

M. Monirul Qader Mirza

**FRAMEWORK CONVENTION ON CLIMATE CHANGE
AND CONVENTION ON BIOLOGICAL DIVERSITY :
IMPLICATIONS FOR THE SOUTH WITH SPECIAL
REFERENCE TO BANGLADESH**

Sustainable development and the protection of environment are two priority issues for the well-being of people throughout the world. Over the period after Stockholm Conference on "Human Environment" held in 1972, concern has been mounting on the gradual degradation of environment both in developed and developing countries. The pattern of consumption and production in the developed countries has been identified as the principal sources of current emission of pollutants, including toxic and hazardous wastes, whereas increasing population, poverty and underdevelopment continue to add to the process of the global environmental degradation.

In 1989, United Nations General Assembly recognized the global environmental problems - climate change, ozone layer depletion, transboundary air and water pollution, contamination of the oceans and seas etc., as the principal environmental problems of the World . The Assembly decided to organize a global conference to address these problems and to recommend policy measures and financial plan for implementation of action programmes, aimed at the protection and preservation of the global

M. Monirul Qader Mirza, Research Fellow, Environmental studies Desk BIISS.

environment. The conference which came to be known as the United Nations Conference on Environment and Development (UNCED) was held in June 1992 in Brazil. The Framework Convention on Climate Change and Convention on Biological Diversity considered to be the most important outcomes of the UNCED have been signed after prolonged negotiations. The Conference was held in the backdrop of heightened international expectations on the prospect of adoption of specific measures to arrest the process of environmental degradation. It is widely viewed, however, that the UNCED failed to live upto the expectations. There is criticism that interests of the South have been sacrificed particularly in relation to the two Conventions which have also re-affirmed the dominance of the North over the South.

In this article an attempt has been made to analyze the Framework Convention on Climate Change and Convention on Biological Diversity from the perspective of the interest of the developing countries. In the first section the problem of climate change is briefly reviewed followed by analysis of the Convention and its implications for the countries of the South including Bangladesh. The second chapter focuses on biological diversity and its importance for mankind, and causes of destruction, before analyzing the salient features of the Convention and its implications while the third chapter presents some recommendations that may be included in the post UNCED action programmes for Bangladesh.

I. GLOBAL CLIMATE CHANGE AND FRAMEWORK CONVENTION

There are by now convincing evidences to suggest that the global climate is changing. Over the last 100 years, global mean surface air temperature has increased by 0.3 to 0.6°C, with five global average warmest years in the 1980s. Over the same period global sea-level increased by 10 to 20cm. However these increases have not been smooth in time, nor uniform over the globe.¹

1. For more details see Intergovernmental Panel on Climate Change (IPCC), *First Assessment Report, Overview and Policy-maker Summaries*, Geneva, 1990.

Intergovernmental Panel on Climate Change (IPCC)² predicted global mean temperature rise under four Scenarios.³ Under "Business-as-Usual" scenario (with 100% 1990 emission), average rate of increase of global temperature during the next century would be about 0.3^o C per decade (with an uncertainty range of 0.2-0.5^o C per decade). This predicted rate of increase is more rapid than seen over the last 10,000 years. This will result in a likely increase in the global mean temperature of about 1^o C above the present value (1990) by 2025 (about 2^o C above the pre-industrial period, and 3^o C above today's (1990) before the end of the next century (above 4^o C above pre-industrial).⁴ Due to some other associated factors this rise will not be steady as experienced in the past.

The industrial revolution of Europe accelerated the atmospheric concentrations of several greenhouse gases e.g., Carbon dioxide (CO₂), Methane (CH₄), Chlorofluorocarbons (CFCs), Nitrous Oxide (N₂O), etc. Other greenhouse gases excepting CFCs have been traced on the earth by laboratory testing of ice cores collected from Antarctica. Several of the greenhouse gases have long atmospheric lifetimes, decades to centuries.

The atmospheric concentration of carbon dioxide was at 353 ppmv (parts per million volume) in 1990 which was about 25 percent greater than the pre-industrial concentration value of 280 ppmv. This value is higher than any concentration in the last 160,000 years.⁵ Carbon dioxide is currently rising at about 1.8 ppmv (0.5%) per year due to anthropogenic

2. In 1988, the United Nations General Assembly adopted resolution 43/53 recognizing Climate Change as a Common concern of humanity. That year, the UN Environment Programme (UNEP) and the UN World Meteorological Organization (WMO) set up the Intergovernmental Panel on Climate Change (IPCC) to investigate the potential severity and impact of Global Climate Change and to suggest possible policy responses. IPCC Published First Assessment Report in August 1990.

3. IPCC (1990) Considered four Scenarios for their assessment:

Scenario A (Business-as-Usual): 100% 1990 emissions

Scenario B : 50% of emission

Scenario C : 2% per annum decrease from 2010

Scenario D : 2% per annum decrease from 1990.

4. IPCC, 1990, *op. cit.*, p. 6.

5. IPCC, *Scientific Assessment*, Cambridge University Press, U.K., 1990.

emissions. With current rate of emission, atmospheric CO₂ would increase to 415-480 ppmv by the year 2050, and to 460-650 ppmv by the year 2100.⁶ Concentration of different greenhouse gases is shown in table I.

Table I : Atmospheric Concentration of Some Greenhouse Gases in 1990.

	Carbon Dioxide (ppmv)	Methane (ppmv)	CFC-11 (pptv)	CFC-12 (pptv)	Nitrous Oxide (ppbv)
Pre-industrial (1750-1800)	280	0.8	0	0	288
1990 level	353	1.72	280	484	310
Rate of change per year	1.8 (0.5%)	0.015 (0.9%)	9.0 (4%)	17 (4%)	0.8 (0.25%)
Atmospheric lifetime(years) ⁷	50-200	10	65	130	150

ppmv = parts per million by volume;

ppbv = parts per billion by volume;

pptv = parts per trillion by volume.

Source : IPCC(1990), *Scientific Assessment*, Cambridge University Press, U.K.

