to furnish information about accidents, giving wrong information or making false statements to get board's consent (permission), the penalty is imprisonment upto 3 months or fine upto Rs. 10,000/- or both.

3. Wildlife protection Act, 1974

Objectives:

This act has been passed to provide for the following objectives

1) To maintain essential ecological processes and life-supporting systems
2) To preserve the biodiversity
3) To ensure a continuous use of species i.e. protection and conservation of wild life

Definitions

a) Wild life- has been defined to include any animal, bees, butterflies, fish and land vegetation which forms part of any habitat
b) Habitat- includes land, water or vegetation which is the natural home of any wild animal
c) Hunting- 1) to capture, kill, poison and trap any wild animal or trying to do so
2) To injure, destroy or take away any part of the body of such animal and damaging or disturbing the eggs or nest of wild birds and reptiles.

Functions:

a) Selection of areas to be declared as sanctuaries, national parks or closed areas
b) Formulation of the policy for protection and conservation of the wild life and specified plants
c) Measures to be taken for harmonizing the needs of the tribals and other dwellers of the forest with the protection and conservation of wild life.
d) Protection of specified plants
e) Prohibition of hunting and dealing in animal articles without license,
but permitted in certain cases:
   (i) Wild animal has become dangerous to human life or is disabled or diseased as to be beyond recovery,
   (ii) The killing or wounding in good faith of any wild animal in self defense or defense of any other person shall not be an offence.
   (iii) by permission for a) education b) scientific research and management c) manufacture of life saving drugs

Powers

a) Power to cancellation of license
b) Power of entry, search, arrest and detention
c) Power to obtain information – regarding process, treatment, quantity, test etc

Penalties:
a) A person violating any provision of this act, shall be punished with imprisonment for three years or a fine of Rs. 23,000/- or both.

4. The Environment (Protection) Act, 1986

In the wake of Bhopal Tragedy, The Government of India enacted this act under article 235 of the constitution.

Objectives:
This act has been passed to provide for the following objectives
a) Protection and improvement of environment (water, air, land)
b) Prevention of hazards to all living creatures (humans, plants, animals) and property
c) Maintenance of harmonious relationship between human beings and their environment

Definitions
Environment – includes water, air and land and the inter relationship which exists among them and property
Environment pollution – means the presence of any environmental pollutant in the environment.

Functions:
(Write the functions of central board and state as mentioned earlier by adding "environment" term where-ever necessary and add the following important points related water pollution.)

a) Restricting area in which industries, operation or processes shall not be carried out.
b) Laying down procedures and safeguards for handling of hazardous substances
c) Examination of manufacturing processes, materials and substances likely to cause environmental pollution

Features:
a) Restricting area in which industries, operation or processes shall not be carried out.
b) Laying down procedures and safeguards for handling of hazardous substances. Emissions and Effluent standards in respect of 61 categories of industries have been evolved and notified so far.
d) The standards in respect of pollutants are to be achieved with in a period of one year from the date of their notification.
d) Those industries which require consent under the water act, Air act or both or authorization under the Hazardous waste (Management and Handling) rules 1989 are required to submit an Environmental audit report to the concerned pollution control board.

Powers
a) Power to take samples
b) Power of entry and inspection
c) Power of prohibition on disposal of polluting matter into environment
d) Power to obtain information – regarding process, treatment, quantity, test etc

Penalties
a) A person violating any provision of this act, shall be punished with imprisonment upto five years or a fine of Rs. 1, 00,000/- or both.

5. Forest conservation Act, 1980

Forest conservation Act Came in to force with effect from October 25, 1980. Modified again in Jan, 10, 2003.

Objectives:
This act has been passed to provide for the following objectives

a) Protection and conservation of forests from being diverted in to non forest lands.
b) To ensure judicious use of forest products

Definitions
Forest- is a biotic community composed predominantly of trees, shrubs and woody climbers.
Forest –produce- include timber, charcoal, wood, oil, resin, natural varnish, bark, seeds etc., whether brought from or found in a forest.

Powers
1) Power to issue notification declaring protected forests and making rules for such forests
2) Power to stop ways and water courses in reserved forest
3) Granting and cancellation of license
4) Power of entry, search, arrest and dentition.

Penalties:
A person violating any provision of this act, shall be punished with imprisonment for six months or a fine of Rs. 500/- or both.

This act has succeeded in controlling the indiscriminative use of forest land. Before 1980, the rate of diversion of forest lands for non forestry purposes was about 1.43 lakh hectares per anum. With advent of this act the rate has been decreased to 15000 ha per anum. The most of it is allowed for the developmental activities such as irrigation projects, Railway lines, Roads, Power Projects, Defense related projects.

