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NATIONAL PLAN FOR CLIMATE CHANGE IN LEBANON

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NATIONAL PLAN FOR CLIMATE CHANGE IN LEBANON

1. OVERVIEW

In the global scene, the most crucial environmental issues of the next few decades will be those relating to the earth's atmosphere, climate change due to greenhouse gases, the depletion of the ozone layer, and transboundary air pollution. These global issues and their potential impacts on agriculture, water resources, energy, natural terrestrial ecosystems, and the social and economic sectors have generated calls for urgent responses by the international community to mitigate their effects.

The United Nations Framework Convention on Climate Change (UN-FCCC) is one of several international efforts undertaken since 1992 to mitigate the man-made causes of climate change.

The Convention was inspired by concerns that humanity's activities may be disturbing the natural climate system.

Human activities are increasing the atmospheric concentrations of greenhouse gases, especially carbon dioxide, methane, and nitrous oxide. All theoretical models predict that these increases in greenhouse gas concentrations will cause changes in climate both regionally and globally with adverse consequences likely for human health, as well as to ecological and socio-economic systems. The best current predictions suggest that the rate of climate change will far exceed any natural climate changes that have occurred during the last 10,000 years. It is obvious that, there are uncertainties regarding the precise magnitude, timing and regional patterns of climate change. But any human-induced climate change that does occur will not be easily reversed for many decades or even centuries because of the long atmospheric lifetimes of the greenhouse gases and the inertia of the climate system.

The issue of climate change has become a convergence point for international cooperation during the last 15 years and the manifestations of this cooperation became obvious when over 150 heads of state were convinced to sign the United Nations Climate Change Convention (UN-FCCC) at the Rio Earth Summit in June 1992.

It is quite obvious now that, even if a significant climate change does not occur during the next 100 years, the overall activities of nations, in the domain of FCCC, will address other important environmental problems such as air pollution, waste reduction, coastal zone management, and other environment related issues.

1.1 WHAT IS THE "GREENHOUSE EFFECT" ?

The earth continuously receive solar energy in the form of short-wave radiation, mainly in the form of light. It must get rid of this energy at the same rate by sending it back to space, in the form of long-wave infra-red radiation (heat waves).

The only tiny fraction of energy stored in the earth is what plants uptake and in the presence of CO_2 and chlorophyll store the energy in plant material. However, plants store less than one percent of incoming solar energy. Greenhouse gases (GHG) such as carbon dioxide, methane, nitrous oxide and others affect the ability of outgoing heat energy to pass through the atmosphere. They act similar to the glass cover of a greenhouse with the potential of trapping heat. Most of the infra-red radiation emitted by the earth's surface is absorbed in the atmosphere by water vapour, carbon dioxide, and other naturally occurring "greenhouse gases", making it difficult for the surface to radiate energy directly to space. Instead, many interacting processes (including radiation, air currents, evaporation, cloud-formation, and rainfall) transport energy high into the atmosphere to levels where it radiates away into space. This is essential for life on earth, because if the earth's surface could radiate energy into space unhindered, the earth would be more than 30°C colder than it is today.

Naturally occurring GHGs play a vital role in preserving the balance between the incoming and outgoing energy. Man-made emissions disturb this equilibrium. Climate models indicate that one of the main effects of GHG emissions will be global warming of the earth's lower atmosphere. In April 1996, the Swedish Scientist Svante Arrhenius predicted that a doubling of the atmospheric CO_2 (which is projected to occur by mid 21st century) would lead to worldwide warming on the order of 5°C , which is a considerable increase and can result in many environmental and socio-economic impacts. In terms of energy the GHGs would reduce the rate at which the earth can shed energy to space by about 2%. This may not sound much, but-over the entire earth it would amount to trapping energy content of some 3,000,000 tons of oil every minute. The "greenhouse effect" is illustrated in Figure 1.

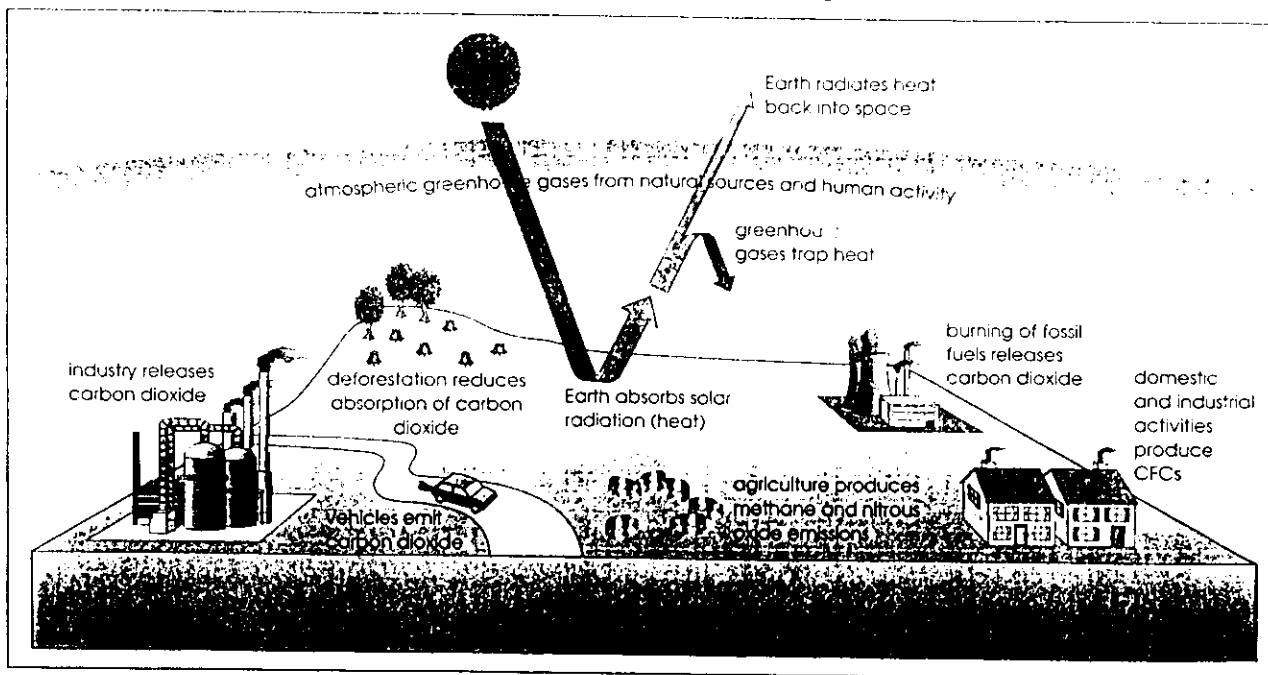


Figure 1. Atmospheric greenhouse gases warm the Earth by trapping the Sun's radiation near the Earth's surface. Increased greenhouse gas concentration (caused by human activity) may be contributing to recent global warming.

1.2 WHAT IS THE "CLIMATE CHANGE" ?

Climate is the average weather, the aggregate of atmospheric conditions over a long period of time. Now the international community recognizes the climate as a natural resource, like water and soil, and that its use needs environmental planning and management.

Global climate change is taking place due to the existence of greenhouse gases in the lower atmosphere, which induce global warming. But global warming is a symptom of climate change, it is not the problem itself. The fundamental problem is that human activity is changing the way the atmosphere absorbs and emits energy. Some of the potential consequences of this change, such as sea-level rise, will depend directly on how the surface temperature responds. But many of the most important effects, such as changes in rainfall and soil moisture, may take place well before there is any detectable warming.

Unlike the discovery of the Antarctic ozone hole, it is not expected to find a single indicator to confirm "global warming". If we wait for that proof it would be too late to do much about it. But there is evidence that the global mean surface temperatures have already increased between 0.3°C and 0.6°C during the last 100 years. In most scientific circles the issue is no longer whether or not GHG-induced climate change is a potentially serious problem. Rather, it is how the problem will develop, what its effects will be, and how these can best be detected.

1.3 WHAT ARE THE "GREENHOUSE GASES" (GHG) ?

Greenhouse gases are a group of naturally occurring and man made gases, which are found in the lower atmosphere. They regulate the energy balance between the incoming solar energy and outgoing radiative heat energy. They play a vital role in moderating the global temperature and preserving the life on earth.

The most important GHGs are Carbon dioxide (CO₂), Methane (CH₄), Chlorofluorocarbons (CFCs) and Nitrous oxide (N₂O). GHG concentrations are determined by a balance between "sources" and "sinks". There are two ways mankind can increase atmospheric concentrations of GHGs: by increasing the strength of GHG sources (processes that produce GHGs) and by decreasing the strength of GHG sinks (processes that remove GHGs). Man-made sources are generally the easiest to quantify.

The main source of CO₂ is fossil fuel burning. Energy use alone is responsible for about 75% of mankind's CO₂ emissions. Deforestation may also be significant, but it is more difficult to quantify. Once in the atmosphere, CO₂ is chemically stable and lasts for more than 100 years.

Carbon dioxide is removed from the atmosphere by a complex network of natural sinks. Most estimates suggest that about one third of the CO₂ being released at present is absorbed by the oceans. Another important and related

sink is photosynthesis by vegetation on land and by plankton in the sea. Most of the CO₂ absorbed by photosynthesis is released again when plants and plankton decay or are burned or are eaten by animals. Except for coal and other hydrocarbons, only a small fraction of CO₂ is removed permanently. Now that atmospheric CO₂ has risen well above its natural level, many aspects of this complex carbon cycle are changing.

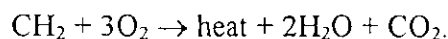
The main sources of methane emissions are: Energy use 20%; agricultural operations; wastewater; and other sources.

There are no natural sources of CFCs, so all CFCs in the atmosphere are due to man-made emissions from aerosol propellants, refrigerants, foam production, and solvents.

Other important GHGs, including ground level ozone and nitrous oxide, are increasing as an indirect consequence of human activity. The gases responsible for creating low-level ozone are carbon monoxide, the oxide of nitrogen (all found in car exhaust fumes), methane, and other hydrocarbons. Other GHGs include HCFCs, other hydrocarbons, and halons.

Carbon dioxide increases have dominated the enhanced greenhouse effects so far (60%), but together the other gases now contribute to over 40% of it.

Extracting, processing, transporting, and distributing fossil fuels also release greenhouse gases. These releases can be deliberate, as when natural gas is flared or is vented from oil wells, emitting mostly methane and carbon dioxide, respectively. Some fuels produce more carbon dioxide per unit of energy than do others. The amount depends on the fuel's carbon and energy content. Burning these carbon-based fuels to release useful energy, yields carbon dioxide as a by product. The following chemical formula represents the reaction of carbon and release of carbon dioxide gas.



Where "CH₂" represent about one carbon unit in the fossil fuel. Other byproducts, such as methane (CH₄), can also result when fuels are not completely burned.

Even if global carbon dioxide emissions were to be stabilized near their current levels, concentrations would increase throughout the 21st century and would continue to increase slowly for several hundred years afterwards. Because of this, substantial cuts in emissions will be necessary to stabilize concentrations in the atmosphere.

2. UN FRAMEWORK CONVENTION ON CLIMATE CHANGE UN-FCCC

2.1 BACKGROUND:

The UN Framework Convention on Climate Change (UN-FCCC) is the first binding international legal instrument to address the issue of Climate Change specifically. It was adopted after 15 months of intensive negotiations within the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC), it was opened for signature in Rio de Janeiro at the June 1992 UN Conference on Environment and Development (UNCED). The convention received 155 signatures and since then other states have signed it too. The INC negotiators drew on the "First Assessment Report" of the Intergovernmental Panel on Climate Change (IPCC), a body established jointly by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO). They were also influenced by the Ministerial Declaration issued by the Second World Climate Conference and by policy statements adopted by numerous other climate conferences. The convention incorporates a number of newly emerging legal principles that had been developed or affirmed by various climate conferences.

The International Panel on Climate Change (IPCC) has played a vital role in providing assessments of climate change research to policy-makers. The UNEP and the WMO established the IPCC in 1988 with a three-fold mandate: to assess the state of existing scientific knowledge on climate change; to examine the environmental, economic, and social impacts of climate change; and to formulate response strategies.

In November 1992, the IPCC established a work-plan for its continuing work and new structure. While working group I still concentrates on science, working group II is responsible for both impacts and response options, and working group III focuses on economics. This restructuring intends to improve efficiency and enable the three reorganized working groups to help governments meet the challenges of Agenda 21 and the requirements of the UN FCCC. One of these requirements is the development of a standard methodology for measuring each nation's sources and sinks of carbon dioxide and other greenhouse gases. Capacity building in developing countries will be an integral part of the work of all the three working groups.

The IPCC network of experts is being continually expanded and reinforced. The IPCC is an intergovernmental scientific and technical body consisting of a very small secretariat and a world-wide network of 2,500 scientist and experts who are leaders in their fields.

The UN-FCCC entered into force on 21 March 1994, 90 days after 50th ratification, and became international law. As of early 1996, already 140 states have ratified the convention and bound to the process of implementing it. On August 1, 1994 Lebanon has ratified the Convention.

The Convention represents a global effort to stem the possible impacts of climate change. Its objective is to stabilize the concentration of greenhouse gases (GHGs), believed to cause climate change. It poses enormous challenges as well as opportunities for all countries to promote sustainable development.

The FCCC implies obligations to transfer technology and resources to help developing countries build capacity and support scientific and technological support. Besides loose obligations to control emissions and transfer resources, the FCCC also requires the parties to submit reports (communication of information) that could help build a dense network of information. The FCCC established the Conference of Parties (COP) as the supreme decision-making body. COP-1 was held in Berlin (1995) and COP-2 in Geneva, July 1996.

The full texts of the UN-FCCC in English, Arabic and French are found in Annex C.

2.2 OBJECTIVE OF THE CONVENTION:

The objective of the UN-FCCC as stated in the official documents is to "...achieve... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner".

2.3 ANALYSIS OF THE UN-FCCC

The convention is formulated in a flexible way to enable all the parties to cooperate in implementing the objective of the agreement.

2.3.1 In the assessment of existence of the climate change issue

The convention responds as follows:

- It recognizes that there is a problem. It is quite easy for the nations of the world to agree on a common course of action, especially one that tackles a problem whose consequences are uncertain and which will be more important for our grandchildren than for the present generation. Still, the Convention was negotiated and signed by 165 states in a little over two years, and over 140 have already ratified and so legally bound by it.
- It sets an "ultimate objective" of stabilizing "greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate

system". The objective does not specify what these concentrations should be, only that they be at a level that is not dangerous.

- It directs that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner". This addresses the main concerns about food production and economic development. It also suggests that some change is inevitable and that adaptive as well as preventive measures are called for.

2.3.2 In the issue of uncertainties on the consequences of GHG increase

The Convention responds as follows:

- It establishes a framework and a process for agreeing to specific actions later. The FCCC was prepared as a launching pad for potential further action in the future. The drafters recognized that it would not be possible in the year 1992 for the world's governments to agree on the detailed activities for tackling climate change. A key benefit of this approach is that it allows countries to begin discussing an issue even before they all fully agree that it is, in fact, a problem. The Convention is designed to allow countries to alter it in response to new scientific developments. For example during the COP meetings they can agree to take more specific actions (such as reducing emissions of GHG's by adopting "amendments" or "protocols" to the Convention.
- The Convention takes preliminary steps that clearly make sense for the time being. Countries ratifying the Convention agree to take climate change into account in such matters as agriculture, energy, natural resources, and activities involving sea-cost. They agree to develop national programmes to slow climate change. The convention encourage them to share technology and to cooperate in other ways to reduce greenhouse gas emissions, especially from energy, transport, industry, agriculture, forestry, and waste management, which together produce nearly all greenhouse emissions attributable to human activity.
- The Convention encourages scientific research on climate change. It calls for data gathering, research, and climate observation, and it creates a subsidiary body for "scientific and technological advice" to help governments decide what to do next. Each country that is Party to the Convention must also develop a greenhouse gas inventory listing its national "sources" (such as factories and transport) and "sinks" (forests and other natural ecosystems that absorb greenhouse gases from the atmosphere). These inventories will have to be carried out with a standard procedure and updated regularly and made public.

2.3.3 In the issue of fair participation in the activities of the Convention

The Convention clarifies that:

- The lion's share of responsibilities for combating climate change and the lion's share of the bill would be on the rich countries. Specific commitments in the treaty relating to financial and technological transfer apply only to the 24 developed countries belonging to the Organization for Economic Cooperation and Development (OECD). They agree to support climate change activity in developing countries by providing financial and technological support to these countries. It is generally accepted that the OECD and economies in transition countries should at a minimum seek to return by the year 2000 to the greenhouse emission levels they had in 1990.
- The Convention recognizes that poorer nations have a right to economic development.
- It acknowledges the vulnerability of poorer countries to the effects of climate change. Particularly those living in small islands, coastal zones, and land locked countries.

2.3.4 In regards to fair standard of living for all without straining the earth

The Convention indicates the following:

- It supports the concept of "sustainable development". Somehow, mankind must learn how to alleviate poverty without destroying the natural environment on which all human life depends.
- The Convention calls for developing and sharing environmentally sound technologies and know-how. Technology can make industrial processes more efficient, agricultural and other sectors more productive for the same amount of resources invested.
- The Convention emphasizes the need to educate people about climate change. The world with its resources is a closed system; what we do has consequences that eventually come back to affect us. People should learn to think about the effects of their actions on the climate and adopt alternative patterns and lifestyles. When they make a decision as members of official bodies and businesses, and as they go about their private lives, they should take the climate into account.

2.3.5 In the matters of shouldering responsibilities

The Convention has adopted the following strategies:

- It starts slowly. It does not make too many demands (or requests) for the time being. But stay tuned. Things are beginning to happen. Developed countries are making national plans with the aim of returning their greenhouse emissions to 1990 levels by the year 2000. Countries that have ratified the treaty are beginning to gather data on their emissions and on the present climate. More and more, people and governments are talking and thinking about climate change. Step by step, national governments' commitment to controlling their emissions must begin tightening emissions standards requiring more replanting of trees; some countries are already working on such standards. Local and urban governments can start designing and building better public transport systems. They should tighten construction codes so that new houses and office buildings can be heated or cooled with less fuel. Meanwhile, industrial companies need to start shifting to environmentally sound technologies that use fossil fuels and raw materials more efficiently. Farmers should look to technologies and methods that reduce the methane gas emitted by livestock and rice fields. Individual citizens, too, must cut their fossil fuels - take public transport more often, switch off the lights in empty rooms - and be less wasteful of all natural resources.
- The Convention is based on sharing the burdens of coping with climate change. The atmosphere being a shared resource, the treaty tries to make sure that any sacrifice made in protecting this resource will be shared fairly among countries - in accordance with their "common but differentiated responsibilities and respective capabilities and their social and economic conditions".

2.3.6 In case of other issues

The Convention clarifies the following:

- Many of the effects of climate change will not be apparent for two or three generations. It is aimed at the next century as much as this one. It establishes institutions to support efforts to carry out long-term commitments and monitor long-term efforts to minimize and adjust climate change.
- The Conference of Parties (COP), in which all states that have ratified the treaty are presented, is the Convention's supreme body. It met for two times, in March 1995 in Berlin and in July 1996 in Geneva and will continue to meet on a yearly basis.

- The treaty is based on a cooperative rather than a confrontational approach - it assumes that countries can successfully tackle problems such as climate change only if they work as a team.
- The Convention calls on industrialized nations to return their greenhouse emissions to 1990 levels by the year 2000. Beyond that, it declares as the "ultimate objective... the stabilization of greenhouse gas concentrations in the atmosphere at levels that would prevent dangerous anthropogenic interference with climate system". The convention enshrines the "precautionary principle" - that is, better to be safe than sorry. The convention requires all nations to make inventories of sources and "sinks" of GHGs, such as forest, that absorb the gases. And they must devise national plans to mitigate the impacts. Those plans could include measures such as:
 - Investment in energy efficiency and in climate-friendly energy, for example solar and wind power.
 - Changes in transport policies-to discourage private cars, to encourage public transport and to reduce travel needs through planning changes.
 - Adoption of systems of carbon taxes, to reflect the damage caused by CO₂ emissions and to encourage reductions.
 - Education of consumers about how to change their wasteful lifestyles to cut their personal contribution to the greenhouse effects.
- The Convention requires all signatory countries to communicate a national inventory of greenhouse gas emissions by sources and removals by sinks. Moreover, each country is eventually required to describe the steps and actions it is taking to implement the principles and goals of the Convention. Climate change country studies are a first step for countries seeking to meet their national reporting and other obligations under the UN FCCC.

Country case studies are important instruments for determining national climate policies and for adding to the global knowledge on climate issues. They are also the basis for examining the obligations of the Parties to the United Nations FCCC, and for developing and assessing projects eligible for finance by the Global Environment Facility (GEF). The term country studies refers to official national studies on climate change covering parts or all of the following areas: 1) inventories of sources and sinks of greenhouse gases (GHGs), 2) impacts and vulnerability assessments; and, 3) response strategies and options. Such studies focus on adaptation and on GHG abatement.

The FCCC commits all parties, from the time of entry into force of the Convention, to develop and periodically update national inventories of sources and sinks of GHGs using comparable methodologies. It also commits the Parties to formulate and implement programmes for mitigation and adaptation. All Parties are obliged to take climate change considerations into account in

their social, economic, and environmental policies and actions. National inventories are to be published and communicated to the Conference of the Parties of the FCCC.

Progress since Rio

Most developed country party to the Convention are aiming at allieving their target of returning greenhouse gas emissions to 1990 levels by the year 2000. The emerging priorities among policies and measures reflect a preference for controlling emissions through technologies solutions rather than charged consumption patterns.

On the other hand, the new assessment report from IPCC reveals that emphasis is being put on improving the scientific basis and promoting sustainable development with particularly emphasis on:

- efficiency in energy resources development and consumption;
- industrial development;
- transportation; and
- terrestrial and marine resource development and land use

Scientific uncertainty, a major barrier to action, is being steadily reduced, which will improve the scientific basis for decision making. This implies that policy makers will be able to receive credible long-term projections of potential impacts of climate change, so that they can take action early enough to avoid environmental harm that may be irreversible.

There is a general agreement among the Parties to the Convention that further measures will be required to achieve its ultimate objectives. This resulted in the Berlin Mandate of March 1995 (COP-1) and in Geneva Meeting of July '96 (COP-2), launching a process aimed at strengthening developed country commitment to action. However, atmospheric concentrations and emissions of the major greenhouse gases continue to grow.

Projections suggest that, in the absence of a concerted international effort, GHGs will continue to increase, committing the earth into an essentially irreversible global environmental change.

3. THE SCIENCE OF CLIMATE CHANGE

3.1 GREENHOUSE GASES (GHG) AND THEIR SOURCES OF GENERATION

As indicated in the overview, GHGs hinder the re-radiation of infra-red waves from the ground surface to the space. The main GHGs being the carbon dioxide, methane, CFCs, nitrous oxides and other minor components such as carbon monoxide (CO).

3.1.1 Carbon Dioxide

Atmospheric concentrations of carbon dioxide (CO₂) are now 30% above the pre-industrial level of 200 years ago, having reached 358 parts per million (ppm). There is no doubt that increases in concentration of this gas, after several thousand years of stability, is due to energy use in transportation, agricultural and industrial operations, domestic use, etc, but also due to deforestation. CO₂ is the central problem for the enhanced greenhouse effect, currently responsible for about 55% of greenhouse forcing. About 75% of this emissions of CO₂ result from combustion of fossil fuels, and about 25% result from changes in land use (largely deforestation), cement manufacturing and flaring of natural gas from petroleum reservoirs. Recently, cement manufacturing is considered as the third largest cause of man-made CO₂ emissions. Large quantities of CO₂ are emitted during the production of lime, the key ingredient (more than 60%) in cement.

More than 90% of the man-made CO₂ currently in the atmosphere emanated from industrialized countries.

CO₂ has a life-time in the atmosphere of more than 100 years. Oceans and forests are the sinks of CO₂.

If emissions continue to grow at the present rates, it is almost certain that atmospheric levels of CO₂ will double from pre-industrial levels during the 21st century. If no steps are taken to mitigate the emissions, it is probably that CO₂ levels will triple by the year 2100.

The average annual emissions in billion tons of carbon per year (10⁹ tons/yr.) and accumulations during the 1980s were as follows:

Atmospheric increase	= Fossil fuel release	+ Land use change	- Oceanic uptake	- Residual sink
3.2 (±0.2)	= 5.5 (±0.5)	+1.6(±0.7)	- 2.0(±0.8)	- 1.9(±1.2)

The residual sink may be further divided into an uptake of 0.5 to 0.8 billion tons of carbon per year in northern and mid-latitude forests and a sink of 1.1 (±1.3) billion tons of carbon per year believed to be terrestrial ecosystems but not observed.

The Carbon Cycle is represented with the following diagram:

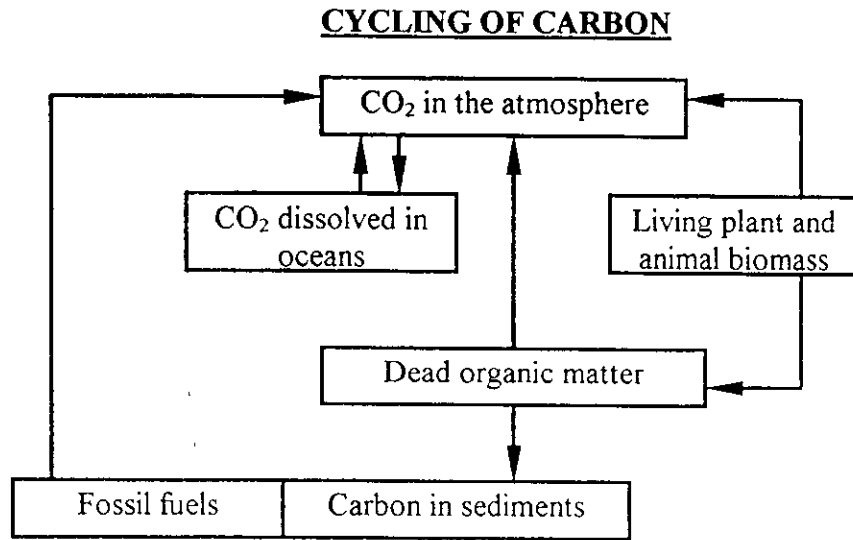


Figure 2 presents the graphs of projected CO₂ concentrations and temperature change according to four IPCC emissions scenarios.

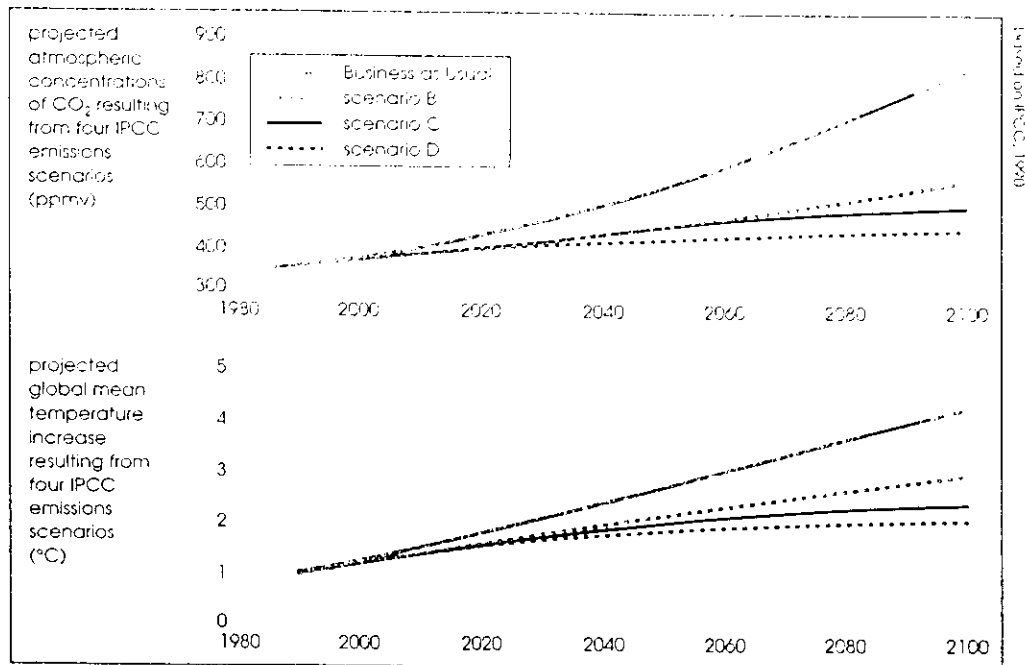


Figure 2. Projected CO₂ concentrations and temperature change according to four IPCC emissions scenarios.

Business as Usual: Mainly coal-based energy generation, only modest improvements in the efficiency of energy use, deforestation continues and only partial participation in implementing the Montreal Protocol.

Scenario B: More lower carbon fuels used in energy generation, large increases in energy efficiency, deforestation reversed and full participation in implementing the Montreal Protocol.

Scenario C: Shift towards renewable energy sources and nuclear power during 2050-2100, CFCs phased out.

Scenario D: Shift towards renewable energy sources and nuclear power during 2000-2050, CO₂ emissions reduced to half 1985 levels by 2050.

3.1.2 Methane (CH₄)

After remaining fairly constant for 2000 years, the global methane levels have risen by 145% over the last 200 years, causing a direct radiative forcing a third that of CO₂. The causes of this increase are less well understood, but about 70% of global methane emissions are associated with man-made activities such as energy production and use (coal mining, oil and natural gas systems, fossil fuel combustion); waste management (landfills and wastewater treatment); livestock management (ruminants and wastes); biomass burning, and rice cultivation.

While CH₄ concentrations in the atmosphere is small, it is about 25 times more effective than CO₂ at trapping heat in the atmosphere.

3.1.3 Chlorofluorocarbons - CFCs, HFCs and others

In the stratosphere CFCs, HFCs and other man-made gases destroy the ozone layer and at ground level they cause greenhouse effect.

CFCs and other halocarbons are extremely potent greenhouse gases. They are released in relatively small quantities, but one kilogram of the most commonly used CFCs may have a direct effect on climate thousands of times larger than that of one kilogram of carbon dioxide. They are a family of man-made gases used for various industrial purposes, and they are generally colorless, odorless, and nontoxic. Although they are important greenhouse gases, CFCs are better known for their role in damaging the ozone layer. Alternatives are being developed to replace CFCs. Some of these substitutes are halocarbon, such as the compound HCFC-22, which can replace CFC-12 in refrigeration and air conditioning systems.

CFCs do not occur naturally. They are manufactured and their production is being phased out following the Montreal Protocol for the Protection of Ozone Layer Signed in 1987. Most CFCs have a lifetime in the atmosphere of only a few years. It is expected that the concentrations of CFCs will fall steeply in the next few years. Figure 3 provides an indication of decrease in CFCs production.

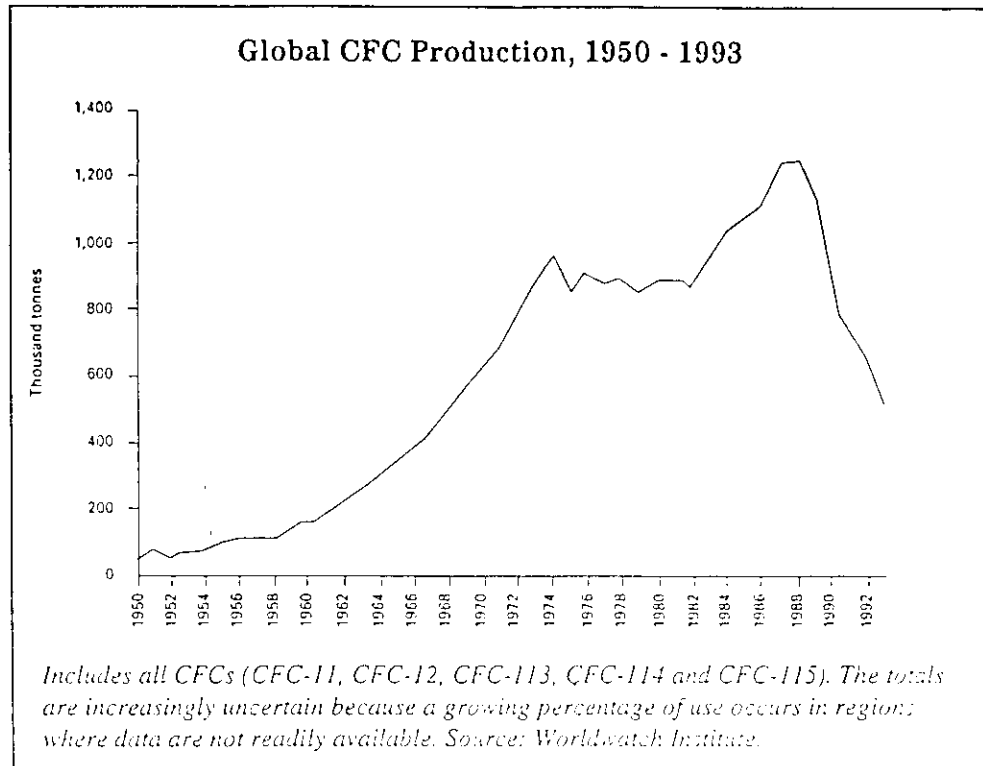


Figure 3. Global CFC production, 1950 - 1993

3.1.4 Nitrous Oxide (N₂O)

Mostly released through agricultural operations (such as fertilizer use), vehicular transport and industrial operations (e.g. nylon production). The warming potential of N₂O per unit mass is 120 - 330 times greater than CO₂.

The graphs presented in Figure 4 present the increase in atmospheric concentrations of CO₂, CH₄ and N₂O.

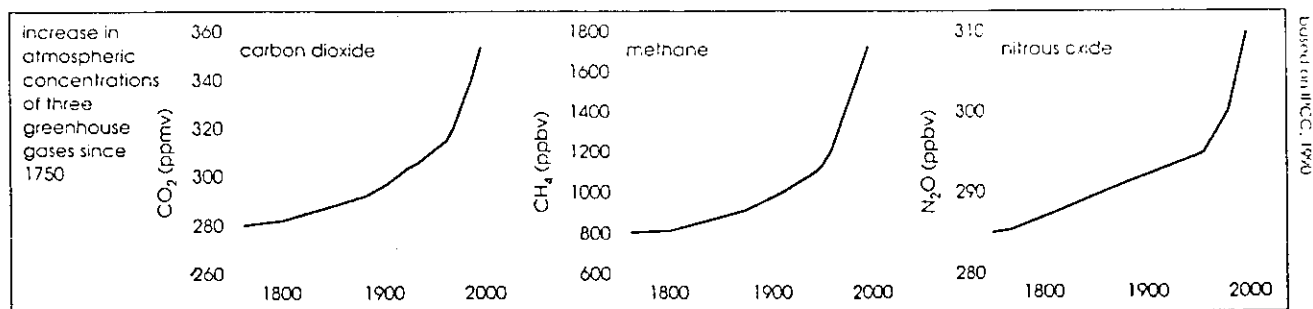


Figure 4. Concentration of atmospheric carbon dioxide, methane and nitrous oxide were fairly constant until the mid-18th century when they began to rise as result of human activity.

3.1.5 Water Vapour

Naturally occurring water vapour in the atmosphere acts as a greenhouse gas. It absorbs huge quantities of heat and releases heat when vapour changes into rain. However, its residence time is too short (less than a couple of days). Due to this characteristic, it is not considered as a greenhouse gas. After all, it is not a man induced gas in the atmosphere.

3.2 EVIDENCE OF CLIMATE CHANGE DURING LAST CENTURY AND PREDICTIONS.

Climate is the aggregate of atmospheric conditions involving heat, moisture, and air movement over a long period of time. Weather is the day to day state of the atmosphere and pertains to short-term changes in conditions of heat, moisture, and air movements.

Weather at any place is constantly changing. It is generally unpredictable further ahead than a few days. But climate - the average weather - is much more stable. Nonetheless, evidence is accumulating that over the past century, the averages have begun to shift.

Most of the world has seen gradual warming in surface temperatures since about 1860, when systematic records began, of between 0.3°C and 0.6°C. Most of the warming occurred between 1910 and 1940 and during 1975 to 1995. Most of the individual warmest years have been during 1980 to 1995.

The evidence of warming provided by recorded temperature data from both land and sea is corroborate by observation of related natural phenomena. There has been a decline in mountain glaciers in much of the world that is consistent with a rise in alpine temperatures of 0.6°C to 1°C. And there has been a rise in sea levels between 10 to 25 centimeters, caused by a combination of thermal expansion of the oceans (warmer water occupies more space than cooler water), the melting of glaciers and ice caps, and possible from changes to the great ice sheets on Greenland and Antarctica.