The concentration of methane is increasing at a rate of about 0.015 ppmv(0.9%) per year. Human activities such as rice cultivation, domestic ruminant rearing, biomass burning, coal mining and natural gas venting

6. IPCC, *op. cit.*

7. The way in which CO₂ is absorbed by the Oceans and biosphere is not simple and a single value cannot be given. For more details see IPCC's *Scientific Assessment op. cit.*,1990.

have increased the input of methane into atmosphere. However, there is strong debate about contribution of methane from rice fields. There is no consensus as yet about quantum of methane being contributed from rice fields. The US Environmental Protection Agency (USEPA) held India responsible for an annual production of 38.4 million tons of methane from rice paddies. But research carried out by the Council for Scientific and Industrial Research (CSIR) New Delhi found that the figure is 3.4 million tons.⁸ The USEPA assumed 120 days inundation for rice harvesting in India. However, Indian Scientists feel that on average 60 days inundation period is sufficient. They have found that amount of methane production is dependent on two factors: (a) soil type and (b) period of submergence of rice roots in stagnant water. Research of CSIR also indicates that upland soils produce negligible methane emissions. On the other hand alkaline saline soils produce considerably more methane per hour.⁹

There is also controversy regarding net emission of greenhouse gases by developed and developing countries. World Resources Institute (WRI) published a report¹⁰ in 1990 which noted India, China and Brazil amongst the top five countries responsible for the accumulation of greenhouse gases in the earth's atmosphere. But New Delhi based Centre for Science and Environment (CSE) challenged the basis of calculation of WRI and they tabled a different set of data.¹¹ Calculation of both the institutions is shown in table-II.

8. "Greenhouse Gases: Atmospheric Chemistry Shifts Blame Around", *Down to Earth*, May 31, 1992, p. 37.

9. *Ibid.*, p. 37.

10. World Resources Institute, *World Resources 1990-91*, 1991, Washington, D.C., USA.

11. Anil Agarwal and Sunita Narain, *Global Warming in an Unequal World: A Case of Environmental Colonialism*, Centre for Science and Environment, New Delhi, 1991, p. 14

Table II : Distribution of Annual Net Emissions of Industrialized and Developing Countries of all Greenhouse Gases.

Region	Percentage of global net Emissions(WRI) (%)	Percentage of global Net Emissions(CSE) (%)
Industrialized Countries	52.60	66.95
USA	16.95	27.44
Japan	3.90	2.51
Western Europe	14.32	11.89
Eastern Europe	4.32	4.54
USSR (former)	11.70	13.08
Australia	1.07	2.00
Developing Countries	47.40	33.05
India	3.90	0.013
China	6.44	0.57
Brazil	10.34	18.21
Asia (excluding Japan)	21.69	7.97
Africa (excluding South Africa)	4.69	3.04
Americas (excluding USA & Canada)	16.61	22.03

Source: Anil Agarwal and Sunita Narain, *Global Warming in an Unequal World : A Case of Environmental Colonialism*, Centre for Science and Environment, New Delhi, 1991, p. 14.

Although there are controversies regarding emission of greenhouse gases by both developed and developing world, as Table-II depicts, the developed world is the main emitter. The role of India and China is much less that what is shown in the calculation of WRI. On the other hand, USA itself emits about 28 per cent of global net emission. This calculation was done on the basis of data available in 1988.

The concentration of greenhouse gases in the atmosphere is increasing but its rate of emission cutoff may reduce the concentration. IPCC's B-a-U scenario envisages an increase in greenhouse gases equivalent to a doubling of the Carbon dioxide content of the atmosphere from pre-industrial levels by about the year 2030. A lower level emission could delay it until 2020. By 2030 the relative contribution of CO_2 to the global warming may be declined to 50 percent compared to 61 percent calculated in 1990. But contribution of other greenhouse gases may be increased as evident from Table-III. It is difficult to assess the historical rate of deforestation. Probably until the mid-20th century, temperate deforestation and the loss of organic matter from soils made significant contribution to atmospheric Carbon dioxide compared to burning of fossil fuels. Gradually, however, fossil fuels have become dominant; one estimate shows that around 1980, 1.6 Gtc was being released annually from the clearing of tropical forests while, emission from fossil fuels was 5 Gtc. So, currently, CO_2 emission from fossil fuel is about 400% greater than contribution of tropical forests. If all tropical forests were removed the estimated addition of Carbon to the atmosphere would be 150-240 Gtc, resulting in increase of atmospheric Carbon-dioxide by 35 to 60 ppmv.¹² In any case, there is no doubt that the world is firmly on the track of doubling of the equivalent Carbondioxide content of atmosphere sometime in the early to middle decades of the next century if measures are not formulated and action programme are not launched to reduce the emission.

Possible change of climate will have disastrous effect on Agriculture and forestry, natural terrestrial ecosystems, hydrology and water resources, human settlements, energy, transport and industrial sectors, human health and air quality, oceans and coastal zones, seasonal snow cover, ice and permafrost.

12. Panos Institute, *Global Warming who is Taking the Heat?*, 1991.

Table-III : Estimates of Relative Contributions to the Greenhouse Effect by Sector and Gas 1980-2030

Sector	Carbon dioxide	Methane	Ozone	Nitrous Oxide	CFCs	Sectoral contribution(%)
Energy	35	4	6	4	0	49
Deforestation	10	4	0	0	0	14
Agriculture	3	8	0	2	0	13
Industry	2	0	2	0	20	24
Total(1980-2030)	50	16	8	6	20	100
1991	61	15	n.a.	4	11	-

Source : UNEP/BEIJER INSTITUTE 1989 and IPCC (1990).

Climate change may alter the pattern of agriculture and production of developing countries. Any reduction in rainfall would badly affect the poor farmers of the arid and semi-arid areas of sub-Saharan Africa, northeast Brazil, and parts of India and Pakistan. Countries dependent on monsoon rain like India and Bangladesh, will be in serious trouble if there is any shift of monsoon season or reduction of rainfall. However, excessive monsoon rainfall may cause floods over vast river basins. Impact of flooding will also be colossal. So regarding climate change South Asia is on a two edge sharp knife. But studies have not yet determined conclusively whether, on average, global agricultural potential will increase or decrease.

Water resources is an important element of socio-economic development specially in the agro-based societies. Small climate change may cause large change in water resources sector. Change in water resources availability will effect agriculture, hydropower generation and natural

disasters. A 1^o C to 2^o C temperature increase, coupled with a 10% reduction in precipitation could produce a 40-70% reduction in annual run-off.¹³ Regions such as South-east Asia, that are dependent on unregulated river systems, are particularly vulnerable to hydrometeorological change. But for Western USSR and United States, the water resource systems are expected to be less sensitive to the hydrometeorological changes as those areas have regulated river systems.

Human population living on coastal and flood plains are prone to flooding, drought, landslides, severe wind storms and tropical cyclones will be most vulnerable to climatic change. In coastal low lands such as Bangladesh, China, Egypt, as well as in small island nations like Maldives inundation caused by rising sea level may lead to huge displacement of population. Shortage of food, clean water, sanitary facilities will generate tremendous health impact coupled with economic crisis. Global warming is expected to affect the sources of biomass energy in many developing countries. Energy shortage will also affect the transport, and industry sectors.