INTERNATIONAL CONVENTIONS

1. Stockholm from 5 to 16 June 1972

Declaration of the United Nations Conference on the Human Environment

The United Nations Conference on the Human Environment, having met at Stockholm from 5 to 16 June 1972, having considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

The Conference calls upon Governments and peoples to exert common efforts for the preservation and improvement of the human environment, for the benefit of all the people and for their posterity. It has been generally considered as the starting point for the rapid development of international environmental law as one of the newest branches of public international law. The most important result of the conference was the Stockholm Declaration containing a set of 26 principles that have considerably influenced the law relating to international protection of the environment.

Recommendations

1) To identify those causes of pollution that have global implications, and to devise protective measures to be adopted.
2) To find out the carrying capacity of the environment and reduce the emission of the major sources of pollution
3) To find a neutralizer for each type of pollutant
4) To ensure that anti-pollution measures are adopted by all industries
5) Initiation of adequate research to devise measures for controlling pollution
6) Identification of areas where the cause of pollution is poverty and lack of environment education
7) Institutional & financial arrangements were envisaged for achieving that purpose
8) To reduce & eliminate 12 persistent or organic (Persistent organic pollutants - POP) that can possibly effect next generation such as Dioxin, furan and DDT

Principles

(The summary of the all principals is stated on top. U read these principles 1-26 once, no need to mug up all the 26 principles)

Principle 1

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated.

Principle 2

The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the

benefit of present and future generations through careful planning or management, as appropriate.

Principle 3

The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.

Principle 4

Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperiled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development. (Maintaining biodiversity and sustainable development)

Principle 5

The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.

Principle 6

The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of ill countries against pollution should be supported.

Principle 7

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Principle 8

Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life.

Principle 9

Environmental deficiencies generated by the conditions of under-development and natural disasters pose grave problems and can best be remedied by accelerated development through the transfer of substantial quantities of financial and technological assistance as a supplement to the domestic effort of the developing countries and such timely assistance as may be required.

Principle 10

For the developing countries, stability of prices and adequate earnings for primary commodities and raw materials are essential to environmental management, since economic factors as well as ecological processes must be taken into account.

Principle 11

The environmental policies of all States should enhance and not adversely affect the present or future development potential of developing countries, nor should they hamper the attainment of better living conditions for all, and appropriate steps should be taken by States and international organizations with a view to reaching agreement on meeting the possible national and international economic consequences resulting from the application of environmental measures.

Principle 12

Resources should be made available to preserve and improve the environment, taking into account the circumstances and particular requirements of developing countries and any costs which may emanate- from their incorporating environmental safeguards into their development planning and the need for making available to them, upon their request, additional international technical and financial assistance

for this purpose.

Principle 13

In order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population.

Principle 14

Rational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment.

Principle 15

Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. In this respect projects which arc designed for colonialist and racist domination must be abandoned.

Principle 16

Demographic policies which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on the environment of the human environment and impede development.

Principle 17

Appropriate national institutions must be entrusted with the task of planning, managing or controlling the 9 environmental resources of States with a view to enhancing environmental quality.

Principle 18

Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.

Principle 19

Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension. It is also essential that mass media of communications avoid contributing to the deterioration of the environment, but, on the contrary, disseminates information of an educational nature on the need to project and improve the environment in order to enable mal to develop in every respect.

Principle 20

Scientific research and development in the context of environmental problems, both national and multinational, must be promoted in all countries, especially the developing countries. In this connection, the free flow of up-to-date scientific information and transfer of experience must be supported and assisted, to facilitate the solution of environmental problems; environmental technologies should be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden on the developing countries.

Principle 21

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 22
States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.
Principle 23
Without prejudice to such criteria as may be agreed upon by the international community, or to standards which will have to be determined nationally, it will be essential in all cases to consider the systems of values prevailing in each country, and the extent of the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries.
Principle 24
International matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries, big and small, on an equal footing.
Cooperation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States.
Principle 25
States shall ensure that international organizations play a coordinated, efficient and dynamic role for the protection and improvement of the environment.
Principle 26
Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

2. EARTH SUMMIT

United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 3-14 June 1992

The United Nations Conference on Environment and Development, having met at Rio de Janeiro from 3 to 14 June 1992, reaffirming the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972. And seeking to build upon it, with the goal of establishing a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people. Working towards international agreements which respects the interests of all and protects the integrity of the global environmental and developmental system.

Recognizing the integral and interdependent nature of the Earth, OUR HOME.

The impact of science and Technology on environment in the post-industrial revolution period has been assessed over the last two decades. Twenty years after the first global environment conference, the UN sought to help Governments rethink economic development and find ways to halt the destruction of irreplaceable natural resources and pollution of the planet. Hundreds of thousands of people from all walks of life were drawn into the Rio. They persuaded their leaders to go to Rio and

join other nations in making the difficult decisions needed to ensure a healthy planet for generations to come.

