CHAPTER-II
GLOBAL ENVIRONMENT INSTITUTIONS AND LEGISLATIVE FRAMEWORK

2.1 Global Issues

Global environmental change is detrimental to the health, to human beings, and would result in hotter summers, colder winters, rise in sea levels, change in monsoon pattern, droughts, extinction of bio-diversity and devastating floods. In the wake of intensification of the problem of global environmental change, the mankind faces environmental dilemma.

Global environmental change is common concern of mankind and possesses inherent capability of transcending national boundaries (one country’s degradation of the global commonly degrades the global environment of all countries). Therefore, the international regulation and control of the phenomenon of global environmental change is legitimate (however, the principle instrument for preventing global pollution and degradation is domestic law and policy).

On 7 November 1989, Noordwijk Declaration of Atmospheric Pollution and Climatic Change proclaims that climate change is a common concern of mankind. However, the developed countries (“North”) have robbed the developing countries (“South”) by dangerously polluting the environment which is common heritage of mankind. It is, therefore, the first and foremost duty of the developed countries to provide a healing touch to the developing countries by way of transfer of technology and adequate compensation. Thus, North-South cooperation is a pre-condition for evolving and implementing legal measures to control global environmental change.
According to R.S. Pathak (Former Chief Justice, India):

“The global concern for the protection and preservation of our environment arises from a recognition of the unity of the human race. And, therefore, there is no logic in maintaining a barrier between the developed and developing Nations. The North-South dialogue should be viewed now in the contest of a greater threat, that of grave environmental damage to the entire planet, and the demand of the South for the free flow of technology and scientific knowledge from the North should be weighed not merely in the dimension of poverty removal and economic justice but in the further reality of the need of developing nations of alternative systems of energy and environmental protection strategies.”

Thus, it emerges that the environmental law is a pointer towards world order, or in other words, a harbinger to an emerging world legal order. Although the world is not environmentally uniform and the nations differ in environmental resources, but degradation of the environment affects all the nations, which require a resolve on the part of all of them to conserve and protect the environment. The Brundtland Report [Our Common Future, Report of the World Commission on Environment and Development, 1987] signaled changes in the way we look at the world.

“Until recently, the planet was a large world in which human activities and their effects were neatly compartmentalized within nations, within sectors (energy, agriculture, trade) and within broad areas of concern (environmental, economic, social). These compartments have begun to dissolve. This applies in particular to the global ‘crisis’ that have seized public concern, particularly over the last decade. These are not separate crisis: an environmental crisis, a development crisis, an energy crisis. They are all one.”
It may be noted that some significant progress has been made in the last decade in confronting environmental challenges in both developing and industrial regions. World-wide, the greatest progress has been in the realm of institutional developments, international co-operation, public participation, and the emergence of private-sector action. Legal frameworks, economic instruments, environmentally sound technologies, and cleaner production processes have been developed and applied. Environment impact assessments have become standard tools for the initiation, implementation, and evaluation of major development and investment projects in many countries around the world.

Nevertheless, despite this progress, from a global perspective the environment has continued to degrade during the past decade, and significant environmental problems remain deeply embedded in the socio-economic fabric of nations in all regions. Progress towards a global sustainable future is just too slow. Internationally and nationally, the funds and political will are insufficient to halt further global environmental issues. Comprehensive response mechanisms have not yet been fully internalized at the national level. The development at local, national, and regional levels of effective environmental legislation and of fiscal and economic instruments has not kept pace with the increase in environmental institutions.

2.2 Enforcement of International Environmental Law

‘International environmental law’ comprises those substantive, procedural institutional rules of international law which have as their primary objective the protection of the environment.

Under international law, a distinction is often made between ‘hard’ and ‘soft’ law. Hard international law generally refers to agreements or principles that are directly enforceable by a national or international body. Soft international law refers to agreements or principles
that are meant to influence individual nations to respect certain norms or incorporate them into national law. Although these agreements sometimes oblige countries to adopt implementing legislation, they are not usually enforceable on their own in a court.

Thus, the enforcement of international law is a complex and often political process. Besides the jurisdictional problems (viz. who may bring a suit, which international forum has subject matter jurisdiction, etc.,) there are other hurdles. “First, the environmental harm must be large and notorious for a country to notice. Second, for a country to have a stake in the outcome of the subject matter, some harm may have to cross the borders of the violating country into the country that is suing. Finally, even if transboundary harm does exist, the issue of causation, especially in the environmental field, is often impossible to prove with any certainty.”

The international law, thus, remains largely unenforceable. One may ask; what is the purpose of international environmental law—is it a moral statement, a deterrence, or a socializing tool?

Nevertheless, international law and institutions serve as the principal framework for international co-operation and collaboration between members of the international community in their efforts to protect the local, regional and global environment. For instance, the established norms of international environmental law are widely accepted. This acceptance is evidenced in a number of ways, such as international agreements, national legislation, domestic and international judicial decisions, and scholarly writings. Environmentalists at “Earth Summit Plus Five” (1997) gave a call to create a “World Environment Court” to solve the international environmental disputes.

### 2.3 International Legal Measures

Significant International Legal Measures taken for the protection of environment and regulation and control of acid rain, greenhouse effect, ozone depletion, etc., are:


Some of the decisions of the courts and international tribunals recognized the State liability in relation to trans-boundary environmental harms. Trial Smelter Arbitration\(^1\) between Canada and the United States concerned action brought by the United States for air pollution caused by a Canadian smelter in British Columbia. It was held by the Arbitral Tribunal that no nation State had the right to use or permit the use of its territory such that emissions cause injury in or to the territory of another State or to properties or persons therein. The Tribunal also emphasized the importance of the States jointly working together to eliminate trans-boundary environmental problems.

\(^1\) [(1939)AJIL, p.648].
The Trial Smelter decision substantially advanced principles of State responsibility in regard to transfrontier pollution but uncertainty existed as to how far these principles could extend. The Corfu Channel Case\(^2\) confirmed the principle of State responsibility for injurious acts which occur within territory under State Control. As a result of this decision, the potential now existed for the principle of Trial Smelter to be extended beyond air pollution to a wide variety of injurious acts. The 1957 Lake Lanoux Arbitration\(^3\) between France and Spain further developed some of these principles by making reference to the obligations States owned to advise their neighbours of activities which could result in transboundary harm.

In the 1950s, the international community legislated on international oil pollution in the oceans, and the conservation of living resources of the High Seas and the Antarctic region. In the 1960s, State Liability for nuclear damage and the oil pollution damage was recognized. By the 1970s, the regional consequences of pollution and the destruction of flora and fauna were obvious. Some very significant conventions took place during this decade.

By the late 1980s, global environmental threats were part of the international community’s agenda as scientific evidence identified the potential consequences of ozone depletion, climate change and loss of biodiversity. Local issues were recognized to have transboundary, then regional, and ultimately global consequences. The 1990s saw the crucial Rio Conference.