Sea level rise will modify the ocean circulation and change marine ecosystems. IPCC predicted under "B-a-U" scenario, a global mean sea-level rise of 18 cm higher than today by 2025. By 2075 and 2100, the expected rise is 44 and 66 cm respectively.¹⁴ However, there is a number of uncertainties in the projections but undoubtedly rising of sea level will bring a series of severe setbacks to the economically and technologically weak nations. A 1m. rise could lead to loss of 10 percent lands of Bangladesh.¹⁵ The impact will be much more severe if the intensity and frequency of cyclonic storms and surges are increased along with sea-level rise. Coastal protection will involve significant investment. But protection of many parts of coastal region may not be possible, and especially the

13. Intergovernmental Panel on Climate Change, *IPCC Assessment Report: Overview and Policymaker Summary*, Geneva, p.54.

14. IPCC, *Global Climate Change and the Rising Challenge of the Sea*, Geneva, 1992, p.7

15. *ibid*.

Sundarbans, the largest mangrove forest of the World is considered to be severely threatened.

Global climate change will certainly be a threat to both developed and developing countries. But for the developing countries, the consequences may be colossal. Developing countries do not have enough resources for protecting sea-level rise or to take up mitigatory measures to fight the problem. In the coming decades, in the context of global economic and political changes, there is little prospect of improvement of economic environment in the developing countries. Considering the extent of damage to be caused by climate change and sea-level rise, scientists have warned the politicians and policy makers to cut down the emission to a certain level to reduce the magnitude of the disaster.

The question is, who is contributing more to the greenhouse gas emission process? Undoubtedly the lion's share of the emission comes from the developed countries. North America alone consumed 25% of global fossil fuel in 1990, while only 6 percent of the world population live there. The former USSR and Eastern Europe rank second and consumed 22%. The share of Western Europe is 16.4 per cent. China consumed 9.2 percent while it contains 20 per cent of World's population. India consumed only 2.4 percent.¹⁶

Per capita energy utilization in developing world is much less than developed countries. Developing countries' contribution to greenhouse gas emission generally comes from deforestation of tropical forest. It is estimated that each year 2Gt(10^9 tons) of carbon is released to the atmosphere due to tropical deforestation.¹⁷ On average 28 percent land area of developing countries is covered with forest and rate of deforestation in the period 1980-90 was 1.1 per cent.¹⁸ Deforestation in many developing countries such as in India and Brazil is going down. Over a four year period

16. Panos Institute, *Global Warming: Who is Taking the Heat?*, 1991, *op. cit.*, p. 72

17. IPCC, *op. cit.*

18. UNDP, *Human Development Report 1992*, p. 172-173.

between 1981-83 and 1985-87, forest loss has gone down by 3 percent annually in India. During 1980-88, annual rate of deforestation in Bangladesh is estimated to be 3.53 per cent. Conspicuous deforestation occurred in the Unclassified State Forest(USF) of the Chittagong Hill Tracts where during the same period the recorded deforestation was 7.10 per cent annually.¹⁹ The ecological balance in Nepal is at stake due to deforestation. In 1954, one FAO expert estimated 33.3 per cent compared to 47.6 per cent estimate of the Government. Currently, it is estimated that Nepal has 42 percent forest cover.²⁰ World Bank estimated 4.3 per cent annual deforestation in Nepal during 1970-80.²¹ In 1987 loss of total Amazonian Forest in Brazil was 2.4% which came down to 0.6 percent in 1988.²² In recent years, awareness about the consequences of deforestation has increased. However, social and economic issues relating to tropical deforestation have to be considered for understanding the reality of this particular phenomenon.

Climate Change Convention : Equity and Responsibility

The Forty Fourth Session of the UN General Assembly in 1989 underscored the need of a "Framework Convention" as it found then the existing legal instruments and institutions were insufficient to deal with climate change.²³ In December 1990, General Assembly constituted Intergovernmental Negotiating Committee (INC) for a "Framework Convention on Climate Change" with support from UNEP and WMO. The INC continued negotiations on the proposed convention parallel with the Preparatory Committee Meetings of the UNCED.

19. Bangladesh Bureau of Statistics(BBS), *Statistical Year Book 1991 and 1982*.

20. *From the Summit of the Earth to the Earth Summit*, A report of the Nepalese Independent Sector to the UNCED, June 1992, p.5

21. World Bank, *A Strategy for Asian Forestry Development*, 1991.

22. Anil Agarwal and Sunita Narain, *op. cit.*, p. 4.

23. UNCED Secretariat, *Earth Summit: Press Summaries on Climate Change Convention, Biodiversity Convention, Rio Declaration and Forest Principles*, Geneva, 1992. p.1.

The INC faced disputes concerning the specific targets and timeframe for reduction of carbon-dioxide and other greenhouse gases. Different proposals were tabled for negotiation. Japan and European Community proposed to stabilize emissions at 1990 levels by the year 2000 while USA was for voluntary reduction as it stated that scientific evidences were insufficient for drawing a specific conclusion regarding climate change.²⁴ Other relevant issues negotiated were financial aid to the developing countries, payments to these developing countries having "Sinks" ("sink" means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere) for carbon dioxide and export of environmentally sound technology to the developing countries. A long and complicated process of negotiation resulted in the conclusion of the "Frame Work Convention on Climate Change" signed by the 154 countries in June 1992 during the UNCED in Rio de Janeiro.

Principles of the Convention

The Convention was finalized based on the following principles.²⁵

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.
2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

24. *Ibid*

25. UNCED Secretariat, *Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the Work of the Second Part of its Fifth Session*, held at New York from 30 April to 9 May 1992, p. 5.

3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and compromise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

The signed Convention is not a strong commitment in order to reduce the danger of greenhouse effect for present and future generations. Although it has been agreed that change in the Earth's climate and its adverse effects are a common concern of humankind,²⁶

The responsibility of polluting the environmental space by the developed countries was not admitted in the Convention. It has already been mentioned that contribution of industrialized countries to the global

26. UNCED Secretariat, *op. cit.*, p. 2.

greenhouse gas emission is about 67 percent compared to 33 percent of the developing countries. The developed countries have found the escape route to ignore their responsibilities although developing countries specially the G-77 tried hard to incorporate these in the final document. At this stage the developed world with its huge political, economic and military forces has a tendency to impose various types of restrictions on the developing countries aimed at limiting emission of greenhouse gases. On the other hand, despite the urgency being faced by the Earth due to climatic change, the whole logic and morality of differential responsibility have been thrown out.²⁷

It is mentioned in the Convention that all Parties shall develop, periodically update, publish and make available to the Conference of the Parties the national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties.²⁸

This implies transparency regarding free flow of information among all participating countries. It is obvious, however, that transparency can be achieved only when comparable methodologies can be worked out which is still wanted. The Convention simply recognizes "... with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol". The stated deadline for the return to 1990 level is the end of the present decade. But there is no indication as to how contracting Parties would "individually" and "or jointly" specifically contribute to this process. This has to be worked out through negotiation which is yet to start and there is no recent development in this respect. There is, moreover, no indication about the expected level of emission after 2000.