The overall result of Stockholm – the environment continued to deteriorate, and such problems as ozone depletion, global warming and water pollution grew more serious, while the destruction of natural resources accelerated at an alarming rate.

No nation can achieve this on its own. Together we can — in a global partnership for sustainable development", states the preamble.

The Summit's message —
That nothing less than a transformation of our attitudes and behavior would bring about the necessary changes

The message reflected the complexity of the problems facing: that poverty as well as excessive consumption by affluent populations place damaging stress on the environment. Governments recognized the need to redirect international and national plans and policies to ensure that all economic decisions fully took into account any environmental impact. And the message has produced results, making eco-efficiency a guiding principle for business and governments alike.

1) Patterns of production — particularly the production of toxic components, such as lead in gasoline, or poisonous waste (tetraethyl lead-anti knocking agent) — are being scrutinized in a systematic manner by the UN and Governments alike.
2) Alternative sources of energy are being sought to replace the use of fossil fuels which are linked to global climate change.
3) New reliance on public transportation systems is being emphasized in order to reduce vehicle emissions, congestion in cities and the health problems caused by polluted air and smog.
4) There is much greater awareness and concern over the growing scarcity of water.

Issues that divided north and south
The nations realigned themselves into North-South environmental blocks. China, India and third world nations united under the group of 77 banner while the developed countries grouped under group 7. The Chinese representative Ms. Deng Nan expressed the feelings of the south block:
"The developed countries are the major polluters and they must accept moral responsibility and pay for it".
North has only 16% of the world population, they consume 60% of world's food, 70% of global energy resources and 80% industrial wood. The earth summit looked like a moderate "Earth War" with sharp division between the north and south blocks.

Issues that divided north and south at Rio-de-Janeiro

Issue	North	South
Green house gas emission	Want a 20 % cut in green house gas emissions by 2005 and also a major shift from use of coal and wood for energy	South blames the north for excessive emissions over last 50 years and wants them to reduce it. Opposed to any cut in its own emission as it affects their development.
Forests	Want a legally binding convention that severely	Opposed to ban on deforestation as it would encroach on their

	restricts deforestation especially in the tropical countries which are rich in biodiversity	national Sovereignty. The North must compensate for conservation and share profits it species are used for research
Population	Population explosion and poverty major causes for deforestation and water pollution. Want steps taken to control population	Blame the north for over consumption of resources. The north is responsible for consuming 60% of world's energy resources.
Technology transfer	Technology development is commercial and those who want to utilize it must pay for it	Want technology transfer cheaply for cleaning up the pollutants and for improving energy efficiency.
Finance	Dislike mandatory condition. World bank should be used to distribute aid.	Want firm commitments on aid for environmental issues. Insist on a new institution whose functioning is transparent and democratic.
Degradation	Admit that industrialization process caused it but don't want to pay for polluting the earth in the past.	North is responsible for all the pollution in the past. Must pay for the entire cleaning up process.

The Earth Summit influenced all subsequent UN conferences, which have examined the relationship between human rights, population, social development, women and human settlements — and the need for environmentally sustainable development. Ex. "the world conference on Human rights, held in Vienna in 1993.

The primary goals of the Summit were to come to an understanding of "development" that would support socio-economic development and prevent the continued deterioration of the environment, and to lay a foundation for a global partnership between the developing and the more industrialized countries, based on mutual needs and common interests, that would ensure a healthy future for the planet.

The Earth Summit Agreements

Adopted three major agreements aimed at changing the traditional approach to development.

1) Agenda 21 — a comprehensive programme of action for global action in all areas of sustainable development; (A detailed action plan for sustainable development in twenty first century)
2) The Rio Declaration on Environment and Development — a series of principles defining the rights and responsibilities of States; (Lists 27 principles of sustainable development.)
3) The Statement of Forest Principles — a set of principles to underlie the sustainable management of forests worldwide. (The conservation on Biological diversity)

In addition, two legally binding Conventions aimed at preventing global climate change and the eradication of the diversity of biological species were opened for signature at the Summit, giving high profile to these efforts:

- The United Nations Framework Convention on Climate Change and
- The Convention on Biological Diversity

Agenda 21

Adopted agenda 21 for achieving sustainable development in the 21st century. Agenda 21 addresses today's pressing problems and aims to prepare the world for the challenges of the next century. It contains detailed proposals for action

1) In social and economic areas (such as combating poverty, changing patterns of production and consumption and addressing demographic dynamics), and
2) For conserving and managing the natural resources that are the basis for life — protecting the atmosphere, oceans and biodiversity; preventing deforestation; and promoting sustainable agriculture, etc.