The adoption of various principles or norms by the international community throughout the 20\(^{th}\) century resulted in the establishment of several core principles of international environmental law viz. Sic utere

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\(^2\) *U.K. v. Albania* (1949) ICJ Reports, p.3.
\(^3\) (1959) 53 AJIL, p.156.
(liability for trans-boundary harm), Precautionary principle, Polluter pays principle, Environmental Impact Assessment, Sustainable development principle, Environmental Impact Assessment, Intergenerational enquiry, etc.

The role played by these principles in the international environmental regulations cannot be denied. For instance, the acceptance of the precautionary principle, which provides basis for action to be taken in the face of significant scientific uncertainty, proved to be a boon. The 1985 Vienna Convention, 1987 Montreal Protocol, the 1992 Climate Change Convention can be cited as examples of international regulations being adopted in the face of scientific uncertainty and in the absence of an international consensus on the existence of environmental harm.

2.4 Stockholm Conference

The United Nations Conference on Human Environment 1972, Marked watershed in international relations and placed the issue of the protection of biosphere on the official agenda of international policy and law. The States treated apart the narrow issues of sovereignty and jurisdiction to collectively resolve complex issues of environment and development.

The initial stages of the conference saw the emergence of two conflicting approaches. The first approach insisted that the primary concern of the conference was the human impact on the environmental with emphasis on control of pollution and conservation of natural resources. The second approach laid emphasis on social and economic development as the real issue. The two seemingly opposite approaches were bridged by the evolution of a concept that environmental protection was an essential element of social and economic development. Environmental protection and development were conceptualized as two sides of the coin, inseparable from each other.
The conference was remarkable achievement as 114 participating nations agreed generally on a declaration of principles and an action plan. The principles contained in the Stockholm Declaration demonstrate that the world has just one environment. The first principle states that 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 generations.

Principle 21 of the Declaration confers responsibility on States to ensure that activities within their jurisdiction and control do not cause damage to environment of other States. Principle 22 requires the States to co-operate to develop international standards regarding liability and compensation for the victims of pollution and other ecological damage. Principle 21 opens the doors for further developments in the area of legal control of acid rain, greenhouse effect and ozone depletion.

The Stockholm Conference also emphasized the importance of co-operation between States and international organization. Principle 25 of the Stockholm Declaration states:-
“States shall ensure that international organizations play a coordinated, efficient and dynamic role for the protection and improvement of the environment.”

The United Nations Environment Programme (UNEP) was born out of the common concern of mankind for the environment. The primary significance of UNEP lies in the fact that it provides a forum acceptable to the developing countries who emphasize on development as a vehicle for raising the quality of the environment. It has given the international
environment movement a universality, a legitimacy, and an acceptability in the developing countries.

Eco-development, signifying ecologically sound development, is a major theme of UNEF. UNEP has been responsible for the establishment and implementation of the Regional Seas Programme, including some thirty regional treaties, as well as important global treaties addressing ozone depletion, trade in hazardous wastes and biodiversity. It also established the Global Environment Monitoring System (GEMS) under the ‘Earth Watch’ programme.

The Stockholm Conference is a major landmark in the effort of nations to collectively protect their life support base on earth. UNEP, an activator of the Stockholm Action Plan, has given the international environment movement a universality, a legitimacy, and an acceptability in the developing countries.

2.5 World Charter for Nature

United Nations World Charter for Nature, 1982, demonstrates widespread acceptance of the principles enunciated at Stockholm and the practical difficulty of making these principles operational in a world of sovereign and antagonistic States. Nevertheless the adoption of the Charter is important.

The World Charter for Nature is not a binding treaty. However, it exerts considerable moral force on accepting States and member States of the United Nations. The purpose of the Charter is to provide a procedural and substantive protection to the global environment from the impact of industrialization. The Charter recognizes that mankind is a part of nature systems. Therefore, man must recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources.
Principle 1 of the Charter laid down that “Nature shall be respected and its essential processes shall not be impaired.” The Charter states that due account shall be taken of the fact that the conservation of nature is an integral part of social and economic development activities. The Charter demands that activities which are likely to cause irreversible damage to nature shall be avoided. It set forth ‘principles of conservation by which all human conduct affecting nature is to be guided and judged.”

The Charter differs from the Stockholm Declaration in substance and from: it is an avowedly ecological instrument, whereas the Stockholm Declaration focused on the protection of nature for the benefit of mankind, the Charter emphasizes the protection of nature as an end in itself. The Charter was strongly supported by developing countries, marking a change from the general reluctance which many of these countries had expressed at Stockholm ten years earlier for international environmental policy. As a standard of ethical conduct, many of its provisions are now reflected in treaties.

2.6 The Montreal Protocol (Ozone Treaty)

In 1985, Vienna Convention established a framework for the adoption of measures ‘to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer’. At the practical level, the Vienna Convention does not set targets or timetables for action but requires various ‘appropriate measures’ (viz. legislature or administrative actions, etc.) to be taken by the parties.

It was the 1987 Montreal Protocol to the Vienna Convention which set firm targets for reducing consumption and production of a range of ozone-depleting substances like CFCs (Chlorofluorocarbons). It is a landmark international environmental agreement, providing a precedent for
new regulatory techniques and institutional arrangements, and the adoption and implementation of innovation financial mechanisms. One of the major innovations of the Protocol is its recognition that all nations should not be treated equally. The agreement acknowledges that certain countries have contributed greatly to ozone depletion while others have made very small contributions. It also recognizes that a nations’ obligation to reduce current emission should reflect its technological and financial ability to abate CFC pollution. Because of this situation, the agreement applies more stringent standards, and a more accelerated phase-out timetable, to the countries that have contributed the most to ozone depletion.

The Montreal Protocol, 1987, which came into force from January 1, 1989, initially aimed at the elimination of ozone-depleting substances at a uniform rate irrespective of the development status of a country. The pact was signed by 48 nations, mostly developed countries. India and other developing nations like Malaysia and China refused to sign it because of pragmatic considerations and discriminatory clauses in Protocol, namely:-

(i) Per capita consumption of CRCs- US accounts for 37% of the world’s consumption of CFCs while poorer countries of Asia and Africa only 5% (India’s consumption is less than 1%). So rate of elimination should be faster in developed countries, but the Protocol provides for a uniform rate.

(ii) Patterns of consumption of CRCs-In India, CFCs mainly used for essential purposes likely food processing, vaccines, space research, etc. While in US, a lot of CFCs used for luxury consumption e.g. car air-conditioning.

(iii) Massive switch-over costs- Very High costs needed for developing CFCs substitutes (e.g. an equipment modification in refrigerator), but in Protocol a miniscule amount specified for developing nations.
For India, it was only $40 million, while India requires nearly $2 billion.

(iv) Transfer of technology-A transfer of technology for CFCs substitutes, by the multinationals to the developing nations was not freely available. Multinationals were of the view that the purchase of substitutes from them would be more economical, then to set up manufacturing units for substitutes in developing nations.