27. R. K. Pachuri, "The Climate Change Convention --- What it May Mean for the Poor", *Network*, August-September, 1992, Geneva, p. 14.

28. Montreal Protocol on Substances that Deplete Ozone layer includes : CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, HCFC-22, Halon 1211 and Halon 1302.

No specific targets in terms of level of emission has been incorporated in the Convention. What is the tolerable limit of greenhouse gases emission ? This level has to be worked out by the Scientific Community before enforcing the Convention. OECD countries need immediate reduction of 356.06 million tonnes of carbon emissions just to reach the energy efficiency levels of Japan. In order to eliminate the threat of global warming completely, the concentration of greenhouse gases should be reduced to pre-industrial level which is now impossible to achieve.²⁹ The IPCC recommended the reductions of anthropogenic emissions of greenhouse gases required to stabilize the concentrations at (1990) level which is given in table-IV.³⁰

Table IV : Reduction limit of man-made emissions of greenhouse gases for stabilizing the concentration at 1990 level.

Carbon- dioxide	> 60%
Methane	15-20%
Nitrous Oxide	70-80%
CFC-11	70-75%
CFC-12	75-85%
HCFC-22	40-50%

Source : IPCC(1990), *Scientific Assessment*, Cambridge University Press, U. K.

The signing of the "Framework Convention on Climate Change" is an important first step towards reducing the level of greenhouse gases emission which is indispensable in order to make our planet free from "climate change induced" danger. But there is clearly a long way to go before achieving the desired goal. The Climate negotiations have just began. What was signed in Rio was simply a framework convention. It just says

29. Panos Institute, *op. cit.*, 1991, p. 51.

30. IPCC, *op. cit.*, p. 23.

that all nations should protect the world's atmosphere. It is not clearly known what actions need to be taken. It is yet to be decided what type of control measures need to be adopted in the use of energy resources. Furthermore, it remains unknown what will be the share of burdens of the developed countries compared to that of the developing ones. The success in the implementation of the Convention would depend on answers to such questions. In the meantime, the implications of the Convention on the developing countries are worth examination.

Implications for Developing Countries and Bangladesh

In the negotiation process developed countries have managed to escape from admitting the responsibility of and compensation for polluting the environmental space of the developing countries. Till 28 February 1992, the draft of the "Framework Convention" recognized "Greenhouse gas emissions have come primarily from developed countries, and those countries have the main responsibility for combating climate change".³¹ This was, however, deleted from the text of the Convention in the latter part of the negotiations.

The main dilemma relating to the "Framework Convention" is the continuing need for high rate of economic development through industrialization on the one hand and that of control of emission on the part of the developing countries.

The dilemma is recognized by the Convention which mentions that "...the share of global emissions originating in developing countries will grow to meet their social and development needs". There is no indication in the Convention for how long the accelerated emission from the developing countries will be allowed and at what level it will be stopped. There is an urgent need to define the "sustainable development limit" for the developing countries with their finite and renewable resources without causing any ecological disaster. The Brundtland Commission suggested that an average

31. UNCED Secretariat, *Earth Summit: Geneva, op. cit, 1992.*

national income growth of 5 per cent per year in developing economies of Asia, 5.5 percent in Latin America and 6 per cent in Africa and West Asia may be able to generate some substantial impact on poverty.³² There is no denying that this can be achieved with higher level of industrialization which is the main source of emissions. On the other hand, cutting of emission will generate impact on industrialization in two ways. (a) additional funding will be needed to modernize the existing industrial units to lower down the emission and, (b) the scope of setting up of new industrial units will be significantly limited in the face of the need for maintaining the overall tolerable level of emissions. The combined outcome of both is contradictory to the sustainable development objective of the developing countries.

So there exists some uncertainty regarding the future of industrial development in developing countries. As tolerable level of emission and necessary emission cut through introducing efficient energy use technology are yet to be indicated in the convention, there is scope of unbalanced emission cut like curtailment of ozone depleting materials under Montreal Protocol. The Protocol treats 1986 as the base year for industrialized countries and expects their 1995 consumption to be just 50 per cent of the base year. The base year for developing countries under the Protocol is the average consumption of 1995-97. The percapita consumption of India in 1996, for example, is estimated to be less than 0.01 kg., which is one-fiftieth of the US consumption in that year. But, Montreal Protocol requires India to first freeze its CFC consumption, at its 1995-97 level and then begin cutting back. Equity would demand that industrialized countries begin by cutting back rapidly until they reach the levels of developing countries and then all countries start cutting back at the same rate.³³

The Convention Committed to give special attention to the countries of following categories to implement actions mentioned in the Convention.

32. World Commission on Environment and Development, *Our Common Future*, 1987, p. 50.

33. Anil Agarwal and Sunita Narain, "Post-Rio : A Handful of Aces for the North", *Down to Earth*, 15 December, 1992, New Delhi p. 28.

particularly in relation to funding, insurance and transfer of technology: (a) Small island countries (b) Countries with low lying coastal areas; (c) Countries with arid semi-arid areas, forested areas and areas liable to forest decay ; (d) Countries with areas prone to natural disasters; (e) Countries with areas liable to drought and desertification; (f) Countries with areas of high urban atmospheric pollution; (g) Countries with fragile ecosystems, including mountainous ecosystems; (h) Countries whose economies are highly dependent on income generated from the production processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and (i) Land-locked and transit countries.

Bangladesh falls within category (b) and (d). There is no mention about climate change induced sea level rise . Will all countries having low-lying coasts be given equal treatment or to be decided on the basis of vulnerability, economic capability and technological base? This also has to be worked out.

Financial commitments made by the industrialized countries are not strong enough. The industrialized countries have made following commitments for implementing the necessary Action Programmes (which are yet to be formulated) of the Convention.