Surface warming of the oceans is apparently penetrating to lower depths. The IPCC reports recent studies that found a 0.3°C warming across the entire width of the Indian Ocean down to a depth of 800 meters over the 1975 to 1995 periods, and a similar warming in parts of the Pacific Ocean.

However, warming has not been uniform across the planet. One study has found significantly greater warming in the world's dry lands than for land areas as a whole, with warming greatest (around 0.8°C this century) in Central and North America.

Other intriguing patterns emerge. There has been a widespread reduction in the difference between daytime and night-time temperatures, mostly as a result of greater warming at night. There has been significant changes in the hydrological cycle, too. The atmosphere above the oceans has become more cloudy since the 1950s. In the tropics, there has been an increase in the amount of water vapour over the oceans, at least since 1973, and more thunderstorms. Yet, over a large region of the tropics and sub-tropics from Africa to Indonesia, there has been less rainfall since the 1960s. Meanwhile, snow cover over the northern hemisphere has been consistently below the long-term average since 1988. And the spring snow melt has begun over much of the hemisphere, causing floods in various parts of the world.

New data from ice cores suggest that the past century has been warmer than any for at least 600 years. Chronologies of glaciers suggest that warming in the past century may be greater than any for 10,000 years. The IPCC reports that the balance of evidence suggests a discernible human influence on global climate.

Figure 5 illustrates the global temperature changes of the last millenium.

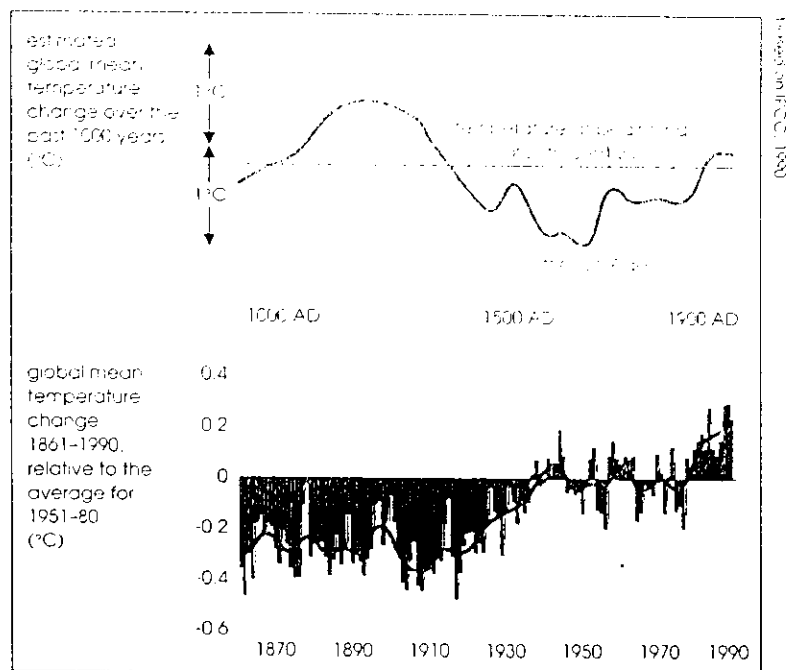


Figure 5. Global temperature changes over the past 1000 years and during 1861-1990.

The mid-range business as usual scenario (refer to Figure 2) for future emissions assumes a doubling in CO₂ concentrations in the atmosphere by the end of the next century. Climate models suggest that, on top of this, there will be substantial amplification, caused by planetary feed-backs.

The important feed-back include:

- Ice and snow. Both strongly reflect sunlight, keeping the planet cool. But as warming melts the ice and snow, it exposes land and water, which will reflect much less and absorb more, causing further warming and further melting, a positive feed-back. The warming feed-back will be especially intense in polar regions.
- Water vapor. Warmer temperatures will increase both evaporation and the atmosphere's ability to hold water vapor. The vapor is itself a powerful greenhouse gas and will further enhance global warming.
- Clouds. They can both reflect solar radiation back into space (a cooling effect) and act as a blanket to retain heat close to the earth's surface (a warming effect, especially at night). Modellers say that clouds could plausibly act either to double warmth or reduce the temperature by as much as a degree. This doubt is largely responsible for the wide band of uncertainty of projections for a doubling of CO₂.

The anticipated doubling of CO₂ levels by the end of the next century will increase global average temperatures by more than 2.5 °C, in all cases, the rate of global warming will be greater than any seen in the past 10,000 years. It is also clear that warming would not stop there. There is a substantial inertia in the climate system, which will ensure that temperatures continue to climb for several decades after even a dramatic reduction in emissions of greenhouse gases. Moreover, the thermal inertia of the oceans will cause temperatures to continue rising until about 2200, and to decline only slowly thereafter. Some predictions about extremes indicate that, frosts will be less frequent, heat waves more frequent. A generally more intense hydrological cycle is likely to make extreme hydrological events more likely, including heavy rainfall, floods and droughts in areas where average rainfall is less.

Global warming and the resulting climate change are now accepted as inevitable, which will have serious environmental, economic, and social repercussions for this and future generations.

Since early eighties, the risk posed by climate change have received an increasing amount of attention from the international scientific and political communities.

In 1988 the IPCC was established and they provided the most definitive assessment so far of global warming and climate change.

As temperatures rise, it is anticipated that the oceans will warm and expand, causing sea levels to rise and flood many of the world's highly productive deltaic areas, including vast tracts of lands in the Arabian Gulf, Egypt, Bangladesh, Indonesia, China, India and other places.

The IPCC calculates that the world's oceans could rise about 20 cm by 2030, and about 65 cm by the end of the next century. Some 300 Pacific atolls could disappear, and the very existence of several island nations in the Pacific and Indian oceans, and the Caribbean, is threatened.

As the seas move inland, ground water supplies in many parts of the world will become contaminated with sea water, and previously fertile land many kilometers inland will become poisoned with salinity.

Rainfall patterns will alter as the planet warms. Some regions of the world could dry out, while others could receive too much rain, which runs off the land without soaking in, flooding rivers and plains and increasing soil erosion. Some of the world's most important food exporting nations, including the United States, Canada, and France, seem likely to suffer drier soil conditions, with potentially adverse impacts on their ability to produce food for the world markets. Many developing countries may also suffer reduction in rainfall and soil moisture. Again, the result could be substantial drops in crop yields.

In addition, it is anticipated that global warming and climate change will seriously disrupt marine ecosystems. The flooding of many of the world's coastal wetlands as the oceans rise will mean the loss of an essential nursery for many fish, shrimp, and bird species. This could significantly reduce the quantities of seafood available for human consumption. This impact seems likely to hit developing countries hardest. In many of these countries, fish forms the bulk of all protein which sustain human life.

Human health may suffer as well. Warmer temperatures will allow disease-carrying insects, parasites and viruses to spread debilitating and often fatal infectious tropical diseases to mid-latitude regions. Drought-induced malnutrition and famine may increase significantly in many regions.

People can move when their environment is destroyed, but many plants and animals cannot react quickly enough. It already appears inevitable that we will lose many plant and animal species as temperatures rise.

The IPCC has called for immediate and drastic reductions, of the order of 60 - 80 per cent in carbon dioxide emissions, and a 15 - 20 per cent reduction in methane emissions, as well as early implementation of the phase-out of chlorofluorocarbons, and more research into ways of reducing nitrous oxide.

Scientists have warned for some time that the polar regions may be the first to show signs of global warming. Some of the most persuasive evidence that warming is already occurring comes from the British research bases in Antarctica that first spotted the Antarctic ozone hole a decade ago.

In mid-1994, the British Antarctic Survey (BAS) reported that, over the past 40 years, average temperatures in the peninsular region of West Antarctica had risen by 2.5 °C, 10 times the global average. BAS scientists believe the drastic warming may be a consequence of the break-up of ice sheets in the region, a

classic example of the positive feedback to global warming predicted by climate modellers. The Wardie ice-shelf near the peninsula has shrunk by more than 1,000 km² in the past 25 years. Researchers warn that, if the ice sheet disappears sea levels worldwide would raise.

3.3 IMPACTS OF CLIMATE CHANGE ON NATURAL ENVIRONMENT AND SOCIETY

Impacts of climate change can be defined as the consequences (biological, physical, and economic) of a particular scenario with respect to the path of future global GHG emissions, given estimated climate changes.

If greenhouse gas concentrations continue to rise, global warming is likely to have wide-ranging effects on the environment and human society.

The IPCC Working Group II has the following assumptions as a point of departure: an increase in greenhouse gases equivalent to a doubling of pre-industrial atmospheric CO₂ by 2025 - 2050 for a business as usual scenario; a corresponding increase in global mean temperature of 1.5 - 4.5 °C; and a sea-level rise of 0.3 - 0.5 m by 2050 and of about 1 m by the year 2100.

The likely impacts of climate change will occur in complicated ways and impacts on one sector will affect those on other sectors. For convenience, we shall describe the possible impacts on the natural environment and on human society. Figure 6. presents the summary of impacts of climate change.

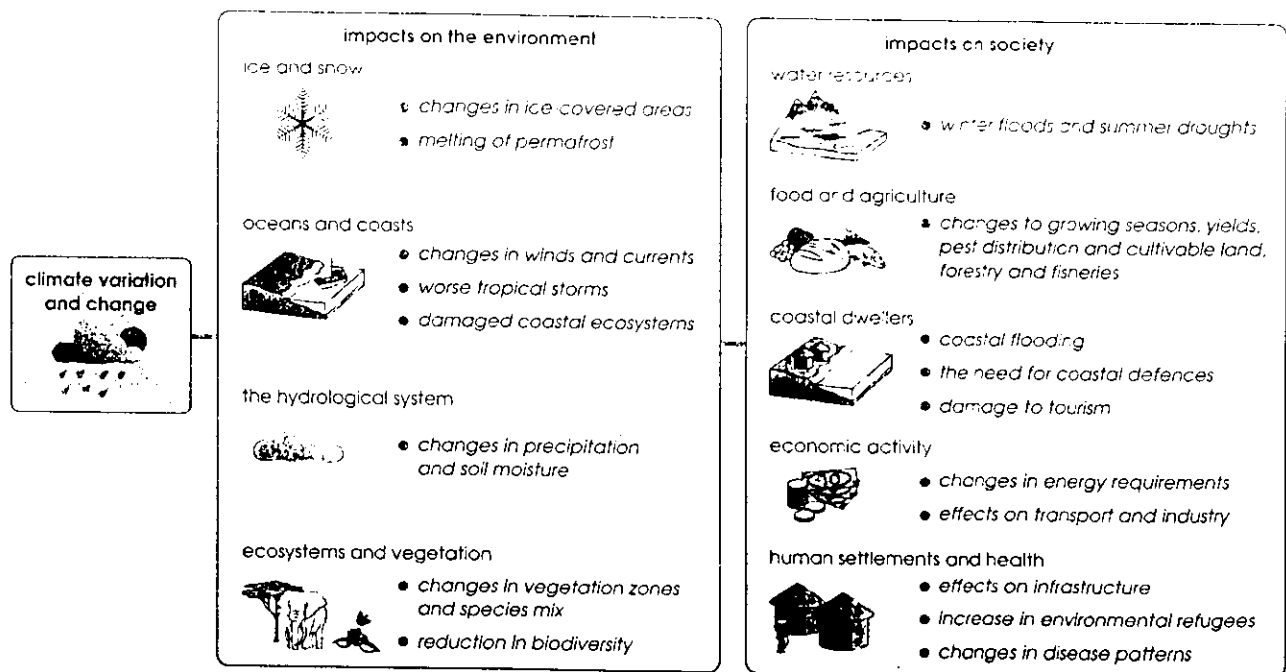


Figure 6. Overall effects of climate variation and change on the environment and on human society.

3.3.1 Impact on Natural Environment:

Ice and snow

Global warming will reduce global snow and ice cover, and permafrost may disappear completely from some regions. The shrinking of glaciers and reduced snow cover will change the seasonal flow of rivers, altering ecosystems in rivers, wetlands, and coastal waters, as well as disrupting human activities from agriculture to the generation of hydroelectric power. A temperature increase of only a degree or two will significantly reduce snow cover in temperate regions in both hemispheres. Such changes would threaten the survival of the polar animals including the bear, seals, birds and fishes due to shortages of food supplies.

Oceans and coasts

Global warming will both raise sea temperatures, especially near the surface, and shift ocean currents and patterns of waves and salinity. Any significant change in the composition or circulation of the oceans could affect the rate at which they absorb CO₂. Temperature rise may increase the occurrence of tropical cyclones and expand the area in which they occur. Moreover, an increase in temperature could radically alter the distribution of krill, the shrimp-like animal that is the fundamental link in the food web of the Antarctic Ocean.

The rise in sea level will damage or destroy delicate coastal ecosystems that depend on wetlands, beaches, coral reefs, mangroves, and estuaries. The width of beaches is likely to be reduced by an average of 50-100 m for each meter rise in sea level. Coral reefs are very sensitive to changes in sea temperature and sediment levels. The mangrove area could decrease in size as a result in rise in seawater level. Estuaries may be seriously affected by sea-level rise. Tidal waters will flow further upriver, widening estuaries and eroding river banks. Estuarine regions could become prone to flooding if the stronger tidal flow raises river levels. River waters will become more saline if seawater penetrates further up estuaries, causing freshwater plants and animals to retreat. A one meter rise in sea level would threaten half of the world's coastal wetlands of international importance for their biodiversity.

The hydrological cycle

Under global warming, the hydrological cycle will run faster. Higher temperatures will increase the rate of evaporation of moisture from plants, the land, and oceans. Consequently, precipitation could increase by up to 10 percent. Computer models predict that rainfall would be reduced in the Mediterranean and southern part of Europe, and would be increased in northern Europe. Global warming will increase the risk of drought wherever temperature increases and there is little increase in rainfall, particularly in mid-continental, mid-latitude regions. In a warmer world, there would be more rain and less snow. Rivers will tend to swell in winter and dry up in summer. Much of the hydrological change will be reflected in changes in fresh water ecosystems, including lakes and streams.

Ecosystems and vegetation

In addition to affecting the location and area of vegetation zones, climate change is likely to alter their typical species composition and affect global biodiversity. Because species within an ecosystem are dependent on each other, the loss of only a few species can set off a chain of extinctions. A permafrost thaw could cause underground ice to melt, soil to become waterlogged and lakes of water to form on the surface. Alternatively, the top layer of soil may dry out to such an extent that plants become short of moisture and topsoil is eroded by wind or rain, thus altering the habitat of many plant and animal species. Sea-level rises will affect coastal habitats, and coastal vegetation will move inland, if this is possible.

3.3.2 Impact on Human Society:

How will global warming affect human society?

The question cannot be answered with precision because too little is known of the many variables involved, and the complex ways in which they will interact

Water resources

Water is the most precious natural resources. It is the source of life on earth and underpins most human activities, agricultural, industrial and domestic. Changes in rainfall - seasonal or long term - can cause droughts, floods and ecological disasters that affects millions of people. Increased evaporation rates caused by higher temperatures will actually make many places drier, particularly during the summer. In the water-scarce regions of the Middle East and North Africa any reduction in water resources is likely to increase conflict amongst users. The areas most at risk from a reduction in water supply are the arid and semi-arid areas currently at the limit of their capacity to sustain their populations (e.g. the Middle East and the Mediterranean). Drought can create severe economic and social problems. Price rises, loss of income and unemployment can lead to social unrest. Greater volumes of water in rivers could increase the rate of erosion in river basin areas and the amount of sediment in water - thus making it less suitable for human use. As indicated earlier, sea level rise contaminates groundwater with salt water, and small islands with no other water supply would be vulnerable.

Food and agriculture

Global warming will almost certainly increase agricultural productivity in some regions and reduce it in others. On the other hand, a warmer climate could have a detrimental effect on agriculture because of an increase in the number of extremely hot days, reduction in rainfall and soil moisture, an acceleration of crop development that would lead to premature ripening and lower yields in crops such as cereals, an increase in pests, weeds, and plant and animal diseases, and a rise in sea level that would reduce the amount of land available for agriculture.

In the mid-latitude regions shifts in the agricultural zones is expected to occur, for instance, 200 to 300 kilometers for every degree Celsius of warming. Increased summer dryness may reduce mid-latitude crop yield by 10 to 30 per cent, and it is possible that today's leading grain-producing areas (such as Great Plains of the United States) would experience more frequent droughts and heat waves.

Any fall in food production increases the price of locally produced food, and increase reliance on imported food. Increased temperatures and precipitation may increase the incidence of disease and infestation. Increased temperatures and rates of evapotranspiration will also increase the risk of forest fires. Changes in ocean temperature and hence location and intensity of upwellings of nutrients are likely to alter the population of many commercially important fish. As a result, a dramatic fall in fish stocks can cause the collapse of fisheries as happened with California sardine.

Coastal dwellers

A doubling of atmospheric CO₂ could cause sea levels to rise by up to 1m by 2100. Many of the world's coastal and delta regions are densely populated, and the flooding that would result from sea level rise will disrupt or destroy human settlements, agriculture and industry, and affect many millions of people. These could lead into more famines and catastrophes.

Twenty percent of Egypt's farm land could be lost as a result of a 1.5 m sea level rise. 17% of Bangladesh could disappear with a one-meter rise in sea level. The cost of protecting such areas from inundation with man-made structures would be immense. It is estimated that protecting the Netherlands from a 0.5 m rise in sea level will cost about \$ 3.5 trillion. In many countries, coastal regions are highly developed and provide housing and facilities for industry, commerce and tourism. In the United States alone, it would cost about \$100 billion to protect tourist resorts and vulnerable urban areas from the flooding and erosion that could result from expected sea level rise. This figure does not take into account of the additional cost of modifying stormwater and sewerage systems, ports, navigation channels, roads, bridges and water supply infrastructure.

Economic activity

As a result of global warming, the cost of heating would be less, in contrast with the cost of air conditioning which would rise. As a result, the rise in temperature will have a positive effect on high latitude regions, like Russia for example, and a negative effect on low latitude and arid regions (Arab countries for instance). Higher sea levels may require costly changes to ports and coastal roads and railways. Some industries are dependent on the availability of local resources, which may be affected by changes in the climate. Variation in the availability and cost of crops, domestic animals, fish, wood, water and mineral resources would affect, for instance, industries processing agricultural products and fish, timber and paper production, hydroelectricity generation and the aluminum industry.

Human settlements and health

The most vulnerable populations will be those in developing countries, which are often unable to respond to natural disasters such as flooding. Climate change may affect people's living resources and shelter to such an extent that they are forced to migrate and resettle in other areas. In addition, climate change may expose humans to new health threats and diseases.

Higher sea-levels would threaten low-lying coastal areas and small islands. Groundwater in some coastal regions would become more saline.

In an increasingly populated world, resetting large numbers of climate change migrants would be a formidable task.

Direct health impacts are likely to include an increase in heat stress and in respiratory, allergic, and communicable diseases. Indirect health effects would result from droughts, floods, and social and economic disruption.

3.4 ANTHROPOGENIC ACTIVITIES THAT CONTRIBUTE TO GHG EMISSIONS

The greenhouse effect is a natural phenomenon of the atmosphere. Naturally occurring gases such as water vapour, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and others are called greenhouse gases because they trap solar heat in the lower atmosphere. They act like a blanket around the earth. Without them earth would be frozen. These naturally occurring gases (CO₂, CH₄, N₂O) make up less than 0.1 percent of the total atmosphere, which consists mostly of oxygen (21%) and nitrogen (78%).

But humans through various activities are adding to these gases, producing pollutants that cause a gas build-up in the atmosphere and raise the temperature of the atmosphere.

The IPCC estimates in 1991 indicated that the relative contribution of anthropogenic gases to the global greenhouse effect was as follows:

- CO ₂	55%
- CFC	24%
- CH ₄	15%
- N ₂ O	6%

To a certain extent, already anthropogenic activities that contribute to GHG emissions were discussed under Section 3.1. Under this heading complementary information is listed.

The main GHGs that affect the climate can be divided into two groups. First are the GHGs that have a direct effect on climate. Such as CO₂, CH₄, N₂O, and

the chlorofluorocarbons (CFCs), hydro-CFCs (HCFCs), hydrofluorocarbons (HFCs).

The first three compounds noted above - CO₂, CH₄, and N₂O - have important natural as well as man-made sources. Most of the chlorine compounds that have a greenhouse effect are of anthropogenic in origin, and their sources are well established. Furthermore, the CFCs, HCFCs, and the chlorine compounds, as well as methyl bromide and carbon tetra-chloride are regulated under the Montreal protocol due to their impact on the ozone layer, and are also considered in FCCC. The HFCs (particularly HFC-134a) have no ozone effect and therefore are not regulated through the Montreal Protocol, but could have noticeable Global Warming Potential and therefore is included in the inventory list.

Second group of gases that affect indirectly the climate, through their impact on chemical and physical processes, include nitrous oxides (NO_x), carbon monoxide (CO), and hydrocarbons.

Most important of these human contribution is carbon dioxide, which is given off whenever carbon materials are burned, such as coal, oil, natural gas, or wood. In other words, CO₂ is produced when energy is used in industrial, agricultural, commercial and domestic level operations. Main activities that contribute to CO₂ emissions include:

- power generation
- transportation (public and private)
- domestic use of energy
- cement production
- various industrial operations
- forest fires
- solid waste burning

Methane accounts for more than 15% of expected global warming from climate change. About 70% of global CH₄ emissions are associated with anthropogenic activities such as:

- energy production and use (coal mining, oil and natural gas systems, fossil fuel combustion);
- waste management (landfills and wastewater treatment);
- livestock management (ruminants and animal wastes);
- biomass burning; and,
- rice cultivation;

Nitrous oxide is mainly produced by agricultural operations.

Conversion of natural tropical forests to farm and ranch land has the potential to increase the nitrous oxide (N₂O) emissions from that land by as much as a factor of three.

Anthropogenic activities that cause N₂O emissions include:

- use of fertilizer;
- fossil fuel combustion; and,
- processes associated with the manufacture of nylon.

The sources of carbon monoxide (CO) include mainly the burning of fuels in various sectors like transportation, power generation and other sources. Untuned car engines produce huge quantities of CO. It is fortunate that the residence time of CO is less than a couple of days.

3.5 INVENTORIES OF SOURCES AND SINKS OF GHGS

All parties to the FCCC must submit periodic reports on their inventories of emissions of greenhouse gases and their sinks, by using common methodologies so that they would be comparable. IPCC and The Organization for Economic Cooperation and Development (OECD) experts and delegates have set standards for conducting GHG inventories. The IPCC/OECD procedures include a recent handbook and workbook to aid country inventories. It covers all sources and all sinks of the greenhouse gases not controlled by the Montreal Protocol on substances that Deplete the Ozone Layer. More than 60 countries have used the IPCC/OECD methodology for their GHG inventories. Software on methodology is distributed by the OECD and may soon be available on the Internet.

The IPCC default methodology is not meant to be obligatory. The countries could use other methods. National methodologies are acceptable, provided that assumptions are clearly set out and scientifically defensible, and that reporting categories consistent with the IPCC methodology used.

Large amounts of carbon are continuously transferred between the atmosphere, the ocean, and the terrestrial biosphere. The management of sinks to control atmospheric concentrations of GHGs can be oriented towards reforestation and afforestation. The ocean is a net sink for excess CO₂ introduced to the atmosphere by human activities.

Adequate methods exist for developing national inventories of the sources and sinks of the major GHGs. An important obstacle is the inherent uncertainty of current estimates of sources and sinks.

Methodology. The IPCC prepared bottom-up methods for studying CH₄, NO₂, NO_x, CO, and non-methane hydrocarbons. This means that several activity data are used on a fairly detailed level together with source-specific emission factors.

For CO₂, on the other hand, a top-down approach is given by the IPCC. This is based mainly on the supply of primary fuels and requires a complete balance of primary fuels produced, plus imports minus exports, and net increase in stocks. If countries choose to use their own method, their approach should still be consistent with this default method.

Reporting. Different methods may be used, but it is critical that the results be compared with other studies, and that explanations be given for any deviations.

If comprehensive national inventories are made world wide, they will help to explain changes in the atmosphere caused by human activity and provide the proving ground for new methods of making inventories of sources and sinks.

Phase II of Inventory Programme:

It is worthwhile to indicate that **Phase II** of the inventory programme was launched in 1995. This new phase is focusing on methods developments, technical outreach, and the transfer of operational activities from the IPCC to the Convention's Subsidiary Body for Scientific and Technological Advice (SBSTA). The purpose of methods development is to ensure that the IPCC Guidelines reflect the most current scientific knowledge for all major anthropogenic sources and sinks of GHGs.

To achieve these objectives, five expert groups consisting of over 130 specialist are addressing key methodological issues in the areas of industrial processes and "new gases" (PFCs, SF₆, HFCs), fuel combustion, agricultural soils, land-use change and forestry, and waste.

Experts groups and their expected products are summarized in Table 1.

In order to fulfill their commitments to the UN Framework Convention on Climate Change, the industrialized countries started searching for cost-effective alternatives for reducing their greenhouse gas emissions. This has led to a rising interest in forestry-based carbon offsets. Tree planting or silvicultural treatments can be used to actively remove carbon dioxide from the atmosphere. Alternatively, conservation practices or improved forest management can be used to prevent or reduce current trends of carbon release from existing forests.

Forestry also has social and economic benefits, ranging from the maintenance of biodiversity and endangered habitats to providing sources of sustainably harvesting local products and employment for local communities.

Full development of large scale forestry projects in carbon offsetting is still dependent on international negotiations. There is need to define a fair mechanism for joint implementation of projects, beneficial to both industrialized and developing countries. Agreement on the concept of joint implementation could promote an unprecedented transfer of funds from industrialized countries to the forestry sectors of developing countries. In other words, instead of developed countries practicing afforestation, developing countries can do it in a

cost effective manner, through their huge labor force, provided that industrialized countries pay for afforestation projects.

Table 1 - FCCC / SBSTA's experts groups work plan.

Expert Groups	Expected Products
1. Fuel Combustion	<ul style="list-style-type: none"> - Investigate a method for non-CO₂ gases using a bottom up approach - Review of emission factors for mobile and stationary sources - Review of CO₂ reference method
2. Industrial Processes and New Gases	<ul style="list-style-type: none"> - New method for fluorinated gases (PFCs, HFCs, SF₆) and for CO₂ from metal and carbide production - Additional methods for ozone precursors (NMVOC, CO₂) N₂O and CO₂ from industrial processes and SO₂ from fuel combustion
3. Land use Change and Forestry	<ul style="list-style-type: none"> - New method for wood products - Review of land cover classification and biomass default data - Guidelines on the use of remote sensing - possible inclusion of particulate and other non- CO₂ gases from biomass burning
4. Agricultural Soils	<ul style="list-style-type: none"> - Significantly revised N₂O method - Development of a CO₂ method
5. Waste	<ul style="list-style-type: none"> - Review of CH₄ emission data for landfills (including open dumps) and wastewater - Incorporation of time release function into the current CH₄ methodology for landfills

3.6 ACTIONS FOR MITIGATION OF GHG EMISSIONS

Energy-related emissions of GHGs are the leading cause of climate change, therefore, there is a growing pressure on all countries to reduce the amount of coal and oil they use and shift to cleaner fuels such as natural gas and renewable energy. There also exists pressure (and incentives) to adopt cleaner technologies so that less damage is inflicted on the environment. But buying such technologies can be costly for the developing countries by large.

It is agreed that the parties to the UN FCCC will reduce their GHG emissions to the level of 1990 by the year 2000.

This scale of reduction is large, but achievable. Technically feasible and cost-effective opportunities exist which would reduce carbon dioxide emissions in all

countries. These measures include increasing the efficiency of energy use and using alternative fuels and energy sources.

Climate change is a global problem that demands a global solution. Nothing short of action which affects every individual on this planet can forestall global catastrophe. No single country or a region is responsible for more than a fraction of the greenhouse gas emissions and no one nation alone can stop the inexorable momentum of the warming.

If the industrialized nations do not help the developing world by providing additional finance and resources, and by transferring new, cleaner technologies to developing nations, global warming will continue to increase. Even if the industrialized world stopped all emissions of greenhouse gases, global warming would continue to accelerate, as developing nations continue to expand their economic base by installing the older, polluting technologies which caused the problem in the first place.

Individual industrialized nations are already taking steps to reduce their emissions of greenhouse gases. Already FCCC is adopted by 165 nations and came into force on March 1994.

For the mitigation of GHG emissions, various programmes and activities are being carried out by various groups and bodies all over the world. These activities are being done at individual, community, national and international levels. A selection of activities under each category is presented here below, which can be an example for the Lebanese situation.

At **individual level** energy conservation is being practiced in many aspects of everyday life.

Domestic energy use (and energy bills) could be reduced by 10 - 20 per cent or more if every household adopts energy conservation options.

Householders can do the following:

- turn off unneeded lights,
- replace incandescent bulbs with 15-watt compact fluorescent bulbs which last much longer, use a fraction of the electricity of a 75-watt incandescent bulb and provide the same amount of light,
- use high-efficiency lamps,
- defrost refrigerator or freezer regularly.
- find the most energy efficient models available when replacing appliances.
- wash laundry in cold or cool water,
- switch to natural gas or biogas for heating, hot water, and cooking,
- reduce space heating temperatures,
- insulate apartments, adequately: good insulation can cut energy used for heating by 50 per cent,
- when renovating or building a new home, install the most energy-efficient features available, including passive solar heating, heat recovery systems,

low-emission window glass and solar water heating units
- plant trees or shrubs around the house, or install them in pots on rooftop gardens. Trees absorb carbon dioxide from the atmosphere, and also reduce the amount of heat in urban areas, cutting down the need for air conditioning.

Avoiding products that contain chlorofluorocarbons: they destroy stratospheric ozone and speed up global warming.

- Recycle as much wastes as possible; use recycled paper.
- Use more organic compost and natural fertilizers when growing any type of crop. Compost stores carbon instead of allowing it to be released into the atmosphere, while synthetic fertilizers release nitrous oxide, which traps heat 230 times more effectively than carbon dioxide and remains in the atmosphere for more than a century.

When using a car:

- Make sure that it is well tuned;
- install catalytic converters to reduce emissions further;
- switch to a high-efficiency low-fuel use model,
- change to fuels which release less carbon dioxide, such as compressed natural gas, or to non-fossil fuels such as ethanol or other biofuels;
- use unleaded or high octane gasoline to reduce lead emissions;
- use your car less, share it more often;
- use a bicycle instead of a car;
- use public transport more frequently.

In addition, people can write to local politicians, asking for improvements in environmental protection in the form of new policies, reduction of air and water pollution, investments in energy efficiency and renewable energy sources, appliance labeling schemes, improved public transport and energy planning and public information and education programmes.

Community level

Various types of activities can be carried out, such as:

- establishing community heating schemes,
- using waste heat from industry;
- installing multi-family heating systems;
- supplementing district heating with biomass energy.
- using white surface and planting trees to reduce air-conditioning loads;
- implementing community afforestation schemes and producing biofuels from fast growing plantations;
- capturing and using biogas from landfills or manure;
- encouraging industrial energy conservation;

- modifying agricultural production patterns to reduce greenhouse gas emissions and use of fossil fuels;
- setting up industry-community groups to investigate and implement innovative energy-saving measures, phasing out CFC use, reduction of air pollutants.

National level

Activities and programmes that are being practiced world over include:

- establishing energy conservation and energy efficiency programmes;
- changing fuel mix to use less carbon-intensive fossil fuels;
- producing methanol or synfuel from gas;
- adopting and inserting cost-efficient technologies into existing power supply systems;
- increasing supply efficiencies through development, demonstration and promotion of advanced generating technologies;
- reforming utility regulations to foster investment in end-use electricity efficiency and co-generation;
 - installing co-generation systems to make more efficient use of the heat produced during electricity generation; overall electricity generation efficiencies can be increased from 30-40 per cent to more than 60 per cent with co-generation;
- encouraging industrial co-generation with biomass energy;
- switching to renewables: solar energy, biomass, hydro and wind power;
- stepping up research into these renewable energy sources;
- making fossil fuels more expensive to encourage adoption of currently-available cost-effective carbon dioxide emission reduction technologies;
- tax energy or carbon dioxide production;
- raising gasoline taxes; using part of the revenue for mass transit and energy efficiency programmes;
- raising car and light truck efficiency standards;
- encouraging conversion of buses and trucks to compressed natural gas or methanol; switching to electric buses and trolley buses;
- encouraging the use of fuel cells, the installation of condensing gas boilers and gas-engine heat pumps and the incorporation of heat-pumps with existing electric boilers;
- removing existing subsidies for fossil fuels;
- strengthening existing appliance efficiencies and standards;
- adopting new efficiency standards on lighting and plumbing fixtures;
- regulating the import of more efficient motors, pumps, fans and compressors.

In addition, to combat climate change, governments can:

- phase out chlorofluorocarbons and other man-made gases;
- stop deforestation and begin afforestation;
- enhance sinks for greenhouse gases;

- begin research into regional impacts of climate change, and establish early warning systems and information programmes;
- establish public information programmes and specific technical training programmes to encourage the introduction of new technologies.

International level

Governments already participate in UN FCCC activities which includes specific commitments to action, and to the provision of additional financial resources and technological assistance to developing countries.

In addition, they can:

- reform patterns of international trade;
- open up home markets of industrialized countries to products from developing nations;
- raise commodity prices;
- build public and private partnerships to transfer technologies and technological expertise to the developing world;
- develop international cooperation in technology development and dissemination, economic relations and management of natural resources;
- improve and develop international co-operation within ecogeographic regions;
- develop international institutions to encourage co-operation among countries;
- strengthen existing international environmental laws;
- set up environmental education programmes.

Many new technologies for mitigating greenhouse gas emissions found to be cost effective. Examples include: a new cleanup process for generating electrical power by fuel cells from methane emitted by landfills has been evaluated and found to be a feasible way of capturing the benefit of clean energy production. Another promising technology to produce alternative transportation fuels (methanol) from biomass which appears cost-competitive with gasoline has been identified.

Annex B gives the German experience in implementing energy efficiency projects.

4. THE NATIONAL CLIMATE CHANGE PROGRAMME

Introduction

Lebanon has signed the UN FCCC during the Earth Summit, which was held in Rio de Janeiro, 1992. Lebanon ratified the Convention in August 1994 and became a party to the Convention.

Since 1994, the Lebanese Government has not taken any actions for the implementation of the UN FCCC. It is expected that by the end of 1997 Lebanon should submit to UN-FCCC secretariat its first national communication, which should include inventories of the GHG emissions and the sinks available in the country. It should also prepare its national plan of action for the management of GHG mitigation activities. It is expected that a detailed description of policies and measures that are adopted for the implementation of emissions control activities should be reported to the secretariat of UN-FCCC.

Under this chapter, a draft plan is proposed, which can act as a basis for the preparation of the final draft of the national climate change action plan.

4.1 A DRAFT OF CLIMATE CHANGE PLAN

This section sets out Lebanon's potential contribution to the UN FCCC activities. A programme of measures is involved which intend to limit the CO₂, CH₄, and other GHG emissions and increase energy efficiency. On the other hand, also forest management actions are proposed which will contribute in increasing the carbon sink capacity of the country.

Therefore, the main sectors that will be considered for the mitigation of GHG emissions, include the following:

- Energy Demand Management (for reduction of CO₂)
 - commercial
 - residential
 - industrial
 - transportation
- Energy supply specifications (for reduction of CO₂ emissions)
- Forestry actions (for CO₂ absorption)
- Methane reduction and recovery
- CFC, HFC reduction and phasing out
- Nitrous oxides reduction

4.1.1 Generalities on Mitigation Options for Reducing CO₂ Emissions

Because fossil fuels account for the largest emissions of CO₂ to the atmosphere, stabilization of the atmospheric concentration of CO₂ will require the greatest efforts.

Carbon dioxide emissions reduction from energy sector fall into two categories:

- (a) improving the efficiency of energy use; and
- (b) substituting less carbon-intensive energy sources for more intensive ones.

Energy efficiency programmes

The same amount of fuel can be converted into more useful energy, that is, less fossil fuel must be burned to achieve the same productivity. And unlike pollution control devices, which generally target a particular gas, higher fuel efficiency has the additional advantage of simultaneously reducing all unwanted emissions, including GHGs.

Energy-efficiency improvement has taken the highest priority option world over. For example, the demand side management (DSM) of energy is a very promising option. This focus on improving household appliance efficiency (such as lighting, air conditioning, refrigeration), power utilization by large users, such as shopping centers, improvements in industrial boilers, improvements in transmission and power plant efficiency, and other actions

Less carbon intensive energy sources present important mitigation options. Natural gas and renewable energy sources are suitable options. For instance, biomass-based energy supply are important options for many countries, largely for rural economies. But it seems that, most renewables are costlier than conventional alternatives. If renewables are to be pursued on a wider scale, economic incentives and technology transfer programmes will be needed.