2.7 Protocol After “London/Other Amendments”

The amendments to the pact resulted because of a firm stand taken by the developing nations including India. The amendments provided for a multilateral fund with obligatory contributions from developed nations; equal voting rights for all parties to the Protocol; a fund to cover all extra costs incurred by developing nations in meeting the obligations of Protocol; and, to ensure transfer of technology to developing nations. India was the last major country to sign the Protocol.

The amendments became operational from August, 1992: Developed countries will phase-out CFCs between 1995 and 2000, while developing nations will begin their elimination programmes only in 2000 and end it in 2010.

As per the Montreal Protocol, the State parties should not only help in developing 'alternative substances’ (ozone-friendly substances) but also help prohibit trade in ‘controlled substances’ (ozone-depleting substances) between parties and non-parties to the Protocol. Thus, parties to the Protocol are prohibited from importing such substances, or exporting CFC production technology and equipment. This comprehensive trade ban placed both economic and diplomatic pressure on all nations to join the Protocol.
The Protocol was further supplemented with the amendment in Copenhagen on 25th November, 1992, wherein timetable for phasing out substances was enhanced. It also established the Multilateral Fund on a permanent basis, and listed three new controlled substances. The list of controlled substances has been further expanded with the adoption of 1995 and 1997 amendments to the Protocol.

2.8 Ozone Depleting Substances

(Regulation and Control) Rules, 2000

These Rules were enacted by the Indian Government in pursuance of the Montreal Protocol, under the Environment Protection Act, 1986. The producers, dealers, users engaged in the manufacture/use of Ozone Depleting Substances (ODS) such as CFCs, Halon, Carbontetrachloride (CCl₄), Etc., are required to compulsorily register under the Rules.

These rules prohibit the use of CFCs in manufacturing various products beyond 1 January 2003 except in metered dose inhaler and for other medical purposes. Creation of new capacity or expansion of capacity of manufacturing facilities of ODS and ODS-based equipment has been prohibited. Purchasers of ODS for manufacturing products containing ODS are required to declare the purpose for which the ODS is purchased. Trade in ODS with non-parties has been banned. Authority has been specified to issue license for all import and exports of ODS and products containing ODS.

Enterprises which have received financial assistance from multilateral funds for switchover to non-ODS technology have to register the date of completion of their project and to declare that the equipment used for ODS technology has been destroyed.

A list of ODS has been provided for in Schedule I of the Rules. Different phase-out dates for different ODS, both for the producers and for the consumers have been specified in Schedule IV to the Rules.
2.9 Kuala Lumpur Conference

A ministerial level conference of developing nations in 1992 at Kuala Lumpur, Malaysia, adopted certain far-reaching declarations. For example, setting up of an international “green fund” for greening the earth (each country to cover at lease 30 percent of its area with forests by 2000 A.D.) with a higher share from the developed nations. However, US rejected the proposal as existing GEF was sufficient, and a country receiving funds may divert money for other purposes.

Global Environmental Facility (GEF) is a U.N. mechanism (with World Bank’s assistance) for funding the greening of the earth and promoting sustainable development. India and other developing nations opposed it as it has a ‘doctor bias’ and is not democratic.

India, at this Conference, also mooted the idea of “Environment Tax” on developed nations to pay for the global environment clean up. Also, India outlined a ‘new global partnership’ based on sound principles—equal weightage to all nations, with stronger U.N. role; no conditionalities in funding or trade on grounds of environment protection; no globalization of national resources like genetic diversity, and; no enforcing of environmental standards at international level in place of national limits. Thus, India recognized the sovereign “right to development”.

2.10 Rio Conference (Earth Summit)

Rio de Janeiro, Brazil, was chosen as the venue for search summit to effectively highlight the consequences of man’s recklessness (which led to destruction of large parts of rainforests in Brazil) and to devise strategies to combat the ecological disaster. This UN conference for Environment and Development (UNCED), held in June 1992, was attended by representatives of 178 nations and 115 heads of government.
(A) **Key Issues**

Issues dividing North and South (developed and developing nations) were placed in the agenda for discussion at the summit. The issues were as follows:

(i) **Greenhouse Gas Emission** - North want a shift from use of coal and wood for energy and to stabilize CO$_2$ emission at 1990 levels by 2000 A.D. South blame rich for excessive emission and want them to reduce it; opposed to any cut in its own emission as it hinders development.

(ii) **Forests** - North want a legally binding convention to restrict deforestation in tropical countries right in biodiversity (‘world forests as common heritage’).

South assert that such works would impinge on national sovereignty; right must compensate for conservation and share profits for researches on species.

(iii) **Population** - North want population control in South, and thus to check deforestation, pollution, etc.,

South blame the rich for over consumption i.e. 60 per cent of world’s energy.

(iv) **Technology Transfer** - North say that technology development is commercial and thus countries wanting to utilize it must pay.

South say that “environment friendly” technology to be transferred cheaply.

(v) **Finance** (‘who would pay for clean-up’?) - North say that existing UN mechanism of GEF is sufficient; want finance sharing from all countries with no mandatory contribution from North.

South favour “polluter must pay” principle, thus North to pay major part with firm commitments; a new institution, in place of GEF, is needed whose functioning is transparent and democratic.

(B) **Balance-Sheet**
(i) Rio Declaration (Earth Charter)- A statement of principles which set out the rights and obligations of all nations in relation to the environment, however, not legally but morally binding only.

(ii) Climate Convention- A commitment to reduce CO₂ emission, signed by 150 nations including USA, however, it does not fix any deadline for reducing or any immediate change in fuel consumption.

(iii) Declaration on Principles in Forestry Conservation- Adopted, however, it is not a legally binding convention.

(iv) Agenda 21- A blue –print for ecologically safe development up to year 2000 and beyond (21st century) adopted, covering issues like transfer of environment-friendly technology, creating environmental awareness, an integrated approach to land resource use, checking desertification, peaceful use of nuclear energy, etc. However, it avoided the question of who would pay for it (European countries promised to pay only a partial amount).

(v) New Un Panel on Environment- To assess the environmental impact of lending by WB and IMF, and implementation of Agenda 21. Also, a Sustainable Development Commission (SDC) to be set up to monitor the implementation of Agenda 21.

(vi) Biodiversity Treaty-150 nations, excluding USA, signed a companion treaty to protect the endangered species on each.

(C) Attitude of USA

USA struck to its unreasonable stand even though it got completely isolated (its allies Japan and Britain signed the biodiversity treaty). US watered down the climate treaty by non-inclusion of any deadlines. US was concerned that it would require major changes in economy that will lead to joblessness in the country.

USA did not want to sign the biodiversity treaty as it would harm the interests of its biotechnology companies (regarding patents); impose burden on its tax-payer (because of funds for conservation), and; raise
problems of ‘control’ on funds the developing countries will get. USA instead proposed a separated international plan for world’s forests by developing eco-technological practices, and contributing funds for it.