(a) The developed country Parties and other developed countries shall provide new and additional financial resources to meet the agreed full costs incurred by developing countries Parties in complying with their obligations under Article 12, Para 1 (developing a national inventory of anthropogenic emissions by sources and removals by sinks)

(b) They shall also provide such financial resources, including the transfer of technology, needed by developing country Parties to meet the agreed full incremental costs of implementing measures agreed between a developing country Party and the international entity or entities referred to in Article 11 (financial mechanism).

There is no agreement on transfer of resources to meet up the cost, estimate, even a rough estimate has not been prepared, and no consensus was reached about the sharing of the burden. On the other hand, the

Convention stipulates that the Conference of the Parties will determine in a predictable and identifiable manner the amount of funding necessary and available for the implementation of this Convention and the conditions under which that amount shall be periodically reviewed. The provision makes the process of funding at best flexible and any disagreement in the Conference may stop the release of funding to the developing countries.

Financial Mechanism is an important issue for the implementation of the Convention. In the Convention (Clause 1 Article 11) it is defined as "a mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology". The Convention further states that this mechanism "shall have an equitable and balanced representation of all Parties within a transparent system of governance".

"It (the financial mechanism) shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities".

The prerequisites for transparent system of governance have not been defined. The operation of the financial mechanism has been made dependent on the Conference of the Parties and possibility of entrusting with one or more existing international organization is ensured. It leaves the scope of further negotiation.

The Convention identified the Global Environment Facility (GEF) of the United Nations Development Programme (UNDP), United Nations Environment Programme and the International Bank for Reconstruction and Development (IBRD) for the operation of financial mechanism for the interim period. But the length of the interim period and status of such mechanism are undefined. The structure of the GEF is not democratic³⁴ and any interested country may become its member paying subscription

34. M. Monirul Qader Mirza, "Many Faces of Environmental Colonialism", *Holiday*, June 19, 1992, Dhaka.

and membership is not mandatory for UN or IBRD members. However, the Convention states that "Global Environment Facility should be appropriately restructured and its membership made universal to enable it to fulfill the requirement of Article 11" (Financial Mechanism). An Agreement was reached on 30th April 1992 in Washington on restructuring of the GEF by thirtytwo governments, about half of which were from the developing countries. Decision was taken in the meeting that restructured GEF will incorporate the following changes:³⁵ The GEF would provide additional grant and concessional funding of the agreed incremental costs for achieving agreed global environmental benefits; would finance activities which benefit the global environment. It should continue to support its current four focal areas: reducing global warming, protecting international waters, preserving biological diversity, and preventing further depletion of the stratospheric ozone-layer. Land degradation issues, primarily desertification and deforestation, as they relate to the focal areas of the Facility, would be eligible for financing; is available to function as the funding mechanism for agreed global environmental conventions, should the Parties to those conventions so desire; would assure the cost-effectiveness of its activities in addressing the targeted global environmental issues; would build on proven institutional structures, thus avoiding the creation of new institutions; must be transparent and accountable to contributors and beneficiaries alike; and would have sufficient flexibility to introduce modifications as the need arises.

It was decided that governance of the restructured GEF would reflect these principles. Universal membership is seen as the key to the Facility's success. The GEF participating governments would form a Participant's Assembly that would normally take decisions on the basis of consensus. When this does not prove possible, a voting system would be used that guarantees an equitable representation of the interests of developing countries while giving due weight to the funding efforts of donor countries. To ensure that deliberations do not become unwieldy, participants agreed that a constituency system might be necessary.

35. Global Environment Facility, *Network '92*, Number 17, May 1992.

The Convention recognizes that the implementation of action programmes by developing countries will be made conditional upon how the developed countries would be committed to do their share. The Convention stipulates: "The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology ... ". However, while developing countries will remain dependent on the goodwill of the developed countries for the financial or technical support, it is merely on a voluntary basis that the latter are likely to extend such support. In the absence of any specific criteria for the transfer of such critical resources from the developed to the developing countries, prospect of implementation of the Convention remains doubtful. There is an imperative need of reaching a consensus by developed countries under one forum regarding extension of support to developing countries based on certain criteria which will ensure equity for each developing country free from political pressure. At present it is not clear whether such support is uniform in nature and quantum by all donors and for all recipients, or would be decided upon by individual donor agency(s) or country (s) or both and on the merit of the cases concerned.

One other area which remains unresolved is the debate over the agricultural activity particularly in relation to the emission of methane from rice fields and livestock rearing. There is disagreement about methane emission contributed by rice-fields. Data collected by the Council for the Scientific and Industrial Research (CSIR), India, has indicated that methane emissions from wet rice cultivation in India is three to nine million tonnes every year, whereas the calculation of World Resources Institute (WRI) is 18 million tonnes and IPCC's estimate is 7-9 million tonnes.³⁶

36. Anil Agarwal and Sunita Narain, *Global Warming in an Unequal World: A Case of Environmental Colonialism*, New Delhi, p.7

Developing countries including Bangladesh have to increase the productivity of land as well as move towards intensive farming for feeding huge population in the years to come. By the year 2000 and 2025 population of Bangladesh may be roughly 128 and 176 millions requiring annually 25 and 34 million metric tons of food respectively.³⁷ Even if all arable lands of the country are brought under cultivation³⁸ per hectare land productivity with present cropping intensity has to be increased by 30 percent and 70 per cent respectively. Land productivity can be increased by (a) introducing sophisticated technology, with better land and water management, and (b) introducing crop variety with higher yielding capability, resistance to pest attack and tolerance against flood water. Now if any quota is imposed on any developing country under the Convention that will force the country to limit its rice cultivation, the people will have to starve or will have to import huge quantities of food which the country cannot afford.

II. BIOLOGICAL DIVERSITY : IMPORTANCE FOR MANKIND

The term "Biological Diversity" refers to the variety of genes, species and ecosystems found on our planet. It includes all life forms - from plant and animal life to micro-organisms and the water, land and air in which they live and interact. Biological resources feed and clothe us and provide housing, medicines, and spiritual nourishment. The natural ecosystems of forests, savannahs, pastures and range lands, deserts, tundras, rivers, lakes and seas contain most of the Earth's biodiversity in three levels: Genetic diversity, species diversity and ecosystem diversity.³⁹

Very little is known about the vastness of biological diversity. The extent of genetic diversity cannot be quantified. The science of examining the gene sequences is still in its infancy and genetic variation within a species at present can be detected by physical characteristics and biochemical examination.