Numerous studies show that between 10% and 30% gains in energy efficiency are feasible at little or no real cost. Such gains would reduce the demand for energy, enabling a significant reduction in greenhouse gas emissions; wherever that energy is generated by burning fossil fuels. It is estimated that, industrialized countries could reduce emissions by a quarter in industry and by a third in transportation without compromising comfort and performance. Also, changes in transport mobility patterns and lifestyles and changes in land use policy could make a total reduction in transportation emissions of 40% by 2025. Additionally, industrial manufacturers and city authorities could reduce emissions by recycling materials, eliminating solvents, capturing and using methane from landfills, etc.

Energy also is generated much more efficiently. Thermal efficiency in the world's power stations currently averages 30% (more than two thirds of the energy is lost). Thermal efficiency could be increased with new plants to 60%.

Combined heat and power systems, which reuse waste heat from power plants, would further improve fuel conversion efficiency.

In sparsely populated areas, fossil fuels could be avoided altogether by switching to solar, biomass, wind, hydro, and other energy generating technologies. There are many combinations of energy options and improvements in energy efficiency that could yield deep reduction in CO₂ emissions within 50 to 100 years. Combinations analyzed by the IPCC indicate that current emissions could be reduced by around a third to 4 billion tons of carbon a year by 2050.

In 1994, Lebanon consumed 3500 TOE (tons of oil equivalent) as primary energy. 97% of this energy constitute fossil fuels which are imported. The remaining 3% of the energy utilized is renewable energy, 2% is obtained from hydro-electricity, while the rest comes from biomass and solar energy. The combustion of this energy produces yearly more than 13 K-tons of dust, 14 K-tons of SO₂, 6 K-tons of NO_x, and 2800 K-tons of CO₂. In 1994, the yearly energy consumption per capita in Lebanon was 900 KEP (kg of energy/person) which is much lower than the world average (1500 KEP). If we consider a yearly increase in energy demand of at least 7%, the amount of energy consumption will double within a period of ten years, and this implies that polluting emissions will increase in the same proportion.

To reduce the GHGs and polluting emissions, many alternative energy management options can be considered, which can be applicable at the domestic level, industrial level, private sector, and the public sector. These will improve the energy efficiency and reduce the demand for fossil fuels.

Technical studies have consistently shown that profitable energy efficiency investments exist in residential, commercial, and industrial sectors, yet many of these opportunities go unrealized.

Technologies and measures that are applicable and cost effective in the Lebanese situation are presented here below, at the first place an overview of potential actions is presented and then actions under each sector or sub-sector are specified.

4.1.2 Overview of programmes promoting energy efficiency

Governments offer various energy-efficiency programmes, such as appliance labeling and financial incentives for energy-efficient equipment.

Funds are arranged to support individuals, business, NGOs, government agencies, and state enterprises in research and development, policy planning, technology transfer, promotion and demonstration of work related to energy efficiency and renewable energy projects.

Sometimes governments initiate Compulsory, Voluntary, and Complementary programmes.

The Compulsory programmes enforce the requirements and standards in designated facilities and buildings. This include retrofitting existing factories and buildings over a period of 5 to 10 years.

The Voluntary Programme provide technical and financial assistance to any factory, manufacturer, institute, or NGO involved in producing energy-efficient equipment, voluntary introducing and disseminating renewable energy technologies, developing new technologies, or improving the efficiency of existing technologies.

The Complementary Programmes are designed to handle the training of personnel in both the public and private sectors as well as to raise the awareness of the general public with respect to energy conservation. The aim of the Complementary Programme is securing public support for the governments' energy programmes.

Switching fuel options (renewable energy resources)

Government put targets for utilizing the solar energy for water heating and electric power generation. Five year plans for installing solar collectors and photo-voltaic devices are designed and implemented.

Demand side management (DSM) and peak electricity scenario

DSM strategies also influence users to shift their time of electricity use away from peak load hours. Implementation of DSM will require creating institutions, financing users to replace inefficient appliances, enforcing equipment standards, reforming electricity pricing to include economic and social costs, and establishing differential tariffs for peak and non-peak hours. Since 1994 Lebanon already is practicing the differential tariff system.

Alternative lifestyles

Changes in lifestyles could lower energy use and thus GHG emissions. Increased energy consciousness would encourage people to adopt any number of minor changes in their habits, such as car-pooling or riding public transport instead of driving alone to work, reducing average lighting levels in stores and offices, taking care not to leave lights or televisions on when not in use, reducing unnecessary driving, and re-using materials to reduce the need for manufacturing. Lifestyles changes could also be a major factor in lowering the energy demand, such as adopting a less materialist lifestyle, restructuring communities to place people closer to offices and shops, redesigning dwellings and schedules to take maximum advantage of sunlight and solar heating, and making use of renewable energy resources such as wood stoves and wind pumps. It is difficult to tell how acceptable and practical such lifestyles changes will be in the absence of compelling economic incentives.

Choosing a development path

Policies for stabilizing GHG concentrations should enable economic development to proceed in a sustainable manner. Choice of a development path has crucial implications for the future resource use pattern and GHG intensities of a nation. Resource-intensive development path of industrialized countries is proved to be unsustainable. Now they are prepared to make major investment decisions in the coming decades. Shifting to a much less resource-intensive scenario is viable, by investing in infrastructure such as rail and communication, renewable energy resources, location planning to promote lower logistical costs, and by education of consumers.

GHG mitigation studies for countries like Lebanon should focus on analysis of alternative policies that transform the development pattern rather than incremental and isolated project-level interventions. Although market dynamics ensure economically efficient choices, they often reject choices that are superior in terms of other criteria such as equity, conservation of resources, preservation of natural environment, biodiversity, and cultural diversity.

Present models need to be adapted so that they include these additional criteria. In their consideration of GHG mitigation strategies, countries are benefiting by explicitly considering developmental choices such as investment in education, demographic measures, infrastructure, employment, consumer education, sustainable agriculture, land use planning, and decentralization.

The conventional development pattern is both energy and carbon intensive. Mitigation gains will be substantive if the development path chosen for the future is not energy or emission intensive.

The problem of climate change is a challenge as well as an opportunity to move the economy towards sustainable development. Challenges posed by climate change are too serious to be ignored. But the opportunity it has offered the global community to shift the development pattern towards a sustainable path will prove to be too costly, if missed.

4.1.3 Relevant actions for Lebanon under each sub-sector

ENERGY DEMAND MANAGEMENT (for CO₂ reductions)

- Actions for Energy Efficiency in Commercial Sector

Commercial buildings consume an important fraction of all electricity, primarily for lighting, heating, cooling and air conditioning. This means that huge quantities of fossil fuel is used to generate the electricity which causes CO₂ emissions.

Companies can invest in energy efficiency in order to improve their energy performance, lower overheads, and increase their competitiveness. Given the fact that the commercial energy prices (12 cents per KWH) in Lebanon are

much higher than elsewhere, there is urgent need to minimize the consumption for improving competitiveness.

In this respect, Ministry of Environment (MOE) can initiate an energy efficiency programme to help firms reduce lighting bills by forgoing agreements with corporate partners, lighting equipment suppliers and by offering state-of-the-art technical assistance.

Ministry of Electric and Hydraulic Resources (MEHR), Ministry of Petroleum and Industry (MOPI) and other line ministries can together sponsor research and promotion programmes in commercial energy technologies, which can include the renewable energy resources (solar, wind, biomass, and others) and other new technologies.

Research and application of new technologies that would increase the efficiency of the energy production and use, as well as the production of energy from renewable resources should be strongly encouraged. Research and commercialization could be performed in the following fields:

- Research, development, and commercialization of renewable energies to include:
 - solar water heating systems
 - increased use of passive solar systems
 - photovoltaic power supply systems
 - wind power systems for water pumping and electric power generation
 - biomass energy (biogas, solid fuel, etc.)
- Coordination between line ministries to set energy efficiency programmes
- Establishing efficient lights programme to promote the imports of cost effective and efficient electric bulbs.
- Establishing energy efficiency and renewable energy information and training programmes.

- Actions for efficient use of energy at domestic level

The use of energy by home owners account about one third of the Lebanese electricity demand. Therefore, the residential sector contribute significantly in CO₂ emissions. Key targets for energy use improvement can include heating and cooling, home appliances, lighting, and the design of the building exterior. Upgraded apartments can save up to 20% of energy input, at a profit to home owners.

An energy-efficient new home that meets the best design criteria can consume 50% less energy than a poorly designed alternative.

Key opportunities in the residential sector can include a mix of partnership with the private sector, economic incentives, and new standards and building codes. It can also include training and awareness component to assist householders to initiate energy-efficiency activities.

MOE can accelerate the commercialization of advanced energy efficient appliances (e.g. refrigerators, washing machines, air conditioners, etc.) in cooperation with line ministries and the private sector. In addition, awareness raising campaigns can be launched and training programmes established.

The urban planning department of the Ministry of Public Works can develop a new building code for energy-efficient residential and commercial buildings, to enable the building owners, architects, planners, engineers, and handicrafts men to take initiatives on energy savings in homes and other structures.

More specifically, the following activities can be undertaken:

1. Coordination between live ministries to set residential appliance standards and develop promotional strategies for air conditioning units ovens, refrigerators, heating equipment, television, and electric lamps.
2. Amending and enforcing the building code, to include passive solar concepts, such as tree planting by the private and public section. (Shades of trees will reduce air conditioning loads and trees will absorb GHGs and filter out air pollutants).
3. Establishing training programmes aiming at energy-efficiency in buildings.
4. Launching awareness on energy efficiency and renewable energy applications.
5. Initiating research programmes aiming at air pollution reduction in urban centers.
6. Adopting differential tariffs for peak and non-peak hours of electric energy. The Lebanese MEHR has already adopted this system, which provides greater fairness in electricity rates for various users and strengthens incentives for saving electricity.

Energy Efficiency in Industrial Sector

There exists 23,000 industrial enterprises in Lebanon, 90% of them being small-scale operations.

Industries consume about one quarter of the country's end-use energy and hence significantly contribute to the carbon emission. There is an urgent need to develop research programmes for energy efficiency and waste minimization technologies in the industrial sector.

The old and inefficient industrial motors need replacement. A collaboration programme is needed to test, verify, and disseminate information on the cost saving potential of industrial motor systems.

- MEHR and MOPI should initiate a marketing effort following evaluation of cost saving potential of motors.

- MEHR and MOPI to become instrumental in promoting highly efficient equipment and appliances (such as super-efficient refrigerator) to the local market.

- MOE to sponsor a research programme that will prioritize candidate clean production (CP) technologies and facilitate the transfer of environmentally sound technologies (ESTs). These tasks can be mandated to local research centers who can play the role of intermediaries for the transfer of CP concepts and ESTs.

- MOE and MOPI to promote voluntary source reduction of CO₂ emissions and product recycling programmes targeted at industrial producers. Using recyclable materials consumes less energy than manufacturing products from virgin materials.

Based on the Lebanese situation, the following specific measures can be adopted:

- Line ministries, as well as the industrial sector to initiate energy saving programmes that support installation, expansion and modernization of plants and machines that:
 - save energy and use it efficiently, and
 - utilize renewable energy.
- Shifting to natural gas as a clean fuel to be encouraged and enforced, since it emits less CO₂ and SO₂ per unit of recovered energy.
- Develop efficiency standards and promote efficient transformers, to reduce energy losses and increase the overall efficiency of electric energy production.
- Promote the concept of co-generation of energy by the use of exhaust gases from certain industries (for example power plants or from the incineration of solid wastes). At the initial stage, this can be applied on a pilot scale, by both the private and the public sectors. co-generation will improve the efficiency of the plant itself and produce energy from a wasted source. After the pilot stage this technology can be commercialized.
- Promote research into technical refinement of power plants.
- Reduce use of agrochemicals (fertilizer and pesticides), which will lower the CO₂ emissions from electricity and gas consumption during the manufacture of fertilizers and pose environmental risks due to pesticide uses.

Transportation actions

The energy balance of Lebanon in 1993-1994 indicated that, combustion of fossil fuels for transportation amounted to more than 40% of the total energy consumed in the country and therefore, it holds the first place in CO₂ emissions.

The fleet size of vehicles in the country in 1995 was more than 1.3 million.

The policy focus for transport sector in Lebanon is on rebuilding roads with no parallel measures for improving efficiency and reducing fuel consumption, or using policy measures such as road pricing.

Private cars and buses provide the main public transport services.

Lebanon is renewing its car fleet. Since 1994 it is restricted to import used cars that are more than 10 years old. This measure intends to lower the emissions.

Policy options currently under consideration include raising the relative price of gasoline and the gradual introduction of unleaded fuel (to reach 50% of gasoline consumption by the year 2003)

Transportation is predicted to be the fastest growing source of CO₂ emissions throughout the year 2000. On the other hand, due to the prevailing bad road conditions and the lack of traffic planning scenarios, traffic congestion are wide-spread, resulting in additional fuel consumption and CO₂ emissions.

Activities and actions listed here below have the potential for lowering the consumption of fossil fuels.

- The Ministry of Transport should improve and increase the attractiveness of public transportation. This can be achieved by various measures including: establishment of central bus stations and maintenance facilities; expand the fleet of buses to reach eventually to 1 bus for 1000 persons; traffic control systems, attractive bus stops, and facilities that speed up urban transportation.
- The authorities should re-establish and strengthen the railway network (in view of a regional network) which is considered to be an environmentally friendly model of transportation. Feasibility of this should be established with neighboring countries before final decisions.
- The authorities should plan for establishing a subway network in greater Beirut.
- Imports of efficient tyres, which increase fuel economy by 4%, should be encouraged.

- Only after establishing and improving the public transportation sector, the government should increase the tax on fuels to encourage fuel efficiency.
- Production and dissemination of information for public awareness raising by: producing brochures on energy-saving and environmentally oriented driving. These brochures make drivers aware of fuel-saving habits while driving, encourage them to use public transport systems, and foster greater environmental awareness on the part of the automobile users.
- The Ministry of Transport (MOT) along with research institutes and universities should foster and promote research projects concerning urban traffic planning and decrease of car emissions in cities.
- MOT to institute a tyre labeling programme and set specifications for imports to help consumers identify tires that have low rolling resistance and superior safety standards.
- MOT to establish air pollution monitoring centres.

ENERGY SUPPLY ACTIONS (for CO₂ reduction)

The fossil fuels that are imported to meet the country's energy needs vary in their greenhouse gas and other pollutant emissions. Natural gas emits the least amount of CO₂ per unit of energy provided, and renewable energy sources (solar, wind, and other release no net CO₂).

Therefore, in order to reduce CO₂, SO₂, NO_x emissions, MOPI and MEHR should promote the use of natural gas; encourage the commercial application of renewable energy resources; make more efficient use of existing hydro-electric resources; and reduce the loss of energy in electricity transmission.

More specifically, the following actions should be considered:

- Promote the use of natural gas as air pollution control strategy. This will serve dual purpose: it will lower GHG emissions and decrease of air pollution in urban areas by minimizing SO₂, NO_x, particulates, and other pollutants.
- Encourage the private sector to invest in high-efficiency gas technologies and in cooperation with research institutes demonstrate the viability of such initiatives.
- MOE, MOPI and MEHR to initiate collective purchases of renewable energy technologies by large scale users (e.g. military installations, schools, universities) to enable equipment manufacturers to increase their production capacity and reduce unit costs, which will broaden the market for the renewable energy technologies, such as solar water heaters, photovoltaics, biomass

energy, and related energy technologies. It is very important to set targets for quantities to be installed each year.

- MEHR to implement the gradual replacement of old transformers with high-efficiency electric transformers.
- Encourage the improvement of hydro-electric generation at existing units and develop the potential of remaining water resources.

FORESTRY ACTIONS (for CO₂ absorption by trees)

CO₂ concentrations are the net result of emissions and absorption that occur through natural processes and human activities. Man can do two things for the mitigation of CO₂ emissions: a) by reducing the emissions, and b) by increasing the absorptive capacity of the natural system, often referred to as carbon "sinks". Trees, plants, and soil absorb and store CO₂ from the atmosphere, and are a significant carbon sink besides oceans.

Sink protection actions are very cost-effective methods for limiting CO₂ emissions.

Foresters should maintain existing forest cover, slow deforestation, encourage natural regeneration of degraded forests, establish tree plantations, and promote agroforestry.

Forestry sector offers a unique opportunity to sequester carbon through better management of vegetation, detritus, and soils, as well as in wood products. Furthermore, sustainable grown biomass can be used as a substitute for fossil fuel and other emission-intensive products like cement. These areas form the basis for possible GHG mitigation strategies in the forestry sector.

The country's net carbon dioxide emissions could be partly stabilized through a tree planting programme.

Some proportion of the required reduction, however, might be obtained from management of forests.

Different management options of forests might have on emissions (or sequestering) of carbon include:

- a reduction in the rate of deforestation.
- an increase in the area of forests (afforestation).
- an increase in stock of carbon within existing forests.
- an increase in the use of wood (including the efficiency of its use).
- the substitution of wood fuels for fossil fuels.
- measures for reducing the occurrence of forest fires.

Production forestry (industrial plantation), is identified as a priority option for most countries due to an expectation of large financial returns.

The mitigation strategies for highly populated areas can focus on social forestry projects, such as community-based forestation, agroforestry, and fuel wood production.

Protection of catchment areas, nature reserves, and old-growth forests are also viable mitigation options with multiple environmental benefits.

Incentives for the implementation of mitigation policies include:

- Provision of soft loans for establishing forest plantations by private individuals, landowners, and industry.
- Assistance in increasing the value of the forest estate through enhanced marketing of various non-timber forest products.
- Provision of technical assistance, including the selection of appropriate species for different options.

The forestry sector can play a unique role in mitigating GHG emissions while serving the various needs of the country

Specific actions and activities in the forestry sector should include.

- The Ministry of Agriculture should **initiate programmes that encourage better management of forests and promote tree planting**, through free technical consultation, free seed and seedlings, and management plans. Better management and accelerated planting programmes will decrease carbon emissions, increase carbon uptake, and provide significant economic and environmental benefits over the long run.
- The Ministry of Agriculture should **also design an action programme** that includes wide-ranging measures for combating types of forest damage which is caused particularly by, fires, and urban development.
- MOE to initiate voluntary source reduction and paper recycling programmes and to encourage research into recycling technologies. These programmes pay a double dividend for climate protection: source reduction and recycling lowers the demand for virgin fiber and reduces harvest levels, decreases CO₂ emissions from forests, while recycling paper consumes less energy than manufacturing paper from virgin fiber.
- MOA to provide technical and economic assistance to private landowners who are ready to practice better forest management and greater tree planting.

METHANE REDUCTION AND RECOVERY ACTIONS

The primary sources of methane emissions in Lebanon are the solid waste dumps, livestock, and anaerobic decomposition of wastewater.

Various cost-effective CH₄ mitigation options exist. In general, methane mitigation options offer attractive benefits, including a return on investment, improved local air and water quality, and increased safety. The main barriers to implementation are lack of funding for projects and lack of awareness among policy-makers, farmers, and waste managers. Following is a list of mitigation options.

Mitigation at livestock operations. Emissions of CH₄ from ruminant animals can be significantly reduced by improving animal productivity and reducing CH₄ emissions per unit product. Methane emissions from manure can be reduced by constructing covered lagoons (or waste digestors) at larger farms to produce biogas for on farm energy use. In addition, small and large scale digesters designed to enhance the anaerobic decomposition of manure can be introduced; these options have the additional benefit of producing high-quality fertilizer and feed as a by-product.

Domestically raised cattle, deer, buffalo, sheep, and goats contribute 15-20% of methane emissions caused by human activities. Much of the food eaten by these hoofed animals cannot be digested until it has been fermented. This process takes place in the part of the digestive system called the rumen. Amongst the various micro-organisms found in the rumen are bacteria that produce methane as a by-product of the fermentation process. Under certain conditions, additional methane is also released from the animals' wastes.

New technologies can both raise the productivity of cattle and lower methane output. Most cattle are raised on poor quality fodder and on land that cannot support other type of farming. The resulting deficiencies in various nutrients encourage the production of methane. Studies have shown that supplementing a cow's diet with substances such as urea increases the animal's ability to digest food. This has two beneficial effects. First, by reducing the amount of fermentation taking place during digestion it can cut methane emissions per unit forage by 20-75%. Second, by raising the productivity of each animal it allows dairy cows to produce more milk and beef cattle to fatten faster.

Wastewater treatment. The primary option for reducing CH₄ emissions from wastewater is to construct water treatment plants. In addition, industrial and municipal wastewater should be separated and treated. The obvious benefits of these measures are increased public health and cleaner water; the main barrier preventing implementation is the extremely high capital cost of construction.

Landfill methane recovery. Two mitigation options in this regard are landfill gas energy recovery and waste reduction through recycling and composting.

Landfill gas to energy projects offer the potential for a revenue stream from the sale of electricity or medium-quality gas. The major barriers to project development are potentially high gas treatment costs and lack of a market for the energy near the landfill sites.

Therefore, it is strongly recommended that:

- Methane gas from planned solid waste landfills and dumps to be extracted and used as fuel. Studies indicate that many landfill operators, by installing recovery systems, could make profit by using or selling the methane as released from the landfills.
- MOE to develop stringent criteria for landfill design and operation. It should also develop outreach programme for municipalities, and research and training programmes as well.
- Ministry of agriculture to initiate pilot projects for testing and promoting the use of compost made from organic component of solid wastes.

The task for the design of mitigation options for methane gas is challenging. The next steps to be taken to encourage implementation of effective mitigation projects can include: (a) establishment of criteria for selecting mitigation options; (b) promotion of institutional awareness, and (c) acquisition of funding for mitigation projects.

CFC, HFC, NITROUS OXIDE REDUCTION ACTIONS

Due to long atmospheric lifetimes, high global warming potentials, and increasing emission, CFCs and HFCs are a growing contributor of the climate change problem.

In the case of Lebanon, these gases are not produced locally, they are imported. Also new refrigerators and air conditioning units are imported containing CFCs and HFCs, which contribute to the global warming potential and present a threat to the ozone layer; if these refrigerants are not handled properly, particularly towards the end of their life cycle.

- MOPI should phase out the use of CFC and HFC and allow the import of CFC-free substitutes, as well as energy saving appliances. Also it should ban the manufacture or import of atomizers.
- As for nitrous oxide emissions, which is mostly from fertilizer and chemical manufacturing plants, this can be controlled through better trapping mechanism of the emitted flue gases evolving from these plants. Improved fertilizer management will also result in lower emissions of N₂O from the soil.

- As an alternative strategy for reducing the N₂O emission from soils, MOA to promote organic farming practices and organic crop marketing, to enable a reduction in chemical fertilizer use.

The table here below provides a summary of the main actions recommended in the previous sections.

Table 2. Summary table of main actions for the mitigation of GHG emissions.

<p>A - ENERGY DEMAND MANAGEMENT (for CO₂ reduction)</p> <p>Commercial Demand</p> <ol style="list-style-type: none"> 1. Coordinate between different line ministries to achieve energy efficiency. 2. Establish efficient lights program. 3. Establish cost-shared demonstration for emerging technologies. 4. Establish energy efficiency and renewable energy information and training programs. <p>Residential Demand</p> <ol style="list-style-type: none"> 5. Form the energy efficient electrical appliances market partnerships. 6. Enhance residential appliance standards. 7. Develop economic incentive to encourage energy efficiency. 8. Upgrade residential building standards. 9. Create energy efficiency training programmes and pilot housing technology upgrading centers. <p>Industrial Demand</p> <ol style="list-style-type: none"> 10. Create a motor efficiency testing program. 11. Establish energy efficient electrical appliances programme for industrial air compressors, pumps, fans and drives. 12. Initiate source reduction, clean production, and recycling. 13. Reduce the use of agrochemicals. <p>Transportation Demand</p> <ol style="list-style-type: none"> 14. Expand and maximize the attractiveness of public transportation. 15. Adopt a transportation system efficiency strategy. 16. Promote greater use of telecommunication and other measures to reduce the use of vehicles. 17. Develop fuel economy labels for tyres and setting import specifications for tyres. <p>B - ENERGY SUPPLY SPECIFICATION (for CO₂ reduction)</p> <ol style="list-style-type: none"> 18. Increase natural gas share of energy use through governmental regulatory reform. 19. Promote high-efficiency gas technologies. 20. Form renewable energy market mobilization collaborative and technology demonstrations. 21. Promote integrated energy resource planning. 22. Retain and improve hydroelectric generation at existing dams. 23. Reduce electric generation losses through transmission pricing reform. <p>C - FORESTRY ACTIONS (for CO₂ absorption)</p> <ol style="list-style-type: none"> 24. Reduce the depletion of non-industrial private forests. 25. Encourage tree planting in non-industrial private forests. 26. Promote large scale tree planting programmes in cities in cooperation with NGO's. <p>D- METHANE REDUCTION AND RECOVERY ACTIONS</p> <ol style="list-style-type: none"> 27. Encourage natural gas utilization as fuel. 28. Develop stringent criteria for landfills. 29. Develop landfill outreach programme for municipalities. 30. Initiate research programme for methane recovery from landfills. 31. Initiate training programmes with livestock producers. 32. Initiate source reduction, pollution prevention, and recycling. <p>E - CFC, HFC, PFC, NITROUS OXIDE REDUCTION ACTIONS</p> <ol style="list-style-type: none"> 33. Phase out CFC use in industry and refrigeration. 34. Launch partnerships with importers of HFC-22 to eliminate HCFC-23 emissions. 35. Improve efficiency of fertilizer nitrogen use.

4.2 INTERSECTORIAL COORDINATION MECHANISM FOR THE LIMITATION OF GHG EMISSIONS

Enforcing existing laws and regulations such as those stipulated under concessions is a good starting point in mitigating GHG emissions.

For mitigation options to be translated into various activities, appropriate policies must be formulated, together with a legal framework to support their implementation. The need for effective institutions to design, oversee, and manage the implementation process is critical. In case of Lebanon, the establishment of a National Coordination Unit for Climate Change is adequate and its role would be strengthening the horizontal and vertical linkages among national government agencies, such as departments of environment, and other actors such as the private sector, NGOs, and community organizations.

At the first stage, it is urgently needed to establish the National Coordination Unit for the effective implementation of the UN Framework Convention on Climate Change (FCCC). Detailed terms of reference (TOR) should be prepared, before establishing the Unit. Its composition can be either from a single ministry or official body or from the representatives of various ministries research centers, NGOs and others.

Tasks of the Coordination Unit should include:

- participate in the activities of UN FCCC (Conference of Parties, various programmes of FCCC Secretariate)
- preparation of the climate protection policy for Lebanon
- coordination of activities among ministries and private sector
- preparation of the national climate change communications for the Secretariate of FCCC
- establishment and operation of climate observation stations and air pollution monitoring instruments
- strengthening and coordinating the national research capability
- exchanging information with regional and national climate centers
- launch awareness raising campaigns and educational programmes
- organize training programmes to support the implementation of the FCCC
- organize training programmes for local enterprises to aim at energy efficiency, pollution control and clean production
- participating in the CC: TRAIN Programme
- develop indicators for climate change
- conduct/coordinate the climate change country study of Lebanon. This aims to, (a) evaluating the present and projected GHG emissions in key sectors, and (b) identify and compare costs of technological options for GHG mitigation. This to include also formulation of emission reduction plan
- prepare the national response strategy for climate change.

The Coordination Unit should be served by a technical secretariat.

It is advisable that the coordination unit is located in the Ministry of Environment so that it can report to the minister of environment.

4.3 SCIENTIFIC AND TECHNOLOGICAL RESEARCH REQUIREMENTS

Active participation of Parties in UN FCCC activities will also contribute to the increase of scientific and technological research activities in the country.

In section 4.2 above, already it is indicated that a National FCCC Coordination Unit should be set, which among other duties will handle the management of scientific and technological research programmes. It will also coordinate the activities and actions of the national climate change plan, which envisages scientific and technological research in various aspects of GHG mitigation and related fields such as energy and other sectors.

When the Coordination Unit conducts inventories of sources and sinks of GHGs in the country, through cooperation with existing research centers and universities, this actually would be the integral part of the national report to be presented to UN FCCC secretariat. Lebanon is supposed to present this report by mid 1997. The same reporting process will be repeated year after year, which implies that a continuous scientific research work is involved in the UN-FCCC implementation.

The type of scientific research work that the National Coordination Unit would concentrate on include studies in the following fields:

- energy efficiency
- clean energy resources development and utilization
- building code amendment
- setting up specifications and standards for imported appliances and lighting system
- identification of technological advances in the fields of cleaner production
- facilitating the development of modern forestry management techniques to maximize carbon sink capacity
- facilitate the transfer of alternative agricultural techniques
- preparedness development for the consequences of climate change, and
- other related fields.

The scientific and technological research can be conducted by various departments of the line ministries (LIBNOR, and others), National Scientific Research Council, university departments and private sector. In addition, a cooperation would be established, through UN FCCC secretariat, with an industrialized country experts (e.g. USA, or UK, or Germany) to establish the foundations for conducting an effective GHG inventory study. The cooperating industrialized country is supposed to cover the costs.

4.4 DEVELOPMENT OF STANDARDS FOR GASES WHICH AFFECT THE CLIMATE

In section 4.1 above, all convenient actions for control of GHG emissions in Lebanon are listed and the development of general standards for appliances, equipment and processes for energy efficiency and conservation are covered in there. Actually the National Climate Change Coordination Unit, with its technical secretariat, will follow-up these matters with the line ministries and standards will be set gradually and then continuously updated, based on new technological developments that surface every now and then.

The targets for GHG reductions are already set at UN-FCCC and are amended during COPs. For instance, in the case of CO₂, it is obligatory that, the emissions will be lowered to the level of 1990 by the year 2000. However, the level of reductions for each country depends on the results of the national inventories for the strength of Sources and Sinks of the GHG's

Similarly, all related sources of GHG emissions are listed for achieving reductions. For instance, the following general standards can be adopted and gradually updated

- To reduce CO₂ emissions
 - car fleet in the country to be renewed continuously,
 - in power generation sector natural gas to be utilized instead of fuel oil and other fossil fuels;
 - energy efficiency to be widely promoted,
 - forest fires and tree felling to be prevented and overall forest management to be improved;
- To reduce CH₄ emissions
 - industrial operations to be upgraded;
 - alternative agricultural technologies to be introduced;
 - energy to be produced from wastes e.g. biogas to be produced from animal wastes;
- To reduce N₂O emissions
 - nitrogen fertilizer application to be minimized;
 - clean technologies to be imported;
- To reduce CFC emissions
 - environmentally sound technologies to be transferred for phasing out the use of CFCs.

4.5 EQUIPMENT AND INSTRUMENTATION NEEDED FOR CONTINUOUS MONITORING OF GHG EMISSIONS AND OTHER AIR POLLUTANTS

There are no centers for direct and continuous measurements of air pollutants in Lebanon. Very crude measurements are being done in this respect, which cover some polluting industries such as cement and asbestos plants. Transport is the major contributor to poor air quality in urban areas.

Until now no nation-wide air quality monitoring programmes or emissions inventories have been conducted, resulting in a considerable lack of data on climate change, health impact, and ozone depletion. Financial constraints has hindered the authorities to take initiatives in this regards.

Actually now there exists opportunities to obtain financial and technical assistance from donors for implementing air monitoring programme. The National Coordination Unit can follow up this matter, when established, with the secretariat of FCCC and other donors.

It is urgently needed that Ministry of Transport and Ministry of Environment initiate a joint programme for air quality monitoring, particularly in urban areas. Stationary and mobile stations is needed to be established. In case of Beirut, priority locations are the main entrances to the city, where, due to heavy traffic the quality of air is deteriorated, particularly during the rush hours. At least four sets of equipment is needed for four different locations.

UNEP/GEMS and GEF have supported air quality monitoring programmes in urban centers of some countries. Lebanon might benefit from such programmes if applied for it.

Equipment and instrumentation that are needed for conducting air quality monitoring studies are readily available in the world market, but even if the costs are arranged, the essential precondition for starting a monitoring programme in Lebanon needs a team of trained staff.

The air quality monitoring programme should address two important issues: - it should continuously measure the concentrations of GHGs, and,
- other pollutants such as SO₂, CO, particulate matter, and other air pollutants.

Mobile units can be utilized in measuring the emissions at point sources such as factories.

4.6 EXCHANGE OF INFORMATION ON ENVIRONMENTALLY SOUND TECHNOLOGIES (ESTs) AND SCIENTIFIC DATA ON CLIMATE CHANGE

The UN-FCCC stipulates that exchange of technical information and scientific data will be exchanged between the parties of the Convention. This process is underway through the secretariat of UN-FCCC.

Already the Climate Convention Information Exchange Programme (CC: INFO) is initiated by the FCCC Secretariat and periodically documentation is provided to the parties.

Also a quarterly: "Climate Change Bulletin" is published by the FCCC Secretariat. In addition, the parties to the Convention have access to research documents, reports, publications, and other sources of technical information, which contribute to the transfer of ESTs.

For effective use of these information there exists some requirements such as (skilled manpower) should be available in the country. Otherwise, there is need to invest in human resources development in order to increase EST exchange capability, which will contribute to the advancement in the country.

Besides technological information and scientific data, the FCCC Secretariat also provides information on the experience of other countries in developing actions at policy level, initiation of economic incentives, and development of legislation for the reduction of GHG emissions.

Lebanon can benefit from many programmes of FCCC Secretariat if a Coordination Unit is established.

4.7 PUBLIC AWARENESS RAISING ON THE DANGERS OF CLIMATE CHANGE AND MODES FOR PUBLIC PARTICIPATION

Governments and international organizations are doing a lot to address climate change and other related themes such as air pollution and acid rains. Governments, however, can not solve the problems on their own. While much needs to be accomplished at a policy level, real action must take place at the individual and community levels.

There is a lack of awareness concerning the climate change and other issues and insufficient knowledge of alternative actions. One idea is to organize seminars bringing different sectors of society together (women, youth, business, scientists and politicians).

On the other hand, promoting awareness through education is a key factor in mobilizing actions in favour of more reasonable energy consumption patterns. All technical solutions are dependent on a widespread change in peoples'

attitudes towards energy. Many people will support and promote sensible long-term energy practices when they become more aware of the damage being done to ecosystems through the extravagant and inefficient use of energy resources for which they are responsible.

A listing of possible activities are already listed under Section 3.6.

The most effective activities at individual and community levels might be the following:

- dissemination of information on of alternative lifestyles to enable a reduction in all sorts of resource consumption,
- initiation of tree planting programmes;
- cooperation with government to set national standards, guidelines and goals to limit the emissions of GHGs. On the other hand, to identify and eliminate existing policies that work against reductions in GHG emissions.
- promotion of the use of renewable energy technology applications such as passive and active solar, wind, and biomass (wood, biogas, refuse derived fuel, etc.), for space heating, water heating, electric energy generation and other applications.

The National Climate Change Coordination Unit can initiate and launch a national scale awareness and education campaign in cooperation with line ministries, universities, research centers, media, NGOs and other groups. In this respect, the Ministry of Education can integrate climate change concepts in their environmental curricula. Already the ministry has developed the "National Strategy for Environmental Education" and every year 60 teachers are trained on various aspects of environmental education. In 1995 the Ministry has developed an Environmental Education Programme, which was adopted by the Government.

Some private educational institutions already address the environment and development, the National Climate Change Coordination Unit can be instrumental in encouraging the educational institutions to introduce, in their curricula, the issues related to GHGs and global warming.

4.8 PARTICIPATION IN TRAINING PROGRAMMES

In 1993, the United Nations Institute for Training and Research (UNITAR) in close collaboration with the FCCC Secretariat initiated the CC: TRAIN training programme to support the implementation of the UN-FCCC.

CC: TRAIN is the main training programme available on climate change. Its aim is to assist the governments to implement the Convention through training, capacity-building and institution strengthening. So far a pilot programme was accomplished in three countries. Starting 1996, a three-year second phase of CC-TRAIN in 17 countries is launched (none of the Arab countries are

participating), with a funding from the GEF (Global Environmental Facility) and bilateral donors.

Phase II is focused on assisting developing country Parties to the Convention to prepare their national communications as required under Article 12 of the Convention, to be submitted to the Conference of the Parties (COP).

This national undertaking involves:

- preparing a GHG inventory
- identifying options on how best to reduce GHG emissions
- undertaking studies on the possible impacts of climate change
- and identifying options on how to best adapt to the impacts of climate change.

The programme aims to maximize public involvement in realizing the Convention's goals.

In addition, it aims to consider the policy implications of the national studies and integrate them, as much as possible, in the country's current development plans as part of a broader climate change response strategy.

The challenge for many countries is that their institutional framework for implementing the Convention is not obvious. There is also a lack of awareness among policy makers about the issue.