(D) India’s Contribution

India, a key player in negotiations, put much heart and energy even at the risk of getting unpopular with the US administration. India did not agree to the phraseography in the text of some clauses of Agenda 21 (‘terms for transfer of technology’). India had strong reservations about the dilution of original commitment in climate treaty. India proposed a ‘Planet Protection Fund (PPF) to help by environment friendly technology world-wide and make them available free of cost to any country seeking them.

(E) Significance of Summit

Earth summit was intended to call attention to the environment as an urgent international issue, and to agree on how to fix it. What the summit achieved is that the problem of environment has come to be recognised as central to saving this planet and inscribed as the agenda of this day and age.

However, summit failed to achieve agreements on crucial environmental issues and to extract definite commitments for financial resources from the developed countries. The summit failed to raise enough funds for GEF. Also, the question of technology transfer remained unclear. The summit, surprisingly, did not address the central question of world population. Thus, the net out-come is hardly satisfying in any concrete measure to the developing countries.

The experience at the summit was that the developed nations were unwilling to bear the responsibility for their consumerism though they acknowledge that their model of civilization is bringing disaster for developing nations. However, the basis of this new perception is their realization that their own future is equally threatened. In the final analysis, North will have to be more firm in its commitments, and Sought must
endeavour to delink, as much as possible, environment from economic development and thereby forge a consensus on the approach to save the planet.

The Earth Summit Plus Five (1997), a special session of the UN General Assembly held after five years from the historic “Earth Summit”, was supposed to ascertain that “how far the committed nations had gone from Rio.” The representatives of various nations reviewed the progress that they had made in achieving the goal of sustainable development and to save the planet Earth from further deterioration.

The Third world nations sharply criticized Western nations for their move to reopen contentious matters such as labour standards and human rights in an attempt to introduce new issues in Agenda 21 on global environmental protection. However, the delegates agreed on a few remedies on such critical areas as global warming. The Conference concluded with a common concern that “we are deeply concerned that overall trends are worse today than they were in 1992.”

2.11 The Biodiversity Convention

It is in the context of the unprecedented global ecological destruction that there have been demands for an international convention on biological diversity. In 1988, the UNEP initiated the process of forging a draft convention, which deals with various aspects of biodiversity, viz. conservation in natural or human-modified surroundings, rational or sustainable use, safeguarding of traditional knowledge and practices, exchange of information and technology between countries. The Convention commits governments “to integrated consideration of the conservation and sustainable use of biological resources into national decision-making.”

At the Rio Conference, an agreement was reached on the conservation and sustainable use of the world’s biodiversity. The
Convention on Biodiversity was signed by 153 nations on 14th June, 1992; it took effect on 29th December, 1993, after it was ratified by the required minimum of 30 countries. The Convention aimed to establish a global partnership for the protection of natural resources with the recognition of the sovereign rights of States over their resources.

The Convention lacks any specific standards or methods to ensure compliance. However, Art. 26 imposes an obligation on each party to submit to the Conference of the Parties, reports or measures which it has taken for the implementation of the provisions of the Convention and their effectiveness in meeting the objectives of the Convention. This provision of mandatory national reports puts enormous persuasive force on the State Parties to take measures to effectively implement the Convention provisions.

The Convention suffers from various fundamental defects. The entire convention is likely to be weakened by being “subject to national plans, programmes and priorities”. The countries may adopt nature protection standards that are appropriate to their own economic needs and priorities. Further, the convention does not strongly commit government to empower local communities to sustainably manage their resources, while helping them to alter destructive practices.

However, the Convention, which is a legally binding agreement, contains several provisions which would be advantageous to exploited nations. One such provision relates to the links between biodiversity and biotechnology. The Convention includes new international rules on access to genetic resources, access to and transfer or technology, and handling of biotechnology and distribution of its benefits. These are controversial to the extent that they are perceived by some countries to threaten the stability of exiting intellectual and other property rights.
Thus, under the Convention, it is provided that each party must provide for the effective participation in biotechnological research activities by parties which provide the genetic resources, especially developing countries. Themselves poor in biodiversity, the developed nations have been forcibly looting the resources of the biologically rich tropical counties, yet denying to the latter the technologies and benefits arising out of these resources (by way of patents and other intellectual property rights). Countless” wonder” drugs produced by multinational companies and western countries are based on plant extracts taken from the tropics, yet the people of the latter not only are denied a share of the resultant benefits, but have to buy these drugs for exorbitant prices.

Therefore, the United State (alone among the industrialized nations) decided against signing the Convention. The USA eventually changed its stand during the Bill Clinton’s regime and signed the Convention.

The Biodiversity Convention, which is legally binding, can be construed as an important effort to protect and conserve natural resources of the world as a whole. The Convention is likely to become the principal framework within which the development and implementation of rules on biodiversity conservation will occur.

2.12 Convention on Climate Change

The world community at Rio Conference showed unanimity to prevent global climate change. A legally binding convention on climate change was adopted at the Conference and it was signed by 150 nations.

The 1992 Framework Convention represents the first step in the international community’s attempt to stop global warming. However, no targets were set to reduce CO₂ emission or any immediate change in fuel consumption. Art. 2 of the Convention states that the ‘ultimate objective’ of the framework agreement is to stabilize the concentrations of greenhouse gases at a level which would prevent dangerous interference with the
climate system. The broad and general phasing provides participating countries with flexibility in implementation strategies.

The Climate Convention was only a broad blueprint, but some significant principles and provisions were negotiated. First, it was agreed that financial commitments should be based on the principles of ‘respective capabilities’, and ‘appropriate burden sharing’ and ‘equity’, meaning that wealthier nations should be required to contribute more than poorer nations. Second, the Convention states that developed countries ‘shall take all practical steps to promote, facilitate and finance e, as appropriate, the transfer of, or access to, environmentally sound technologies.”

2.13 Kyoto Summit on Global Warming, 1997

The Convention on Climate Change had decided that a review conference would be convened after a period of 5 years. Therefore, a conference on “climate change” was held at Kyoto (Japan) to review the progress made in 5 years and to chalk out plans and fix strategies/objectives for the future. More than 150 countries participated in it.

The Conference achieved some success as it took certain solid decisions, viz., that the emission of greenhouse gases from the 1990 level would be reduced by 8%, 7% and 6% by European Union, America and Japan, respectively. Similarly, targets of 21 other industrial countries were fixed for reducing emissions of greenhouse gases viz., an average of vide per cent relative to their 1990 levels. These targets are to be achieved in between 2008 and 2012. The Kyoto process envisages that poor or developing countries will take on targets at a later stage.

The developing countries expressed the view that their economic conditions do not permit them to accept such commitments. Therefore, they (including China and India) were for the time being exempted from such commitments. One of the main reasons for this is that per capita emission
of these gases in these countries is far less than in developed industrial countries.

Developing nations only agreed at the last minute to allow emissions trading among all countries as part of ‘clean development mechanism’. The Protocol provides for trading in emission credits between those who don’t use up their entitlement and those who exceed it, purportedly to enable industrialized countries to replace ‘dirty’ technologies with clean ones. The ‘clean development mechanism’ (Art. 12, Protocol) seemingly allows developed countries to implement (and pay for) carbon-reducing projects in developing countries. However, the provision is largely undefined. India and China resisted emissions trading schemes because they want developed nations to bear the major costs of global carbon reductions.