37. Based on 485 gm/capita day with 10% additional as wastage.

38. 9.03 million hectares according to Master Plan Organization, Government of Bangladesh, *Final Report*, 1986

39. For more details see, Worldwide Fund For Nature(WWF) , *The Importance of Biological Diversity*, p. 5.

Scientists have so far identified and named about 1.4 million species of living organisms. Of these, around 1.03 million are animal and 248,000 are higher plants.⁴⁰ Among the groups of living species, most completely known groups are birds and mammals. Until recent times, 9000 and 4000 species of birds and mammals respectively have been identified, which together account for less than 1% of all known species. Most of the species are unknown. It has been estimated that there are at least 5 million and by another estimate as many as 100 million species on Earth.⁴¹

Table V : Numbers of Identified Species of Living Organisms⁴²

Group	Common Name	Total
Virus	Viruses	1,000(approx.)
Monera	Bacteria or Blue-green Algae	4,760
Fungi	Fungi	46,983
Algae	Algae	26,900
Plantae	Lower Plants	28,428
	Higher Plants	220,000
Protozoa	Protozoa	30,800
Invertebrata	Lower invertebrates	106,300
	Insects	751,000
	Other Anthropods	123,161
	Other Invertebrates	9,300
	Chordata	Lower Vertebrates
	Fish	19,056
	Amphibians and Reptiles	10,484
	Birds	9,040
	Mammals	4,000
Total :		1,392,485

40. E. O. Wilson, (ed.), *Biodiversity*, National Academy Press, Washington D.C., 1988, p. 521.

41. UNCED Secretariat, "Conservation of Biological Diversity," in *Agenda 21*, 1992, p. 107.

42. E.O. Wilson, *op. cit.*, p. 53.

Tropical rainforests covers only 14 percent of land surface of the Earth. But this forest area is very rich with biological diversity. It is estimated that at least half of the species of the Earth is in the tropical rainforests. Most of these species are yet to be named or studied. One hectare of rainforest typically contains 50-150 tree species with notable variations like Malaysian rainforests which have 220 species.⁴³ It's rainforests have about 14,500 species of flowering plants, well over 200 species of mammals, 600 species of birds, 140 species of Snakes, 150 species of frogs and thousands species of insects.⁴⁴

Amazonia's tropical forests which cover only 7 percent of the Earth's surface and contains more than half of all biota,⁴⁵ features 60,000 species of higher plants, 2,500,000 species of arthropods, 2,000 species of fish and 3,000 mammals.⁴⁶

Importance of biological diversity for the survival of the human race as well as the rest of the living creatures on the earth can hardly be over emphasized. The three forms of biological diversity, e.g., genetic, species and ecosystem, significantly contribute to agricultural systems. 75 percent of human nutrition is provided by just seven species. Wheat, rice, maize, potato, barley, sweet potato and cassava among which 50 per cent is contributed by the first three. The potential contribution of biological diversity as the sources of food for future generations is immense. In this context important varieties are: The Yeheb nut bush (*Cordeauxia edulis*), the Wax gourd (*Benecasa hispida*), the Winged bean (*Psophicorpus tetragonolobus*) etc. About ten widely consumed fruit species are produced by temperate zone plants whereas tropics supply as many as 200 fruit varieties. Wild genes can help developing disease resistant improved variety.

43. Ministry of Primary Industries, Malaysia, 1992, *For EverGreen: Malaysia and Sustainable Forest Management*, 1992, p. 22.

44. *ibid.*

45. E. O. Wilson, *op. cit.*, p. 3-18.

46. Salati, E., *Clima actual depende da floresta*, rom Salati, E. (ed.) *Amazonia : Desenvolvimento, integracao ecologica*, 1983, pp. 15-44, Brasiliense, Sao Paulo, Brazil, cited in, *Amazonia : Without Myths*, Commission on Development and Environment for Amazonia, IDB, UNDP and Amazon Cooperation Treaty, 1992, p. 13.

Contribution of biological diversity to industries is immense. Rubber tree (*Hevea brasiliensis*) was introduced in Southeast Asia from Brazil in 1877. On average year, Malaysia, Indonesia and Thailand earn more than US\$ 700 million by exporting rubber to USA. Biological diversity is the principal source of starch and oils. Natural starches and oils are used in a wide variety of ways:

Natural starches are used in fabrics, glue, soaps, cosmetics, medicines, numerous prepared foods, photographic films, explosives, colourings, car tyres, plastics, several industrial processes and even the preservation of blood plasma.

Natural fats and oils contribute to chemical manufacture, cosmetics, adhesives, inks, rust preventors and other coatings, foods, beverages, lubricants, polishes, linoleum, sunscreen compounds and a whole variety of medicines.

Contribution of timber to world trade is one of the largest. Yearly trade value is US\$ 40 billion. Next is fishery products worth US\$ 12 billion a year.

Some tropical plants help developing bio-pesticide due to its natural chemical defenses. In India, some companies have marketed four Neem (*Azadirachta indica*) based pesticides.⁴³ Even today, Malaria is considered as a deadly disease in the tropics. Quinine, the successful alkaloid from the bark of *Cinchona* tree, was first isolated in 1820 and spread over throughout the world for the treatment of Malaria.

From time immemorial people have been dependent on different plant species for medicinal purpose. In Amazonia, 1300 plant species being used for medicinal purposes by indigenous people. India is rich in species diversity. It is estimated that in India there exist 45,000 plant species of which 15,000 are flowering plants. Estimates of other plant taxa include 5,000 species of algae, 1600 lichens, 20,000 fungi, 2700 bryophytes and 600 pteridophytes. There are about 75,000 species of animals including 50,000 insects, 4,000 molluscs, 2,000 fishes, 140 amphibians, 420

reptiles, 1200 birds and 340 mammals and other invertebrates.⁴⁷ In Southeast Asia approximately 6500 and in India 2500 plant are used by traditional healers. In China over 5000 medicinal plants have been catalogued of which some 1700 are in common use. World health Organization (WHO) estimates that 80% of the people in developing countries rely on traditional medicine.⁴⁸

Causes of Destruction of Biological Diversity

Increasing human population in developing countries is considered as the most important factor for the reduction of biological diversity. Since a large section of the population of developing countries is poor and can hardly collect materials to support their life, so, they generate pressure on natural resources. Increased population living generally in and around of forest lands enter into the forest to collect forest products. Sometime illegal encroachments made by wood traders may emerge as a big threat to the biological diversity. With the objective of protecting wildlife and earning foreign currency through promoting tourism Kenya has, for example, allocated 6 percent of its territory as parks and reserves. But these parks and reserves are threatened by more than 20 million population.⁴⁹ Like Kenya, increasing population pressure is becoming a threat to the parks and reserves in Ethiopia, Uganda, Zimbabwe, etc. where large section of population is dependent on extraction of resources from forest.