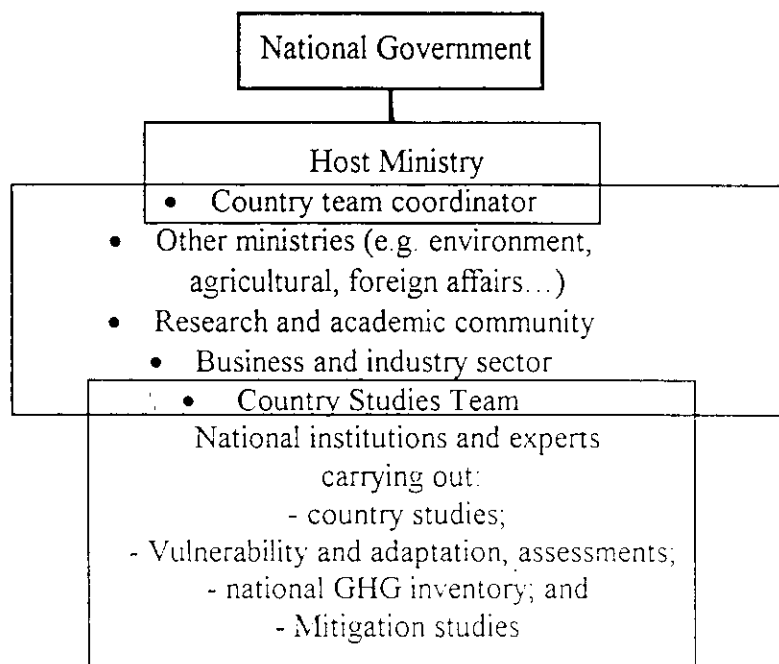
To help governments meet the challenge of formulating their national communications, a country team approach is adopted.

The country team (in the case of Lebanon, the National Climate Change Coordination Unit) will be the host agency designated by the government. The team will include national experts from various government agencies, industry, NGOs, and the research and academic community. It will be responsible for organizing the CC:TRAIN activities and preparing country studies, the national implementation strategy, and the national communications.

The CC:TRAIN programme offers country teams the resources and the training they need for undertaking the required activities and tasks.

In this way, countries not included in phase II will nevertheless be able to start using the services and materials developed for the CC:TRAIN.

The following diagram presents a typical structure of the country team.



Developing countries' first national communications are due in 1997, but there is tacit understanding that the least developed countries will submit reports only when they can. With western consultancies, accounting firms, and experts poised to play a major role in preparing reports for developing countries. The benefits of building indigenous capacity and expertise in developing countries through country studies could be tenuous. Country studies are now the major area where FCCC-related bilateral assistance is being offered. The cost of collecting and reporting data from developing countries is to be paid by OECD countries. The United States, Germany, Switzerland, and the United Kingdom are bilaterally funding and assisting with country studies.

In addition to the preparation of the national communications, the country team is supposed to organize the following activities, with support from regional partners:

- workshop on the Climate Change Convention
- workshops on climate change studies
- workshop on preparing national implementation strategies and national communications
- conference on implementing the Climate Change Convention.

Phase II of CC: TRAIN will be implemented in 3 phases in each country. The following table summarizes the overall programme:

Phases	Activities
1. ESTABLISHING COUNTRY TEAMS AND GENERATING NATIONAL AWARENESS	- country team orientation workshops - national workshops on the Climate Convention - public information activities
2. UNDERTAKING COUNTRY STUDIES	- regional training workshops - technical assistance - national consultative meetings - regional exchange workshops
3. FACILITATING POLICY DEVELOPMENT	- national and regional training workshops - national consultative meetings - regional exchange workshops

In order to participate in the training programme of CC:TRAIN contacts should be established with UNITAR at the following address:

- Gao Pronove
 Programme Manager
 email: gpronove.unfcc@unep.ch

- Stephen Gold
 Technical Coordinator
 email: sgold.unitar@unep.ch

Address: UNITAR, Palais des Nations
 1211 Geneva 10,
 Switzerland

Tel: (41-22) 798-5850
 Fax: (41-22) 733-1383

4.9 THE ECONOMIES OF CLIMATE CHANGE

Global climate change is an economic issue because any policy response will involve sacrifice. If we take measures to reduce our greenhouse gas emissions

substantially or to adapt to climate change impacts, we will have to pay for these efforts by diverting resources away from other activities. If climate change impacts are still felt despite our efforts, then we will have to suffer the consequences of environmental damage. The economics of global climate change is primarily about how to balance these sacrifices.

A balanced policy response must seek to reduce both greenhouse gas concentrations and the damage they cause. Atmospheric concentrations can be lowered by reducing emissions and by creating new "sinks" like forests for absorbing greenhouse gases. Meanwhile, the damage from remaining greenhouse gases can be lessened by constructing dikes and sea walls or by developing new seed varieties that are better suited to a changed climate. Because there is no feasible policy response in the short term for bringing greenhouse gas concentrations back to pre-industrial levels, some measures for adapting to the expected impacts of climate change will be essential. The optimal balance between reduction and adaptation will depend on each policy's costs and benefits. One economic study shows that, while some abatement emissions is warranted, it would be less than the amount required to stabilize the GHG concentrations at their current levels.

The cost of a climate change policy can be estimated by calculating the change that it produces in human well-being. One way to estimate this change is to determine the additional income that would be required to make society as well off with the policy as it would be without it.

Most economist believe that the total cost of reducing emissions by a significant amount would be high, more than one percent of gross domestic product (GDP).

The benefits of a climate change policy can be estimated by calculating how much the policy reduces environmental damage. Calculating the benefits of climate change policy is even more controversial among economist than is estimating the costs. An order-of-magnitude estimate can be obtained by asking how much of an economy would be seriously affected by climate change. For some industrialized countries, it seems that the answer is not more than 1-3 % of GDP.

Once policy-makers have determined what their objectives are, economist can offer insights into how to craft the most cost-effective policies. Economist generally prefer economic instruments to direct regulation. Two particular proposals for economic instruments have received the most serious attention. The first is to impose tax on carbon dioxide emissions. Several countries, including Sweden, Finland, Norway, and the Netherlands, already levy a national carbon tax, and the European Community too may soon adopt a uniform but nationally administrated tax. The second proposal is to set a quantitative limit on the global emissions of greenhouse gas and then allow emissions permits to be traded like ordinary goods and services.

Making a significant reduction in atmospheric concentrations of greenhouse gases will require international coordination and agreement. When one country reduces its emissions, all countries benefit. But a country reducing its emissions will incur a substantial cost and will receive only a fraction of the total benefit achieved by its actions. All countries would benefit from a greater reduction in global emissions.

The direct benefits of reducing sea-level rise would be very high for some countries but negligible for others. One US study suggests that a one meter rise in sea-levels would cost the US about \$ 11 billion annually, or 0.2% of current GDP.

Action is necessary because the damage caused by climate change may be catastrophic and irreversible. Nasty surprises, such as changes in certain ocean currents that strongly influence regional weather patterns, could not be ruled out. Once such disasters started to occur, it would take at least several generations before measures to reverse climate change could have significant results.

Reducing greenhouse gas emissions would have additional benefits unrelated to climate change. Fuel efficiency would save money. Lower emissions of pollutants from factories and automobiles would improve air quality in urban centers and reduce acid rain. Putting a stop to deforestation would reduce soil erosion, offer aesthetic and economic benefits, and protect biodiversity. One study suggested that while a hypothetical carbon tax might cost Norway 2.75% of its GNP in the year 2010, 70% of that cost would be recouped through such non-climate benefits.

4.10 INFORMATION ON CLIMATE CHANGE TO POLICY MAKERS FOR BETTER DECISION MAKING

For all climate change issues, environmental effects result from the accumulation of greenhouse gases over many decades. In some cases such as CO₂ the effects can persist for many decades even after corrective measures are taken.

This means that policymakers need credible long-term projections of potential impacts so that they can take action early enough to avoid environmental harm that may be irreversible. Furthermore, detailed and complex information must be condensed, simplified, and transmitted to policy makers in a form that facilitates decision-making without seeming to dictate policy which, in the end, must be based on value judgments.

National policy-makers need information on the magnitude of the GHG reduction potential and the cost and benefits of mitigation options (as detailed in section 4.9). It would be good to note that, the national report on mitigation assessments of GHGs can form the basis for the preparation of national action

In August 1994, the Business Council for a Sustainable Energy Future of Washington D.C. has recommended that governments should adopt six principles when addressing global warming issues.

The Six principles are:

(1) Policies should be market-based. Policies for remedying global climate change should, to the extent possible, be market-based while taking into account the environmental externalities of energy use. The best policy instruments provide economic incentives to deploy and adopt clean and efficient energy technologies and practices. This approach minimizes economic distortions and energizes the financial resources and organizational assets of the private sector.

(2) Clean -energy alternatives should receive recognition. Policy-makers should explicitly recognize the environmental benefits of technologies and services that have the potential to replace high-emissions technologies. Demand-side and supply-side energy management should be key components of national action plans. Cost-effective technologies and practices for clean energy deserve priority.

For example, the Sacramento Municipal Utility District (SMUD) has used greater reliance on renewables and efficiencies to dramatically improve its ability to serve its customers. Today SMUD gets nearly half its energy from renewables and efficiency sources. By the turn of the century, it expects to get 75 percent of its power from efficiency and clean-energy sources.

(3) Energy and environmental planning should be coordinated. The planning of energy projects in support of economic growth must explicitly recognize the relative environmental consequences of alternative actions, including their impacts on global climate change.

Business Council members, New York Power Authority (NYPA) and United Solar Systems Corporation (USSC) are jointly demonstrating the importance of accounting for environmental costs when developing energy project. NYPA is using a cutting-edge photovoltaic array that is manufactured by USSC to test photovoltaic performance as a grid-connected source of power. Environmentally sustainable solar-powered photovoltaic hold great promise for cost-effectively meeting a significant portion of US energy needs. NYPA's evaluation will serve as a model for energy planning that seeks cost-effective, environmentally benign alternatives to traditional fuel sources.

(4) Progress must be measured and adjustments made. Implementing global climate change mitigation strategies for reducing greenhouse gas emissions are not achieving desired results. This implies that, policies must be modified and results monitored.

(5) Technology transfer should be encouraged. A coordinate effort to deploy clean-energy technologies throughout the developing world could substantially lower global greenhouse gas emissions while promoting economic development.

The following projects illustrate the kinds of clean-energy activities that can meet developing countries' energy needs in an environmentally responsible manner.

Honeywell Inc. is upgrading the district heat system in Krakow, Poland in order to reduce Krakow's air pollution and energy costs. Enron Corporation is constructing a natural gas pipeline system in Argentina, adding significant natural gas capacity to an economy that relies on natural gas for over 40 percent of its energy requirement. Bergey Wind-power is providing wind turbines for distributed power applications, such as water pumping and hybrid electrification systems in Indonesia and Mexico.

(6) Development assistance should support economic and environmental objectives. Most of the donors believe that development assistance from industrialized nations must support cost-effective, environmentally responsible economic policies.

The Business Council is a cooperative effort and its members recognize the many challenges that must be met if we are to make sustainable energy a reality. However, they believe that with persistence and hard work on parts of industry and governments, an environmentally and economically sustainable energy future lies within our grasp.

One way for countries to proceed is to assemble a team of in-country experts, including scientists, policy-makers, financiers, and people from the private sector. This team can identify a list of mitigation projects, perform economic feasibility studies on them, and come up with a group of projects that have the most promising economic returns. International financial institutions and donor governments can then be approached with this list to obtain funding. Joint implementation is also an option, where appropriate.

5. TECHNICAL ASSISTANCE AND FINANCIAL SUPPORT FROM DONORS FOR IMPLEMENTING ACTIVITIES ON CLIMATE CHANGE

Under section 4.8 already it was described how to get involved in the training and capacity building programmes of CC:TRAIN of Climate Change Secretariat.

Globally, GEF is funding country studies through UNEP, which includes GHG emissions inventories. Regionally, the Asian Development Bank (ADB) is quite active in funding projects.

In addition, Annex A gives the details of profiles of 61 international organizations and bodies and governmental agencies that supply technical and financial resources to implement climate change country activities. These profiles cover all sources of technical assistance that are available in the world.

Lebanon has the great chance to benefit from the resources of these organizations, but the first step is the establishment of the national team.

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7. ANNEXES

- Annex A:** Profiles of Organizations that Supply Resources to Implement Country Activities on Climate Change
- Annex B:** List of Climate Protection Related Projects of the German Industries
- Annex C:** Text of the UN-FCCC
- C.1: Text in English
 - C.2: Text in France
 - C.3: Text in Arabic

Annex A ORGANIZATION PROFILES:

Organizations that Supply Resources to Implement Country Activities on Climate Change

The following table contains name, type, and resources available of all organizations which can potentially supply resources to implement country activities on climate change. Organizations are sorted in alphabetical order. Detailed profile of each organization is presented in pages following this table.

NAME AND LOCATION OF ORGANIZATION	TYPE OF ORGANIZATION	RESOURCES AVAILABLE
African Development Bank (AFDEV), Abidjan, Côte d'Ivoire	Intergovernmental	Financial
Asian Development Bank, Manila (ADB), Philippines	Intergovernmental	Financial
Climate Convention Information Exchange Programme (CC:INFO), Geneva, Switzerland	UN System	Information
Coastal Zone Management Centre, The Hague, Netherlands	Governmental	Information Methodologies Technical
Common Framework for Integrated Coastal Zone Management (FRAME), The Hague, Netherlands	Governmental	Information Technical
Commonwealth Science Council (CSC), London, UK	Intergovernmental	Financial Information
Earthwatch, Watertown, USA	NGO	Financial Technical
Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok, Thailand	UN System	Information Technical
Economic Commission for Africa (ECA), Addis Ababa, Ethiopia	UN System	Information Technical
Environment Agency of Japan, Tokyo, Japan	Governmental	Financial Technical
Environmental Development Action in the Third World (ENDA-TM), Dakar, Senegal	NGO	Information Methodologies Technical
European Bank for Reconstruction and Development (EBRD), London, UK	Intergovernmental	Financial
Food and Agriculture Organization (FAO), Roma, Italy	UN System	Information Technical
Global Environment Facility (GEF), Washington DC, USA	UN System	Financial
Global Industrial and Social Progress Research Institute (GISPRI), Tokyo, Japan	Governmental	Financial Technical
Greenhouse Gas Technology Information Exchange (GREENTIE), Sittard, Netherlands	Intergovernmental	Information Technology
GTZ (German Agency for Technical Cooperation), Eschborn, Germany	Governmental	Financial Technical
Institute for Environmental Studies (IES), Free University Amsterdam, Amsterdam, Netherlands	Academic	Information Methodologies Technical
Inter-American Development Bank (IDB), Washington DC, USA	Intergovernmental	Financial
Intergovernmental Oceanographic Commission (UNESCO/IOC), Paris, France	Intergovernmental	Information Technical
International Academy of the Environment (IAE), Conches, Switzerland	Academic	Information Technical
International Atomic Energy Agency, Vienna (IAEA), Austria	UN System	Information Technical

International Civil Aviation Organization (ICAO), Montreal, Canada	UN System	Information Technical
International Council of Scientific Unions (ICSU), Paris, France	NGO	Information
International Energy Agency (IEA), Paris, France	Intergovernmental	Information Technical
International Fund for Agricultural Development (IFAD), Roma, Italy	UN System	Financial Technical
International START Secretariat, Washington, USA	NGO	Information
Islamic Development Bank (IDB), Jeddah, Saudi, Arabia	Intergovernmental	Financial
Latin-American Energy Organization (OLADE), Quito, Ecuador	Intergovernmental	Information Technical
Ministry of Foreign Affairs, Copenhagen, Denmark	Governmental	Financial
Ministry of Foreign Affairs, The Hague, Netherlands	Governmental	Financial
Ministry of Foreign Affairs, Tokyo, Japan	Governmental	Technical
Ministry of International Trade and Industry (MITI), Tokyo, Japan	Governmental	Financial Information Technical
National Institute of Public Health and Environmental Protection (RIVM), Bilthoven, Netherlands	Governmental	Information Technical
Opec Fund for International Development, Vienna, Austria	Intergovernmental	Financial
Organisation for Economic Co-operation and Development (OECD), Paris, France	Intergovernmental	Information Methodologies Technical
Resource Analysis (RA), Delft, Netherlands	Corporate	Technical
South Pacific Regional Environment Programme (SPREP), Apia, Samoa	Intergovernmental	Information Methodologies Technical
Stockholm Environment Institute (SEI), Stockholm, Sweden	NGO	Information Methodologies Technical
Stockholm Environment Institute - Boston Center (SEI-B), USA	NGO	Information Methodologies Technical
Stockholm Environment Institute - Tallinn (SEI-T), Estonia	NGO	Information Methodologies Technical
Swedish Agency for Research Cooperation with Developing Countries, Stockholm, Sweden	NGO	Information Technical
Swedish International Development Authority (SIDA), Stockholm, Sweden	Governmental	Financial
Swiss Development Cooperation (SDC), Bern, Switzerland	Governmental	Financial Technical
Tata Energy Research Institute (TERI), New Delhi, India	NGO	Information Technical
U.S. Country Studies Program, Washington DC, USA	Governmental	Financial Technical
UNEP Collaborating Centre on Energy and Environment (UNEP/Riso), Roskilde, Denmark	NGO	Information Methodologies Technical
UNEP/WMO Information Unit on Climate Change (IUCC), Geneva, Switzerland	UN System	Information
United Nations Centre for Human Settlements (HABITAT), Nairobi, Kenya	UN System	Information Technical
United Nations Conference on Trade and Development (UNCTAD), Geneva, Switzerland	UN System	Information Technical
United Nations Development Programme (UNDP), New York, USA	UN System	Financial Information Technical

United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris, France	UN System	Information Technical
United Nations Environment Programme (UNEP), Nairobi, Kenya	UN System	Financial Information Methodologies Technical
United Nations Industrial Development Organization (UNIDO), Vienna, Austria	UN System	Financial Information Technology
United Nations Institute for Training and Research (UNITAR), Geneva, Switzerland	UN System	Information Technical
United Nations Population Fund (UNFPA), New York, USA	UN System	Information Technical
United Nations University (UNU), Helsinki, Finland	UN System	Information
WMO/UNEP Intergovernmental Panel on Climate Change (IPCC), Geneva, Switzerland	Intergovernmental	Information Methodologies
World Bank (IBRD), Washington DC, USA	Intergovernmental	Financial Information Technical
World Health Organization (WHO), Geneva, Switzerland	UN System	Information Technical
World Meteorological Organization (WMO), Geneva, Switzerland	UN System	Financial Information Technical

Name of organization (English): African Development Bank (AFDEV)
Name of organization (Local): Banque Africaine de Développement
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Contact person: Mr. G.M.B. KARIISA
Director
Central Project Department
Direct telephone:
Direct fax:
Direct e-mail:
Type of organization: Intergovernmental
Resources available: Financial
Subject area of expertise: Capacity Building
Mitigation - Implementation
Adaptation - Implementation
National Plan - Implementation
Policy - Implementation
Geographical scope of interest: Regional

Remarks:

The Bank provided an amount of US\$ 275 million for natural resources conservation and rehabilitation projects in 13 African countries, between 1978 and 1993. The following projects were funded by the Bank:

- 1) Liberia: to provide technical assistance for the establishment of a trial industrial plantation to produce pulpwood.
 - 2) Ethiopia: the project is aimed at increasing fuelwood plantations for the Addis Ababa market, and to promote infrastructures such as schools and water networks.
 - 3) Benin: the fuelwood plantation program is expected to alleviate the critical shortage of domestic fuel.
 - 4) Ghana: to establish an industrial forestry plantation and increase the production of food crops by agro-silvi-cultural techniques.
 - 5) Nigeria: to fund an industrial plantation to provide pulpwood on a sustainable basis, which shall increase employment opportunities, encourage agroforestry practices and prevent environmental degradation.
-

- 6) Cote d'Ivoire: the project aims at solving the problem of rapid depletion of the forest, thanks to reforestation (10,000 ha) and a better management.
- 7) Ethiopia: to increase the living standards of pastoralists, by improving animal production and health, and promoting range management.
- 8) Morocco: the project aims at solving the problems of fodder supply. It consists in the reforestation of 93,000 ha of pine and of 700 ha of eucalyptus, in planting fodder trees and in staff training to manage the project. Another project in Morocco will improve the living conditions of the local populations and limit environment degradation by the intensification of fodder production and research, and by an increasing role of women in extension.
- 9) Kenya: the project seeks to protect and conserve forest reserves through the establishment of tea belts and fuelwood plantations as physical buffers between forest and population, and to promote rational management, educate and encourage rural populations in the management and protection of forests.
- 10) Madagascar: the program involves soil conservation, environmental research, education, training and environmental awareness.
- 11) Malawi: the project aims at afforesting 6,115 ha, protecting the existing forest, supporting infrastructure works and providing technical assistance.
- 12) Uganda: the purpose of the social and forestry project is to support the governmental afforestation which seeks to minimize environmental degradation due to deforestation and provide fuelwood, create an environmentally sound agro-forestry production, and provide technical assistance, training and studies for forestry development.
- 13) Tanzania: to improve natural resources management by better administering forests and woodlands.
- 14) Seychelles: the aim of this forestry management and conservation program in the Seychelles is to help the government achieve self-sufficiency in forest products, and in promoting conservation and environmental protection activities. That implies afforestation (200 ha), rehabilitation (400 ha) for fire wood production and strengthening management for the forestry division.
- 15) Mozambique: aims to ensure sustained wood supply to industries, to serve as a model for viable wildlife management throughout the country, and to strengthen the implication of the government, people and institutions in forest management and environmental care.
- 16) Nigeria: the project is aimed at promoting forestry resources management.

Source: Answer to a questionnaire sent by the UNFCCC secretariat, June 1994.

DATE UPDATED: 20-Oct-94

DATE CREATED: 05-Oct-93

Name of organization (English): Asian Development Bank (ADB)
Name of organization (Local): Asian Development Bank
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1501 Mandaluyong City
1099 Manila
Philippines
Telephone: (63-2)711-3851
Fax: (63-2)741-7961 or 632-6816
E-mail:
Telex: 63587 ADB PN (ETPI)
Contact person: Mr. Bindu N. LOHANI
Assistant Chief
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Direct fax:
Direct e-mail: b._n._lohani@oenvmail.asiandevbank.org
Type of organization: Intergovernmental
Resources available: Financial
Subject area of expertise: Capacity Building
Mitigation - Implementation
Adaptation - Implementation
National Plan - Implementation
Policy - Implementation
Geographical scope of interest: Regional

Remarks:

The Bank's on-going/current and planned activities in the field of global climate change issues are as follows:

1) Completed Projects/Activities

* A regional technical assistance (RETA) project on "Global Environmental Issues" amounting to US\$ 1,690,000 was approved on 2 October 1991. The project aimed to assist eight developing member countries (Bangladesh, India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka and Viet Nam) in assessing the implications of global atmospheric changes and in identifying policy options to deal with climate change, thereby enabling participating countries to develop national response strategies. The project was completed in June 1994. Project outputs are climate change in Asia reports to include an executive summary, thematic overview and country reports.

* Technical assistance for the preparation of a "National Response Strategy for Global Climate Change," was provided to China on 10 April 1992 on a grant basis in the amount of US\$ 600,000. The technical assistance aimed to assist China formulate a national response strategy for global climate change through, inter alia, an assessment of present and future emissions of greenhouse gases, the identification and evaluation of greenhouse gas reduction measures and a macroeconomic analysis of the selected major policy options, thereby facilitating China's positive participation in the global efforts to manage climate change. The project was completed on 30 September 1994.

* Technical assistance was also provided to Thailand for the "Preparation of a National Strategy on Global Climate Change" (approved on 24 July 1994).

* In coordination with ESCAP, the Bank organized the Second Asia-Pacific Symposium on Climate Change, Bangkok, March 1993.

* As part of the RETA on Global Environmental Issues, the national workshop "Global Environmental Issues: Philippine Country Study on Climate Change" was held on 3 August 1993.

2) Current/On-going Activities

* A regional technical assistance project on "Acid Rain and Emissions Reduction Project in Asia" in the amount of \$450,000 was approved on 22 April 1993. The technical assistance is aimed to develop approaches to derive regional and subregional policies to avoid problems of atmospheric emissions, provide the preliminary basic assessments needed to catalyze the process of intergovernmental policy dialogue on acid rain precursor emission control, and develop basic strategies for the Bank, World Bank and other aid institutions for policy advice, institution building, and investment initiatives to deal with the problem of acid rain precursor emission control in the developing member countries.

* A RETA for the project "Asia Least-Cost Greenhouse Gas Abatement Strategy" (ALGAS) was approved on 2 August 1994. To be executed by the Bank in close collaboration with UNDP, the three-year project's main objective is to enhance the ability of twelve developing member countries (Bangladesh, China, Korea (Republic of), Korea (Democratic People's Republic of), India, Indonesia, Mongolia, Myanmar, Pakistan, Philippines, Thailand and Viet Nam) to gather and analyze data on GHG emissions. In addition, the RETA will emphasize the generation of cost-effective, technically feasible and economically viable actions that will result in a net reduction of GHG emissions. The total cost of the RETA is estimated to be US\$ 9,533,000, of which US\$ 8,137,000 will be financed by GEF/UNDP and US\$ 100,000 by the Bank. An international consultant was selected, while the recruitment of the Regional Project Coordinator is in process.

3) Future Activity

* A commencement workshop for the ALGAS project will be held at the Bank in mid-January 1995 to develop a three-year work program and establish the basic framework for country studies.

Source: Letter to the UNFCCC secretariat, November 1994; answer to a questionnaire sent by the UNFCCC secretariat, June 1994.

DATE UPDATED: 09-Dec-94

DATE CREATED: 13-Jul-92

Name of organization (English): Climate Convention Information Exchange Programme (CC:INFO)
Name of organization (Local): Climate Convention Information Exchange Programme
Address: Climate Change Secretariat
(UNFCCC)
Palais des Nations
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Switzerland
Telephone: (41-22)979-9111
Fax: (41-22)979-9034
E-mail: secretariat.unfccc@unep.ch
Telex:
Contact person: Mr. Janos PASZTOR
Direct telephone: (41-22)979-9519
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Direct e-mail: jpasztor.unfccc@unep.ch
Type of organization: UN System
Resources available: Information
Subject area of expertise: Information
Geographical scope of interest: Global

Remarks:

The main objective of this joint UNFCCC/United Nations Environment Programme (UNEP) programme (CC:INFO, formerly Climex) is to improve the availability of information on country activities, and the availability of resources for such activities, in order to match, on the one hand, demands for resources, as requested by countries, and on the other the supply of these in other countries and in international organizations. The resources in question include financial, human, scientific and technical resources, to be used in climate change activities, projects and programmes. In order to achieve this, CC:INFO collects this information (on both the supply and demand sides) and disseminates it to the relevant parties, thus facilitating the contacts between these parties. CC:INFO does not itself provide resources. By collecting and disseminating information on these issues, the project also contributes to improved information exchange between organizations that are now supporting country activities on climate change, as well as between and within countries. While initially the project emphasizes information on activities enabling countries to meet their first reporting requirements, ultimately information on investment activities will be processed as well. Participation in the CC:INFO programme is entirely voluntary.

Preliminary outputs from the CC:INFO information base include Organization Profiles, containing detailed information on organizations that are able to provide resources to country activities, and Country Profiles. The latter are one-stop information sources containing summary information on the dates of ratification and

signature of the Climate Convention, the UNFCCC National Focal Point, etc., and country activities on climate change. CC:INFO also makes available requests for assistance to implement country activities on climate change to organizations that could potentially provide support.

In addition to the traditional printed outputs, CC:INFO plans to make selected information available on diskettes, as well as on on-line information systems. Initially, such information will be accessible on some of the electronic bulletin boards on the APC networks, and will be expanded to other networks later. CC:INFO will be also present in the World Wide Web, accessible through the browser Mosaic. Over time, the project will build up working relations with existing information systems related to climate change, to ensure that no duplication occurs and that possible synergies are exploited to the maximum.

DATE UPDATED: 26-Jan-95

DATE CREATED: 13-May-94

Name of organization (English): Coastal Zone Management Centre
Name of organization (Local): Coastal Zone Management Centre
Address: P.O. Box 20907
 NL-2500 EX The Hague
 Netherlands
Telephone: (31-70)374-5200/5186
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Type of organization: Government (Other)
Resources available: Information
 Methodologies
 Technical
Subject area of expertise: Research and Monitoring
 Education and Training
 Capacity Building
 Adaptation - Study
 Vulnerability and Impact Assessment
 Policy - Study
Geographical scope of interest: Global

Remarks:

The Coastal Zone Management Centre has been implementing a number of activities related to climate change, including:

* Playing a key role in the development of the IPCC Common Methodology for Vulnerability Assessment to Climate Change. This methodology is designed to assist nations to assess their vulnerability to sea level rise and help in identifying what actions low lying nations need to undertake in order to reduce their vulnerability. The CZM Centre has initiated and provided technical assistance to projects funded by the Dutch Government in a number of countries (Bangladesh, Guyana, Maldives, Nicaragua, Poland, Viet Nam) to assess vulnerability to sea level rise and in coastal zone management planning.

* Organizing the World Coastal Conference 1993 (November 1-5, 1993, The Netherlands). The Conference was organized under the auspices of the IPCC, in response to the calls of UNCED's Chapter 17 of Agenda 21 and the IPCC. Policy makers and experts from 90 countries, 20 International Organizations and 23 Non-Governmental Organizations recognized the urgency and benefits of Integrated Coastal Zone Management (ICZM) and discussed the actions required for coastal states to undertake ICZM as they progress towards the year 2000. The World Coast Conference Report provides a synthesis of information assembled at the WCCC'93 and preparatory workshops. It includes chapters on the urgency of the need for and benefits of ICZM, ongoing ICZM programmes and obstacles encountered, and opportunities for building national and international ICZM capabilities. The appendices summarize the results of the 46 vulnerability assessment studies executed so far, 23 coastal zone management case studies and programmes of international organizations in the field of ICZM. A copy of the Report can be requested from the CZM Centre.

* Developing a training programme on ICZM, including the long-term aspects of climate change, for policy and decision makers in low-lying coastal nations. This training programme is included in the UNDP/UN Law of the Sea Action Plan for Human Resource Development and Capacity Building for the Planning and Management of Coastal Marine Areas.

* Initiating, together with NOAA/ORCA from the USA, the development of a Common Framework for ICZM (FRAME) which would strengthen and enhance the national and regional capabilities in ICZM by providing information, and concepts and tools for improved decision making. FRAME should be considered as an inviting forum for cooperation where concepts and tools for ICZM can be exchanged. The development of FRAME would be an open process, actively involving a wide segment of the coastal zone management community, providing the opportunity for refining ICZM concepts and policy based on real experiences. FRAME would encourage international organizations and nations in the formulation and implementation of ICZM strategies and programmes that take fully into account the existing environmental, social, political, governance and economic contexts.

Source: Organization Profile, Project Manager, Coastal Zone Management Centre, January 1995.

DATE UPDATED: 27-Feb-95

DATE CREATED: 17-Nov-94

Name of organization (English): Commonwealth Science Council (CSC)
Name of organization (Local): Commonwealth Science Council
Address: Commonwealth Secretariat
 Marlborough House
 Pall Mall London SW1Y 5HX
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Fax: (44-171)839-6174
E-mail: comsci@gn.apc.org
Telex: 27678 ComSec G
Contact person: Ms. Judy JOHNSON
 Deputy Secretary
 Science & Technology Division
 Direct telephone:
 Direct fax:
 Direct e-mail:
Type of organization: Intergovernmental
Resources available: Financial
 Information
Subject area of expertise: Information
 Capacity Building
 Mitigation - Implementation
 Policy - Implementation
Geographical scope of interest: Global
 Regional

Remarks:

The Commonwealth Science Council (CSC) uses its global network of scientific institutions to address common areas of deficiency and opportunity within the Commonwealth, focusing on the practical application of science and technology, and on strengthening national science and technology infrastructures. Special emphasis is placed on sustainable, environmentally sound development.

CSC is not a donor agency - subscriptions from its 36 member governments provide core funds. In addition, strategic links are developed with external agencies to augment funding, and increase effectiveness, of projects.

Resources are focused on three programme areas (biodiversity, water resources, energy). Activities include

regional and global workshops, training and capacity building, and publication of technical reports, practical handbooks and manuals.

Source: "Organization Profile", Assistant Director Science & Technology Division, CSC, January 1995.

DATE UPDATED: 27-Feb-95

DATE CREATED: 25-Jan-95

Name of organization (English): Earthwatch
Name of organization (Local): Earthwatch
Address: 680 Mt. Auburn St.
 Box 403
 Watertown MA 02272
 United States of America
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Fax: (1-617)926-8532
E-mail:
Telex: 510 600 6452
Contact person: Mr. Andrew G. HUDSON
 Executive Director
 The Center for Field Research at Earthwatch
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 Direct e-mail: ahudson@earthwatch.org
Type of organization: NGO (Other)
Resources available: Financial
 Technical
Subject area of expertise: Education and Training
 Capacity Building
 Mitigation - Implementation
 Adaptation - Implementation
Geographical scope of interest: Global

Remarks:

Earthwatch is an international funder of research, conservation and sustainable development projects. To date the organization has sponsored 1,845 projects in 109 countries with over US\$ 28 million in grants and 40,000 volunteer field assistants. Recent projects funded related to climate change include:

- 1) Trinidad and Tobago: monitoring of sea level rise and development of adaptation and mitigation strategies.
- 2) Ghana: assessment of the level and environmental impact of fuelwood use.
- 3) Kenya: transfer of renewable energy technologies and knowledge (solar ovens, windmills) to rural Kenia communities.
- 4) Indonesia, evaluation of the economic, environmental and social impacts of introducing solar oven technologies to Indonesian villages.

Source: Letter to UNFCCC secretariat, October 1994.

DATE UPDATED: 26-Jan-95

DATE CREATED: 24-Oct-94

Name of organization (English): Economic and Social Commission for Asia and the Pacific (ESCAP)

Name of organization (Local): Economic and Social Commission for Asia and the Pacific

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Type of organization: UN System

Resources available: Information
Technical

Subject area of expertise: Education and Training
Capacity Building
Mitigation - Study
Adaptation - Study
Vulnerability and Impact Assessment

Geographical scope of interest: Regional

Remarks:

ESCAP main thrust in issues related to climate change concerns the promotion of awareness in the region, the provision of technical assistance services for capacity-building to government agencies and strengthening regional cooperation.

ESCAP has organized and sponsored a number of regional fora to review the scientific, technical and policy implications of climate change in the Asian and Pacific region, including the Second Asia Pacific Seminar on Climate Change, Bangkok, 29-31 March 1993; the Consultative Meeting for the Development of a Regional Strategy on Climate Change, Bangkok, 13-15 October 1993; and the Fourth Asia Pacific Seminar on Climate Change, Bangkok, 15-17 March 1995.

ESCAP carries out policy reviews studies in support to capacity building efforts in the region and to the implementation of the Framework Convention on Climate Change. To this end, ESCAP is also working at the development of a Regional Network on Climate Change, composed of national agencies and institutions involved in research, training, policy analysis and formulation and policy enforcement in areas related to climate change issues.

The Network, initially established in 1993, has the following main objectives:

- (a) promoting international cooperation among countries of the ESCAP region through information exchange and consultation on scientific and policy issues related to climate change, with a view to the implementation of the Framework Convention on Climate Change;
- (b) to develop a network of research and decision-making institutions based on data gathering and information exchange mechanisms;
- (c) to strengthen national capabilities and coordinate regional research activities on climate change, impact assessment and policy evaluation for mitigation and adaptation;
- (d) to develop regional cooperation initiatives to cope with climate change, involving the dissemination of methodologies for impact assessment, green house gas inventory and the promotion of mitigation and adaptation policies.

Sources: "Organization Profile," Chief, Environment Section, ESCAP - Bangkok, February 1995; answer to a questionnaire sent by the UNFCCC secretariat, August 1993.

DATE UPDATED: 24-Feb-95

DATE CREATED: 12-Jul-92

Name of organization (English): Economic Commission for Africa (ECA)

Name of organization (Local): Economic Commission for Africa

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Africa Hall
Addis Ababa
Ethiopia

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Fax: (251-1) 51-4416

E-mail:

Telex:

Contact person: Mr. Peter N. MWANZA
Chief
N.R.D.
Direct telephone: (251-1)51-5332
Direct fax:
Direct e-mail:

Type of organization: UN System

Resources available: Information
Technical

Subject area of expertise: Adaptation - Study
Vulnerability and Impact Assessment

Geographical scope of interest: Regional

Remarks:

The ECA has been implementing a number of activities related to climate change, including:

* Establishing of the African Centre of Meteorological Applications for Development (ACMAD), whose immediate objectives are investigating the effects of drought, cyclones and other extreme phenomena and promoting the development of the applications of meteorological data and information to the individual and collective solution of environmental problems through better understanding of the anomalies of weather and climate in Africa. WMO, UNEP, FAO and the National Meteorological and Hydrological Services cooperates to this programme, whose duration is continuous. The programme is funded by ECA Member States, UNEP, WMO and FAO.