The Kyoto Protocol has been criticized on the ground that it calls for sharp reductions in emissions over a relatively short period of time. There are ambitious targets but no limits on compliance costs (which could be very high). The USA argues that “the Kyoto Protocol is unfair to the United States and to other industrialized nations because it exempts 80% of the world from compliance.” The argument is misplaced, because the developing countries’ contribution to global warming via greenhouse gases emission pales besides America-first on the list.

The Fourth Sessions of the Conference of the Parties to the UN Framework Convention on Climate Change (COP4) [Buenos Aires, 1998], COP6 [Hague, 2000], and, COP7 (2002) have failed because of the U.S. intransigence. When Clinton signed the treaty in 1998, it was thought that US ratification would follow and the Kyoto Protocol would become law. But in a dramatic turn of events, George Bush pulled out of the treaty in 2001, seriously endangering global climate negotiations.
The Protocol has been approved (signed) by 120 countries. The targets and objectives of the K.P. can be achieved only when the countries participating and signing the Targets ratify it at an early date and strictly enforce the same in their respective countries. At least 55 countries need to concur (ratify) to grant the Kyoto Protocol legal status. Very recently (Oct. 2004), Russia, responsible for 17% of the world’s greenhouse gas emission, signed the Protocol. Now with China and Canada also ratifying, the US and Australia are the only two major countries who have opted out of the Protocol, and thanks to Russia, the rest of us can go ahead with operation clean up. With Russia’s participation the threshold for enactment under the treaty’s complicated terms has been reached. In other worlds, the Protocol can become operational now.

It would not be an exaggeration to say that survival of the planet earth depends on the success of Kyoto Summit. It is, therefore, imperative that nations of the world should keep in mind not only of their own self interests but also the interests of the planet earth as a whole because environment of the whole planet is one and indivisible. As regards America, the least that can be said is that if it cannot take the initiative, it can at least follow the example set by European Union.

2.14 Biosafety Protocol, 2000

No other scientific controversy in recent times would seems to have polarized opinion as much as the issue of genetically/living modified organisms (GMOs). A genetically/living modified organism (GMO) refers to an organism into which one gene from an unrelated organism has been transferred an incorporated in the generic material, which means that is characteristic are different. Modern science makes it possible to isolate one gene from an organism and put it into another and get the desired characteristic in the later. This makes it possible to produce agricultural
crops (‘transgenic plants’) or create domestic animals with particular characteristics.

The main issues of contention viz-a-viz the use of GMOs pertain to the lack of transparency and public awareness about them and environmental and ecological safety. Other aspects of the controversy relate to social and economic equity, legal and regulatory consideration and moral and ethical issues.

The issues of biosafety has always posed problems due to scientific inadequate and uncertainties. The Conference of the Parties to the Convention of Biological Diversity adopted a supplementary agreement to the Convention known as the “Cartagena Protocol on Biosafety” on 29 Jan. 2000. The Protocol seeks to protect the biological diversity from the potential risk posed by living modified organism resulting from modern biotechnology. It establishes a procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the impost of such organism onto their territory.

The Biosafety Protocol is breakthrough in that it enshrines the “precautionary principle” as a principle of international environmental law. The Protocol established a Biosafety Clearing House to facilitate the exchange of information on living modified organism and to assist countries in the implementation of the Protocol.

It may be noted that the Biodiversity Contention, 1992 also contains a provision to prevent the likelihood of environmental damage as a result of release of living modified organism. Art 8(g) of it lays down that the Parties shall establish the means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking into account the risk to human health.
The Biosafety Protocol would required exporters of genetically modified organisms to obtain prior approval from the importing country. Such regulations are intended to allow countries to reduce the ecological risks from introducing generically altered plants, animals and microorganisms into the environment. The main sticking point in the biosafety negotiations was whether the requirement should apply to genetically altered agricultural commodities meant for eating or processing, as opposed to planting.

The U.S. and five other big agricultural exporters (Canada, Australia, Argentina, Chile and Uruguay) argued that such a requirement would not protect biodiversity because commodities such as corn and soyabeans do not enter the environment. The US and its allies obviously wanted to protect the interests of their farming and biotechnology industries. However, the developing nations and the European Union argued that commodities should be included because they have seeds that can be planted.

It may be noted that even without a Protocol or Treaty, countries can limit the import of genetically engineered seeds or foods under their own law, subject to challenge under world trading rules. The Protocol was mainly meant to help developing countries, which now lack the expertise and legislation to regulate biotechnology.

The Biosafety Protocol came into force on Sept. 11, 2003, when the requisite number of parties had ratified it. India is a signatory to the Protocol and is bound by its provision. USA is not a member of the Protocol.

2.15 Regulatory Mechanism in India

India woke up to the GMO threat in 1998 after reports about the controversial “Terminator” technology and the angry responses of farmers’ organizations to filed trial in India of Bollgarb (Br) Cotton seeds,
manufactured by Monsanto/American Home Products, appeared in the Media.

The approval for the commercial release of Br. Cotton was given by the Genetic Engineering Approval Committee (GEAC) of the Central MoEF, the statutory body set up for approving large scale (research or commercial) use of genetically engineered organism( GEOs) following the rules enacted in 1989 under the Environment Act, 1986 (viz. Hazardous or Genetically Engineered Micro-Organisms Rules, 1989).

The GEAC is the apex clearing authority in the three-tier regulatory structure after bio-safety studies and small-scale filed trials are evaluated by the Review Committee for Genetic Manipulation (RCGM) and the Monitoring Evaluation Committee (MEC) of the Department of Biotechnology(DBT). The State-level Committees are also to be consulted in the process of approval.

Recently enacted Biological Diversity Act, 2002, also contains provision relating to the regulation of GMOs. The Central Government is required to undertake measures to regulate, manage or control the risks associated with the use and release of living/genetically modified organisms resulting from biotechnology likely to have adverse impact on the conservation and sustainable use of biodiversity and human health.

2.16 Global Environmental Concerns

Global Environmental Issues

As early as 1896, the Swedish scientist Svante Arrhenius had predicted that human activities would interfere with the way the sun interacts with the earth, resulting in global warming and climate change. His prediction has become true and climate change is now disrupting global environmental stability. The last few decades have seen many treaties, conventions, and protocols for the cause of global environmental protection.
Few examples of environmental issues of global significance are:

• Ozone layer depletion
• Global warming
• Loss of biodiversity

One of the most important characteristics of this environmental degradation is that it affects all mankind on a global scale without regard to any particular country, region, or race. The whole world is a stakeholder and this raises issues on who should do what to combat environmental degradation.