But only the local demand is not responsible for diversity destruction. Consumption pattern of the North leads wildlife destruction in Africa. African ivory has large demand in the North. This encourages poor African for killing elephants through illegal encroachments.

Farming and ranching is another important cause of destruction of biodiversity. This practice is expanding in Amazonia. It is difficult to assess the total area converted to farm and ranch land since the colonial rule. In the

47. Ministry of Environment and Forests, Govt. of India, *National Report to UNCED*, 1992, p. 32.

48. WWF, *op. cit.*, p. 15.

49. *Our Common Future, op. cit.*, p. 153.

Amazonia, agriculture and livestock production are generally extensive but yield is low. Huge lands are wasted after burning for clearing land and even a high proportion of land is abandoned due to decreasing soil fertility. The contribution of this sector to the growth of GDP is not proportionate compared to the investments being made in other sectors of the economy which reflects the ineffectiveness of the effort. The situation of Brazil is much more critical compared to other countries within the Amazon. "In Brazil an estimated five million hectares of first cycle pastureland is deteriorated or unproductive. In Peru, the same amount of land is used for livestock production as for coca cultivation. Low productivity and the small contribution to the GDP of these countries is also a cause for concern. The Environmental consequences of settlements geared to farming and ranching are tied to the impact on renewable natural resources, mainly the forests, water and biodiversity".⁵⁰

Settlements and clearing forests are also responsible for biodiversity destruction. Originally 16 million km² of earth surface was covered with tropical forests. But due to clearing of forest for commercial purpose, this area had been dwindled to about 10 million km² by mid-70s.⁵¹ FAO estimated that during 1981 and 1985, 4.4 million hectares of closed tropical forest were logged every year. In addition, each year 3.8 million ha of open forest were transformed into permanently cleared land.⁵² As a result of clearing of forests, in addition to irreversible damage to forest species, hydrobiological resources like fisheries have seriously been affected in Amazonia due to sedimentation from cleared land and chemical contamination from land brought under agricultural practices. The destruction of biological diversity is quite serious in the Andes, characterized by high diversity and the quantity of endemisms.⁵³

50. *Amazonia Without Myths, op. cit.*, p. 40.

51. WWF, *op. cit.*, p. 9.

52. *ibid.*

53. *Amazonia Without Myths, op. cit.*, p. 41.

Settlers arrive from different cultural and socio-economic backgrounds in the forest land. Life within forest is different from non-forest areas. Even within the forest life style may vary from periphery to the core areas. Indigenous people are by birth trained to manage the forest resources for their own survival. But intruders do not have that sort of training. The main reason behind excessive destruction is the lack of adaptability with the changed environment. "Government may play a key role in this respect but this is also dependent on financial support, political will and objective of establishment of settlements. In Amazonia, training was not completely successful. Government instituted training programmes were only partially effective due to massive and spontaneous influx of migrants, or were suspended when foreign credits dried up".⁵⁴

Convention on Biological Diversity : Implications for South

It is clear from the above discussion that factors for the on-going damage to the bio-diversity may vary from place to place depending on population density, life support capability, governments' and donors policies, etc. The common concern, however, is that Earth's biological diversity is in danger.

In 1987, the UNEP communicated its message regarding depleting biological diversity and called on governments to consider an international legal instrument for the conservation and rational use of biological diversity. One year later, the UNEP established an Ad Hoc Working Group of Experts on Biological Diversity which during 1988 and 1989, organized three sessions. A Working Group of Legal and Technical Experts was established on the basis of the final report of the working group. This group held two sessions and was renamed as Intergovernmental Negotiating Committee (INC) for a Convention on Biological Diversity. INC finalized the text of Convention in its Nairobi Meeting held in May 1992. The final text was

54. Bedoya, E., J Collins and M. Painfer, *Estrategias Productivas Y recursos naturales en la Amazonia* 1985, CPA, DOC, No. 9, Lima, Peru cited in *Amazonia Without Myths, op. cit.*, p. 43.

produced in the UNCED and as of 14 June, 153 countries signed the Convention. However, there is strong argument that this Convention is weak, north dominated and will not be able to uphold the interest of the South.

The Convention on Biological Diversity stipulates that "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."

During the negotiation process on biodiversity Convention delegates from South maintained a very low profile. On the other hand, delegations from the North were strong enough to fight with the arguments raised by the South. Most of what developing countries tried to include in the Convention were finally deleted in Nairobi during the last rounds of talks. "The delegates from South felt their poverty in the negotiating rooms and corridors. Their delegations were often too small to be effective. They had to deal with a multitude of disciplines, for which most of them had no educational background. Meanwhile delegates from the North came mostly in multidisciplinary teams. They also came equipped with comprehensive data bases, while their counterparts from the South had to rely on their own knowledge and situation."⁵⁵

The principle of the Convention as contained in Article-3 has some weaknesses. Firstly, it encourages exploitation rather than protection. Secondly, it assumes that environmental policies of all countries are safeguarding the environmental resources for sustainable development. Thirdly, it ignores the sovereign right of local communities who are dependent, whose cultural survival is linked intimately to the survival of biodiversity.

⁵⁵ Tewelde Berham Gebre Egziabher, "Conserving and Using Biological Diversity: By Whom for Whom?" *Network '92*, No. 19, August-September, 1992, p. 12.

Most of the biological diversity is in the South while north possesses the lion's share of biotechnology. The Convention assumes that biotechnology is an essential element for the conservation and sustainable use of biological diversity (Article 16.1). For the development of biotechnology the North uses raw materials from the South. Unlike other commodities, biotechnology commodities replace and substitute the original biodiversity used as raw material. This double transformation induced by Biotechnology has significant impact on the South.⁵⁶

The North has been collecting genetic materials from the South and storing it in their gene banks. It is unknown how much genetic materials are presently with gene banks of the North exploited from the South. The importance of ex-situ conservation is stated in the Convention but North has succeeded in excluding the existing ex-situ storage of genes from any obligation. This opens an opportunity for patenting the genetic material currently with the gene banks which means that a process of recycling would be opened in which the North will benefit at the expense of the South.

Regarding the technology transfer it is stated that "Access to and transfer of technology ... to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and where necessary in accordance with the financial mechanism established ...". But this transfer is not independent. Another clause Art. 16.2 neutralizes it by stating that "the terms of access should be recognized and be consistent with adequate and effective protection of intellectual property rights".