* Implementing, in collaboration with UNEP and regional and national institutions in the region, the project "Capacity Building in Africa in Climate Impact Related Activities: Climate Impact and Response Strategies Network." This project, currently in development stage, will establish the Climate Impact and Response Strategies Network in Africa and, hence, contribute to capacity building in Africa and in the overall

international network of Governments, institutions and researchers on climate impacts and response strategies.

Source: Answer to a questionnaire sent by the UNFCCC secretariat, August 1993.

DATE UPDATED: 23-Sep-94

DATE CREATED: 13-Jul-92

Name of organization (English): Environmental Development Action in the Third World (ENDA-TM)

Name of organization (Local): Environnement et Développement du Tiers Monde

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Telephone: (221)21-6027 or 22-4229

Fax: (221)22-2695

E-mail: energy@endadak.gn.apc.org

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Contact person: Mr. Youba SOKONA
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Direct telephone: (221)22-5983/2-496
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Direct e-mail:

Type of organization: NGO (Other)

Resources available: Information
Methodologies
Technical

Subject area of expertise: Education and Training
Mitigation - Study
Inventory
Policy - Study

Geographical scope of interest: Global
Regional

Remarks:

ENDA/Energy Programme aims at improving the knowledge of energy problems from the technical, economic and socio-cultural angle, including in particular the energy situation of African nations, energy information systems, energy planning, energy management, demand side management and energy policies. Moreover, ENDA/Energy Programme aims at contributing to the widespread adoption by developing countries of modern and efficient energy technologies, exploring the interactions between climate change and development of the Africa region, advising decision makers in the African continent on the efficient management of energy and environmental problems, contributing to reinforce cooperation between nations and organizations in Africa, in the third World and in the North.

ENDA/Energy Programme bases its projects and activities in general upon the close interaction of the

The fourth seminar will be held in Bangkok, Thailand, March 1995, and will be organized by ESCAP and sponsored by the Agency.

2. Regional cooperation on global warming and sea level research

The following activities have been undertaken:

(a) The Basic Study on Strategic Response against the Global Warming, Climate Change and their Adverse Effects for the Republic of Indonesia (March 1992);

(b) The study on the Response Actions against the Increasing Emission of Carbon Dioxide in Indonesia (March 1993);

(c) Integrated Coastal Zone Management Programme for Western Samoa and Fiji Islands, Assessment of Coastal Vulnerability and Resilience to Sea Level Rise and Climate Change: Phase I: Concept and Approach (March 1993); Phase II: Development of Methodology (March 1994);

(d) Integrated Coastal Zone Management Programme for Fiji and Tuvalu Islands, Assessment of Coastal Vulnerability and Resilience to Sea Level Rise and Climate Change (ongoing); this study is implemented in cooperation with the South Pacific Regional Environment Programme (SPREP) with a two years time horizon.

Source: "Organization Profile," First Secretary, Permanent Mission of Japan - Geneva, February 1995.

DATE UPDATED: 24 Feb 93

DATE CREATED: 09 Aug 93

following three elements: Research, Action and Training. ENDA/Energy Programme makes extensive use of data bases, implements direct actions on populations and organizes and chairs training events for African decision-makers. This approach is also integrated as much as possible in ENDA/Energy Programme's other activities with different organizations and programmes, such as: COPED (Cooperative Programme on Energy and Development), FWD (Foundation for Woodstove Dissemination), WEEA (World Energy Efficiency Association), GITER (Groupe International Technique sur l'Electrification Rurale), CNA (Climate Network Action), etc.

ENDA/Energy Programme has been undertaking a number of projects in the field of climate change, including:

- * Programme Energie Environnement en Afrique (PEEA), whose aim is to inventory African countries' emissions of GHGs (in the pilot phase implemented in a limited number of West Africa countries only) and to favour the establishment of national environmental focal points.
- * Based on the above experience, ENDA/Energy Programme organized a training seminar/workshop (Bamako, Mali, 13-17 April 1992) entitled: "Outils et méthodes d'analyse des problèmes environnementaux en Afrique: la problématique du réchauffement climatique."
- * Following the PEEA (which allowed to undertake GHG inventories in Senegal, Cote d'Ivoire and Niger), with the support of the French Ministry of Cooperation and Development, ENDA - Energy Programme intends to carry on this initiative in Burkina Faso and Benin. Furthermore, the work undertaken in Niger should be strengthened in the framework of the recently established Energy-Environment Interministerial Unit.
- * Long-range Energy Alternatives Planning System (LEAP). ENDA/Energy Programme began cooperating four years ago with the Stockholm Environment Institute - Boston Center (SEI-B) to develop and apply LEAP in Africa.
- * Evaluation des coûts de limitation des émissions de gaz à effet de serre. ENDA/Energy Programme presently cooperates with UNEP/Risø in the programme UNEP GHGs Abatement costing Studies, involving about twenty developed and developing countries.
- * Impacts macro-économiques des mécanismes de limitation des émissions de gaz à effet de serre (taxation/droits à polluer). ENDA/Energy Programme (and others) cooperate with CIRED to develop a model on the macro-economic implications of institutional and financial mechanisms to curb GHGs emissions.
- * Stratégies et instruments pour promouvoir l'utilisation rationnelle de l'énergie dans les pays en développement. ENDA/Energy Programme cooperates with the Netherlands ECN organization in the framework of a work programme on the demand side management in developing countries' industrial sectors.
- * Inventaire des émissions de gaz à effet de serre au Sénégal. ENDA/Energy Programme participates, in cooperation with the Environmental Change Unit of Oxford University, in a UNEP/GEF GHG inventory programme. This initiative involves 4 African countries, one Eastern European country and six Latin American countries.

Source: Answer to "Survey of Institutional Interest and Capacity," UNDP questionnaire to selected organizations to assist in carrying out the project "GHG Assessment and Least Cost Global Warming Mitigation in Sub-Saharan Africa," July 1993.

DATE UPDATED: 15-Feb-95

DATE CREATED: 13-Apr-94

Name of organization (English): European Bank for Reconstruction and Development (EBRD)
Name of organization (Local): European Bank for Reconstruction and Development
Address: One Exchange Square
 London EC2A 2EH
 United Kingdom
Telephone: (44-71)338-6000 or 496-6000
Fax: (44-71)338-6100 or 496-6100
E-mail:
Telex: 8812161 EBRD L G
Contact person: Dr. William V. KENNEDY
 Senior Environmental Specialist
 Direct telephone: (44-71)338-6567
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 Direct e-mail:
Type of organization: Intergovernmental
Resources available: Financial
Subject area of expertise: Capacity Building
 Mitigation - Implementation
 Adaptation - Implementation
 National Plan - Implementation
 Policy - Implementation
Geographical scope of interest: Regional

Remarks:

The Bank's ongoing/current and planned activities in the field of climate change are as follows:

1) Baltic States (US\$ 143 million):

To improve energy efficiency. On the supply side it proposes repairs of energy plants, and on the demand side a provision of the most cost-effective insulation materials to residences.

2) Belarus (US\$ 48 million):

To increase the efficiency of a new modern gas plant which will result in lower emissions and reduce NOx emissions.

3) Czech Republic (US\$ 44 million):

To provide industrial waste water pre-treatment facilities, to replace gas-fired boilers by lignite boilers, and to install new pollution control equipment in paint shops.

4) Republic of Georgia (US\$ 35 million):

That project aims at rehabilitating two power stations and also includes the purchase and installation of a water treatment plant for a gas/oil-fired power station, which will increase efficiency and reduce emissions.

5) Hungary (US\$ 75 million):

To facilitate transport rehabilitation and thereby reduce current levels of noxious emissions.

6) Former Yugoslav Republic of Macedonia (US\$ 27 million):

To increase the efficiency of the power system network and improve the restarting of the thermal generating units. This will result in a reduction of emissions from the power station.

7) Republic of Moldova (US\$ 19 million):

The project is aimed at the heat-subsector and includes rehabilitation of district heating systems, resulting in reduced need for generation of heat. Emissions would be reduced by increased fuel efficiency and reduction of losses in the district heating circuits.

8) Slovenia (US\$ 88 million):

To refurbish hydroelectric power stations and five switch yards, and the construction of an automatic control center. This will result in a decrease of demand for fossil fuels.

9) Ukraine (US\$ 158 million):

To finance the rehabilitation of the gas transit system and development of a commercial gas long distance transport system. Physical investments comprise the major overhaul of gas pumping units, replacement of low efficiency compressors and upgrading of the metering and control system. The replacement of low efficient gas turbines is expected to achieve a significant reduction of greenhouse gas emissions. In addition, it will result in improvements of the efficiency of the gas transportation, i.e. reduced losses of natural resources.

10) Uzbekistan (US\$ 130 million):

The rehabilitation program will achieve an improvement in the efficiency of the Syrdarinskaya power plant by lowering specific fuel consumption and substantial reductions of NO_x and SO_x emissions through a number of measures, such as the progressive replacement of high-sulfur content oil by natural gas. In addition, it will provide technical cooperation to facilitate the institutional restructuring of the power sector along commercial lines, which will provide incentives to reduce energy consumption.

Source: Answer to a questionnaire sent by the UNFCCC secretariat, June 1994.

DATE UPDATED: 09-Aug-94

DATE CREATED: 24-Nov-93

4) Republic of Georgia (US\$ 35 million):

That project aims at rehabilitating two power stations and also includes the purchase and installation of a water treatment plant for a gas/oil-fired power station, which will increase efficiency and reduce emissions.

5) Hungary (US\$ 75 million):

To facilitate transport rehabilitation and thereby reduce current levels of noxious emissions.

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To finance the rehabilitation of the gas transit system and development of a commercial gas long distance transport system. Physical investments comprise the major overhaul of gas pumping units, replacement of low efficiency compressors and upgrading of the metering and control system. The replacement of low efficient gas turbines is expected to achieve a significant reduction of greenhouse gas emissions. In addition, it will result in improvements of the efficiency of the gas transportation, i.e. reduced losses of natural resources

10) Uzbekistan (US\$ 130 million):

The rehabilitation program will achieve an improvement in the efficiency of the Syrdarinskaya power plant by lowering specific fuel consumption and substantial reductions of NO_x and SO_x emissions through a number of measures, such as the progressive replacement of high-sulfur content oil by natural gas. In addition, it will provide technical cooperation to facilitate the institutional restructuring of the power sector along commercial lines, which will provide incentives to reduce energy consumption.

Source: Answer to a questionnaire sent by the UNFCCC secretariat, June 1994.

DATE UPDATED: 09-Aug-94

DATE CREATED: 24-Nov-93

Name of organization (English): Global Environment Facility (GEF)
Name of organization (Local): Global Environment Facility
Address: 1818 H Street, NW
Washington DC 20433
United States of America
Telephone: (1-202)473-1053
Fax: (1-202)522-3240 or -3245
E-mail:
Telex:
Contact person: Mr. Kenneth KING
Senior Environment Specialist
Direct telephone: (1-202)473-1075
Direct fax:
Direct e-mail: kking@worldbank.org
Type of organization: UN System
Resources available: Financial
Subject area of expertise: Climate Change
Geographical scope of interest: Global

Remarks:

The GEF provides grants for projects and programmes aimed at protecting the global environment. GEF resources are available for investment and technical assistance projects in the following four areas: reduction of greenhouse gas emissions, protection of biodiversity, protection of international waters and reduction of the depletion of the ozone layer. The GEF also serves as the interim financial mechanism for the UNFCCC.

The GEF is implemented by three international agencies: the World Bank (IBRD), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). Each agency has distinct programme development responsibilities. The responsibilities of the World Bank are related to the investment aspects of the GEF Work Programme. The responsibilities of UNDP are in the areas of capacity building, human resource development, pre-investment studies and administration of the NGO Small Grants Programme. The responsibilities of UNEP are mainly scientific, including targeted research, monitoring and country studies relating to the global environmental Conventions.

During the Pilot Phase (1991-1993), 45 GEF-funded projects totalling US\$ 288.7 million were approved by the three implementing agencies. The breakdown is as follows: UNDP 22, World Bank 20 and UNEP 3. By the end of 1993, the Work Programme of the GEF had 113 projects, 41 of which in the area of global warming, for a total commitment of US\$ 727 million. The criteria of innovativeness and a balanced portfolio

were of priority importance for the assignment of grants.

While the criteria for GEF projects will continue to evolve as experience is gained in their application, it is expected that during the forthcoming GEF Operational Phase the criterion of cost-effectiveness will be of greater importance in selecting projects than it was during the Pilot Phase. To be cost effective, Operational Phase projects will need to focus on, inter alia, feasibility, magnitude of global benefits and least-cost measures. Greater emphasis will also be placed on encouraging policy shifts that are more friendly to the global environment: if the new, environmentally friendly policy is more costly than an alternative that meets national priorities, it may be eligible for GEF financing. During the Operational Phase, the GEF budget for funding the incremental costs for achieving global environmental benefits will amount to about US\$ 2 billion.

DATE UPDATED: 01-Mar-95

DATE CREATED: 29-Mar-94

Name of organization (English): Global Industrial and Social Progress Research Institute (GISPRI)
Name of organization (Local): Global Industrial and Social Progress Research Institute
Address: 7th Floor, Mori Building No. 33
3-8-21 Toranomon, Minato-Ku
Tokyo 105
Japan
Telephone: (81-3)3435-8800
Fax: (81-3)3435-8810
E-mail:
Telex:
Contact person: Mr. Itsuya TSUZAKA
Manager
Global Environmental Affairs Dept.
Direct telephone:
Direct fax:
Direct e-mail:
Type of organization: NGO (Other)
Resources available: Information
Technical
Subject area of expertise: Information
Capacity Building
Geographical scope of interest: Global

Remarks:

In fulfilling its purpose, GISPRI engages in the following activities:

- (1) Research in resources conservation and environmental issues, the international order, and relationships between industry and the economy on the one hand and culture and society on the other.
 - (2) Holding of meetings of the Global Industrial and Social Progress Policy Forum to draw up general policy proposals on global problems that need to be addressed, and submission of these proposals to entities both in Japan and abroad.
 - (3) Exchange of research data and personnel and conducting joint research with institutes in Japan and abroad.
 - (4) Information activities as symposiums, seminars, and personal-computer communications forums, as well as publication of GISPRI Newsletter and GISPRI Quarterly.
-

Source: Organization Profile, The Manager of the Global Environmental Affairs Department, GISPRI, December 1994.

DATE UPDATED: 24-Feb-95

DATE CREATED: 17-Aug-93

Name of organization (English): Greenhouse Gas Technology Information Exchange (GREENTIE)
Name of organization (Local): Greenhouse Gas Technology Information Exchange
Address: Swentiboldstraat 21
P.O. Box 17
NL-6130 AE Sittard
Netherlands
Telephone: (31-46)59-5203
Fax: (31-46)51-0389
E-mail: nl:novqve@ibmmail.com
Telex:
Contact person: Mr. Derk KALVERKAMP
General Manager GREENTIE
Direct telephone: (31-46)595-240
Direct fax:
Direct e-mail:
Type of organization: Intergovernmental
Resources available: Information
Technology
Subject area of expertise: Information (Technologies)
Mitigation - Implementation
Mitigation - Study
Geographical scope of interest: Global

Remarks:

GREENTIE is the Greenhouse Gas Technology Information Exchange, a worldwide information centre on technologies that contribute to the mitigation of greenhouse gas emissions. Under the Climate Change Convention, countries carry out inventories of their emissions and then formulate mitigation policies. GREENTIE will help countries achieve their mitigation goals by providing information on available technologies.

GREENTIE aims at the diffusion and exchange of information on greenhouse gas technologies through identifying technologies and their suppliers, and supplying information on these technologies and suppliers to those who need it. The users of this information may include policy planners and decision makers in government organisations or in the private sector, involved in activities such as the manufacturing and mining industries, power generation, heating, refrigeration, transportation, etc.

The scope of the technology GREENTIE deals with varies from the early stages of research and

development to commercial application. At present GREENTIE focuses mainly on energy technologies, but it will gradually expand its scope to technologies that help curb emissions other than those related to energy.

The identified data sources are stored in a Directory, from which searches are made to create a number of information products. GREENTIE's basic product is the Supply Identification Paper (SIP), a printed document containing information on technology suppliers. It is designed to answer specific questions sent in by individual users. These questions may seek either information on the technology options that are most appropriate to a particular situation, or information on suppliers of a specific technology. Other GREENTIE products include thematic readers on greenhouse gas technologies and a newsletter called GREENTIMES. GREENTIE products are distributed free of charge.

GREENTIE was set up by the International Energy Agency (IEA) and the Organisation for Economic Cooperation and Development (OECD). By creating GREENTIE, the countries of the IEA and the OECD open up their technology resources to non-OECD countries. The identification and dissemination of technology information is mostly carried out by a network of Liaison Groups in each of the twenty participating countries, both OECD and non-OECD members countries. GREENTIE welcomes participation from other FCCC countries in its network. Participation in GREENTIE is free of charge for non-OECD countries.

GREENTIE started in October 1993 and is in a development phase until 1995. During this period the network for identification and dissemination is developed, and the Directory is expanded. The annual budget for this development phase amounts to about US\$ 700,000. From 1996 on, GREENTIE will be fully operational.

Source: "Organization Profile," GREENTIE General Manager, November 1994.

DATE UPDATED: 17-Jan-95

DATE CREATED: 09-Mar-94

Name of organization (English): GTZ (German Agency for Technical Cooperation)
Name of organization (Local): Deutsche Gesellschaft für Technische Zusammenarbeit
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D-65726 Eschborn
Germany
Telephone: (49-6196)79-0
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Telex: 407501-0 gtz d
Contact person: Mr. Holger LIPTOW
Energy Division
Direct telephone: (49-6196)79-1626
Direct fax: (49-6196)79-7144
Direct e-mail: gtz-4150@gad.geonet.de
Type of organization: Government (Contributor)
Resources available: Financial
Technical
Subject area of expertise: Education and Training
Mitigation (Energy) - Study
Inventory
Geographical scope of interest: Global

Remarks:

GTZ - a German governmental agency - supports national studies of developing countries. The total amount available is DM 5 million (US\$ 2.9 million circa). The aim of the program is to assist approximately ten developing countries. Preference is given to full country studies, inventories or studies for technological options for mitigation. Particular interest is given to energy-related national studies. The program started in early 1993.

As of early 1994, 19 countries submitted official assistance requests to GTZ. Support was sought for studies on inventories, effects, mitigation technological options and mitigation policy options. By April 1994, the following country studies were either approved or being considered:

- * Country: Status / Type of Activity / Remarks
- * China (3 provinces): High Priority / Technical Options / Focus on mitigating GHG emissions;
- * Colombia: High Priority / Inventory / Focus on inventories;
- * Dominican Republic: High Priority / Inventory / Focus on inventories;

- * Indonesia: Approved / Inventory, Technical Options, Political Options / Project fully formulated; focus on CO2 emissions; started 08/94;
- * Pakistan: High Priority / Inventory / Focus on inventories;
- * Philippines: Approved / Inventory, Technical Options, Political Options / Focus on CO2 emissions; started 05/94;
- * Tanzania: Approved / Technical Options / Focus on evaluation of technical options; started 09/94;
- * Thailand: Approved / Technical Options / Focus on evaluation of technical options; started 01/95;
- * Tunisia: 2nd Priority / Inventory, Effects, Technical Options, Political Options / Official request still to be received;
- * Viet Nam: High Priority / Inventory, Effects, Technical Options, Political Options / Complete country study requested;
- * Zambia: Approved / Inventory, Technical Options / Focus on inventories and technical options; started 09/94

In addition to compliance with the UNFCCC, a request must meet the following other conditions: (a) local participation in the country study or in part of it, (b) existence of minimal hardware support, (c) execution of the study within 12 months, and (d) support sought must not exceed ten external (or value-equivalent local) expert-months. Consultants must, in all cases, follow the methodologies of international standards. In this context, help is provided by GTZ in form of advice for the proper application of such standards, recommendations, provision of existing country studies which can be used as models.

The German Government considers it important that support for country studies should not only provide financial assistance for hiring consultants but should also establish or improve national capabilities and capacities. Therefore, the program can make provisions that the local trainees should be in a position to follow up on the country studies carried out and for regional training workshops.

Before support is granted, discussions take place between the country requesting support and GTZ on issues such as: will the study become the official country study or will it officially contribute to it? Who is the official UNFCCC counterpart in the country? What and to what extent is external and/or local support required? Details of the execution of the study. What other past, present or planned activities exist which are relevant vis-à-vis the country's mitigation policy? What other support has been or will be given from other donors?

If a request can be considered, the details will be finalized during meetings in the assisted country. Final approval is given on the basis of an official project paper.

Sources: "Framework Convention on Climate Change: German Support for Country Studies;" "FCCC - Prompt Start: List of German Support for Country Studies," GTZ, April 1994 (updated October 1994).

DATE UPDATED: 25-Nov-94
DATE CREATED: 05-Oct-93

Name of organization (English): Institute for Environmental Studies, Free University Amsterdam (IES)
Name of organization (Local): Institute for Environmental Studies, Vrije Universiteit Amsterdam
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 NL-1081 HV Amsterdam
 Netherlands
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Telex:
Contact person: Mr. Jan F. FEENSTRA
 Direct telephone: (31-20)444-9550
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 Direct e-mail: feenstra@sara.nl
Type of organization: Academic
Resources available: Information
 Methodologies
 Technical
Subject area of expertise: Economics - Study
 Information
 Inventory (Emissions)
 Policy - Study
Geographical scope of interest: Global

Remarks:

The IES was established at the Vrije Universiteit, Amsterdam in 1971. It is the oldest academic institute for fundamental and applied environmental research in the Netherlands. IES is a non-profit organization that devotes about 70% of its efforts to externally funded research projects (contract research). IES can draw upon the Vrije Universiteit resources and facilities and cooperates frequently with several faculties of the University.

In the field of climate change, IES specializes in six programme areas:

- * Emission inventories: methodologies and application in different countries;
- * Economic aspects: integrated modeling, cost benefit analysis, evaluation of environmental goods, and policies, measures and instruments;
- * Biodiversity: translation of the "ultimate objective" of the climate treaty, and assessment of the effects of climate change for nature management;
- * Coastal zone management: integration of policy measures;

- * Extreme weather events: events, direct/indirect impacts, and international (re)insurance and policy aspects;
- * International cooperation and decision making: factors facilitating cooperation, bottlenecks in the process, and measures and instruments to facilitate climate cooperation such as joint implementation (JI).

IES has a multidisciplinary approach to the study of the climate change problem. It focuses on the natural science aspects, the socioeconomic aspects and policy making aspects. A team of specialists are working cooperatively to develop a functional multidisciplinary approach to the problem. The major features of this multidisciplinary approach are: (a) a combination of qualitative and quantitative analyses, (b) a combination of natural and social sciences and (c) a combination of science and policy approach.

Selected Projects Related to Climate Change

- * Final editor Netherlands National Communications to the UNFCCC;
- * Cooperation with the Hungarian Government in the preparation of the Hungarian National Communication to the UNFCCC;
- * Advisor to the Dutch Country Study Programme;
- * Country Case Studies on Sources and Sinks of GHGs (UNEP); IES' role in the study is to give technical support to Tanzania, Uganda and Poland for their national inventories of sources and sinks of GHGs;
- * Country Case Study on GHGs - Sources and Sinks and Potential Measures - in the Republic of Latvia; the IES provides technical support to Latvia for the preparation of an inventory of GHG emissions and the identification of potential measures for their reduction;
- * Climate Change Impact Studies Database (IPCC former WG II); distribution of report and computer disks with approximately 500 research projects that can be retrieved by several entries;
- * GHG Policy Exercises; in cooperation with RIVM/MITV, IES started the development of a policy exercise about global warming; in the context of this project, a computer model will be designed to support the policy exercise and to create a learning environment on the development of strategies to reduce the risks of climate change;
- * Consultancy for the Dutch Ministry of Housing, Physical Planning and the Environment with regard to climate change and related policy measures;
- * Final editor European Union National Communications to the UNFCCC;
- * Lead author Handbook on Methods for Assessing the Impacts of Climate Change and Adaptation Measures (UNEP/GEF).

Source: E-mail to the UNFCCC secretariat, November 1994.

DATE UPDATED: 18-Jan-95

DATE CREATED: 26-Jul-93

Name of organization (English): Inter-American Development Bank (IDB)

Name of organization (Local): Inter-American Development Bank

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Washington D.C. 20577
United States of America

Telephone: (1-202)623-3403

Fax: (1-202)623-3614

E-mail:

Telex:

Contact person: Mr. Marc J. DOUROJEANN
Chief
Environment Protection Division
Direct telephone:
Direct fax: (1-202)623-1315
Direct e-mail:

Type of organization: Intergovernmental

Resources available: Financial

Subject area of expertise: Capacity Building
Mitigation - Implementation
Adaptation - Implementation
National Plan - Implementation
Policy - Implementation

Geographical scope of interest: Regional

Remarks:

One of the Bank's main area of action is the prevention and reduction of air and water pollution in urban areas. It also finances afforestation projects. The Bank's 1993 Annual Report on the Environment and Natural Resources mentions the following projects:

1) Colombia, Honduras, Ecuador (US\$ 83 million):

The project is comprised of reforestation and agroforestry goals of 66,160 ha, and in protecting areas and of existing management targets of 324,900 ha.

2) Colombia: (US\$ 81 million):

The forestry components of the programme are:

- an initiative for managing renewable natural resources;
- a blueprint for institutional strengthening;

Name of organization (English): Intergovernmental Oceanographic Commission (UNESCO/IOC)

Name of organization (Local): Intergovernmental Oceanographic Commission

Address: UNESCO
1, rue Miollis
F-75732 Paris Cedex 15
France

Telephone: (33-1)4568-3983

Fax: (33-1)4056-9316

E-mail:

Telex:

Contact person: Mr. Alexander P. METALNIKOV
2nd Vice-Chairman
Direct telephone: (41-22)979-9509
Direct fax: (41-22)979-9034
Direct e-mail: ametalnikov@unfccc@unep.ch

Type of organization: Intergovernmental

Resources available: Information
Technical

Subject area of expertise: Research and Monitoring
Information
Education and Training
Inventory (Sinks)

Geographical scope of interest: Global

Remarks:

The IOC was established in 1960 as an organization with functional autonomy within UNESCO. One hundred and twenty-four countries are members of the Commission. The main objective of the IOC is the promotion of marine scientific investigations and related ocean services through the concerted action of its members. Particularly relevant to the global climate change responsibilities of IOC are the applicable provisions of the convention on the Law of the Sea, the strategy provided in Agenda 21 of UNCED, the Framework Convention on Climate Change and the Convention on Biological Diversity. IOC has concentrated its attention on the research and monitoring issues and related ocean services that are germane to the governments of its Member States. Its recent efforts include the establishment of the Global Ocean Observing System (GOOS) jointly with WMO, UNEP and ICSU, the climate module of which is joint with the ocean component of the Global Climate Observing System (GCOS) programme. An existing function of long standing, the joint IOC-WMO Integrated Global Ocean Service System which currently serves the ocean community's need for collecting and distributing near-real-time data and data products, will

be incorporated in GOOS. When fully implemented, GOOS will routinely collect and process huge amounts of data on a wide range of issues related to the marine environment.

* Global Sea Level Observing System (GLOSS). Another of the existing operational elements incorporated into GOOS is GLOSS, which monitors the level of the sea surface through a worldwide network of tide gauge stations. A rising sea level is believed to be one consequence of global warming. The data obtained are currently being entered in a data bank operated and maintained by the Permanent Service for Mean Sea Level (PSMSL). The data bank is openly accessible and will soon be available in CD-ROM format. Use of the data bank may be of particular interest to small island states and low-lying coastal developing nations. Recently, IOC and the PSMSL produced the report "Sea Level Monitoring in the Small Island Developing States."

* Coastal Zone Monitoring System. A related recent initiative is the development of a long-term global monitoring system for coastal and near-shore phenomena related to climate change as a contribution to the GOOS module on monitoring of the coastal zone environment. The goal is to contribute to (i) global, regional and national efforts to assess climate change and the environmental and socio-economic impacts of this change and (ii) the development and implementation of policies and measures designed to mitigate the undesirable effects of such changes. International pilot monitoring activities include the assessment of climate change on coral reef ecosystems, mangrove communities and sea-level changes.

* Ocean Role in Carbon Budget. The IOC, jointly with ICSU's Scientific Committee on Oceanic Research (SCOR), sponsors international intercalibration and global observational activities related to quantifying the role of the oceans as a CO₂ source and sink in modulating the atmospheric concentration of CO₂. Recent emphasis has been made on standards and measurements techniques, the goal being to improve the intercomparability of data acquired from investigators from all over the globe using various types of instrumentation. The ultimate aim is to acquire high quality global data sets on the physical and biogeochemical processes that dominate the carbon cycle in order to better understand them and thus lead to reduced uncertainties in model forecasts of the long range effects of CO₂ increases. Another aspect of IOC's ocean CO₂ activities is to continually update the state of knowledge on CO₂ issues important to governments and to produce periodic ocean CO₂ publications for use by other agencies as well as IOC Member States. These efforts are in direct response to the charge given IOC by Agenda 21 (chapter 17).

Other useful contacts for information within IOC:

Head of the Training, Education and Mutual Assistance Programme: Dr. Kazuhira Kitazawa.

Information on ocean-climate-related computer applications: Dr. John Withrow.

Training possibilities in tide gauge operations and information on sea level data exchange: Dr. Albert Tolkachev.

Source: "Organization Profile," IOC Secretary, UNESCO/IOC, December 1994.

DATE UPDATED: 27-Feb-95

DATE CREATED: 20-Dec-93

Name of organization (English): International Energy Agency (IEA)
Name of organization (Local): International Energy Agency
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 F-75775 Paris Cedex 16
 France
Telephone: (33-1)4524-1861
Fax: (33-1)4524-9004
E-mail: firstname.lastname@iea.fr
Telex: 630 190 Energ A
Contact person: Ms. Jacqueline VINKE
 Administrator
 Energy and Environment Division
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Type of organization: Intergovernmental
Resources available: Information
 Technical
Subject area of expertise: Research and Monitoring
 Information
 Mitigation (Costing) - Study
 Mitigation (Energy) - Study
 Inventory (Emissions)
Geographical scope of interest: Global

Remarks:

The Paris-based IEA, founded in 1974, is the energy forum for 23 industrialized countries. IEA's objectives are: (a) to improve the world's energy supply and demand structure by developing alternative energy sources and increasing the efficiency of energy use; (b) to maintain and improve systems for coping with oil supply disruptions; (c) to operate a permanent information system on the international oil market and other sources of energy; (d) to assist the integration of environmental and energy policies; and (e) to approach energy developments in a global context through cooperative relations with non-member countries and international organizations. The Committee on Non-Member Countries (CNMC), closely monitors energy developments in their global context, including possibilities for cooperative relations with non-member countries and international organizations.

The International Energy Agency has many ongoing activities related to the Framework Convention on Climate Change. These activities have been grouped under four broad categories described below:

(a) IEA has developed a data base of emission factors to estimate gaseous emissions from energy extraction, supply and use. Initial work has focused on CO₂. The emissions factors are applied to projections of energy balances in countries, to evaluate the effectiveness of policy initiatives to stabilize greenhouse gases. Future energy balances are used to create a series of climate change indicators to help countries understand the relationship between economic and population growth and greenhouse gas emissions. The purpose of this data base is to improve the understanding of energy utilization in economic development and relationships between energy use and greenhouse gas emissions. This activity is ongoing since 1988.

(b) IEA conducts sectoral studies of the energy industry and energy intensive industries to obtain a better understanding of the relationship between energy supply and demand and effects on the environment. The main objectives of the studies are to examine government interventions in energy markets or the need for government interventions in energy markets to reduce or internalise the environmental effects of electricity production. The studies typically include projections of technological and economic responses to policy options and how such responses vary among countries. The UN and OECD cooperate to these studies, which are ongoing since 1988.

(c) Technology assessments of renewable energy systems and studies of energy intensity and energy conservation potentials in member countries. These assessments by IEA summarize technological developments and analyze current R&D programs, in the renewable energy industry. The assessments also include in-depth analyses of energy intensity and conservation potentials in particular industries to examine the range of technical and economic possibilities for emissions reductions. The studies often compare countries' claimed results. The purpose of these studies is to obtain a better understanding of the structural relationships in energy production and consumption. The studies attempt to identify progress towards stabilizing emissions and to quantify how progress is being made towards those goals. The UN and OECD cooperate to these studies, which are ongoing since 1988.

(d) Some activities of IEA are directed towards identifying countries energy policies, emissions reductions strategies and other policies implemented to stabilize gaseous emissions from energy sources. Specifically, these efforts identify methodological problems in the measurement and communication of countries' progress in meeting gaseous emissions targets under the UNFCCC. Their purpose is to improve the understanding of energy utilization in economic development and relationships between energy use and green house gas emissions. The UN and OECD cooperate to these activities, which are ongoing since 1988.

Source: Answer to a questionnaire sent by the UNFCCC secretariat, August 1993.

DATE UPDATED: 06-Jan-95

DATE CREATED: 16-Apr-93

Name of organization (English): Islamic Development Bank (IDB)
Name of organization (Local): Islamic Development Bank
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Jeddah 21432
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Direct fax:
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Type of organization: Intergovernmental
Resources available: Financial
Subject area of expertise: Mitigation (Land Use) - Study
Geographical scope of interest: Regional

Remarks:

The Bank's ongoing/current activities in the field of global climate change are as follows:

- * Rehabilitation and plantation of mangrove forest at Red sea, Saudi Arabia (US\$ 304,000).

Source: Answer to a questionnaire sent by the UNFCCC secretariat, July 1994.

DATE UPDATED: 25-Jan-95

DATE CREATED: 12-Jul-94

Name of organization (English): Ministry of Foreign Affairs
Name of organization (Local): Ministry of Foreign Affairs
Address: P.O. Box 2006 I
NL-2500 GX The Hague
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Telephone: (31-70)348-6486
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Contact person: Mr. Thyman A. KOUWENAAR
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Type of organization: Government (Ministry of Foreign Affairs)
Resources available: Financial
Subject area of expertise: Capacity Building
Mitigation - Study
Adaptation - Study
Inventory
National Plan - Development
Geographical scope of interest: Global

Remarks:

Within the Netherlands Government, two ministries are involved in a donor capacity in promoting climate-related country studies: the Ministry of Foreign Affairs and Development Cooperation, focussing mainly on developing countries, including Central Asia; and the Ministry for Environment, focussing mainly on countries with an economy in transition.

As a general eligibility criterion, assistance can be rendered to a government, upon request, for the purpose of improving the country's capacity to prepare for policy-making in the light of UNFCCC and IPCC's requirements. The country study should be executed to the maximum possible extent by local experts. Assistance from outside experts should be kept to a minimum. The Netherlands gives special attention to issues relating to coastal areas. Also, NGO's can submit requests for financial support for activities promoting the implementation of the FCCC.

The Netherlands received assistance requests from a number of countries, including the following:

- * Yemen: a request was received from the Environmental Protection Council to assist in setting up a national working group for air quality and climate change; requests were also received for assistance in the field of emission inventory, and vulnerability study on sea level rise and coastal zone management;
- * Ghana: a request was received from the Minister of Finance and Economic Planning for assistance in the field of emission inventory, effects of climate change and options for mitigation/adaptation;
- * Bangladesh: a comprehensive vulnerability study on sea level rise and drought effects was finalised in September 1994; follow-ups on seminars and integrated coastal zone management are planned, as well as an assessment study of options, instruments and costs;
- * Suriname: a request was received for assistance on mitigation and adaptation, emission inventory and effects (e.g. sea level rise);
- * Costa Rica: a request was received for assistance to set up a national programme on climate change; a request was also received for assistance in the field of inventory, vulnerability and mitigation;
- * Tanzania: no reply was received from this country;
- * Egypt: a comprehensive vulnerability study on sea level rise and coastal zone management was completed on May 1994; follow-ups on training and seminars are planned for beginning of 1995;
- * Vietnam: a comprehensive vulnerability study on sea level rise, coastal zone management and drought effects is ongoing; the study concerns the deltas of Mekong and Red River and the east-coast, and is carried out jointly by the Government of Vietnam and the Mekong Secretariat; the training component of this project was developed in close cooperation with CC:TPAIN;
- * Gambia: a request for assistance on sea level rise and coastal zone management was received;
- * Hungary: an inventory study is ongoing;
- * Poland: a comprehensive vulnerability study on sea level rise and coastal zone management was completed in 1992.
- * Thailand: the Netherlands renders assistance to CORIN (University of Bangkok) in training activities on coastal zone management for developing countries;

At the present, the following countries have been selected for conducting missions to set up country studies: Yemen (types a and b), Ghana (a, b and c), Bangladesh (a), Suriname (a, b, and c), Costa Rica (a, b and c), Bolivia (b), Ecuador (b) and Senegal (b and c).