2.17 Ozone Layer Depletion

Earth’s atmosphere is divided into three regions, namely troposphere, stratosphere and mesosphere (see Figure 9.1). The stratosphere extends from 10 to 50 kms from the Earth’s surface. This region is concentrated with slightly pungent smelling, light bluish ozone gas. The ozone gas is made up of molecules each containing three atoms of oxygen; its chemical formula is O$_3$. The ozone layer, in the stratosphere acts as an efficient filter for harmful solar Ultraviolet B (UV-B) rays Ozone is produced and destroyed naturally in the atmosphere and until recently, this resulted in a well-balanced equilibrium (see Figure 9.2). Ozone is formed when oxygen molecules absorb ultraviolet radiation with wavelengths less than 240 nanometres and is destroyed when it absorbs ultraviolet radiation with wavelengths greater than 290 nanometres. In recent years, scientists have measured a seasonal thinning of the ozone layer primarily at the South Pole. This phenomenon is being called the ozone hole.

2.18 Ozone Depletion Process

Ozone is highly reactive and easily broken down by man-made chlorine and bromine compounds. These compounds are found to be most responsible for most of ozone layer depletion.
The ozone depletion process begins when CFCs (used in refrigerator and air conditioners) and other ozone-depleting substances (ODS) are emitted into the atmosphere. Winds efficiently mix and evenly distribute the ODS in the troposphere. These ODS compounds do not dissolve in rain, are extremely stable, and have a long life span. After several years, they reach the stratosphere by diffusion.

Strong UV light breaks apart, the ODS molecules, CFCs, HCFCs, carbon tetrachloride, methyl chloroform release chlorine atoms, and halons and methyl bromide release bromine atoms. It is the chlorine and bromine atom that actually destroys ozone, not the intact ODS molecule. It is estimated that one chlorine atom can destroy from 10,000 to 100,000 ozone molecules before it is finally removed from the stratosphere.

### 2.19 Chemistry of Ozone Depletion

When ultraviolet light waves (UV) strike CFC* ($\text{CFCl}_3$) molecules in the upper atmosphere, a carbon-chlorine bond breaks, producing a chlorine (Cl) atom. The chlorine atom then reacts with an ozone ($\text{O}_3$) molecule breaking it apart and so destroying the ozone. This forms an ordinary oxygen molecule ($\text{O}_2$) and a chlorine monoxide (ClO) molecule. Then a free oxygen** atom breaks up the chlorine monoxide. The chlorine is free to repeat the process of destroying more ozone molecules. A single CFC molecule can destroy 100,000 ozone molecules.

* CFC - chlorofluorocarbon: it contains chlorine, fluorine and carbon atoms.

** UV radiation breaks oxygen molecules ($\text{O}_2$) into single oxygen atoms.

### 2.20 Effects of Ozone Layer Depletion

Effects on Human and Animal Health: Increased penetration of solar UV-B radiation is likely to have high impact on human health with potential risks of eye diseases, skin cancer and infectious diseases.
Effects on Terrestrial Plants: In forests and grasslands, increased radiation is likely to change species composition thus altering the bio-diversity in different ecosystems. It could also affect the plant community indirectly resulting in changes in plant form, secondary metabolism, etc.

Effects on Aquatic Ecosystems: High levels of radiation exposure in tropics and subtropics may affect the distribution of phytoplanktons, which form the foundation of aquatic food webs. It can also cause damage to early development stages of fish, shrimp, crab, amphibians and other animals, the most severe effects being decreased reproductive capacity and impaired larval development.

Effects on Bio-Geo-Chemical Cycles: Increased solar UV radiation could affect terrestrial and aquatic bio-geo-chemical cycles thus altering both sources and sinks of greenhouse and important trace gases, e.g. carbon dioxide (CO$_2$), carbon monoxide (CO), carbonyl sulfide (COS), etc. These changes would contribute to biosphere-atmosphere feedbacks responsible for the atmosphere build-up of these greenhouse gases.

Effects on Air Quality: Reduction of stratospheric ozone and increased penetration of UV-B radiation result in higher photo dissociation rates of key trace gases that control the chemical reactivity of the troposphere. This can increase both production and destruction of ozone and related oxidants such as hydrogen peroxide, which are known to have adverse effects on human health, terrestrial plants and outdoor materials.

The ozone layer, therefore, is highly beneficial to plant and animal life on earth filtering out the dangerous part of sun’s radiation and allowing only the beneficial part to reach earth. Any disturbance or depletion of this layer would result in an increase of harmful radiation reaching the earth’s surface leading to dangerous consequences.
2.21 Ozone Depletion Counter Measures

- International cooperation, agreement (Montreal Protocol) to phase out ozone depleting chemicals since 1974
- Tax imposed for ozone depleting substances
- Ozone friendly substitutes- HCFC (less ozone depleting potential and shorter life)
- Recycle of CFCs and Halons

2.22 Global Warming

Before the Industrial Revolution, human activities released very few gases into the atmosphere and all climate changes happened naturally. After the Industrial Revolution, through fossil fuel combustion, changing agricultural practices and deforestation, the natural composition of gases in the atmosphere is getting affected and climate and environment began to alter significantly.

Over the last 100 years, it was found out that the earth is getting warmer and warmer, unlike previous 8000 years when temperatures have been relatively constant. The present temperature is 0.3 - 0.6 °C warmer than it was 100 years ago.

The key greenhouse gases (GHG) causing global warming is carbon dioxide. CFC's, even though they exist in very small quantities, are significant contributors to global warming. Carbon dioxide, one of the most prevalent greenhouse gases in the atmosphere, has two major anthropogenic (human-caused) sources: the combustion of fossil fuels and changes in land use. Net releases of carbon dioxide from these two sources are believed to be contributing to the rapid rise in atmospheric concentrations since Industrial Revolution. Because estimates indicate that approximately 80 percent of all anthropogenic carbon dioxide emissions currently come from fossil fuel combustion, world energy use has emerged at the center of the climate change debate.
2.23 Sources of Greenhouse Gases

Some greenhouse gases occur naturally in the atmosphere, while others result from human activities. Naturally occurring greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Certain human activities, however, add to the levels of most of these naturally occurring gases.

Carbon dioxide is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned.

Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic wastes in municipal solid waste landfills, and the raising of livestock. Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.

Very powerful greenhouse gases that are not naturally occurring include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6), which are generated in a variety of industrial processes.

Often, estimates of greenhouse gas emissions are presented in units of millions of metric tons of carbon equivalents (MMTCE), which weights each gas by its Global Warming Potential or GWP value.

2.24 Global Warming (Climate Change) Implications Rise in Global Temperature

Observations show that global temperatures have risen by about 0.6°C over the 20th century. There is strong evidence now that most of the observed warming over the last 50 years is caused by human activities. Climate models predict that the global temperature will rise by about 6°C by the year 2100.

2.25 Rise in Sea Level

In general, the faster the climate change, the greater will be the risk of damage. The mean sea level is expected to rise 9 - 88 cm by the year 2100, causing flooding of low lying areas and other damages.
2.26 Food Shortages and Hunger

Water resources will be affected as precipitation and evaporation patterns change around the world. This will affect agricultural output. Food security is likely to be threatened and some regions are likely to experience food shortages and hunger.