(See page –315 in Benny Joseph for the more details)

Rio Declaration

The Rio Declaration on Environment and Development supports Agenda 21 by defining the rights and responsibilities of States regarding these issues. Among its principles:

1) Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
2) The scientific uncertainty should not delay measures to prevent environmental degradation where there are threats of serious or irreversible damage;
3) The States have a sovereign right to exploit their own resources but not to cause damage to the environment of other States;
4) The eradicating poverty and reducing disparities in worldwide standards of living are "indispensable" for sustainable development;
5) The full participation of women is essential for achieving sustainable development; and
6) The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Forest Principles

The Statement of Forest Principles, the non–legally binding statement of principles for the sustainable management of forests, was the first global consensus reached on forests. Among its provisions:

1) All countries, notably developed countries, should make an effort to "green the world" through reforestation and forest conservation;
2) States have a right to develop forests according to their socio-economic needs, in keeping with national sustainable development policies; and
3) Those specific financial resources should be provided to develop programmes that encourage economic and social substitution policies.

At the Summit, the UN was also called on to negotiate an international legal agreement

a) On desertification,
b) To hold talks on preventing the depletion of certain fish stocks,

c) To devise a programme of action for the sustainable development of small island developing States and
d) To establish mechanisms for ensuring the implementation of the Rio accords.

Follow –up mechanisms:

a) Commission on sustainable development
b) Inter-agency committee on sustainable development
c) High-level advisory board on sustainable development

The summit did not yield the desired result, namely signing of two treaties at the summit

1) Curtailment of greenhouse gas emission by 20 percent by 2000
2) Conservation and management of Biodiversity

CASE STUDIES

1. THE CHIPCO MOVEMENT

The women who saved the trees

The forests of India are a critical resource for the rural people throughout the country, especially in hill and mountain areas, both because of their direct dependence on forests for food, fuel and fodder and because of their role in stabilizing soil and water resources. As these forests have been increasingly felled for commerce and industry, Indian villagers have sought to protect their livelihoods through the Gandhian method of Satyagraha (non-violent resistance). In the 1970s and 1980s this resistance to the destruction of forests spread throughout India and became organized and known as the Chipko Movement.

The first Chipko action took place spontaneously in April 1973 and spreads to many districts of the Himalaya in Uttar Pradesh. The name of the movement comes from a word meaning 'embrace': the villagers hug the trees, saving them by interposing their bodies between them and the contractors' axes. On March 26, 1974, a group of men arrived to begin cutting down 2500 trees in the forest. Anticipating resistance from the people, the contractor had ensured that all the men of the village were away on that day. Word of the arrival of the axe-men spread in the village and the women came out of their houses. About 25 of them, led by Guara Devi, confronted the contractor’s men. The pleaded with the men not to start the felling operations, but the men responded with threats and abuses. As the confrontation continued, more women joined with protest. Ultimately, the men were forced to leave since the women had not moved.

The Chipko protests in Uttar Pradesh achieved a major victory in 1980 with a 15-year ban on green felling in the Himalayan forests of that state by order of India's then Prime Minister, Indira Gandhi. Since then the movement has spread to Himachal Pradesh in the North, Karnataka in the South, Rajasthan in the West, Bihar in the East and to the Vindhyas in Central India. In addition to the 15-year ban in Uttar Pradesh, the movement has stopped clear felling in the Western Ghats and the Vindhyas and generated pressure for a natural resource policy which is more sensitive to people's needs and ecological requirements.

Its leaders and activists are primarily village women. One of the most prominent leaders has been Sunderlal Bahuguna, a Gandhian activist and philosopher, whose appeal to Mrs Gandhi resulted in the green-felling ban and whose 5,000-kilometre trans-Himalayan foot march in 1981-83 was crucial in spreading the Chipko message. Since the late 1980s, Bahuguna had been opposing construction of a proposed Himalayan dam on the river near his birthplace of Tehri. In 1989 he began the first of a series of hunger strikes to draw political attention to the dangers posed by the dam and in due course the Chipko Movement gave birth to the Save Himalaya Movement. Bahuguna ended a 45-day fast in 1995 when the Indian government promised a review of the Tehri dam project. But the promise was not kept and the following year he committed himself to another fast, only broken after 74 days when the Prime Minister gave a personal undertaking to conduct a thorough review, largely on Bahuguna's terms. The veteran environmentalist, then in his 70th year, told the Prime Minister that the Himalayan glaciers were receding at an alarming rate. If this was not checked, the glacier feeding the Ganges would disappear within 100 years.

2. NARMADA BACHAVO ANDOLAN

ECOLOGY:
The lower Narmada River Valley and the surrounding uplands, covering an area of 1,69,900 sqkm (65,598.8 sq mi) consists of dry deciduous forests. The eco region is home to 76 species of mammals and to 276 bird species none of which are endemic. According to the World Wildlife Fund (WWF), about 30% of the eco region is covered in relatively intact vegetation. About 5% of the ecoregion lies within protected areas, including Bandhavgarh, Panna, and Sanjay national parks.