The provisions on intellectual property rights (IPRs) and transfer of technology are confusing as stated in the text. It is said that the contracting Parties "recognizing that patents and other intellectual property rights may have an influence on the implementation of this convention, shall cooperate in this regard subject to national legislation and international law in order to

56. Vandana Shiva, "Why Biodiversity Convention May Harm the South", *Third World Resurgence*, No. 24/25, Penang Malaysia, p. 16.

ensure that such rights are supportive of and do not run counter to its objective". It is recognized that IPRs may influence the implementation of Biological Diversity Convention but it has not been cleared how any future development on IPRs negotiation will influence the implementation of the Convention or how the future change will be adjusted with the current provisions of the Convention.

Even contradictory definitions have been included in the Convention regarding "Country providing genetic resources". According to Article 2 it is defined as the country providing genetic resources meaning the country that supplies genetic resources collected from *in-situ* sources, including populations of both wild and domesticated species, or taken from *ex-situ* sources, which may or may not have originated in that country. This definition is contradicted in Article 15.3 which states that "the genetic resources being provided by a contracting Party, ... are only those that are provided by contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention". Article 16.3 talks about countries providing genetic resources which can use either definitions.

The USA did not sign the biodiversity Convention on the ground that the text of the Convention is "seriously flawed". US interest relates particularly to patenting and intellectual property rights. According to President Bush "the Convention is not strong enough on patents."⁵⁷ The US wants no mention of indigenous communities being Party to the benefits of biodiversity as this may lead to sharing gains with American Indians. The US is also reluctant to participate in the GEF and prefers to channelize the funds bilaterally.⁵⁸

The USA will continue fighting over biosafety included in Article 19 as "The Parties shall consider ... in the field of the safe transfer, handling

57. Vandana Shiva, *Ibid*,

58. M.Monirul Qader Mirza , "Global Environment Facility: Undiscovered Realities for the South", paper presented in the seminar organized by ADAB and Like Minded Environmental Activists Group, Dhaka 18 July ,1992.

and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity." This article no. 19(3) was diluted during the final negotiations that took place in Nairobi in May, 1992. During the final negotiation the terms "genetically modified organisms (GMOs)" has been removed and substituted by the vague term "living modified organism resulting from biotechnology".⁵⁹ This substitution did not eliminate the biosafety clause completely. "The issue of biosafety and regulation of biotechnology is a major reason for the Bush decision not to sign the treaty."⁶⁰ The recent record of the US has been a systematic dismantling of the regulatory framework for ensuring environmental and health security in the area of biotechnology. The regulations of the Food and Drug Administration (FDA) of the US have been drastically weakened. Recently, the FDA has ruled that food products altered by genetic engineering raised no new or unique safety issues and will be regulated no differently than food created by conventional means. Thus food which have genes from animals introduced into them are to be treated 'as natural' and 'safe' on the basis that the transferred gene occurs naturally in the original organism. Already, human genes have been transferred to pigs, and chicken genes to crops. In such instances, complex ecological, ethical, cultural and religious problems can emerge which have totally ignored and even suppressed. Quite clearly Article 14 of Convention on Biological Diversity which addresses biosafety issues would make it necessary to examine safety in biotechnology and render the ongoing deregulation in the US illegal under international law. On the other hand, the Convention would strengthen regulation related to people's health and environmental safety. This clause which protects the environment and human lives may create problem for the US industries.⁶¹

59. Vandana Shiva, *op. cit.*, p. 18.

60. *Ibid.*

61. *Ibid.*

III. IMPLICATIONS FOR BANGLADESH

Bangladesh signed both "**Framework Convention on Climate Change**" and "**Convention on Biological Diversity**" in Brazil during UNCED. In conformity with the commitments made in the Conventions and for attaining sustainable development Bangladesh has to reorganize and reformulate its environmental policies in the spirit of two Conventions. Government of Bangladesh announced National Environment Policy in 1992. It covers many sectors of environmental management but put little importance on climatic change and sea level rise and potential disaster to be induced by these.

Emission of greenhouse gas by Bangladesh is negligible. According to World Resources Institute Bangladesh emits 0.4 percent of Global emission of greenhouse gases.⁶² Quantum of Chlorofluorocarbons used by Bangladesh is unknown. Very recently UNDP has initiated a Reconnaissance Study on Chlorofluorocarbons under Montreal Protocol being used in Bangladesh. There is no national inventory of greenhouse gas emission on sectoral basis. In the light of the "Frame Work Convention on Climate Change" tasks before Bangladesh are :

- undertaking national inventory of emission sources, sinks and reservoirs;
- quantification of emission by different sectors, say, fossil fuel, cement factory and rice cultivation, etc.;
- quantification of removals of greenhouse gases not controlled by the Montreal Protocol by different sinks;
- formulate and implement measures at national level to mitigate and help develop adaptation to the impacts of climate change;
- formulating national level policies for sustainable management of sinks and reservoirs including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

62. World Resources Institute, *World ... 1990-91*, op. cit, 1990

- develop integrated management plans for coastal zone, water resources development including flood hazard mitigation and cyclonic disaster management;

- integrating climate change considerations in the social, economic and industrial policies;

- initiate scientific, technological, socio-economic and other relevant research on climate change and establishment of a National resources centre and data bank for facilitating the exchange and dissemination of information;

- inclusion of environmental education and training in national education programme at all levels with specific emphasis on the need of mass awareness about climate change and sea level rise;

- initiate monitoring of sea surface temperatures, and tide-gauge levels, and coordinate with the international network for such monitoring;

- monitoring of coastal erosion and land accretion using remote sensing techniques;

- preparation of a Master Plan for emission control as an integral part of long-term industrialization prospect; and

- establishing strong government-NGO relationship for strengthening national capacity for implementing the above.

The Tasks before Bangladesh consequent upon the **Convention on Biological Diversity** include:

- conducting a countrywide survey on biodiversity to prepare an inventory of extinct, endangered and threatened species and to identify most vulnerable and degrading areas;

- promoting the rehabilitation and restoration of damaged ecosystems and recovery of threatened and endangered species;

- integrating strategies for the conservation of biological diversity and sustainable use of biological and genetic resources into relevant sectoral or cross-sectoral plans, programmes and policies;

- promoting programmes of regeneration rather than afforestation through monoculture;

- formulating action programme for the conservation of biological diversity through *in situ* conservation of ecosystem and natural habitats;
- establishing gene bank for storing the genetic diversity of mangroves of the coastal belt which are threatened by possible sea level rise;
- undertaking programmes for public awareness on conservation of biodiversity; establishing linkages with international institutions for exchange of knowledge, technical knowhow and manpower development; and
- formulating adequate legal measures for the stated programmes for the conservation, protection and sustainable use biological diversity.