2.27 India Could be More at Risks than Many other Countries

Models predict an average increase in temperature in India of 2.3 to 4.8°C for the benchmark doubling of Carbon-dioxide scenario. Temperature would rise more in Northern India than in Southern India. It is estimated that 7 million people would be displaced, 5700 km of land and 4200 km of road would be lost, and wheat yields could decrease significantly.

2.28 Loss of Biodiversity

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

It is now believed that human activity is changing biodiversity and causing massive extinctions. The World Resource Institute reports that there is a link between biodiversity and climate change. Rapid global warming can affect ecosystems chances to adapt naturally. Over the past 150 years, deforestation has contributed an estimated 30 percent of the atmospheric build-up of CO$_2$. It is also a significant driving force behind the loss of genes, species, and critical ecosystem services.
2.29 Link between Biodiversity and Climate Change

- Climate change is affecting species already threatened by multiple threats across the globe. Habitat fragmentation due to colonization, logging, agriculture and mining etc. are all contributing to further destruction of terrestrial habitats.

  Individual species may not be able to adapt. Species most threatened by climate change have small ranges, low population densities, restricted habitat requirements and patchy distribution.

- Ecosystems will generally shift northward or upward in altitude, but in some cases they will run out of space – as 1°C change in temperature correspond to a 100 Km change in latitude, hence, average shift in habitat conditions by the year 2100 will be on the order of 140 to 580 Km.

- Coral reef mortality may increase and erosion may be accelerated. Increase level of carbon dioxide adversely impact the coral building process (calcification).

- Sea level may rise, engulfing low-lying areas causing disappearance of many islands, and extinctions of endemic island species.

- Invasive species may be aided by climate change. Exotic species can out-compete native wildlife for space, food, water and other resources, and may also prey on native wildlife.

- Droughts and wildfires may increase. An increased risk of wildfires due to warming and drying out of vegetation is likely.

- Sustained climate change may change the competitive balance among species and might lead to forests destruction

2.30 Climatic Change Problem and Response

The United Nations Framework Convention on Climate Change, Unfccc

In June 1992, the “United Nations Framework Convention on Climate Change” (UNFCCC) was signed in Rio de Janeiro by over 150
nations. The climate convention is the base for international co-operation within the climate change area. In the convention the climate problem’s seriousness is stressed. There is a concern that human activities are enhancing the natural greenhouse effect, which can have serious consequences on human settlements and ecosystems.

The convention’s overall objective is the stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”

The principle commitment applying to parties of the convention is the adoption of policies and measures on the mitigation of climate change, by limiting anthropogenic emissions of Bureau of Energy Efficiency 1909. Global Environmental Concerns greenhouse gases and protecting and enhancing greenhouse gas sinks and reservoirs. The commitment includes the preparation and communication of national inventories of greenhouse gases. The Climate convention does not have any quantitative targets or timetables for individual nations. However, the overall objective can be interpreted as stabilization of emissions of greenhouse gases by year 2000 at 1990 levels.

2.31 The Kyoto Protocol

There is a scientific consensus that human activities are causing global warming that could result in significant impacts such as sea level rise, changes in weather patterns and adverse health effects. As it became apparent that major nations such as the United States and Japan would not meet the voluntary stabilization target by 2000, Parties to the Convention decided in 1995 to enter into negotiations on a protocol to establish legally binding limitations or reductions in greenhouse gas emissions. It was decided by the Parties that this round of negotiations would establish limitations only for the developed countries, including the former Communist countries.
Negotiations on the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) were completed December 11, 1997, committing the industrialized nations to specify, legally binding reductions in emissions of six greenhouse gases. The 6 major greenhouse gases covered by the protocol are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

2.32 Emissions Reductions

The United States would be obligated under the Protocol to a cumulative reduction in its greenhouse gas emissions of 7% below 1990 levels for three greenhouse gases (including carbon dioxide), and below 1995 levels for the three man-made gases, averaged over the commitment period 2008 to 2012.

The Protocol states that developed countries are committed, individually or jointly, to ensuring that their aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases do not exceed amounts assigned to each country with a view to reducing their overall emissions of such gases by at least 5% below 1990 levels in the commitment period 2008 to 2012.

The amounts for each country are listed as percentages of the base year, 1990 and range from 92% (a reduction of 8%) for most European countries to 110% (an increase of 10%) for Iceland.

2.33 Actions Required from Developed and Developing Nations

The Kyoto Protocol does call on all Parties (developed and developing) to take a number of steps to formulate national and regional programs to improve "local emission factors," activity data, models, and national inventories of greenhouse gas emissions and sinks that remove these gases from the atmosphere. All Parties are also committed to formulate, publish, and update climate change mitigation and adaptation...
measures, and to cooperate in promotion and transfer of environmentally sound technologies and in scientific and technical research on the climate system.

2.34 Who is Bound by the Kyoto Protocol?

The Kyoto Protocol has to be signed and ratified by 55 countries (including those responsible for at least 55% of the developed world's 1990 carbon dioxide emissions) before it can enter into force. Now that Russia has ratified, this has been achieved and the Protocol will enter into force on 16 February 2005.

2.35 India’s Greenhouse Gas Emissions

India has experienced a dramatic growth in fossil fuel CO₂ emissions, and the data compiled by various agencies shows an increase of nearly 5.9% since 1950. At present India is rated as the 6th largest contributor of CO₂ emissions behind China, the 2nd largest contributor. However, our per capita CO₂ of 0.93 tons per annum is well below the world average of 3.87 tons per annum. Fossil fuel emissions in India continue to result largely from coal burning. India is highly vulnerable to climate change as its economy is heavily reliant on climate sensitive sectors like agriculture and forestry. The vast low-lying and densely populated coastline is susceptible to rise in sea level.

The energy sector is the largest contributor of carbon dioxide emissions in India. The national inventory of greenhouse gases indicates that 55% of the total national emissions come from energy sector. These include emissions from road transport, burning of traditional bio-mass fuels, coal mining, and fugitive emissions from oil and natural gas.

Agriculture sector constitutes the next major contributor, accounting for nearly 34%. The emissions under this sector include those from enteric fermentation in domestic animals, manure management, rice cultivation,
and burning of agriculture residues. Emissions from Industrial sector mainly came from cement production.

2.36 Indian Response to Climatic Change

Under the UNFCCC, developing countries such as India do not have binding GHG mitigation commitments in recognition of their small contribution to the greenhouse problem as well as low financial and technical capacities. The Ministry of Environment and Forests is the nodal agency for climate change issues in India. It has constituted Working Groups on the UNFCCC and Kyoto Protocol. Work is currently in progress on India's initial National Communication (NATCOM) to the UNFCCC. India ratified the Kyoto Protocol in 2002.