The missions are intended to seek local partners to work together with external experts during the implementation stage and to set up country studies centering upon the following issues:

- * Type a.: inventory of net emissions of GHGs and scenarios of their evolution in the future;
- * Type b.: vulnerability assessments of potential impacts of climate change on natural and human systems;
- * Type c.: assessment of technological options, policy instruments and costs.

In the course of 1995, the results of these missions are expected to be used as a basis for projects to be implemented in the countries visited.

Sources: Meeting at the Ministry Headquarters, The Hague, October 1994; "Invitation to submit tender to conduct country studies on climate change," Ministry of Foreign Affairs of the Netherlands, The Hague, 25 March 1994; "Information on the Netherlands Country Study Programme," 20 January 1994.

DATE UPDATED: 19-Dec-94

DATE CREATED: 13-Aug-93

Name of organization (English): Ministry of Foreign Affairs
Name of organization (Local): Ministry of Foreign Affairs
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Research & Programming Division
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Direct e-mail:
Type of organization: Government (Ministry of Foreign Affairs)
Resources available: Technical
Subject area of expertise: Education and Training
Capacity Building
Mitigation (Energy) - Study
Geographical scope of interest: Global

Remarks:

The Ministry of Foreign Affairs of Japan has been setting up a number of environment-related activities in Official Development Assistance. At the UNCED, the government expressed that it would expand its bilateral and multilateral ODA in the field of the environment to around 900 billion to one trillion yen during the five-year period starting from fiscal year 1992, which began in April 1992.

The Japan International Cooperation Agency (JICA), which is administered by the Ministry of Foreign Affairs, has been implementing various technical cooperation related to climate change, including:

- * Technical cooperation for training in Dalian Energy Conservation Training Center in China;
- * Formulation of local energy conservation plan in East European countries including Bulgaria, Hungary and Romania;

- * Setting up training courses on climate change and energy conservation.

Any government wishing to carry out a project/program to mitigate global warming can formulate a request for Official Development Assistance through the normal diplomatic channels, and the request will be considered by the Ministry of Foreign Affairs.

Source: "Organization Profile", Permanent Mission of Japan, Geneva, February 1995.

DATE UPDATED: 24-Feb-95

DATE CREATED: 14-Jun-92

Name of organization (English): Latin-American Energy Organization (OLADE)

Name of organization (Local): Organización Latinoamericana de Energía

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E-mail:

Telex:

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Executive Secretary
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Direct e-mail:

Type of organization: Intergovernmental

Resources available: Information
Technical

Subject area of expertise: Mitigation (Energy) - Study

Geographical scope of interest: Regional

Remarks:

As an international public cooperation, coordination, and advisory agency, OLADE's basic purposes are the integration, perfection, conservation, rational development, marketing, and defense of the Region's energy resources.

With specific regard to the environment, OLADE has recently issued a series of four extensive guides for assessing the environmental impacts of geothermal plants, biomass production, hydropower stations, and thermoelectric stations.

In addition, it has cooperated with the GEF in organizing a Seminar focusing on the Incremental Costs of Reducing Greenhouse Gas Emissions in Power Generation, which included two case studies (in Colombia and Costa Rica) and the publication of the proceedings. There is also an ongoing exchange of information with GEF to enhance the environmental components of the SUPER/OLADE-BID Power Planning Model.

Likewise, Olade is interested in broadening the environmental modules of its Energy-Economic Information System, using the IPCC/OCED/IEA emission calculation methodology.

The main program guidelines for the various projects that are being implemented and proposed are:

- * Economic and Energy Policy: reforms, privatization and regulation.
- * Energy Efficiency and Conservation: demand management, rational use of energy promotion of technologies for efficient use of energy, improvements in planning and information system tools.
- * Energy and the Environment: environmental impact of energy projects, least-cost mitigation strategy, renewable sources of energy.
- * Energy Forecasting: assessment of geopolitical and macroeconomic scenarios that determine energy behaviour.
- * Training

Source: Organization Profile, Executive Secretary, OLADE, 18 January 1995.

DATE UPDATED: 24-Jan-95

DATE CREATED: 21-Dec-93

Name of organization (English): Ministry of International Trade and Industry (MITI)

Name of organization (Local): Ministry of International Trade and Industry

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Type of organization: Government (Other)

Resources available: Financial
Information
Technical

Subject area of expertise: Mitigation - Implementation
Mitigation - Study

Geographical scope of interest: Global

Remarks:

Within the Ministry of International Trade and Industry of Japan, the Global Environmental Affairs Office has been dealing with general environmental issues, including climate change. In particular, the Office recently launched the "Green Aid Plan."

While the Green Aid Plan mainly focuses on supporting efforts conducted by countries to address domestic pollution problems, its projects related to energy conservation are effective in mitigating climatic changes.

The Green Aid Plan plans to extend policy dialogues with six Asian countries, including China, Indonesia, Philippines, Malaysia, Thailand and, likely, India.

DATE UPDATED: 28-Feb-95

DATE CREATED: 09-Aug-93

Name of organization (English):	National Institute of Public Health and Environmental Protection (RIVM)
Name of organization (Local):	Rijksinstituut voor Volksgezondheid en Milieuhygiene
Address:	P.O. Box 1 NL-3720 BA Bilthoven Netherlands
Telephone:	(31-30)74-3780 or -3704
Fax:	(31-30)25-0740
E-mail:	mobidre@rivm.nl
Telex:	
Contact person:	Mr. Andre R. VAN AMSTEL Global Change Department Direct telephone: Direct fax: (31-30)29-3651 Direct e-mail:
Type of organization:	Government (Other)
Resources available:	Information Technical
Subject area of expertise:	Adaptation - Study Vulnerability and Impact Assessment National Plan - Development Policy - Study
Geographical scope of interest:	Global

Remarks:

RIVM is a main supplier of expertise to the Ministries of Welfare and of Environment in the Netherlands. It has a staff of about 2,000 and carries out numerous cooperative programmes with other institutions and universities.

At present, RIVM is developing version 2.0 of its IMAGE model, which is a multi-disciplinary, integrated model designed to simulate the dynamics of the global society-biosphere-climate system. The objectives of the model are to investigate linkages and feedback in the system, and to evaluate consequences of climate policies. It consists of three fully linked sub-systems: energy-industry, terrestrial environment, and atmosphere-ocean. The first of these computes the emissions of greenhouse gases in 13 world regions as a function of energy production and industrial production. The second simulates the changes in global land area on a grid-scale based on climatic and economic factors, and the flux of CO₂ and other greenhouse gases from the biosphere to the atmosphere. The third of these sub-models compute the build-up of gases in the atmosphere and the resulting temperature and precipitation patterns (averaged over zones). An earlier version of the model has been used for developing the first set of IPCC scenarios. The present

version is used to support preparation of the Second Assessment Report of IPCC, especially with regards to general scenarios and to biospheric changes.

The Laboratory for Waste Management and Emissions (RIVM/LAE) runs a programme on the diagnosis and prognosis of emissions. For the national simulation, it assesses emissions to air and water and production of waste (in cooperation with other national institutes); for the continental and global situation the focus is on air emissions. The diagnosis of emissions means that the relation is studied between emissions and processes (in a broad sense) that are responsible for these. Global emissions are assembled in the EDGAR database, which is developed on a scientific basis in the IGBP framework together with Canada (Environment Canada) and the US (ENCAR).

The National Research Programme is completing its first phase (a five-year period) and has started its second phase by defining its research themes and soliciting proposals. Over a 5-year period, US\$ 35 million will be available. Themes are: (a) the behavior of the climate system and its components; (b) vulnerability and cultural systems against climate change; (c) causes and solutions in the context of society; and (d) "assessment:" synthesis and evaluation of knowledge and policy options and dialogue between research policy and society.

Source: Report on a Mission to the National Institute of Public Health and Environmental Protection, 16 May 1994, UNFCCC secretariat.

DATE UPDATED: 09-Dec-94

DATE CREATED: 01-Aug-93

Name of organization (English): Opec Fund for International Development
Name of organization (Local): Opec Fund for International Development
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A-1011 Vienna
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E-mail:
Telex: I-31734 Fund A
Contact person: Mr. Abdelkader BENAMARA
Director of Research and Information
Direct telephone:
Direct fax:
Direct e-mail:
Type of organization: Intergovernmental
Resources available: Financial
Subject area of expertise: Capacity Building
Geographical scope of interest: Regional

Remarks:

The Organization of Petroleum Exporting Countries carried out various projects related to climate change including the following:

1) Support for an African Science Workshop:

Support for a workshop on the applicability of environmental physics and meteorology in Africa.

2) Water resources development in Chad:

The project is expected to reach the following objectives:

- use of artesian pressure to provide water to the population, and therefore to avoid the use of expensive fuel-operated pumps with high operating and maintenance costs;
- construction of deep wells and provision of technical assistance;
- training of local operators to manage equipments such as wells.

3) Loans in mid-1994 to:

- Bangladesh (US\$ 15.3 million) for rural electrification project;
- Grenada (US\$ 2 million) for coastal protection and road rehabilitation;
- Tanzania (US\$ 4.73 million) for transport project;
- Jordan (US\$ 10 million) for electricity rehabilitation project.

Source: Press Releases, summer 1994; answer to a questionnaire sent by the UNFCCC secretariat, July 1994.

DATE UPDATED: 09-Dec-94

DATE CREATED: 25-May-94

Name of organization (English): Organisation for Economic Co-operation and Development (OECD)
Name of organization (Local): Organisation de coopération et de développement économiques

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Type of organization: Intergovernmental

Resources available: Information
Methodologies
Technical

Subject area of expertise: Economics - Study
Mitigation - Study
Inventory

Geographical scope of interest: Global

Remarks:

In the field of climate change, the OECD has been implementing several different activities, including:

THE ECONOMICS OF CLIMATE CHANGE POLICY RESPONSES

For the past few years, the OECD Economics Department has studied design of appropriate policy responses to the risk of climate change, from an economic perspective, and most recently, it has published several related reports on this subject. Most of the supporting technical analysis is based on the use of the "GREEN" model, which is a dynamically recursive, multi-sectoral, global general equilibrium model. This recent round of publications marks the end of the present OECD work programme on broad economic assessment of policy responses to climate change.

IPCC/OECD/IEA PROGRAMME ON NATIONAL GREENHOUSE GAS INVENTORIES

Since 1991, the OECD Environment Directorate and the IEA have assisted the IPCC in developing and

testing guidelines on national greenhouse gas inventories. A Phase II programme was initiated at the beginning of 1995, which is intended to cover the transitional phase while the roles of the Conference of the Parties under the FCCC and its subsidiary bodies are undefined. The highest priority will be to identify and correct any major deficiencies or errors in the present set of guidelines. An initial assessment of the guidelines will take into account national experience with application of the guidelines, which includes both developed and developing countries. Inventory results will also be assessed for internal consistency. High priority will also be placed on extending the guidelines to include methods for estimation of emissions of additional greenhouse gases (N₂O, C₂O, PFCs, HFCs, SF₆, sulphur gases and aerosol precursors). The OECD will work with the INC secretariat to ensure that all operational aspects of the guidelines, including technical outreach and cooperation can be handed over at the end of the transitional period (early 1996).

COMMUNICATION OF INFORMATION UNDER THE UNFCCC

Since 1993, OECD Environment Directorate and the IEA have conducted a project representing on national communications under the FCCC which enabled Annex I country governments to collectively shape common positions on issues relating to national communications. The project's attention initially focused on: (a) guidelines on the specific content and format of first communications from Annex I Countries; (b) the first review of Annex I country national communications under the Convention; (c) providing assistance to countries with economies in transition for preparation of their national communications.

Currently the focus of the project has shifted to a different set of issues: (a) assessment of policies and measures for greenhouse gas emission mitigation and sink enhancement; (b) continued assistance to countries with economies in transition, focused on methods for mitigation assessment; (c) exploring methodologies for the projection of GHG and estimates of the effects of policies and measures.

The project is working to analyze promising policies and measures that could lend themselves to common action. A workshop on analytical methods to assess greenhouse gas mitigation options for countries with economies in transition is scheduled for June 1995. In addition, a study of methodologies to improve comparability and transparency of greenhouse gas emission projections and estimates of the effects of measures is proposed.

ENERGY AND ENVIRONMENT

The OECD Environment Directorate also has a work programme on energy and environment, parts of which are directly relevant to climate change policy. Some of the specific projects include: (a) environmental implications of removing supports to energy systems, including subsidy definition and evaluation, choice of measures to remove subsidies and methods for evaluation; (b) environmental and social cost assessment and pricing (in cooperation with the IEA and the European Community), featuring a series of workshops to address principles, modes and methods for monetisation, policy choice for internalisation, and dealing with uncertainty; (c) energy efficiency strategies for pollution and GHG abatement, including a guide on energy efficiency for sustainable development, collaboration with the IEA on the development of indicators on energy efficiency as well as case studies on the use of indicators to evaluate the effects of policies.

Sources: Fax from OECD dated 24 February 1995; Meeting at OECD Headquarters, October 1994; Answer to a questionnaire sent by the UNFCCC, August 1993.

DATE UPDATED: 27-Feb-95

DATE CREATED: 16-Apr-93

Name of organization (English): Resource Analysis (RA)
Name of organization (Local): Resource Analysis
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Telex:
Contact person: Dr. Frank P. RIJSBERMAN
 Director
 Direct telephone:
 Direct fax:
 Direct e-mail:
Type of organization: Corporate
Resources available: Technical
Subject area of expertise: ---
Geographical scope of interest: Global

Remarks:

Recently, RA was assigned a project by the Netherlands Government to formulate country studies on climate change in Bangladesh, Bolivia, Costa Rica, Ecuador, Ghana, Senegal and Suriname.

RA has also been implementing a number of other projects in the field of climate change, including:

- * Brainstorm meeting on the implementation of the UN Framework Convention on Climate Change in Central and Eastern Europe (1994) (in cooperation with the Institute of Environmental Studies of the Free University of Amsterdam, IES).

- * Indicators and targets for the Netherlands climate policy (1993-1994). RA was tasked with carrying out a research project for the Ministry of Housing, Spatial Planning and Environment to explore possible indicators or indices that can be used to evaluate the relative progress made by the Netherlands Government in reducing CO₂ emissions with respect to impacts on climate change.

- * Support for the development of a climate policy in Hungary (1992). RA was tasked by the Ministry of Housing, Spatial Planning and Environment with (a) providing support for an inventory of CO₂ emissions in Hungary, (b) developing scenarios for energy use and provision, and (c) contributing to the development of a climate policy for Hungary.

* Preparation of the Netherlands government policy to prevent and adapt to climate change (1990-1991). This project consisted of a policy analysis to support several interdepartmental task groups in the preparation of a policy note for parliament in 1991. RA contributions included: (a) developing a framework for analyzing impact-oriented measures, (b) describing the non-fossil carbon cycle of the Netherlands, and (c) drafting the chapter of the policy document on GHGs other than CO₂ and CFCs.

* Policy analysis and development support of the Netherlands Government Climate Change Group (1989-1993). RA was tasked by the Ministry of Housing, Spatial Planning and Environment with providing support for the formulation of policies with respect to global climate change issues in general, and for the Dutch contribution to the Intergovernmental Panel on Climate Change (IPCC) in particular.

* Support for the Advisory Group on GHGs, Working Group 2: Targets and Indicators of Climate Change (1989-1990). This research project, jointly sponsored by the Swedish Stockholm Environment Institute (SEI) and the Netherlands Ministry of Housing, Spatial Planning and Environment, aimed at developing targets and indicators of impacts of climate change, in preparation for the Second World Climate Conference. RA was responsible for several research papers, the organization of an international review workshop, and editing the final report.

Source: Project Sheet 8, Resource Analysis, August 1994; communication to the UNFCCC secretariat, August 1994.

DATE UPDATED: 03-Dec-94

DATE CREATED: 01-Jun-94

Name of organization (English): South Pacific Regional Environment Programme (SPREP)
Name of organization (Local): South Pacific Regional Environment Programme
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 Samoa
Telephone: (685)21-929
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Telex:
Contact person: Mr. Chalapan KALUVIN
 Climate Change Coordinator
 Direct telephone:
 Direct fax:
 Direct e-mail:
Type of organization: Intergovernmental
Resources available: Information
 Methodologies
 Technical
Subject area of expertise: Research and Monitoring
 Information
 Education and Training
 Capacity Building
 Mitigation - Study
 Adaptation - Study
 Vulnerability and Impact Assessment
 Inventory
 National Plan - Development
 Policy - Implementation
 Policy - Study
Geographical scope of interest: Regional

Remarks:

SPREP is the leading environmental agency for the South Pacific region. It is an intergovernmental organization with members from 26 countries and territories in the region and was established in 1982. In 1992 it became an autonomous organization, with programme activities covering a wide range of national, regional and international concerns implemented by the secretariat.

programmes are listed below:

* Climate and Sustainable Development

Key components of this programme are: (a) exploration of the linkages between rapid climate change and sustainable development; (b) indication and analysis of policy options and investment strategies on greenhouse gas emissions; and, (c) improvement of the quality of data on emissions and times;

* SEI, IPCC and the OECD

Through its Boston Centre, SEI is working with the Intergovernmental Panel on Climate Change (IPCC) and the Organization for Economic Cooperation and Development (OECD) to develop consistent methodologies for assessing and reporting on national greenhouse gas emissions and sinks, as required by the Climate Change Convention. As part of this initiative, a computer software has been recently developed (see Organization Profile on Stockholm Environment Institute-Boston Center SEI-B);

* Climate Change and Forest-Based Land Use Systems

This project is being undertaken by SEI and the Tata Energy Research Institute (TERI) in New Delhi, India. It assesses the vulnerability of existing and planned forest-based land use systems in Himachal Pradesh (India);

* Greenhouse Gas Scenario System (G2S2)

G2S2 is a database of current anthropogenic greenhouse gas emissions and a policy assessment tool for analysing possible future emission patterns (see also Profile on SEI-B);

* Atmospheric Environment Issues in Developing Countries

Three major climate change-related projects are undertaken under this label in Thailand, India and Viet Nam. The main areas are: (a) responses to climate change; (b) greenhouse gas abatement strategies; and, (c) information on climate change issues;

* Climate and Africa: An Assessment of African Policy Options and Responses to Global Climate

This project is an 18-month initiative undertaken by SEI in collaboration with the African Centre for Technology and Science (ACTS), the African Energy Policy Research Network, the Zimbabwe Environmental Research Organization (ZERO), Environnement et Développement du Tiers Monde (Enda-TM) and the Audit Planification Expertise - Energie-biomasse-bases de Données. The project aims at supporting African governments with their preparations for the first meeting of the Conference of the Parties in March 1995. It involves research in 12 countries and diplomatic dialogues all over Africa.

Sources: "Stockholm Environment Institute: A Profile of the Climate Change and Sustainable Development Programme," SEI, 1994, Stockholm. "Distribution of IPCC Software for National GHG Inventories," Letter, OECD, 14 March 1994.

DATE UPDATED: 24-Jan-95

DATE CREATED: 20-Apr-93

Name of organization (English): Stockholm Environment Institute-Boston Center (SEI-B)

Name of organization (Local): Stockholm Environment Institute-Boston Center

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Type of organization: NGO (Other)

Resources available: Information
Methodologies
Technical

Subject area of expertise: Information (Methodologies)
Capacity Building
Inventory
National Plan - Development
Policy - Study

Geographical scope of interest: Global

Remarks:

The Stockholm Environment Institute-Boston Center is hosted by the Boston-based Tellus Institute. Its climate programme focuses on the development, application and dissemination of methods for estimating current greenhouse gas emissions, projecting future emissions and devising strategies to abate future emissions. SEI-B projects feature the development of an appropriate microcomputer which rely on scenario analysis to combine the best available data, information and simulation methods to draw a picture of current situations and future possibilities.

In addition to conducting studies and policy assessments, a central purpose of the program is building the institutional capacity of countries to address problems of resources, environment and development. SEI-B assists developing countries in improving their capacity for integrated resource planning. This program includes transferring SEI-B computer systems to national planning agencies and training professionals on integrated planning, computer use, data development and general skills.

The Greenhouse Gas Scenario System (G2S2), is a microcomputer system for evaluating greenhouse gas emissions recently developed by SEI-B. G2S2 is an easy-to-use system which:

- * provides current and historic GHG accounts;
- * covers all major GHG and anthropogenic sources
- * treats emissions at country, regional or global levels;
- * permits the examination of a wide range of alternative policies for reducing future emissions.

As an up-to-date emissions data base and policy evaluation tool, G2S2 offers a quick response resource for global warming analysts and policy makers designed to explore alternative GHG targets, and to test the sensitivity to uncertainty in basic driving parameters. Based on techniques used in G2S2, SEI-B has been working with the IPCC/OECD project to develop the software for standardized methodologies for carrying out national inventories. This software, currently called MINERGG, has been widely distributed. G2S2 builds off the snapshot of current emissions from MINERGG to explore future emissions, scenarios and policy targets.

In addition, SEI-B's LEAP model has been used internationally for many years to conduct detailed analyses of GHG emissions in the energy sector alone. Like G2S2, LEAP is a user-friendly and flexible system. G2S2 is useful for comprehensive investigations of all sectors and all gases. LEAP is an appropriate tool for energy sector experts wishing to formulate energy plans and explore the ramifications for greenhouse gases.

DATE UPDATED: 06-Oct-94

DATE CREATED: 17-Mar-94

Name of organization (English): Swiss Development Cooperation (SDC)
Name of organization (Local): Direktion für Entwicklungszusammenarbeit und humanitäre Hilfe
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Type of organization: Government (Contributor)
Resources available: Financial
Technical
Subject area of expertise: Education and Training
Mitigation - Implementation
Mitigation - Study
Geographical scope of interest: Global

Remarks:

SDC supports the efforts of developing countries to improve the living conditions of their populations. Its overall goal is to enable these countries to accomplish development by their own efforts.

SDC sponsors a number of climate-related activities, including:

* India, "Renewable Energy Solar PV." Stage: implementation. Subject area of interest: mitigation. Implementing agency: Indian Renewable Energy Agency. Estimated starting date: March 1993. Duration: 60 months. Estimated total cost: US\$ 4 million. Other supporting agency: Global Environment Facility (GEF).

* India, "Energy Study on Small-Scale Industry." Stage: development. Subject area of interest: mitigation and energy study. Implementing agency: Tata Energy Research Institute. Estimated starting date: January 1994. Duration: 12 months. Estimated total cost: US\$ 0.2 million.

* India, "Ecorefrigeration." Stage: implementation. Subject area of interest: mitigation. Implementing agency: Ministry of Environment and Forests; Refrigeration Industry. Estimated starting date: December

1992. Duration: 30 months. Estimated total cost: US\$ 1 million.

* Costa Rica, "Renewable Energy Solar Thermic." Stage: implementation. Subject area of interest: mitigation. Implementing agency: National Environmental Commission; University of Heredia; National Technical Institute. Estimated starting date: January 1993. Duration: 60 months. Estimated total cost: US\$ 2 million.

* Costa Rica, "Energy Efficiency." Stage: implementation. Subject area of interest: mitigation. Implementing agency: National Environmental Commission; University of Heredia; National Technical Institute. Estimated starting date: January 1993. Duration: 60 months. Estimated total cost: US\$ 4 million.

* Cape Verde, "Energy Efficiency Desalinization." Stage: implementation. Subject area of interest: mitigation. Implementing agency: Electra. Estimated starting date: April 1994. Duration: 16 months. Estimated total cost: US\$ 2 million.

* Cape Verde, "Mini-Hydel Network." Stage: implementation. Subject area of interest: capacity building; mitigation. Implementing agency: Swiss Center for Appropriate Technology. Estimated starting date: January 1992. Duration: 36 months. Estimated total cost: US\$ 0.2 million.

Source: "Organisation Profile," Letter, Swiss Development Cooperation, May 1994.

DATE UPDATED: 29-Jun-94

DATE CREATED: 25-Apr-94

Name of organization (English): Tata Energy Research Institute (TERI)
Name of organization (Local): . Tata Energy Research Institute
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 India
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Fax: (91-11)462-1770
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Telex: 31-61593 TERI IN
Contact person: Mr. R. K. PACHAURI
Director
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Type of organization: NGO (Other)
Resources available: Information
 Technical
Subject area of expertise: Information
 Education and Training
 Mitigation - Study
 Policy - Study
Geographical scope of interest: National
 Global
 Regional

Remarks:

TERI is an autonomous, not-for-profit research organization. It addresses problems such as (1) the gradual depletion of the earth's finite energy resources which are largely non-renewable; and (2) the existing methods of their use, which lead to increasing pollution. The mission of TERI is, therefore, to find solutions to a wide range of problems, and this characteristic imparts a definite goal-orientation to all activities undertaken within the institute.

STAFF

TERI has more than 360 employees on its staff, including 252 research and technical, and approximately 100 administrative and supporting staff members.

ACTIVITIES

TERI's programmes reflect its wide-ranging character and illustrates its integrated and wide-ranging approach. The institute is currently active on eight broad areas, within which programmes attack problems at several levels and scales. It is active in publishing several forms of literature in energy and environment, ranging from abstracting services to in-depth, state-of-the-art reports.

TERI's outreach programme includes a specialized library, Documentation and Information Centre, publications and original software packages which provide research support to energy-environment scientists and institutions worldwide and the production of public awareness video films and television programmes. TERI also organizes each year national and international conferences and workshops on specific themes and training programmes for senior officials in government and energy utilities, and corporate managers.

BROAD AREAS

* Policy analysis on energy and environment: energy data systems, energy-environment interface, energy modelling and policy analysis, fossil fuels, global warming centre and power policy; * rural energy; * forestry; * renewable energy technologies; * energy conservation; * biotechnology; * computer applications; * training and information dissemination.

BRANCHES

* TERI, Bangalore; * TERI, Guwahati; * TATA Energy Resources Institute (TERI), Washington D.C., U.S.A. TERI is also host to the secretariat of the Asian Energy Institute (AEI), a network of energy institutions from around 12 countries of the Asia-Pacific region.

MAJOR FUNDING ORGANIZATIONS

* Ministries and departments of the Government of India; * Industrial sector; * International organizations such as the Commission of the European Communities, USAID, the World Bank, the Asian Development Bank, Ford Foundation, the International Development Research Centre, the UN University, ESCAP, UNESCO, FAO and others.

Source: "Organization Profile," Research Associate, TERI, New Delhi, December 1994.

DATE UPDATED: 28-Feb-95

DATE CREATED: 19-Apr-93

Name of organization (English): U.S. Country Studies Program
Name of organization (Local): U.S. Country Studies Program
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Washington D.C. 20585
United States of America
Telephone: (1-202)426-0011
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E-mail:
Telex:
Contact person: Mr. Robert K. DIXON
Director
Country Studies Management Team
Direct telephone:
Direct fax:
Direct e-mail:
Type of organization: Government (Contributor)
Resources available: Financial
Technical
Subject area of expertise: Mitigation - Study
Vulnerability and Impact Assessment
Inventory
Policy - Implementation
Policy - Study

Geographical scope of interest: Global

Remarks:

In support of the UNFCCC, the United States has initiated the programme U.S. Country Studies Program (short for United States Support for Country Studies to Address Climate Change), whose budget is US\$ 25 million over three years. Under this program, the U.S. is providing technical and financial support to developing countries and countries with economies in transition.

OBJECTIVES

- * To enhance the capabilities of countries to inventory net emissions of greenhouse gases, assess vulnerability to climate change and evaluate options to mitigate and adapt to climate change;
- * To support countries' efforts to establish a process for developing and implementing national policies and measures to mitigate and adapt to climate change and for reexamining these policies and measures over

time;

- * To develop information to advance national, regional and global discussions of climate change issues.

CRITERIA FOR ELIGIBILITY

- * To be a signatory to the UNFCCC or have publicly stated its intention to become one;
- * To be either a developing country or a country with an economy in transition;
- * To be willing to adopt the completed work as part of an official country study and make the results and documentation available internationally;
- * To be willing to establish appropriate institutional structures to direct the study and provide a basis for developing and implementing future policies to address climate change.

OTHER ELEMENTS OF THE PROGRAMME

- * Will not support more than one study per country;
- * Studies can address one or more of the following: greenhouse gas inventory, vulnerability assessment, evaluation of mitigation and adaptation options, preparation of national plans, public education and outreach;
- * Studies assist countries in meeting their national reporting needs under the FCCC.

STATISTICS

- * Approximately 30 countries expressed interest in the program in the first round (FY93-94);
- * Twenty-six countries or subregions were granted financial assistance to conduct studies, including: Algeria, Bulgaria, Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), Chile, Czech Republic, Egypt, Ethiopia, Gambia, Kazakhstan, Marshall Isl., Mexico, Micronesia, Mongolia, Nigeria, Oman, Peru, Poland, Russian Federation, Venezuela and Zimbabwe;
- * In the second round (FY94-95), several countries applied for financial support. The list of countries declared eligible to receive support under this second phase of the program includes: Argentina, Bangladesh, Bolivia, Botswana, China, Cote d'Ivoire, Ecuador, Estonia, Fiji, Hungary, Indonesia, Kenya, Kiribati, Malawi, Mauritius, Mozambique, Nepal, Philippines, Romania, Slovak Republic, Sri Lanka, Tanzania, Thailand, Uganda, Ukraine, Uruguay, Western Samoa and Zambia.
- * A third round is under consideration. Armenia, Brazil, Eritrea, Georgia, Guyana, India, Latvia, Lesotho, Seychelles, Sierra Leone, Togo and Uzbekistan have expressed interest in receiving support under this third round.

Technical support for country studies is a major element of the program. Approximately 25% of FY93 and FY94 resources were devoted to provide training analytical tools and other technical support for participants from developing and transition countries. The program provided training to over 150 analysts, engineers and scientists at workshops in Africa, Asia, Europe, Latin America, South America and the U.S. in FY93 and early FY94. Methodological handbooks, as well as reference materials and models, were developed and distributed to provide a common technical framework for climate change vulnerability and adaptation assessments and evaluation of mitigation response options. The IPCC/OECD GHG emissions inventories guidance documents and software were also distributed to countries in multiple languages. A library and an electronic clearinghouse to support a large demand for technical information has also been established. Financial and technical support for U.S.-sponsored country studies complements activities developed by other donors (e.g. UNDP, UNEP, GEF, Germany, the Netherlands, others). The U.S. coordinate its support activities with other donors through several venues, including the CC:INFO project of the UNFCCC.

Letter to INC secretariat, Contry Studies Management Team, 29 April 1994; "Country Study Notes," Quarterly Publication, Issue 1, August 1994.

DATE UPDATED: 16-Mar-95

DATE CREATED: 27-Oct-93

Name of organization (English): UNEP Collaborating Centre on Energy and Environment (UNEP/Risø)
Name of organization (Local): UNEP Collaborating Centre on Energy and Environment
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Direct e-mail: ucc-joch@risoe.dk
Type of organization: NGO (Other)
Resources available: Information
Methodologies
Technical
Subject area of expertise: Information (Methodologies)
Mitigation (Costing) - Study
Mitigation (Energy) - Study
Policy - Study
Geographical scope of interest: Global

Remarks:

The UNEP Collaborating Centre on Energy and the Environment, based in Risø, Denmark, was founded in 1990 by the Danish International Development Agency (DANIDA), the United Nations Environment Programme (UNEP) and the Risø municipality. The work programme of UNEP/Risø is centered upon four areas: (a) environmental impacts of energy production and use in developing countries; (b) energy policy in selected countries and the formulation of guidelines for incorporating environmental considerations into energy policy; (c) information on energy-related environmental effects, energy planning methods and models; and, (d) scientific and technical support to the UNEP on energy issues. Currently, the Centre conducts studies on implementation in Zimbabwe and the State of Maharashtra, India. Further activities are centered upon investigating the issue of energy and the environment in the People's Republic of China and India.

UNEP/Risø was responsible for the preparation of the 1993 report "UNEP Greenhouse Gas Abatement Costing Studies." This report consists of an analysis of abatement costing issues and the preparation of a methodology to undertake national greenhouse gas abatement costing studies. It includes the guidelines developed for and applied in the estimation of the costs of limiting greenhouse gas emissions and the summaries for the countries investigated. The countries investigated are the following: Brazil, Denmark, Egypt, France, India, Netherlands, Senegal, Thailand, Venezuela and Zimbabwe.

The studies undertaken build upon the work of UNEP, the Intergovernmental Panel on Climate Change (IPCC) and the Organisation for Economic Cooperation and Development (OECD) on inventories of greenhouse gas sources and sinks, using the methodologies established as a basis for the abatement analysis. Their main aim is to expand the understanding of the economic issues involved in national strategies to limit greenhouse gas emissions, and to help develop a methodological framework for carrying out and presenting assessments of the cost of limiting emissions of greenhouse gases. A major concern was to make sure that the framework adopted is acceptable and applicable to widely varying countries - developing countries, countries with economies in transition, industrialized countries, etc. Phase Three of the above project, initiated in October 1993, takes the methodological approach a step further by focusing on in-depth analyses on the issues above in two developing countries: Venezuela and Zimbabwe.

The Centre has, in collaboration with institutions in Botswana, Tanzania, Zambia and Zimbabwe, also initiated a project on sub-regional analysis and national strategy development. This regional approach intends to analyze the regional implications of major abatement options implemented either in individual countries or in all countries of the region. These may include technical options related to specific sectors (energy, forestry, agriculture, industry or transport) or policy instruments like taxes, financial schemes and investment grants.

Following a request of the Government of Burkina Faso to the Danish Government, the Centre has also been commissioned to provide technical assistance and support in order to assess national contributions to global GHG accumulation and to identify the most relevant GHG abatement options for national target-setting and action. The project, supported by DANIDA, aims at improving national capacity building on emission inventories, vulnerability and adaptation issues.

UNEP/Risø publishes a newsletter called C2E2 News which provides up-to-date information at regular intervals on the activities of the Centre and the UNEP.

Sources: "UNEP Greenhouse Gas Abatement Costing Studies," UNEP/Risø, Denmark, 25 November 1993; "C2E2 News," Newsletter, UNEP/Risø, Denmark, April 1994.

DATE UPDATED: 12-Jan-95

DATE CREATED: 15-Apr-93

Name of organization (English): UNEP/WMO Information Unit on Climate Change (IUCC)

Name of organization (Local): UNEP/WMO Information Unit on Climate Change

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Type of organization: UN System

Resources available: Information

Subject area of expertise: Information

Geographical scope of interest: Global

Remarks:

IUCC was established in Geneva in July 1991 by the United Nations Environment Programme (UNEP). In 1992, the World Meteorological Organization (WMO) joined UNEP as a co-sponsor of the IUCC.

IUCC operates an information service on all aspects of climate change. Its services are available to decision-makers from all sectors (government, industry, NGOs and others) to help States disseminate information to the public about the issues laid down in the Convention and in Agenda 21.

The services of IUCC include: organizing seminars; documentation centre; quarterly newsletter; fact sheets in French, English, Spanish and other languages; electronic information network; video productions, a catalogue and video library; and overhead projector slides for speakers.

During the biennium 1992/1993, the unit created a full menu of information products and services. Some of these products and services are listed below:

* A dossier of 89 fact sheets covering the causes of climate change, likely impacts and possible response strategies. French, Spanish, Chinese, Japanese, Portuguese and Urdu translations of these fact sheets were prepared. Arabic and Russian versions will be available soon.

* Seminars organized in Belgium, Botswana, Brazil, Egypt, India, Lesotho, Pakistan, Swaziland, Switzerland, Tanzania and Zambia. These seminars were attended by ministers, senior government representatives, NGOs, journalists and educators.

* Three videos produced in cooperation with TVE/UNEP. The first one was a 12-minute explanatory video called "What is the Greenhouse Effect?." The second one was an artistic three-minute film entitled "Bios." The third one was a 40-minute video of news clips on climate change, and was co-produced with the UNFCCC secretariat.

* A media campaign for the UNFCCC was carried out. IUCC issued press releases and articles and organized two press conferences to publicize the Convention and the ratification process.

IUCC based its strategy for 1993 and beyond on integrating its activities more closely with those of other UN bodies, particularly the secretariats of the IPCC and the UNFCCC. In this latter context, a popular guide to the Convention has been co-published, the media campaign will be strengthened and support is being given to the UNFCCC/UNEP Climate Change Information Exchange Programme - CC:INFO.