Narmada Basin

History of Development

a) In the year 1946, request for investigations and proposals for the development of the Narmada basin was made by the then Government of Central Provinces
b) In 1955 a study was carried out to assess the hydro-electric potential of the Narmada basin and it was found that there was possibility of generating hydro-electric power at 16 sites in the Narmada basin.
c) Project reports for a few major projects (Broach project - Sardar Sarover Project in Gujarat and Narmada Sagar (Indira Sagar), Bargi and Harinphal projects in Madhya Pradesh) were prepared during the period 1959-65

The Sardar Sarover Project, as cleared by the Planning Commission in August 1960, was contemplated at a height of FRL (full reservoir level) 162 feet with the canal off take at 158.4 feet.

a) It was designed to irrigate about 10 lakh acres of land
b) In the second stage the height of the Broach dam was contemplated at 320 feet but had not received clearance from the Planning Commission.

The new State of Gujarat was formed in May 1960. Efforts were started to have a high dam at the Sardar Sarover dam site involving submergence of large areas in Madhya Pradesh and Maharashtra.

Narmada is the fifth largest river in India and largest west flowing river of Indian peninsula originating from Maikala ranges at Amarkantak in Madhya Pradesh at an elevation of 900 m. It flows westwards over a length of 1,312 km before draining into the Gulf of Cambay, 50 km west of Bharuch city. The basin has an elongated shape almost like a thin ribbon with a maximum length of 953 km east to west and a maximum width of 234 km north to south. The first 1,077 km of the river flows in Madhya Pradesh and the next 35 km stretch of the river forms the boundary between the State of Madhya Pradesh and Maharashtra. Again for the next 39 km, it forms the boundary between Maharashtra and Gujarat. The last stretch of 161 km lies in Gujarat. Out of the total Catchment area of about 1 Lakh sq. km 87% lies in Madhya Pradesh, 2% in Maharashtra and 11% in Gujarat. On full development, the Narmada has a potential of irrigating over 6 million ha (15 million acres) of land along with a capacity to generate about 3,000 Mega Watt of hydro-electric power.

Narmada Water Disputes Tribunal

In spite of the huge potential, there was hardly any development of the Narmada Water Resources prior to Independence. Investigations were carried out after 1947 for a number of projects but Inter-State differences on sharing of waters and planning of

the schemes for development of the lower reaches of the river prevented any concrete action. As these could not be resolved through negotiations the Central Government by Notification of the then Ministry of Irrigation & Power No S.O.4054 dated 6th Oct. 1969, issued under Section -4 of the Inter-State water Disputes Act 1956 (33 of 1956), constituted the Narmada Water Disputes Tribunal (NWDT) to adjudicate upon the water dispute.

The Central Government and the State Govts of Gujarat, Madhya Pradesh, Maharasthra and Rajasthan made references to the Tribunal under Sub-section (3) of Section - 5 of the Act. The Tribunal considered these references and forwarded its Further Report to the Central Government on 7th December, 1979. The decision of the Tribunal, as modified by the explanations and guidance given in its further report, were published in the official gazette by the Central Government, under Notification of the then Ministry of Agriculture and Irrigation (Department of Irrigation) No. S.O.792 (E) of the 12th December, 1979 whereupon the Decision of the Tribunal became final and binding on the parties to the dispute.

Resettlement and Rehabilitation

Sardar Sarovar Project

The directions provide that every displaced family from whom more than 25% of its land holding is acquired shall be entitled to and be allotted irrigable land in the state of its choice to the extent of land acquired form it, subject to the prescribed ceiling in the State concerned and a minimum of 2 hactre. per family.

It has also been stipulated that all project Affected Persons (PAPs) whether landowner or landless and their major sons shall be entitled to a house plot of area 502 Sq. M (60 ft x 90ft).free of cost and a resettlement grant of Rs.750/- (with escalation @ 8% per annum since year 1980 onwards) per family inclusive of transportation charges.

The main thrust of rehabilitation is directed towards resettlement of the PAPs in the benefited zone (i.e.in command area) of the project in Gujarat. Gujarat has to accommodate all the PAPs willing to settle in Gujarat from the States of Maharashtra and Madhya Pradesh, so that the benefits of the project are fully shared by the people who get dislocated due to the project and who are willing to be resettled in the command area of the project.

Environmental Protection

Conditions & Directions of Ministry of Environment & Forests (MOEF)

Ministry of Environment & Forests had stipulated implementation of certain environmental safeguard measures with the progress of the engineering works of the projects. Safeguard measures are:

- Phased Catchment Area Treatment
- Compensatory Afforestation
- Command Area Development
- Survey of Flora and Fauna and Carrying capacity of surrounding areas
- Health Aspects
- Archaeological and Anthropological studies
- Seismicity and Rim Stability of Reservoirs.