2.37 The Conference of the Parties (Cop)

The Conference of the Parties is the supreme body of the Climate Change Convention. The vast majority of the world’s countries are members (185 as of July 2001). The Convention enters into force for a country 90 days after that country ratifies it. The COP held its first session in 1995 and will continue to meet annually unless decided otherwise. However, various subsidiary bodies that advise and support the COP meet more frequently.

The Convention states that the COP must periodically examine the obligations of the Parties and the institutional arrangements under the Convention. It should do this in light of the Convention’s objective, the experience gained in its implementation, and the current state of scientific knowledge.

2.38 Exchange of Information

The COP assesses information about policies and emissions that the Parties share with each other through their national communications. It also promotes and guides the development and periodic refinement of comparable methodologies, which are needed for quantifying net
greenhouse gas emissions and evaluating the effectiveness of measures to limit them. Based on the information available, the COP assesses the Parties efforts to meet their treaty commitments and adopts and publishes regular reports on the Convention’s implementation.

2.39 Support for Developing Countries

Developing countries need support so that they can submit their national communications, adapt to the adverse effects of climate change, and obtain environmentally sound technologies. The COP therefore oversees the provision of new and additional resources by developed countries.

The third session of the Conference of the Parties adopted the Kyoto Protocol.

2.40 The Flexible Mechanisms

The Kyoto protocol gives the Annex I countries the option to fulfill a part of their commitments through three “flexible mechanisms”. Through these mechanisms, a country can fulfill a part of their emissions reductions in another country or buy emission allowances from another country. There are three flexible mechanisms:

i. Emissions trading

ii. Joint implementation

iii. Clean development mechanism

1) Emissions Trading

Article 17 of the Kyoto protocol opens up for emissions trading between countries that have made commitments to reduce greenhouse gas emissions. The countries have the option to delegate this right of emissions trading to companies or other organisations.

In a system for emissions trading, the total amount of emissions permitted is pre-defined. The corresponding emissions allowances are then issued to the emitting installations through auction or issued freely.
Through trading, installations with low costs for reductions are stimulated to make reductions and sell their surplus of emissions allowances to organisations where reductions are more expensive. Both the selling and buying company wins on this flexibility that trade offers with positive effects on economy, resource efficiency and climate. The environmental advantage is that one knows, in advance, the amount of greenhouse gases that will be emitted. The economical advantage is that the reductions are done where the reduction costs are the lowest. The system allows for a cost effective way to reach a pre-defined target and stimulates environmental technology development.

II) Joint Implementation, Ji

Under article 6 of the Kyoto protocol an Annex I country that has made a commitment for reducing greenhouse gases, can offer to, or obtain from another Annex I country greenhouse gas emissions reductions. These emissions reductions shall come from projects with the objectives to reduce anthropogenic emissions from sources or increase the anthropogenic uptake in sinks. In order to be accepted as JI-projects, the projects have to be accepted by both parties in advance. It also has to be proven that the projects will lead to emissions reductions that are higher than what otherwise would have been obtained. JI-projects are an instrument for one industrial country to invest in another industrial country and in return obtain emissions reductions. These reductions can be used to help fulfill their own reduction commitments at a lower cost than if they had to do the reductions in their own country.

III) Clean Development Mechanism (CDM)

Article 12 of the Kyoto protocol defines the Clean Development Mechanism, CDM. The purpose of CDM is to:

a) contribute to sustainable development in developing countries;
b) help Annex I-countries under the Kyoto Protocol to meet their target.
With the help of CDM, countries which have set themselves an emission reduction target under the Kyoto Protocol (Annex I countries) can contribute to the financing of projects in developing countries (non-Annex I countries) which do not have a reduction target. These projects should reduce the emission of greenhouse gases while contributing to the sustainable development of the host country involved. The achieved emission reductions can be purchased by the Annex I country in order to meet its reduction target.

In order to be accepted as CDM-projects, the projects have to be accepted by both parties in advance. It also has to be proven that the projects will lead to emissions reductions that are higher than what otherwise would have been obtained. The difference between JI-projects and CDM-projects is that JI-projects are done between countries that both have commitments, while the CDM-projects is between one country that has commitments and another country that does not have commitments. Emissions reductions that have been done through CDM-projects during the period 2000 to 2007, can be used for fulfilling commitments in Annex I countries for the period 2008-2012.

2.41 Indian Initiatives on CDM

Government of India has been willing to fulfill its responsibility under the CDM. It has developed an interim criterion for approval of CDM project activities, which is now available to stakeholders. It has undertaken various capacity building activities like holding of workshops, initiation of various studies, and briefing meeting with the stakeholders. India has been actively participating in the CDM regime and has already approved projects for further development.

Under CDM, projects such as energy efficient hydrocarbon refrigerators, modernization of small scale foundry units and renovation, modernization of thermal power stations etc. are being taken up.
2.42 Prototype Carbon Fund (PCF)

Recognizing that global warming will have the most impact on its borrowing client countries, the World Bank approved the establishment of the Prototype Carbon Fund (PCF). The PCF is intended to invest in projects that will produce high quality greenhouse gas emission reductions that could be registered with the United Nations Framework Convention on Climate Change (UNFCCC) for the purposes of the Kyoto Protocol. To increase the likelihood that the reductions will be recognized by the Parties to the UNFCCC, independent experts will follow validation, verification and certification procedures that respond to UNFCCC rules as they develop.

The PCF will pilot production of emission reductions within the framework of Joint Implementation (JI) and the Clean Development Mechanism (CDM). The PCF will invest contributions made by companies and governments in projects designed to produce emission reductions fully consistent with the Kyoto Protocol and the emerging framework for JI and the CDM. Contributors, or "Participants" in the PCF, will receive a pro rata share of the emission reductions, verified and certified in accordance with agreements reached with the respective countries "hosting" the projects.

2.43 Sustainable Development

Sustainable development is often defined as 'development that meets the needs of the present, without compromising the ability of future generations to meet their own needs'.

Sustainable development encompasses three basic and inter-related objectives:

- Economic security and prosperity
- Social development and advancement
- Environmental sustainability
Sustainable development demands that we seek ways of living, working and being that enable all people of the world to lead healthy, fulfilling, and economically secure lives without destroying the environment and without endangering the future welfare of people and the planet.

Sustainable development as applied to energy and environment should consider the following:

• inputs - such as fuels and energy sources, land and raw materials - are non-renewable they should be used up only as far as they can be substituted in future
• where they are renewable they should be used up at a rate within which they can be renewed,
• outputs - in production and consumption - should not overstrain ecosystems or the assimilation capacity of the ecosphere.

Thus it is observed that the world has more than 200 International Environmental Laws, about 6000 bilateral agreements and more than 150 regional legislations. Institutions like the United Nations and its specialized agencies, various international NGO’s, various regional institutions, as also special purpose institutions, facilitate implementation of these environment laws. The single intrentional environmental conference i.e. United Nations Conference on Human Environment, popularly known as Stockholm Conference, has the deepest impact on codification of India environmental laws. These global institutions have generated enough heat at the national level to initate codificaiton of national legislations and their early, effective implementation.