Sources: "Climate Change," IUCC Brochure. "1992/1993 Activities Report," IUCC, 31 December 1993.

DATE UPDATED: 16-Sep-94

DATE CREATED: 20-Dec-93

Name of organization (English): United Nations Development Programme (UNDP)
Name of organization (Local): United Nations Development Programme
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Direct e-mail: richard.hosier@undp.org
Type of organization: UN System
Resources available: Financial
Information
Technical
Subject area of expertise: Information
Capacity Building
Geographical scope of interest: Global

Remarks:

UNDP established a GEF Secretariat to better coordinate its efforts as an implementing agency of the GEF. In this capacity, UNDP's primary mission is to help countries build their capabilities to address global environmental problems, in concert with national efforts to achieve sustainable human development. To fulfill this role, UNDP provides policy, programme and project-level technical assistance, and serves as a convenor and facilitator through its network of Country Offices. UNDP has adopted a policy of full information disclosure and consultation with affected communities in all of its GEF operations.

During the Pilot Phase (1991-1993), the UNDP/GEF initiated 23 global warming projects representing an investment of US\$ 97.5 million. This portfolio focused on the problem of global warming both from the energy consumption and generation side, as well as from the land use side. Emphasis was given to pre-investment assessments, analyses, pilot-technology projects, targeted research and capacity building. Emphasis was also given to small-scale, rural-based initiatives, a number of which were generated and led by NGOs. The Pilot Phase global warming projects can be grouped into five categories:

* Projects to assess/quantify greenhouse gas emissions and to develop remedial strategies including the identification of eligible projects, e.g. three regional greenhouse gas assessment projects and country-specific initiatives in India and China;

* Pilot projects focussing primarily on low-carbon alternative energy technologies such as photovoltaics in Zimbabwe, development of coal-based methane gas in China, wind electric power in Mauritania, bio-energy technology in Brazil and methane/biogas initiatives in India, Tanzania and Jordan;

* Carbon sequestration projects involving the protection of existing vegetation and forestation which have associated land-use benefits, e.g. community-based rangeland rehabilitation in Sudan and village-based carbon sequestration in Benin;

* Energy efficiency initiatives such as the control of greenhouse gas emissions through energy efficient building technology in West Africa and the reduction of greenhouse gases in Chile;

* Targeted research/monitoring, e.g. global initiatives to monitor greenhouse gases, measure methane emissions from rice fields and undertake research into alternatives to slash-and-burn practices.

Several principles and objectives will guide the UNDP/GEF's operations during the forthcoming Operational Phase, including:

* It is recognized that the GEF mandate is closely associated with the financial requirements of the Conventions on Climate Change and Biodiversity;

* GEF interventions are to be catalytic, cost-effective and in line with the emerging concept of funding an incremental cost to gain a global benefit;

* Global environmental objectives are to be integrated into the policy and institutional frameworks of programme countries, and GEF's limited resources strategically programmed to maximize national and global environmental benefits;

* Programme countries initiate and manage high-impact, cost-effective and sustainable GEF projects.

Sources: GEF-UNDP, "Summary Review of the Pilot Phase Work Programme," December 1993, UNDP, New York; "UNDP/GEF Strategic Plan: Meeting Global Environmental Challenges," Report to UNDP Senior Management, February 1994.

DATE UPDATED: 16-Nov-94

DATE CREATED: 12-Feb-93

Name of organization (English): United Nations Educational, Scientific and Cultural Organization (UNESCO)

Name of organization (Local): United Nations Educational, Scientific and Cultural Organization

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Contact person: Mr. Gunnar KULLENBERG
Secretary General
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Direct fax:
Direct e-mail:

Type of organization: UN System

Resources available: Information
Technical

Subject area of expertise: Research and Monitoring
Education and Training
Adaptation - Study
Vulnerability and Impact Assessment

Geographical scope of interest: Global

Remarks:

UNESCO has been implementing a number of activities related to climate change, including:

* International Environmental Education Programme (IEEP) (UNESCO/UNEP). Promotes the introduction of environmental education and information at all levels of formal and non-formal education. UNEP cooperates in this activity, which is ongoing since 1975 and will be continued throughout 1994 and 1995. The approximate costs are about US\$ 1,2 million for the period 1994-1995.

* Contributing to the Global Terrestrial Observing System (GTOS). Establishment and maintenance of an effective network of 50-100 sites integrated into a regional and global information system on global change. The science plan for GTOS is being elaborated in 1993-1994 by a task force led by IGBP-GTCE, building on the recommendations of an IGBP/UNESCO/OSS workshop held in Fontainebleau in July 1992 (report

Name of organization (English): United Nations Industrial Development Organization (UNIDO)

Name of organization (Local): United Nations Industrial Development Organization

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Contact person: Mr. Robert O. WILLIAMS
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Direct e-mail: 5529529@unido1.bitnet

Type of organization: UN System

Resources available: Financial
Information
Technology

Subject area of expertise: Information (Technologies)
Mitigation - Implementation
Mitigation (Industry) - Study
Mitigation (Transport) - Study
Mitigation (Energy) - Study
Inventory (Emissions)

Geographical scope of interest: Global

Remarks:

UNIDO's Energy Programme, which has been a major theme in the Organization's technical assistance programme for over 15 years, addresses both the provision of adequate industrial energy supply and the need to improve energy and end use efficiency in developing countries. About 60 projects with a total budget of about US\$ 20 million are currently underway worldwide. Projects are undertaken at the policy, institutional and enterprise levels. Within the context of climate change these projects can be seen as supporting the implementation of Mitigation Strategies in developing countries. The main areas of focus are:

1. Conservation and improved efficiency of energy end use in industry (power, heat and steam), and

adopted in 1979 on recommendation of the First World Climate Conference. The overall objectives of the WCP, as agreed by the Eleventh Meteorological Congress in 1991, are:

- (a) to facilitate the effective collection and management of climate data and the monitoring of the global climate system, including the detection and assessment of climate variability and changes;
- (b) to foster the effective application of climate knowledge and information for the benefit of society and the provision of climate services, including the prediction of significant climate variations both natural and as result of human activity;
- (c) to assess and advise government on the impacts of climate variability and changes that could markedly affect economic or social activities and to contribute to the development of a range of socio-economic response strategies that could be used by governments and the community;
- (d) to improve the understanding of climate processes for determining the predictability of climate, including its variability and change, identifying the extent of human influence on climate and developing the capability for climate prediction.

The WCP was established to respond to the world's demand for enhanced information on climate and climate change and on methodologies of application of climate knowledge in various socio-economic areas and for assessments of climate impacts. The WCP has the following component programmes:

- * World Climate Data and Monitoring Programme (WCDMP) - implemented by WMO;
- * World Climate Applications and Services Programme (WCASP) - implemented by WMO;
- * World Climate Impact Assessment and Response Strategies Programme (WCIRP) - implemented by UNEP;
- * World Climate Research Programme (WCRP) - implemented jointly by WMO, the Council of Scientific Unions (ICSU) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

Other related programmes implemented or co-ordinated by WMO are the Global Climate Observing System, the World Weather Watch, the Atmospheric Research and Environment Programme (including the Global Atmosphere Watch), the Hydrology and Water Resources Programme and the Applications of Meteorology Programme. The Technical Co-operation and Education and Training Programme also supports climate-related activities.

Major international climate/policy-related events in which WMO has a leading role include:

- * First World Climate Conference
- * establishment of the joint WMO/UNEP Intergovernmental Panel on Climate Change (IPCC) 1998;
- * Second World Climate Conference (1990);
- * Intergovernmental Meeting on the World Climate Programme ("The Climate Agenda")
- * Preparation of an integrated proposal on international climate-related programmes (1993-1995)

Sources: Letter to the UNFCCC secretariat, November 1994; "How UNEP and WMO are responding to climate change," Fact Sheet No. 206, IUCC, May 1993; "The Climate Agenda," April 1993; answer to a questionnaire sent by the UNFCCC secretariat, August 1993.

DATE UPDATED: 23-Jan-95

DATE CREATED: 15-Apr-93

Annex B

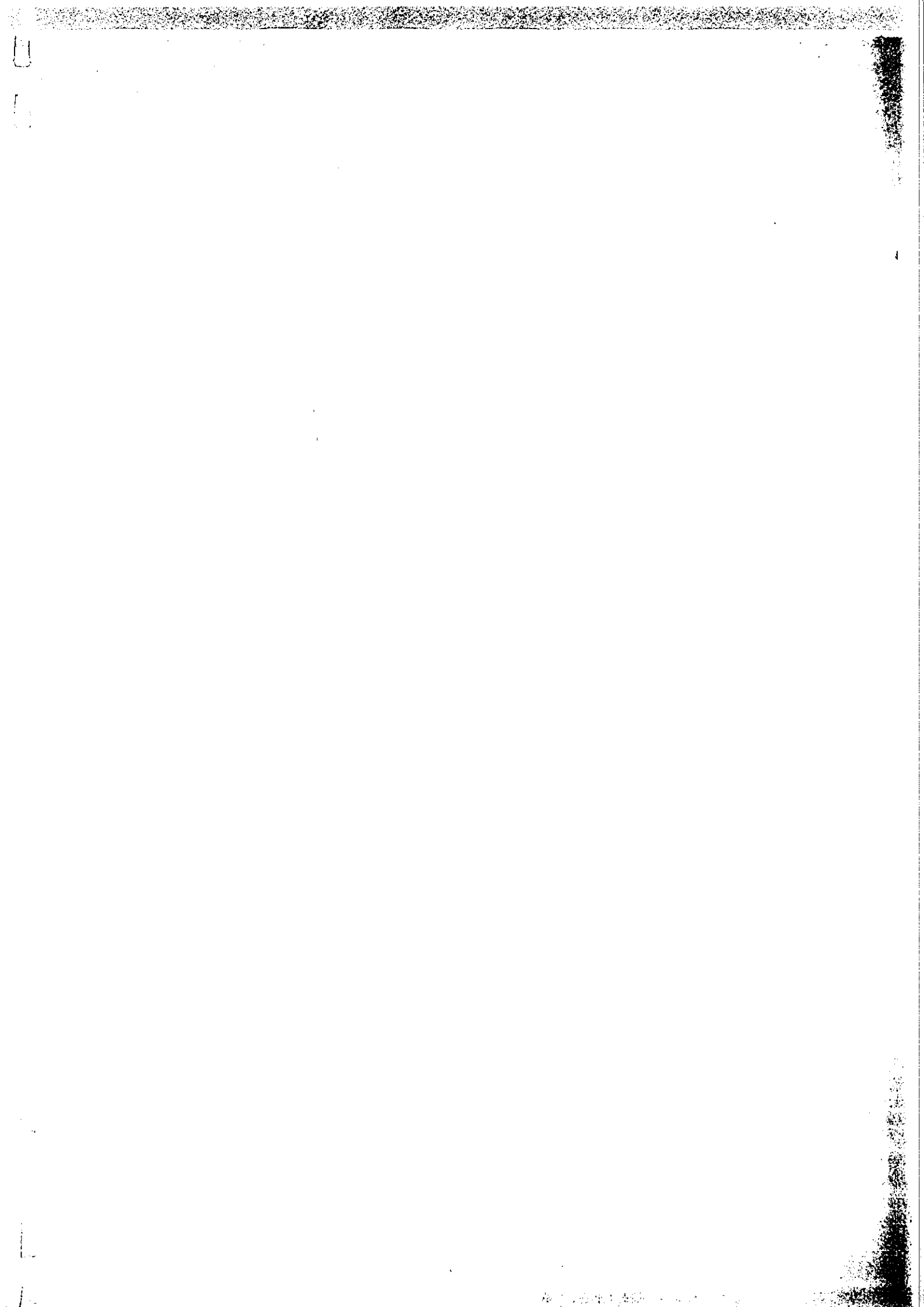
List of Climate Protection projects of the German Industry

Z 1. Production, Conversion and Distribution of Energy

1. New Perspectives for Old Strata - Above Ground Methane Gas Recovery from Hard coal Deposits in the Saarland
2. The Most Modern Coking Plant of the World - Dry Coke cooling and Energy Recovery at the Kaiserstuhl Coking Plant
3. Coking in High-Capacity Reactors
4. Fluidized Lignite Drying with the Heat-Pump Technique
5. Joint Energy Saving - Cogeneration and the Ruhr District Heat Line
6. A Powerful Joint Venture - Joint Industrial and Municipal Power Plant
7. Energy Turn in Eastern Germany - Modernization and Renewal of the Existing Power Stations
8. Energy Practically from Nothing - Electricity Without Additional Emissions through the Modernization of Steam Turbines
9. Heat for the Alexanderplatz - A combined Cycle Power Station with Modern Burner and Turbine Technology in the Centre of Berlin
10. Quantum Jump of Gas Turbines - Lower Emissions through Multi-Stage Combustion
11. Conversion of Coal into Electric Energy in a Combined Cycle Plant with Integrated Coal Gasification
12. From Briquettes to Gas - Modernization of the Power Station of a Paper Mill
13. Staying Cool about Energy Supply - Step-by-Step Modification of the Concept for Power, Heat and Cold Generation in an Office Building
14. Good Neighbourhood is Worthwhile - Cold-water Local-Heat Supply System Utilizing Industrial Waste Heat
15. Gas Leakages are Glued Up - Demonstration Projects for Area-Wide Sanitation of Gray Cast-Iron Natural-Gas Supply Lines in East Berlin
16. Two Power Systems are complementing Each Other - Submarine Cable connections between Sweden, Norway and Northern Germany
17. Electricity from the Water Pipe - Utilization of Pressure Differences in the Drinking Water Supply System for Electricity Generation

Z2 Renewable Energies

18. The Correct Approach to the Future - Pilot Projects for the Use of Renewable Energy Sources
19. Swimming in the Sun - Solar Absorber Systems in the Low-Temperature Range
20. Solar Power from the Sahara - German-Moroccan-Spanish Cooperation for the Construction of Solar Thermal Parabolic Trough Collector Power Stations
21. Electricity From a Photovoltaic Façade - The Structural Glazing Façade ÖKOTEC 3 in Berlin
22. Sun and Water are Complementing Each Other - The Combined Power Station in Toledo
23. Together to the Largest Wind Farm - Fehmarn as Wind Mekka
24. Germany's Most Powerful Windmill - The Wind converter AEOLUS II
25. Environmental-Friendly Hydropower - Nature- and environmental-Friendly Modernization of Run-of-River Power Stations
26. How to Make Something New Out of the Old - Reactivation of Hydraulic Power Stations in the New Federal States
27. Electricity and Heat from Bark - The Bark Cogeneration Plant in Oberrot in Baden-Württemberg
28. Waste contains a Lot of Energy - Conversion of Landfill Gas into Electric Energy
29. Utilization is Better than Burning Off - Landfill Gas for the Production of Bloating Clay
30. District Heat from the Depths of the Earth - The Geothermal Energy Project in Upper Bavaria



UNITED NATIONS FRAMEWORK CONVENTION
ON CLIMATE CHANGE



UNITED NATIONS
1992

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The Parties to this Convention,

Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind,

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind, .

Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs,

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases,

Noting that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof,

Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions,

Recalling the pertinent provisions of the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972,

Recalling also 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 and developmental 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,

Reaffirming the principle of sovereignty of States in international cooperation to address climate change,

Recognizing that States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries,

Recalling the provisions of General Assembly resolution 44/228 of 22 December 1989 on the United Nations Conference on Environment and Development, and resolutions 43/53 of 6 December 1988, 44/207 of 22 December 1989, 45/212 of 21 December 1990 and 46/169 of 19 December 1991 on protection of global climate for present and future generations of mankind,

Recalling also the provisions of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effects of sealevel rise on islands and coastal areas, particularly low-lying coastal areas and the pertinent provisions of General Assembly resolution 44/172 of 19 December 1989 on the implementation of the Plan of Action to Combat Desertification,

Recalling further the Vienna Convention for the Protection of the Ozone Layer, 1985, and the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, as adjusted and amended on 29 June 1990,

Noting the Ministerial Declaration of the Second World Climate Conference adopted on 7 November 1990,

Conscious of the valuable analytical work being conducted by many States on climate change and of the important contributions of the World Meteorological Organization, the United Nations Environment Programme and other organs, organizations and bodies of the United Nations system, as well as other international and intergovernmental bodies, to the exchange of results of scientific research and the coordination of research,

Recognizing that steps required to understand and address climate change will be environmentally, socially and economically most effective if they are based on relevant scientific, technical and economic considerations and continually re-evaluated in the light of new findings in these areas,

Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems,

Recognizing also the need for developed countries to take immediate action in a flexible manner on the basis of clear priorities, as a first step towards comprehensive response strategies at the global, national

natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

2. "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

3. "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

4. "Emissions" means the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time.

5. "Greenhouse gases" means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

6. "Regional economic integration organization" means an organization constituted by sovereign States of a given region which has competence in respect of matters governed by this Convention or its protocols and has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

7. "Reservoir" means a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored.

8. "Sink" means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

9. "Source" means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.

ARTICLE 2

OBJECTIVE

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

ARTICLE 3

PRINCIPLES

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, inter alia, by the following:

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.
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 comprise 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 economic 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.

ARTICLE 4

COMMITMENTS

1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, 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;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

2. The developed country Parties and other Parties included in annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national ^{1/} policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification, and taking into account the differences in these Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding that objective. These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph;

^{1/} This includes policies and measures adopted by regional economic integration organizations.

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

2. The developed country Parties and other Parties included in annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national ^{1/} policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification, and taking into account the differences in these Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding that objective. These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph;

^{1/} This includes policies and measures adopted by regional economic integration organizations.

(b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), 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. This information will be reviewed by the Conference of the Parties, at its first session and periodically thereafter, in accordance with Article 7;

(c) Calculations of emissions by sources and removals by sinks of greenhouse gases for the purposes of subparagraph (b) above should take into account the best available scientific knowledge, including of the effective capacity of sinks and the respective contributions of such gases to climate change. The Conference of the Parties shall consider and agree on methodologies for these calculations at its first session and review them regularly thereafter;

(d) The Conference of the Parties shall, at its first session, review the adequacy of subparagraphs (a) and (b) above. Such review shall be carried out in the light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information. Based on this review, the Conference of the Parties shall take appropriate action, which may include the adoption of amendments to the commitments in subparagraphs (a) and (b) above. The Conference of the Parties, at its first session, shall also take decisions regarding criteria for joint implementation as indicated in subparagraph (a) above. A second review of subparagraphs (a) and (b) shall take place not later than 31 December 1998, and thereafter at regular intervals determined by the Conference of the Parties, until the objective of the Convention is met;

(e) Each of these Parties shall:

- (i) coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the objective of the Convention; and
- (ii) identify and periodically review its own policies and practices which encourage activities that lead to greater levels of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol than would otherwise occur;

(f) The Conference of the Parties shall review, not later than 31 December 1998, available information with a view to taking decisions

regarding such amendments to the lists in annexes I and II as may be appropriate, with the approval of the Party concerned;

(g) Any Party not included in annex I may, in its instrument of ratification, acceptance, approval or accession, or at any time thereafter, notify the Depositary that it intends to be bound by subparagraphs (a) and (b) above. The Depositary shall inform the other signatories and Parties of any such notification.

3. The developed country Parties and other developed Parties included in annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1. They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.

4. The developed country Parties and other developed Parties included in annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

5. The developed country Parties and other developed Parties included in annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

6. In the implementation of their commitments under paragraph 2 above, a certain degree of flexibility shall be allowed by the Conference of the Parties to the Parties included in annex I undergoing the process of transition to a market economy, in order to enhance the ability of these Parties to address climate change, including with regard to the historical level of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol chosen as a reference.

7. 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 and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

- (a) Small island countries;
- (b) Countries with low-lying coastal areas;
- (c) Countries with arid and 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 areas 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.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income

generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

ARTICLE 5

RESEARCH AND SYSTEMATIC OBSERVATION

In carrying out their commitments under Article 4, paragraph 1 (g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

ARTICLE 6

EDUCATION, TRAINING AND PUBLIC AWARENESS

In carrying out their commitments under Article 4, paragraph 1 (i), the Parties shall:

(a) Promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:

- (i) the development and implementation of educational and public awareness programmes on climate change and its effects;
- (ii) public access to information on climate change and its effects;
- (iii) public participation in addressing climate change and its effects and developing adequate responses; and

(iv) training of scientific, technical and managerial personnel.

(b) Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

(i) the development and exchange of educational and public awareness material on climate change and its effects; and

(ii) the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.

ARTICLE 7

CONFERENCE OF THE PARTIES

1. A Conference of the Parties is hereby established.

2. The Conference of the Parties, as the supreme body of this Convention, shall keep under regular review the implementation of the Convention and any related legal instruments that the Conference of the Parties may adopt, and shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention. To this end, it shall:

(a) Periodically examine the obligations of the Parties and the institutional arrangements under the Convention, in the light of the objective of the Convention, the experience gained in its implementation and the evolution of scientific and technological knowledge;

(b) Promote and facilitate the exchange of information on measures adopted by the Parties to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(c) Facilitate, at the request of two or more Parties, the coordination of measures adopted by them to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(d) Promote and guide, in accordance with the objective and provisions of the Convention, the development and periodic refinement of comparable methodologies, to be agreed on by the Conference of the

Parties, inter alia, for preparing inventories of greenhouse gas emissions by sources and removals by sinks, and for evaluating the effectiveness of measures to limit the emissions and enhance the removals of these gases;

(e) Assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved;

(f) Consider and adopt regular reports on the implementation of the Convention and ensure their publication;

(g) Make recommendations on any matters necessary for the implementation of the Convention;

(h) Seek to mobilize financial resources in accordance with Article 4, paragraphs 3, 4 and 5, and Article 11;

(i) Establish such subsidiary bodies as are deemed necessary for the implementation of the Convention;

(j) Review reports submitted by its subsidiary bodies and provide guidance to them;

(k) Agree upon and adopt, by consensus, rules of procedure and financial rules for itself and for any subsidiary bodies;

(l) Seek and utilize, where appropriate, the services and cooperation of, and information provided by, competent international organizations and intergovernmental and non-governmental bodies; and

(m) Exercise such other functions as are required for the achievement of the objective of the Convention as well as all other functions assigned to it under the Convention.

3. The Conference of the Parties shall, at its first session, adopt its own rules of procedure as well as those of the subsidiary bodies established by the Convention, which shall include decision-making procedures for matters not already covered by decision-making procedures stipulated in the Convention. Such procedures may include specified majorities required for the adoption of particular decisions.

4. The first session of the Conference of the Parties shall be convened by the interim secretariat referred to in Article 21 and shall take place not later than one year after the date of entry into force of the

Convention. Thereafter, ordinary sessions of the Conference of the Parties shall be held every year unless otherwise decided by the Conference of the Parties.

5. Extraordinary sessions of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one-third of the Parties.

6. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State member thereof or observers thereto not Party to the Convention, may be represented at sessions of the Conference of the Parties as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by the Convention, and which has informed the secretariat of its wish to be represented at a session of the Conference of the Parties as an observer, may be so admitted unless at least one-third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

ARTICLE 8

SECRETARIAT

1. A secretariat is hereby established.

2. The functions of the secretariat shall be:

(a) To make arrangements for sessions of the Conference of the Parties and its subsidiary bodies established under the Convention and to provide them with services as required;

(b) To compile and transmit reports submitted to it;

(c) To facilitate assistance to the Parties, particularly developing country Parties, on request, in the compilation and communication of information required in accordance with the provisions of the Convention;

(d) To prepare reports on its activities and present them to the Conference of the Parties;

(e) To ensure the necessary coordination with the secretariats of other relevant international bodies;

(f) To enter, under the overall guidance of the Conference of the Parties, into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(g) To perform the other secretariat functions specified in the Convention and in any of its protocols and such other functions as may be determined by the Conference of the Parties.

3. The Conference of the Parties, at its first session, shall designate a permanent secretariat and make arrangements for its functioning.

ARTICLE 9

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

1. A subsidiary body for scientific and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, and drawing upon existing competent international bodies, this body shall:

(a) Provide assessments of the state of scientific knowledge relating to climate change and its effects;

(b) Prepare scientific assessments on the effects of measures taken in the implementation of the Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries; and

(e) Respond to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions and terms of reference of this body may be further elaborated by the Conference of the Parties.

ARTICLE 10

SUBSIDIARY BODY FOR IMPLEMENTATION

1. A subsidiary body for implementation is hereby established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention. This body shall be open to participation by all Parties and comprise government representatives who are experts on matters related to climate change. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, this body shall:

(a) Consider the information communicated in accordance with Article 12, paragraph 1, to assess the overall aggregated effect of the steps taken by the Parties in the light of the latest scientific assessments concerning climate change;

(b) Consider the information communicated in accordance with Article 12, paragraph 2, in order to assist the Conference of the Parties in carrying out the reviews required by Article 4, paragraph 2 (d); and

(c) Assist the Conference of the Parties, as appropriate, in the preparation and implementation of its decisions.

ARTICLE 11

FINANCIAL MECHANISM

1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It 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.

2. The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance.

3. The Conference of the Parties and the entity or entities entrusted with the operation of the financial mechanism shall agree upon

arrangements to give effect to the above paragraphs, which shall include the following:

(a) Modalities to ensure that the funded projects to address climate change are in conformity with the policies, programme priorities and eligibility criteria established by the Conference of the Parties;

(b) Modalities by which a particular funding decision may be reconsidered in light of these policies, programme priorities and eligibility criteria;

(c) Provision by the entity or entities of regular reports to the Conference of the Parties on its funding operations, which is consistent with the requirement for accountability set out in paragraph 1 above; and

(d) Determination in a predictable and identifiable manner of the amount of funding necessary and available for the implementation of this Convention and the conditions under which that amount shall be periodically reviewed.

4. The Conference of the Parties shall make arrangements to implement the above-mentioned provisions at its first session, reviewing and taking into account the interim arrangements referred to in Article 21, paragraph 3, and shall decide whether these interim arrangements shall be maintained. Within four years thereafter, the Conference of the Parties shall review the financial mechanism and take appropriate measures.

5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

ARTICLE 12

COMMUNICATION OF INFORMATION RELATED TO IMPLEMENTATION

1. In accordance with Article 4, paragraph 1, each Party shall communicate to the Conference of the Parties, through the secretariat, the following elements of information:

(a) A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties;

(b) A general description of steps taken or envisaged by the Party to implement the Convention; and

(c) Any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends.

2. Each developed country Party and each other Party included in annex I shall incorporate in its communication the following elements of information:

(a) A detailed description of the policies and measures that it has adopted to implement its commitment under Article 4, paragraphs 2 (a) and 2 (b); and

(b) A specific estimate of the effects that the policies and measures referred to in subparagraph (a) immediately above will have on anthropogenic emissions by its sources and removals by its sinks of greenhouse gases during the period referred to in Article 4, paragraph 2 (a).

3. In addition, each developed country Party and each other developed Party included in annex II shall incorporate details of measures taken in accordance with Article 4, paragraphs 3, 4 and 5.

4. Developing country Parties may, on a voluntary basis, propose projects for financing, including specific technologies, materials, equipment, techniques or practices that would be needed to implement such projects, along with, if possible, an estimate of all incremental costs, of the reductions of emissions and increments of removals of greenhouse gases, as well as an estimate of the consequent benefits.

5. Each developed country Party and each other Party included in annex I shall make its initial communication within six months of the entry into force of the Convention for that Party. Each Party not so listed shall make its initial communication within three years of the entry into force of the Convention for that Party, or of the availability of financial resources in accordance with Article 4, paragraph 3. Parties that are least developed countries may make their initial communication at their discretion. The frequency of subsequent communications by all Parties shall be determined by the Conference of the Parties, taking into account the differentiated timetable set by this paragraph.

6. Information communicated by Parties under this Article shall be transmitted by the secretariat as soon as possible to the Conference of the Parties and to any subsidiary bodies concerned. If necessary, the

procedures for the communication of information may be further considered by the Conference of the Parties.

7. From its first session, the Conference of the Parties shall arrange for the provision to developing country Parties of technical and financial support, on request, in compiling and communicating information under this Article, as well as in identifying the technical and financial needs associated with proposed projects and response measures under Article 4. Such support may be provided by other Parties, by competent international organizations and by the secretariat, as appropriate.

8. Any group of Parties may, subject to guidelines adopted by the Conference of the Parties, and to prior notification to the Conference of the Parties, make a joint communication in fulfilment of their obligations under this Article, provided that such a communication includes information on the fulfilment by each of these Parties of its individual obligations under the Convention.

9. Information received by the secretariat that is designated by a Party as confidential, in accordance with criteria to be established by the Conference of the Parties, shall be aggregated by the secretariat to protect its confidentiality before being made available to any of the bodies involved in the communication and review of information.

10. Subject to paragraph 9 above, and without prejudice to the ability of any Party to make public its communication at any time, the secretariat shall make communications by Parties under this Article publicly available at the time they are submitted to the Conference of the Parties.

ARTICLE 13

RESOLUTION OF QUESTIONS REGARDING IMPLEMENTATION

The Conference of the Parties shall, at its first session, consider the establishment of a multilateral consultative process, available to Parties on their request, for the resolution of questions regarding the implementation of the Convention.

ARTICLE 14

SETTLEMENT OF DISPUTES

1. In the event of a dispute between any two or more Parties concerning the interpretation or application of the Convention, the Parties

concerned shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.

2. When ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, a Party which is not a regional economic integration organization may declare in a written instrument submitted to the Depository that, in respect of any dispute concerning the interpretation or application of the Convention, it recognizes as compulsory ipso facto and without special agreement, in relation to any Party accepting the same obligation:

(a) Submission of the dispute to the International Court of Justice, and/or

(b) Arbitration in accordance with procedures to be adopted by the Conference of the Parties as soon as practicable, in an annex on arbitration.

A Party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with the procedures referred to in subparagraph (b) above.

3. A declaration made under paragraph 2 above shall remain in force until it expires in accordance with its terms or until three months after written notice of its revocation has been deposited with the Depository.

4. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the arbitral tribunal, unless the parties to the dispute otherwise agree.

5. Subject to the operation of paragraph 2 above, if after twelve months following notification by one Party to another that a dispute exists between them, the Parties concerned have not been able to settle their dispute through the means mentioned in paragraph 1 above, the dispute shall be submitted, at the request of any of the parties to the dispute, to conciliation.

6. A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall be composed of an equal number of members appointed by each party concerned and a chairman chosen jointly by the members appointed by each party. The commission shall render a recommendatory award, which the parties shall consider in good faith.

7. Additional procedures relating to conciliation shall be adopted by the Conference of the Parties, as soon as practicable, in an annex on conciliation.

8. The provisions of this Article shall apply to any related legal instrument which the Conference of the Parties may adopt, unless the instrument provides otherwise.

ARTICLE 15

AMENDMENTS TO THE CONVENTION

1. Any Party may propose amendments to the Convention.
2. Amendments to the Convention shall be adopted at an ordinary session of the Conference of the Parties. The text of any proposed amendment to the Convention shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to the Convention and, for information, to the Depositary.
3. The Parties shall make every effort to reach agreement on any proposed amendment to the Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.
4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three-fourths of the Parties to the Convention.
5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.
6. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

ARTICLE 16

ADOPTION AND AMENDMENT OF ANNEXES TO THE CONVENTION

1. Annexes to the Convention shall form an integral part thereof and, unless otherwise expressly provided, a reference to the Convention constitutes at the same time a reference to any annexes thereto. Without

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Center for Public Sector Projects and Studies
(C.P.S.P.S.)

prejudice to the provisions of Article 14, paragraphs 2 (b) and 7, such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

2. Annexes to the Convention shall be proposed and adopted in accordance with the procedure set forth in Article 15, paragraphs 2, 3, and 4.

3. An annex that has been adopted in accordance with paragraph 2 above shall enter into force for all Parties to the Convention six months after the date of the communication by the Depositary to such Parties of the adoption of the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex. The annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.

4. The proposal, adoption and entry into force of amendments to annexes to the Convention shall be subject to the same procedure as that for the proposal, adoption and entry into force of annexes to the Convention in accordance with paragraphs 2 and 3 above.

5. If the adoption of an annex or an amendment to an annex involves an amendment to the Convention, that annex or amendment to an annex shall not enter into force until such time as the amendment to the Convention enters into force.

ARTICLE 17

PROTOCOLS

1. The Conference of the Parties may, at any ordinary session, adopt protocols to the Convention.

2. The text of any proposed protocol shall be communicated to the Parties by the secretariat at least six months before such a session.

3. The requirements for the entry into force of any protocol shall be established by that instrument.

4. Only Parties to the Convention may be Parties to a protocol.

5. Decisions under any protocol shall be taken only by the Parties to the protocol concerned.

ARTICLE 18

RIGHT TO VOTE

1. Each Party to the Convention shall have one vote, except as provided for in paragraph 2 below.
2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to the Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

ARTICLE 19

DEPOSITARY

The Secretary-General of the United Nations shall be the Depositary of the Convention and of protocols adopted in accordance with Article 17.

ARTICLE 20

SIGNATURE

This Convention shall be open for signature by States Members of the United Nations or of any of its specialized agencies or that are Parties to the Statute of the International Court of Justice and by regional economic integration organizations at Rio de Janeiro, during the United Nations Conference on Environment and Development, and thereafter at United Nations Headquarters in New York from 20 June 1992 to 19 June 1993.

ARTICLE 21

INTERIM ARRANGEMENTS

1. The secretariat functions referred to in Article 8 will be carried out on an interim basis by the secretariat established by the General Assembly of the United Nations in its resolution 45/212 of 21 December 1990, until the completion of the first session of the Conference of the Parties.
2. The head of the interim secretariat referred to in paragraph 1 above will cooperate closely with the Intergovernmental Panel on Climate Change to ensure that the Panel can respond to the need for objective scientific

and technical advice. Other relevant scientific bodies could also be consulted.

3. The Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the international entity entrusted with the operation of the financial mechanism referred to in Article 11 on an interim basis. In this connection, the Global Environment Facility should be appropriately restructured and its membership made universal to enable it to fulfil the requirements of Article 11.