Catchment Area Treatment

(a) Treatment, of critically degraded, directly draining sub-watersheds (Phase-I) within the catchment of Sardar Sarovar and Indira Sagar Projects, is in advance stage of completion. Against a target of 1,25,725 ha of SSP catchment, an area of 1,10,997 ha was treated upto the end of March 2005. Similarly for the Indira Sagar Project (ISP) against a target of 62,975 ha., works were completed on an area of 53,581 ha.

(b)For treating balance of the directly draining critically degraded (Phase –II) areas in Madhya Pradesh, schemes within the framework of guidelines by RVP/NAEB are undertaken.
GOMP have undertaken schemes covering 95,831 ha of the catchment as RVP schemes of which 95,831 ha area was proposed to be treated at the cost of Rs. 3916.80 lacs against which by the end of March 2004, an area of 60,268 ha was treated.

SARDAR SAROVAR PROJECT (GUJARAT)

a) Sardar Sarovar Project is a multipurpose Interstate Project of 4 States (Madhya Pradesh, Gujarat, Maharashtra and Rajasthan) being implemented by Govt. of Gujarat.
b) The Project comprises construction of a 163 M, high and 1200M. long concrete gravity dam across River Narmada near Village Kevadia of Distt. Baroda.
c) The live storage capacity of the Reservoir will be 5800 million cubic metres
d) The 458 Km. long lined canal will irrigate 17.92 Lakh hectares of land in Gujarat and will also provide 616 million cubic metre of water to Rajasthan.
e) The installed capacity of the River Bed Power House is 1200M.W. and that of Canal Head Power House is 250 MW.
f) The Project will also cater domestic water supply needs of 135 towns and 8,215 villages of Gujarat.
g) At full reservation level (138.68m) the submergence will affect 193 Villages of Madhya Pradesh, 33 villages of Maharashtra and 19 villages of Gujarat; likely total submergence of land will be of 37,533 ha which includes 13,385 ha of forest land.
h) The number of families likely to be effected due to submergence, based upon 1991 census, are estimated as 40,727; out of these 33,014 are of Madhya Pradesh. Gujarat will be required to resettle 14124 families of Madhya Pradesh in the command area of the project in Gujarat. Remaining 18890 families will be resettled in Madhya Pradesh.
i) The Project cost at price level of 1988 is Rs.6,406 Crores.
j) The first phase construction of Main Canal upto km144.50 is nearing completion. Civil works of Canal Head Power House are complete, and the T.G. sets (5 x 50 MW) have been also installed.
k) Gujarat has allotted 6350 ha of Agricultural land and 2,682 house plots each of 60'x90' size to Project affected families (PAFs) while Madhya Pradesh has made allotment of house plots to 808 PAFs upto 3/2000. Out of 14124 PAFs 1042 PAFs have moved to Gujarat.

NARMADA BACHAO ANDOLAN:

FORMATION: Narmada Bachao Andolan is the most powerful mass movement, started in 1985, by some small environmental groups against the construction of huge dam on the Narmada river. Medha Patkar established *Narmada Bachao Andolan* in 1989, all these groups joined this national coalition of environmental and human

rights activists, scientists, academics and project-affected people with a non-violent approach. Within *Narmada Bachao Andolan* the focus is mainly towards the stoppage of the *Sardar Sarovar dam*, she advised addition of World Bank to their propaganda. Using the right to fasting, she undertook a 22 day fast that almost took her life. In 1991, her action brought led to an unprecedented independent review by the World Bank. The Morse Commission, appointed in June 1991 at the recommendation of The World Bank President Barber Coinable, conducted its first independent review of a World Bank project. This independent review stated that "performance under these projects has fallen short of what is called for under Bank policies and guidelines and the policies of the Government of India. The World Bank's participation in these projects was eventually cancelled in 1995.

She further undertook a similar fast in 1993 and resisted evacuation from the dam site. In 1994, the Bachao Andolan office was attacked reportedly by a couple of political parties, where Patkar and other activists were physically assaulted and verbally abused. In protest, a few NBA activists and she began a fast and 20 days later, they were arrested and forcibly fed intravenously. Despite this, the Gujarat Government, for whom the SSP was a major prestige issue, decided to push ahead with the project by finding other ways to fund it. In the meantime, the NBA continued its oppsition to the project and when its activists threatened "*Jal Samarpan*" (literally jumping into the river), the Centre agreed to set up a five-member committee to re-examine the SSP. This committee agreed with the Morse committee report, which had concluded that SSP was a flawed project.

SUPREME COURT'S DECISION:

Medha Patkar led Narmada Bachao Andolan had filed a written petition with the Supreme Court of India [the nation's apex court] seeking stoppage of construction on the Sardar Sarovar dam. The court initially ruled the decision in the Andolan's favor thereby affecting an immediate stoppage of work at the dam and directing the concerned states to first complete the rehabilitation and replacement process. The court's decision referred in this document, given in the year 2000 after seven years of deliberations, has paved the way for completing the project to attain full envisaged benefits.

Narmada Bachao Andolan, (NBA) is the people's movement that has mobilised itself against this development since the mid- and late-1980s. It has succeeded in generating a debate across the sub-continent which has encapsulated the conflict between two opposing styles of development: one massively destructive of people and the environment in the quest for large-scale industrialisation; the other consisting of replicable small-scale decentralised, democractic and ecologically sustainable options and activities harmoniously integrated with both local communities and nature.

In place of the dams, NBA calls for an energy and water strategy, based on improving dry farming technology, watershed development, small dams, lift schemes for irrigation and drinking water, and improved efficiency and utilization of existing dams.

PEOPLE INVOLVED:

Medha Patkar is the heart and soul of the NBA. Amongst the major celebrities who have shown their support for Narmada Bachao Andolan apart from Medha Patkar are Booker Prize winner, Arundhati Roy, Baba Ampte and film actor Aamir Khan.

3. SILENT VALLEY

Threatened again - a power project proposal that threatens to put the Kerala biodiversity hotspot at risk.

It is a First major 'environment versus development' controversy.

a) Situated in the Kundai Hills of the Westeren Ghats in Kerala.
b) The Silent Valley ecosystem comprises of 8,952 hectares of forestland on the Nilgiris plateau closed on all sides by mountains of the Western Ghats, some as high as 2000 metres.
c) A high degree of floral and faunal endemism. Rare, endangered and new biological species continue to be discovered from the Silent Valley National Park.
d) In the late 1970's, the Kerala government decided to build a hydel power project in the area, on the Kuntipuzha river, the kunthipuzha drops 857 meters, making the valley an attractive site for generation electricity to generate 240 MW of power and irrigate 1,00,000 hectares of land and provide 2000 jobs.
e) The proponents argued that Kerala lacked industry at least partly because it was short of power.

Draw backs

a) The project would have, however, submerged 500 hectares of the forest, Deforestration and Ecological balance will be disturbed

Agitation against the project

A) Several organizations like the Bombay Natural History Society and Kerala Sastra Sahitya Parishad formed a 'Save Silent Valley' movement to urge the state government to abandon the project.
B) International organizations like the World fund for Nature and the World Conservation Union Supported the Struggle.
C) The issue became highly politicized and the Pro-dam groups came up with the Slogan, "Are monkeys more important than men? 'Man or Monkey'. The reference was to the lion-tailed macaque that the conservationists were concerned about.
D) Finally, the continued agitation and intervention of the then Prime Minister, Indira Gandhi, in 1980 forced the government to shelve the project. It is declared as National Park.

This is its status till today. A story with a happy ending? Well, the struggle over silent valley in not over. In 2003, the Kerala government proposed another dam, 3.5 km down stream from the proposed site of the earlier on and 500 m below the border of the nation park. The debates and arguments have begun all over again.

While environmentalists perceive a grave threat to the pristine Silent Valley ecosystem in the Pathrakkadavu Hydroelectric Project (PHEP) proposed to be built on the Kunthipuzha just outside the boundary of the National Park. But the Government of Kerala and the Kerala State Electricity Board (KSEB) argue that the apprehension and the controversy are misplaced and misguided.

4. TAJ MAHAL (MATHURA REFINERY)

"A white marble tomb built in 1631-48 in Agra, by ShahJehan Mugal Empire, for his wife, Arjuman Banu Begum, the monument sums up many of the formal themes that have played through Islamic architecture. Its refined elegance is a conspicuous contrast both to the Hindu architecture of pre-Islamic India, with its thick walls, corbelled arches, and heavy lintels, and to the Indo-Islamic styles, in which Hindu elements are combined with an eclectic assortment of motifs from Persian and Turkish sources."

Mathura Refinery Only 40 km from Taj Mahal

Emits 25-30 tonnes of SO_2 daily in spit of using low sulphur fuels. If SO2 concentrations are above 1.75 kg/m^3 , they would result in acidic precipitation under conditions of low wind spreads combined with humidity.

$SO_2 + H_2O \rightarrow H_2SO_3$
$SO_3 + H_2O \rightarrow H_2SO_4$
$NO_2 + H_2O \rightarrow HNO_3$
$H_2SO_4 + CaCO_3 \rightarrow CaSO_4 + CO_2 + H_2O$

The sulphuric acid could react with calcium carbonate in the marble to form Calcium Sulphate (CuSO4) - which would cause pitting in the Taj.

Discoloration of the white marble surface i.e. appearance of a yellow layer or yellow-grey deposits or brown rust like strain on white marble, especially in the Niches and Arches, chipping and breaking of the edges of the marble slabs, and formation of cracks in marble are some of the signs of deterioration of the Taj.

IOCl Contributions

a) Extra-low sulphur (0.25%) Diesel was introduced in the Taj area and unleaded petrol is supplied here
b) Ecological Parks were set up at Mathura
c) ISO-14001:1986 for its efficient environmental management system
d) Sulphur dioxide emissions are well below the limits prescribed by the MOEF
e) Establishment of four monitoring stations between Mathura and Agra

Many steps are being taken to save the Taj from the deterioration
1) Establishment of pollution monitoring stations inside the Taj
2) Establishment of four monitoring stations between Mathura and Agra
3) Cleaning of effluent emitted by chimney of the oil refinery
4) Closing down of two thermal power stations at Agra
5) Developing of a green belt of 1 to 5 km around the monument
6) Construction of outer road to restrict traffic
7) Constituted Taj Trapezium Zone Pollution (Prevention & Control) Authority.
8) Diesel Hydro desulphurization units.
9) Improving the vehicle technology
10) Improvement in fuel quality
11) Traffic & transport management
12) Phasing out of old vehicles
13) Prevention of adulteration of fuel

5. RALEGAON SIDDHI

A Model Village of Rural India (Anna Hazare)

a) In 1975, the village was suffering from drought, poverty, debt and unemployment.
b) Anna Hazare, a retired army man decided to mobilize the people and, with the collective support of all the villagers, he began to introduce changes
c) Today ralegaon Siddhi is being taken as a role model for other villages by the Maharashtra government and by other states too.
d) Massive tree plantation has been undertaken, and hills have been terraced to check erosion
e) Large canals with ridges on either side have been dug to retain rainwater. Water table in this area is now considerably higher and the wells and tube wells are never dry, making it possible to raise three crops a year where only one was possible before
f) The village's biggest achievement is undoubtedly in the area of non-conventional energy.
g) All the streets in the village are lit by solar lights, each with a separate panel.
h) There are four large community biogas plants and one of them is fitted to the community toilets.
i) There is a large wind mill used for pumping water
j) A number of households have their own biogas plants
k) The village is self sufficient

6. TEHRI DAM

"This is a dam built with our tears" —Sunderlal Bahuguna.

OVERVIEW:

Tehri Dam is the primary dam of the Tehri Development Project, a major hydroelectric project centered near Tehri Town in the state of Uttaranchal state in India. Located on the Bhagirathi River, the principal tributary of the sacred River Ganges, the Tehri Dam has a height of 855 feet (261 m), making it the 5th tallest dam in the world. The Tehri Dam on India's Bhagirathi River, the main tributary of the Ganges, is the 5th world's largest and most controversial hydroelectric projects. Tehri is located 200 miles north east of Delhi, in the state of Uttaranchal. With a height of 260 meters (855 feet), the dam will be the fifth tallest in the world. Its reservoir will completely submerge Tehri Town and 40 villages, and partially submerge 72 villages.

BENEFITS:

- Final installed capacity of 2400MW (only Phase I with installed capacity of 1000 MW has been approved).
- Additional irrigation to 270,000 hectares.

- Stabilization to existing irrigation on 600,000 hectares.
- 270 million gallons of drinking water per day to Uttaranchal, Uttar Pradesh and Delhi

DISADVANTAGES OF TEHRI DAM

- The dam will completely submerge Tehri town and 23 villages, while 72 other villages will be partially submerged.
- Nearly 5,200 hectares of land will also be lost to the reservoir.
- In addition, about 1,00,000 persons will be displaced by the dam.

PROTESTS AGAINST TEHRI DAM:

The Tehri Dam has thus been the object of active protestation by environmental organizations and local people of the region. In addition to the human rights concerns, the project has spurred concerns about the environmental consequences of locating a large dam in the fragile ecosystem of the Himalayan foothills. There are further concerns regarding the dam's geological stability. The Tehri dam is located in the Central Himalayan Seismic Gap, a major geologic fault zone. This region was the site of a 6.8 magnitude earthquake in October 1991, with an epicenter 500 km from the location of the dam. Dam proponents claim that the complex is designed to withstand an earthquake of 7.2 magnitudes, but some seismologists say that earthquakes with a magnitude of 8.5 or more could occur in this region. Were such a catastrophe to occur, the potentially resulting dam-break would submerge numerous towns downstream, whose populations total near half a million.

The Tehri Dam has thus been the object of active protestation by environmental organizations and local people of the region. The relocation of more than 100,000 people from the area has led to protracted legal battles over resettlement rights, and ultimately resulted in the project's delayed completion. Since 2005, filling of the reservoir has led to a reduced flow of Bhagirathi water from the normal 1000 ft^3/s to a mere 2 ft^3/s. This reduction has been central to local protest against the dam, since the Bhagirathi is considered part of the sacred Ganges whose waters are crucial to Hindu mythology.