ARTICLE 22

RATIFICATION, ACCEPTANCE, APPROVAL OR ACCESSION

1. The Convention shall be subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. It shall be open for accession from the day after the date on which the Convention is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

2. Any regional economic integration organization which becomes a Party to the Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

CONVENTION-CADRE DES NATIONS UNIES SUR LES
CHANGEMENTS CLIMATIQUES

Les Parties à la présente Convention,

Conscientes que les changements du climat de la planète et leurs effets néfastes sont un sujet de préoccupation pour l'humanité tout entière,

Préoccupées par le fait que l'activité humaine a augmenté sensiblement les concentrations de gaz à effet de serre dans l'atmosphère, que cette augmentation renforce l'effet de serre naturel et qu'il en résultera en moyenne un réchauffement supplémentaire de la surface terrestre et de l'atmosphère, ce dont risquent de souffrir les écosystèmes naturels et l'humanité,

Notant que la majeure partie des gaz à effet de serre émis dans le monde par le passé et à l'heure actuelle ont leur origine dans les pays développés, que les émissions par habitant dans les pays en développement sont encore relativement faibles et que la part des émissions totales imputable aux pays en développement ira en augmentant pour leur permettre de satisfaire leurs besoins sociaux et leurs besoins de développement,

Conscientes du rôle et de l'importance des puits et réservoirs de gaz à effet de serre dans les écosystèmes terrestres et marins,

Notant que la prévision des changements climatiques recèle un grand nombre d'incertitudes, notamment en ce qui concerne leur déroulement dans le temps, leur ampleur et leurs caractéristiques régionales,

Conscientes que le caractère planétaire des changements climatiques requiert de tous les pays qu'ils coopèrent le plus possible et participent à une action internationale, efficace et appropriée, selon leurs responsabilités communes mais différenciées, leurs capacités respectives et leur situation sociale et économique,

Rappelant les dispositions pertinentes de la Déclaration de la Conférence des Nations Unies sur l'environnement adoptée à Stockholm le 16 juin 1972,

Rappelant que, conformément à la Charte des Nations Unies et aux principes du droit international, les Etats ont le droit souverain d'exploiter leurs propres ressources selon leur propre politique d'environnement et de développement, et ont le devoir de faire en sorte que les activités exercées dans les limites de leur juridiction ou sous leur contrôle ne causent pas de dommage à l'environnement dans d'autres Etats ou dans des régions ne relevant d'aucune juridiction nationale,

et si elles sont constamment réévaluées à la lumière des nouveaux progrès réalisés dans ces domaines,

Sachant que diverses mesures prises pour faire face aux changements climatiques peuvent trouver en elles-mêmes leur justification économique et peuvent aussi contribuer à résoudre d'autres problèmes d'environnement,

Sachant également que les pays développés doivent agir immédiatement et avec souplesse sur la base de priorités clairement définies, ce qui constituera une première étape vers des stratégies d'ensemble aux niveaux mondial, national et éventuellement régional, ces stratégies de riposte devant tenir compte de tous les gaz à effet de serre et prendre dûment en considération la part de chacun d'eux dans le renforcement de l'effet de serre,

Sachant en outre que les pays de faible élévation et autres petits pays insulaires, les pays ayant des zones côtières de faible élévation, des zones arides ou semi-arides ou des zones sujettes aux inondations, à la sécheresse et à la désertification ainsi que les pays en développement ayant des écosystèmes montagneux fragiles sont particulièrement vulnérables aux effets néfastes des changements climatiques,

Conscientes des difficultés particulières que connaîtront les pays, notamment les pays en développement, dont l'économie est particulièrement tributaire de la production, de l'utilisation et de l'exportation de combustibles fossiles, du fait des mesures prises pour limiter les émissions de gaz à effet de serre,

Affirmant que les mesures prises pour parer aux changements climatiques doivent être étroitement coordonnées avec le développement social et économique afin d'éviter toute incidence néfaste sur ce dernier, compte pleinement tenu des besoins prioritaires légitimes des pays en développement, à savoir une croissance économique durable et l'éradication de la pauvreté,

Conscientes que tous les pays, et plus particulièrement les pays en développement, doivent pouvoir accéder aux ressources nécessaires à un développement social et économique durable et que, pour progresser vers cet objectif, les pays en développement devront accroître leur consommation d'énergie en ne perdant pas de vue qu'il est possible de parvenir à un meilleur rendement énergétique et de maîtriser les émissions de gaz à effet de serre d'une manière générale et notamment en appliquant des technologies nouvelles dans des conditions avantageuses du point de vue économique et du point de vue social,

Résolues à préserver le système climatique pour les générations présentes et futures,

h) Etablissent, mettent en oeuvre, publient et mettent régulièrement à jour des programmes nationaux et, le cas échéant, régionaux contenant des mesures visant à atténuer les changements climatiques en tenant compte des émissions anthropiques par leurs sources et de l'absorption par leurs puits de tous les gaz à effet de serre non réglementés par le Protocole de Montréal, ainsi que des mesures visant à faciliter l'adaptation voulue aux changements climatiques;

c) Encouragent et soutiennent par leur coopération la mise au point, l'application et la diffusion - notamment par voie de transfert - de technologies, pratiques et procédés qui permettent de maîtriser, de réduire ou de prévenir les émissions anthropiques des gaz à effet de serre non réglementés par le Protocole de Montréal dans tous les secteurs pertinents, en particulier ceux de l'énergie, des transports, de l'industrie, de l'agriculture, des forêts et de la gestion des déchets;

d) Encouragent la gestion rationnelle et encouragent et soutiennent par leur coopération la conservation et, le cas échéant, le renforcement des puits et réservoirs de tous les gaz à effet de serre non réglementés par le Protocole de Montréal, notamment la biomasse, les forêts et les océans de même que les autres écosystèmes terrestres, côtiers et marins;

e) Préparent, en coopération, l'adaptation à l'impact des changements climatiques et conçoivent et mettent au point des plans appropriés et intégrés pour la gestion des zones côtières, pour les ressources en eau et l'agriculture, et pour la protection et la remise en état des zones frappées par la sécheresse et la désertification, notamment en Afrique, et par les inondations;

f) Tiennent compte, dans la mesure du possible, des considérations liées aux changements climatiques dans leurs politiques et actions sociales, économiques et écologiques et utilisent des méthodes appropriées, par exemple des études d'impact, formulées et définies sur le plan national, pour réduire au minimum les effets - préjudiciables à l'économie, à la santé publique et à la qualité de l'environnement - des projets ou mesures qu'elles entreprennent en vue d'atténuer les changements climatiques ou de s'y adapter;

g) Encouragent et soutiennent par leur coopération les travaux de recherche scientifique, technologique, technique, socio-économique et autres, l'observation systématique et la constitution d'archives de données sur le système climatique permettant de mieux comprendre les causes, les effets, l'ampleur et l'échelonnement dans le temps des changements climatiques, ainsi que les conséquences économiques et sociales des diverses stratégies de riposte, et de réduire et dissiper les incertitudes qui subsistent à cet égard;

périodiques, des informations détaillées sur ses politiques et mesures visées à l'alinéa a), de même que sur les projections qui en résultent quant aux émissions anthropiques par ses sources et à l'absorption par ses puits de gaz à effet de serre non réglementés par le Protocole de Montréal, pour la période visée à l'alinéa a), en vue de ramener individuellement ou conjointement à leurs niveaux de 1990 les émissions anthropiques de dioxyde de carbone et d'autres gaz à effet de serre non réglementés par le Protocole de Montréal. La Conférence des Parties passera ces informations en revue, à sa première session puis à intervalles périodiques, conformément à l'article 7;

c) Il conviendra que le calcul, aux fins de l'alinéa b), des quantités de gaz à effet de serre émises par les sources et absorbées par les puits s'effectue sur la base des meilleures connaissances scientifiques disponibles, notamment en ce qui concerne la capacité effective des puits et la contribution de chacun de ces gaz aux changements climatiques. La Conférence des Parties examinera et adoptera les méthodes à utiliser pour ce calcul à sa première session et les passera en revue à intervalles réguliers par la suite;

d) La Conférence des Parties, à sa première session, examinera les alinéas a) et b) pour voir s'ils sont adéquats. Elle le fera à la lumière des données scientifiques et évaluations les plus sûres concernant les changements climatiques et leur impact, ainsi que des données techniques, sociales et économiques pertinentes. Sur la base de cet examen, la Conférence des Parties prendra les mesures voulues, qui pourront comporter l'adoption d'amendements aux engagements visés aux alinéas a) et b). A sa première session, elle prendra également des décisions au sujet des critères régissant une application conjointe, comme indiqué à l'alinéa a). Elle procédera à un deuxième examen des alinéas a) et b) au plus tard le 31 décembre 1998, puis à des intervalles réguliers dont elle décidera, jusqu'à ce que l'objectif de la Convention ait été atteint;

e) Chacune de ces Parties :

- i) Coordonne selon les besoins avec les autres Parties visées les instruments économiques et administratifs appropriés élaborés aux fins de l'objectif de la Convention;
- ii) Recense et examine périodiquement celles de ses politiques et pratiques qui encouragent des activités ajoutant aux émissions anthropiques de gaz à effet de serre non réglementés par le Protocole de Montréal;

f) La Conférence des Parties passera en revue, le 31 décembre 1998 au plus tard, les informations disponibles afin de statuer sur les modifications qu'il y aurait lieu d'apporter aux listes figurant aux annexes I et II, avec l'accord de la Partie intéressée;

g) Toute Partie ne figurant pas à l'annexe I pourra, dans son instrument de ratification, d'acceptation, d'approbation ou d'adhésion, ou à tout moment par la suite, notifier au Dépositaire son intention d'être liée par les dispositions des alinéas a) et b). Le Dépositaire informera les autres signataires et Parties de toute notification en ce sens.

3. Les pays développés Parties et les autres Parties développées figurant à l'annexe II fournissent des ressources financières nouvelles et additionnelles pour couvrir la totalité des coûts convenus encourus par les pays en développement Parties du fait de l'exécution de leurs obligations découlant de l'article 12, paragraphe 1. Ils fournissent également les ressources financières nécessaires aux pays en développement Parties, notamment aux fins de transferts de technologie, pour couvrir la totalité des coûts supplémentaires convenus entraînés par l'application des mesures visées au paragraphe 1 du présent article et sur lesquels un pays en développement Partie se sera entendu avec l'entité ou les entités internationales visées à l'article 11, conformément audit article. L'exécution de ces engagements tient compte du fait que les apports de fonds doivent être adéquats et prévisibles, ainsi que de l'importance d'un partage approprié de la charge entre les pays développés Parties.

4. Les pays développés Parties et les autres Parties développées figurant à l'annexe II aident également les pays en développement Parties particulièrement vulnérables aux effets néfastes des changements climatiques à faire face au coût de leur adaptation auxdits effets.

5. Les pays développés Parties et les autres Parties développées figurant à l'annexe II prennent toutes les mesures possibles en vue d'encourager, de faciliter et de financer, selon les besoins, le transfert ou l'accès de technologies et de savoir-faire écologiquement rationnels aux autres Parties, et plus particulièrement à celles d'entre elles, qui sont des pays en développement, afin de leur permettre d'appliquer les dispositions de la Convention. Dans ce processus, les pays développés Parties soutiennent le développement et le renforcement des capacités et technologies propres aux pays en développement Parties. Les autres Parties et organisations en mesure de le faire peuvent également aider à faciliter le transfert de ces technologies.

6. La Conférence des Parties accorde aux Parties figurant à l'annexe I qui sont en transition vers une économie de marché, pour les mettre mieux à même de faire face aux changements climatiques, une certaine latitude

dans l'exécution de leurs engagements au titre du paragraphe 2, notamment en ce qui concerne le niveau historique, qui sera choisi comme référence, des émissions anthropiques de gaz à effet de serre non réglementés par le Protocole de Montréal.

7. La mesure dans laquelle les pays en développement Parties s'acquitteront effectivement de leurs engagements au titre de la Convention dépendra de l'exécution efficace pour les pays développés Parties de leurs propres engagements en ce qui concerne les ressources financières et le transfert de technologie et tiendra pleinement compte du fait que le développement économique et social et l'éradication de la pauvreté sont les priorités premières et essentielles des pays en développement Parties.

8. Aux fins de l'exécution des engagements énoncés dans le présent article, les Parties étudient les mesures - concernant notamment le financement, l'assurance et le transfert de technologie - qui doivent être prises dans le cadre de la Convention pour répondre aux besoins et préoccupations spécifiques des pays en développement Parties face aux effets néfastes des changements climatiques et à l'impact des mesures de riposte, notamment dans les pays suivants :

- a) Les petits pays insulaires;
- b) Les pays ayant des zones côtières de faible élévation;
- c) Les pays ayant des zones arides et semi-arides, des zones de forêts et des zones sujettes au dépérissement des forêts;
- d) Les pays ayant des zones sujettes à des catastrophes naturelles;
- e) Les pays ayant des zones sujettes à la sécheresse et à la désertification;
- f) Les pays ayant des zones de forte pollution de l'atmosphère urbaine;
- g) Les pays ayant des écosystèmes, notamment des écosystèmes montagneux, fragiles;
- h) Les pays dont l'économie est fortement tributaire soit des revenus de la production, de la transformation et de l'exportation de combustibles fossiles et de produits apparentés à forte intensité énergétique, soit de la consommation desdits combustibles et produits;
- i) Les pays sans littoral et les pays de transit.

La Conférence des Parties peut en outre prendre les mesures voulues, selon qu'il conviendra, touchant le présent paragraphe.

9. Les Parties tiennent pleinement compte, dans leur action concernant le financement et le transfert de technologie, des besoins particuliers et de la situation spéciale des pays les moins avancés.

10. Dans l'exécution des engagements découlant de la Convention, les Parties tiennent compte, conformément à l'article 10, de la situation de celles d'entre elles, notamment les pays en développement, dont l'économie est vulnérable aux effets néfastes des mesures de riposte aux changements climatiques. Tel est notamment le cas des Parties dont l'économie est fortement tributaire soit des revenus de la production, de la transformation et de l'exportation de combustibles fossiles et de produits apparentés à forte intensité énergétique, soit de la consommation desdits combustibles et produits, soit de l'utilisation de combustibles fossiles qu'il est très difficile à ces Parties de remplacer par des produits de substitution.

ARTICLE 5

RECHERCHE ET OBSERVATION SYSTEMATIQUE

Lorsqu'elles s'acquittent de leurs engagements en vertu de l'article 4, paragraphe 1 g), les Parties :

a) Soutiennent et, selon le cas, développent davantage les organisations ou les programmes et réseaux internationaux et intergouvernementaux dont le but est de définir, réaliser, évaluer et financer des travaux de recherche, de collecte de données et d'observation systématique, en tenant compte de la nécessité de limiter le plus possible les doubles emplois;

b) Soutiennent les efforts menés aux niveaux international et intergouvernemental pour renforcer l'observation systématique et les capacités et moyens nationaux de recherche scientifique et technique, notamment dans les pays en développement, et pour encourager l'accès aux données provenant de zones ne relevant pas de la juridiction nationale et à leur analyse, ainsi que pour en promouvoir l'échange;

c) Prennent en considération les préoccupations et les besoins particuliers des pays en développement et coopèrent pour améliorer leurs moyens et capacités endogènes de participation aux efforts visés aux alinéas a) et b).

paragraphe 3, et elle décidera du maintien éventuel de ces dispositions. Ensuite, et dans les quatre ans, elle fera le point du fonctionnement du mécanisme et prendra les mesures appropriées;

5. Les pays développés Parties pourront également fournir, et les pays en développement Parties pourront obtenir, des ressources financières par voie bilatérale, régionale ou multilatérale aux fins de l'application de la Convention.

ARTICLE 12

COMMUNICATION D'INFORMATIONS CONCERNANT L'APPLICATION

1. Conformément à l'article 4, paragraphe 1, chacune des Parties communique à la Conférence des Parties, par l'intermédiaire du secrétariat, les éléments d'information ci-après :

a) Un inventaire national des émissions anthropiques par ses sources, et de l'absorption par ses puits, de tous les gaz à effet de serre non réglementés par le Protocole de Montréal, dans la mesure où ses moyens le lui permettent, en utilisant des méthodes comparables sur lesquelles la Conférence des Parties s'entendra et dont elle encouragera l'utilisation;

b) Une description générale des mesures qu'elle prend ou envisage de prendre pour appliquer la Convention;

c) Toute autre information que la Partie juge utile pour atteindre l'objectif de la Convention et propre à figurer dans sa communication, y compris, dans la mesure du possible, des données utiles à la détermination des tendances des émissions dans le monde.

2. Chacun des pays développés Parties et chacune des autres Parties inscrites à l'annexe I fait figurer dans sa communication les éléments d'information ci-après :

a) La description détaillée des politiques et mesures qu'ils ont adoptées pour se conformer à l'engagement souscrit à l'article 4, paragraphes 2 a) et 2 b);

b) L'estimation précise des effets que les politiques et mesures visées à l'alinéa a) ci-dessus auront sur les émissions anthropiques de gaz à effet de serre par leurs sources et l'absorption par leurs puits pendant la période visée à l'article 4, paragraphe 2 a).

3. En outre, chacun des pays développés Parties et chacune des autres Parties développées figurant à l'annexe II donnent le détail des mesures prises conformément à l'article 4, paragraphes 3 à 5.

4. Il est loisible aux pays en développement Parties de proposer des projets à financer en précisant les technologies, les matériaux, l'équipement, les techniques ou les pratiques qu'il faudrait pour les exécuter et en donnant si possible une estimation de tous les coûts supplémentaires de ces projets, des progrès de la réduction des émissions et de l'absorption des gaz à effet de serre ainsi qu'une estimation des avantages que l'on peut en attendre.

5. Chacun des pays développés Parties et chacune des autres Parties inscrites à l'annexe I présentera sa communication initiale dans les six mois qui suivront l'entrée en vigueur de la Convention à son égard. Chacune des Parties qui ne figurent pas sur cette liste présentera sa communication initiale dans les trois ans de l'entrée en vigueur de la Convention à son égard ou de la mise à disponibilité des ressources financières conformément à l'article 4, paragraphe 3. Les Parties qui sont au nombre des pays les moins avancés seront libres du choix de la date de leur communication initiale. Par la suite, la fréquence des communications de toutes les Parties sera fixée par la Conférence des Parties, qui tiendra compte des différences d'échéance indiquées dans le présent paragraphe.

6. Les informations communiquées par les Parties en application du présent article seront transmises dans les meilleurs délais par le secrétariat à la Conférence des Parties et aux organes subsidiaires compétents. La Conférence des Parties révisera au besoin les procédures de transmission des informations.

7. A partir de sa première session, la Conférence des Parties prendra des dispositions pour assurer la fourniture aux pays en développement Parties, sur leur demande, d'un concours technique et financier qui les aide à réunir et à communiquer les informations demandées dans le présent article et à recenser les moyens techniques et financiers nécessaires à l'exécution des projets proposés et des mesures de riposte prises au titre de l'article 4. Ce concours pourra être fourni par d'autres Parties, par les organisations internationales compétentes et par le secrétariat, selon qu'il conviendra.

8. Tout groupe de Parties peut, sous réserve de se conformer aux directives de la Conférence des Parties et d'en aviser au préalable celle-ci, s'acquitter des obligations énoncées dans le présent article en présentant une communication conjointe, à condition d'y faire figurer des informations sur la façon dont chacune de ces Parties s'est acquittée des obligations que la Convention lui impose en propre.

9. Les informations reçues par le secrétariat et dont la Partie qui les fournit aura indiqué qu'elles sont confidentielles, selon des critères qu'établira la Conférence des Parties, seront compilées par le

secrétariat de manière à préserver ce caractère avant d'être transmises à l'un des organes appelés à les recevoir et à les examiner.

10. Sous réserve du paragraphe 9 et sans préjudice de la possibilité pour toute Partie de rendre sa communication publique en tout temps, les communications présentées par les Parties en application du présent article sont mises par le secrétariat à la disposition du public en même temps qu'elles sont soumises à la Conférence des Parties.

ARTICLE 13

REGLEMENT DES QUESTIONS CONCERNANT L'APPLICATION

La Conférence des Parties étudiera, à sa première session, la mise en place d'un processus consultatif multilatéral, à la disposition des Parties sur leur demande, pour le règlement des questions relatives à l'application de la Convention.

ARTICLE 14

REGLEMENT DES DIFFERENDS

1. En cas de différend entre deux ou plus de deux Parties au sujet de l'interprétation ou de l'application de la Convention, les Parties concernées s'efforcent de le régler par voie de négociation ou par tout autre moyen pacifique de leur choix.

2. Lorsqu'elle ratifie, accepte ou approuve la Convention ou y adhère, ou à tout moment par la suite, une Partie qui n'est pas une organisation régionale d'intégration économique peut déclarer dans un instrument écrit soumis au Dépositaire que pour ce qui est de tout différend lié à l'interprétation ou à l'application de la Convention, elle reconnaît comme obligatoire de plein droit et sans convention spéciale, à l'égard de toute Partie acceptant la même obligation :

- a) La soumission du différend à la Cour internationale de Justice;
- b) L'arbitrage conformément à la procédure qu'adoptera dès que possible la Conférence des Parties dans une annexe consacrée à l'arbitrage.

Une Partie qui est une organisation régionale d'intégration économique peut faire en matière d'arbitrage une déclaration allant dans le même sens, conformément à la procédure visée à l'alinéa b).

3. La déclaration faite en application du paragraphe 2 reste en vigueur jusqu'à ce qu'elle expire conformément à ses termes ou jusqu'à l'expiration d'un délai de trois mois à compter de la date à laquelle

notification écrite de la révocation de cette déclaration aura été déposée auprès du Dépositaire.

4. Le dépôt d'une nouvelle déclaration, la notification de la révocation d'une déclaration ou l'expiration d'une déclaration n'affecte en rien une procédure engagée devant la Cour internationale de Justice ou le tribunal arbitral, à moins que les parties au différend n'en conviennent autrement.

5. Sous réserve du paragraphe 2, si, à l'expiration d'un délai de 12 mois à compter de la date à laquelle une Partie a notifié à une autre Partie l'existence d'un différend entre elles, les Parties concernées ne sont pas parvenues à régler leur différend en utilisant les moyens décrits au paragraphe 1, le différend, à la demande de l'une quelconque des parties au différend, est soumis à conciliation.

6. Une commission de conciliation est créée à la demande de l'une des parties au différend. La Commission est composée de membres désignés, en nombre égal, par chaque partie concernée et d'un président choisi conjointement par les membres désignés par les parties. La Commission présente une recommandation, que les parties examinent de bonne foi.

7. La Conférence des Parties adoptera, dès que possible, une procédure complémentaire de conciliation dans une annexe consacrée à la conciliation.

8. Les dispositions du présent article s'appliquent à tout instrument juridique connexe que la Conférence des Parties pourra adopter, à moins que l'instrument n'en dispose autrement.

ARTICLE 15

AMENDEMENTS A LA CONVENTION

1. Toute Partie peut proposer des amendements à la Convention.

2. Les amendements à la Convention sont adoptés à une session ordinaire de la Conférence des Parties. Le texte de toute proposition d'amendement à la Convention est communiqué aux Parties par le secrétariat six mois au moins avant la réunion à laquelle il est proposé pour adoption. Le secrétariat communique aussi les propositions d'amendement aux signataires de la Convention et, pour information, au Dépositaire.

3. Les Parties n'épargnent aucun effort pour parvenir à un accord par consensus sur toute proposition d'amendement à la Convention. Si tous les efforts dans ce sens demeurent vains et qu'aucun accord

n'intervienne, l'amendement est adopté en dernier recours par un vote à la majorité des trois quarts des Parties présentes et votantes. L'amendement adopté est communiqué par le secrétariat au Dépositaire, qui le transmet à toutes les Parties pour acceptation.

4. Les instruments d'acceptation des amendements sont déposés auprès du Dépositaire. Tout amendement adopté conformément au paragraphe 3 entre en vigueur à l'égard des Parties l'ayant accepté le quatre-vingt-dixième jour qui suit la date de réception, par le Dépositaire, des instruments d'acceptation des trois quarts au moins des Parties à la Convention.

5. L'amendement entre en vigueur à l'égard de toute autre Partie le quatre-vingt-dixième jour qui suit la date du dépôt par cette Partie, auprès du Dépositaire, de son instrument d'acceptation dudit amendement.

6. Aux fins du présent article, l'expression "Parties présentes et votantes" s'entend des Parties qui sont présentes et qui votent pour ou contre.

ARTICLE 16

ADOPTION ET AMENDEMENT D'ANNEXES DE LA CONVENTION

1. Les annexes de la Convention font partie intégrante de celle-ci et, sauf disposition contraire expresse, toute référence à la Convention constitue également une référence à ses annexes. Sans préjudice des dispositions de l'article 14, paragraphes 2 b) et 7, les annexes se limitent à des listes, formules et autres documents descriptifs de caractère scientifique, technique, procédural ou administratif.

2. Les annexes de la Convention sont proposées et adoptées selon la procédure décrite à l'article 15, paragraphes 2, 3 et 4.

3. Toute annexe adoptée en application du paragraphe 2 entre en vigueur à l'égard de toutes les Parties à la Convention six mois après la date à laquelle le Dépositaire leur en a notifié l'adoption, exception faite des Parties qui, dans le même délai, notifient par écrit au Dépositaire qu'elles n'acceptent pas l'annexe en question. A l'égard des Parties qui retirent cette notification de non-acceptation, l'annexe entre en vigueur le quatre-vingt-dixième jour qui suit la date de réception par le Dépositaire de la notification de ce retrait.

4. Pour la proposition, l'adoption et l'entrée en vigueur d'amendements à des annexes de la Convention, la procédure est la même que pour la proposition, l'adoption et l'entrée en vigueur des annexes elles-mêmes, conformément aux paragraphes 2 et 3.

5. Si l'adoption d'une annexe ou d'un amendement à une annexe nécessite un amendement à la Convention, cette annexe ou cet amendement n'entre en vigueur que lorsque l'amendement à la Convention entre lui-même en vigueur.

ARTICLE 17

PROTOCOLES

1. La Conférence des Parties peut, à l'une quelconque de ses sessions ordinaires, adopter des protocoles à la Convention.
2. Le texte de tout protocole proposé est communiqué aux Parties par le secrétariat six mois au moins avant la session.
3. Les règles régissant l'entrée en vigueur de tout protocole sont définies par le protocole lui-même.
4. Seules les Parties à la Convention peuvent être Parties à un protocole.
5. Seules les Parties à un protocole prennent des décisions en vertu dudit protocole.

ARTICLE 18

DROIT DE VOTE

1. Chaque Partie à la Convention dispose d'une voix, sous réserve des dispositions du paragraphe 2 ci-après.
2. Dans les domaines de leur compétence, les organisations d'intégration économique régionale disposent, pour exercer leur droit de vote, d'un nombre de voix égal au nombre de leurs Etats membres qui sont Parties à la Convention. Ces organisations n'exercent pas leur droit de vote si l'un quelconque de leurs Etats membres exerce le sien, et inversement.

ARTICLE 19

DEPOSITAIRE

Le Secrétaire général de l'Organisation des Nations Unies est le Dépositaire de la Convention et des protocoles adoptés conformément à l'article 17.

ARTICLE 20

SIGNATURE

La présente Convention est ouverte à la signature des Etats Membres de l'Organisation des Nations Unies ou membres d'une institution spécialisée des Nations Unies ou parties au Statut de la Cour internationale de Justice, ainsi que des organisations d'intégration économique régionale, à Rio de Janeiro, pendant la Conférence des Nations Unies sur l'environnement et le développement, puis au Siège de l'Organisation des Nations Unies, à New York, du 20 juin 1992 au 19 juin 1993.

ARTICLE 21

DISPOSITIONS TRANSITOIRES

1. Jusqu'à la fin de la première session de la Conférence des Parties, les fonctions de secrétariat visées à l'article 8 seront exercées provisoirement par le secrétariat créé par l'Assemblée générale des Nations Unies dans sa résolution 45/212 du 21 décembre 1990.
2. Le chef du secrétariat provisoire visé au paragraphe 1 ci-dessus collaborera étroitement avec le Groupe intergouvernemental d'experts pour l'étude du changement climatique, de manière que celui-ci puisse répondre aux besoins d'avis scientifiques et techniques objectifs. D'autres organes scientifiques compétents pourront aussi être consultés.
3. Le Fonds pour l'environnement mondial du Programme des Nations Unies pour le développement, du Programme des Nations Unies pour l'environnement et de la Banque internationale pour la reconstruction et le développement sera l'entité internationale chargée d'assurer à titre provisoire le fonctionnement du mécanisme financier visé à l'article 11. Il conviendra, à cet égard, que le Fonds soit réaménagé de la manière voulue et que la composition de ses membres devienne universelle, pour qu'il puisse répondre aux exigences de l'article 11.

ARTICLE 22

RATIFICATION, ACCEPTATION, APPROBATION OU ADHESION

1. La Convention est soumise à la ratification, à l'acceptation, à l'approbation ou à l'adhésion des Etats et des organisations d'intégration économique régionale. Elle sera ouverte à l'adhésion dès le lendemain du jour où elle cessera d'être ouverte à la signature. Les instruments de ratification, d'acceptation, d'approbation ou d'adhésion sont déposés auprès du Dépositaire.

2. Toute organisation d'intégration économique régionale qui devient Partie à la Convention sans qu'aucun de ses Etats membres y soit Partie est liée par toutes les obligations découlant de la Convention. Lorsqu'un ou plusieurs Etats membres d'une telle organisation sont Parties à la Convention, cette organisation et ses Etats membres conviennent de leurs responsabilités respectives dans l'exécution des obligations que leur impose la Convention. En pareil cas, l'organisation et ses Etats membres ne sont pas habilités à exercer concurremment les droits découlant de la Convention.

3. Dans leurs instruments de ratification, d'acceptation, d'approbation ou d'adhésion, les organisations d'intégration économique régionale indiquent l'étendue de leur compétence à l'égard des questions régies par la Convention. En outre, ces organisations informent le Dépositaire, qui en informe à son tour les Parties, de toute modification importante de l'étendue de leur compétence.

ARTICLE 23

ENTREE EN VIGUEUR

1. La Convention entrera en vigueur le quatre-vingt-dixième jour qui suivra la date du dépôt du cinquantième instrument de ratification, d'acceptation, d'approbation ou d'adhésion.

2. A l'égard de chaque Etat ou organisation d'intégration économique régionale qui ratifie, accepte ou approuve la Convention, ou y adhère, après le dépôt du cinquantième instrument de ratification, d'acceptation, d'approbation ou d'adhésion, la Convention entrera en vigueur le quatre-vingt-dixième jour suivant la date du dépôt par cet Etat ou cette organisation de son instrument de ratification, d'acceptation, d'approbation ou d'adhésion.

3. Aux fins des paragraphes 1 et 2, l'instrument déposé par une organisation d'intégration économique régionale n'est pas compté en sus de ceux déposés par ses Etats membres.

ARTICLE 24

RESERVES

Aucune réserve ne peut être faite à la présente Convention.

ARTICLE 25

DENONCIATION

1. A l'expiration d'un délai de trois ans à compter de la date d'entrée en vigueur de la Convention à l'égard d'une Partie, cette Partie pourra la dénoncer par notification écrite donnée au Dépositaire.
2. Cette dénonciation prendra effet à l'expiration d'un délai d'un an à compter de la date à laquelle le Dépositaire en aura reçu notification, ou à toute date ultérieure spécifiée dans ladite notification.
3. Toute Partie qui aura dénoncé la Convention sera réputée avoir dénoncé également tout protocole auquel elle est Partie.

ARTICLE 26

TEXTES FAISANT FOI

L'original de la présente Convention, dont les textes anglais, arabe, chinois, espagnol, français et russe font également foi, sera déposé auprès du Secrétaire général de l'Organisation des Nations Unies.

EN FOI DE QUOI les soussignés, dûment autorisés à cet effet, ont signé la présente Convention.

FAIT à New York le neuf mai mil neuf cent quatre-vingt-douze.

ANNEXE I

Allemagne
Australie
Autriche
Bélarus a/
Belgique
Bulgarie a/
Canada
Communauté européenne
Danemark
Espagne
Estonie a/
Etats-Unis d'Amérique
Fédération de Russie a/
Finlande
France
Grèce
Hongrie a/
Irlande
Islande
Italie
Japon
Lettonie a/
Lituanie a/
Luxembourg
Norvège
Nouvelle-Zélande
Pays-Bas
Pologne a/
Portugal
Roumanie a/
Royaume-Uni de Grande-Bretagne et d'Irlande du Nord
Suède
Suisse
Tchécoslovaquie a/
Turquie
Ukraine a/

a/ Pays en transition vers une économie de marché.



خرونتماي - المهندسون الاستشاريون للشرق الأوسط
مستشارون في هندسة البيئة
CONSULTING ENVIRONMENTAL ENGINEERS

Republic of Lebanon

Office of the Minister of State for Administrative Reform
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اتفاقية الأمم المتحدة الإطارية
بشأن تغير المناخ



الأمم المتحدة
١٩٩٢

اتفاقية الأمم المتحدة الإطارية بشأن تغير المناخ

إن الأطراف في هذه الاتفاقية ،

إذ تعترف بأن التغير في مناخ الأرض وآثاره الضارة تمثل شافلا مشتركا للبشرية ،

وإذ يساورها القلق إزاء تزايد تركيزات غازات الدفيئة بدرجة كبيرة في الغلاف الجوي من جراء أنشطة بشرية ، وما تؤدي إليه هذه الزيادات من استئحسال ظاهرة الدفيئة الطبيعية وما يسفر عنه ذلك بمفلة عامة من احترار إضافي لسطح الأرض والغلاف الجوي ويمكن أن يؤثر تأثيرا سلبيا على الأنظمة الأيكولوجية الطبيعية وعلى البشرية ،

وإذ تلاحظ أن أكبر قسط من الانبعاثات العالمية في الماضي والحاضر لغازات الدفيئة نشأ في البلدان المتقدمة النمو ، وأن متوسط الانبعاثات للفرد في البلدان النامية ما زال منخفضا نسبيا ، وأن القسط الناشئ في البلدان النامية من الانبعاثات العالمية سيزيد لتلبية احتياجاتها الاجتماعية والإنمائية ،

وإذ تدرك دور وأهمية معارف ومستودعات غازات الدفيئة في الأنظمة الأيكولوجية البرية والبحرية ،

وإذ تلاحظ أن قدرا كبيرا من الشكوك يكتنف التنبؤات بتغير المناخ ، ولا سيما فيما يتعلق بتوقيته ومداه وأنماطه الإقليمية ،

وإذ تعترف بأن الطابع العالمي لتغير المناخ يتطلب أقصى ما يمكن من التعاون من جانب جميع البلدان ومشاركتها في استجابة دولية فعالة وملائمة ، وفقا لمسؤولياتها المشتركة ، وإن كانت متباينة ، ووفقا لقدرات كل منها وظروفها الاجتماعية والاقتصادية ،

وإذ تشير إلى الأحكام ذات العلة من إعلان مؤتمر الأمم المتحدة المعنى بالبيئة البشرية ، الذي اعتمد في استكهولم في 16 حزيران/يونيه 1972 ،

وإذ تشير إلى أن للدول ، وفقا لميثاق الأمم المتحدة ومبادئ القانسون الدولي ، الحق السيادي في استغلال مواردها الخاصة بها بمقتضى سياساتها البيئية والإنمائية ، وعليها مسؤولية كفالة ألا تسبب الأنشطة التي تقع داخل ولايتها أو تحت سيطرتها ضررا لبيئة دول أو مناطق أخرى تقع خارج حدود ولايتها الوطنية ،

وإذ تؤكد من جديد مبدأ سيادة الدول في التعاون الدولي لتناول تفسير المناخ ،

وإذ تعلم بضرورة أن تمن الدول تشريعات بيئية فعالة ، وأن تعكس المعايير البيئية والأهداف الإدارية وأولويات الإطار البيئي والإنمائي السني تنطبق عليه ، وأن المعايير التي تطبقها بعض البلدان قد تكون غير مناسبة وذات تكلفة اقتصادية واجتماعية لا مبرر لها بالنسبة لبلدان أخرى ، لا سيما لبلدان نامية معينة ،

وإذ تشير أيضا إلى أحكام قرار الجمعية العامة ٢٣٨/٤٤ المؤرخ ٢٢ كانون الأول/ديسمبر ١٩٨٩ بشأن مؤتمر الأمم المتحدة المعني بالبيئة والتنمية ، والقرارات ٥٣/٤٣ المؤرخ ٦ كانون الأول/ديسمبر ١٩٨٨ ، و ٢٠٧/٤٤ المؤرخ ٢٢ كانون الأول/ديسمبر ١٩٨٩ ، و ٢١٢/٤٥ المؤرخ ٢١ كانون الأول/ديسمبر ١٩٩٠ و ١٦٩/٤٦ المؤرخ ١٩ كانون الأول/ديسمبر ١٩٩١ بشأن حماية المناخ العالمي لمنفعة أجيال البشرية الحاضرة والمقبلة ،

وإذ تشير كذلك إلى أحكام قرار الجمعية العامة ٢٠٦/٤٤ المؤرخ ٢٢ كانون الأول/ديسمبر ١٩٨٩ بشأن ما يمكن أن ينشأ عن ارتفاع منسوب مياه البحار من آثار ضارة بالجزر والمناطق الساحلية ، ولا سيما المناطق الساحلية المنخفضة ، وإلى الأحكام ذات الصلة من قرار الجمعية العامة ١٧٣/٤٤ المؤرخ ١٩ كانون الأول/ديسمبر ١٩٨٩ بشأن تنفيذ خطة العمل لمكافحة التمهح ،

وإذ تشير إلى اتفاقية فيينا لحماية طبقة الأوزون لعام ١٩٨٥ ، وبروتوكول مونتريال بشأن المواد المستنفدة لطبقة الأوزون لعام ١٩٨٧ ، بالشكل الذي كلف وعدل به في ٢٩ حزيران/يونيه ١٩٩٠ ،

وإذ تحيط علماً بالإعلان الوزاري لمؤتمر المناخ العالمي الثاني السنوي
اعتمد في ٧ تشرين الثاني/نوفمبر ١٩٩٠ ،

وإذ تدرك الأعمال التحليلية القيمة التي يظطلع بها كثير من الدول في
مجال تغير المناخ والإسهامات الهامة التي تقدمها المنظمة العالمية للأرصاد
الجوية وبرنامج الأمم المتحدة للبيئة وغير ذلك من أجهزة ومؤسسات وهيئات
منظمة الأمم المتحدة ، فضلا عن الهيئات الدولية والهيئات الحكومية الدولية
الأخرى ، لتبادل نتائج البحث العلمي وتنسيق الجهود ،

وإذ تعلم بأن الخطوات المطلوبة لفهم تغير المناخ وتناوله متحقق أقصى
فعالية بيئية واجتماعية واقتصادية إذا استندت إلى الاعتبارات العلمية والفنية
والاقتصادية ذات الملة وإذا أعيد تقييمها باستمرار في ضوء الاكتشافات الجديدة
في هذه المجالات ،

وإذ تعلم بأن الإجراءات المختلفة الرامية إلى تناول تغير المناخ لها
ما يبررها اقتصاديا في حد ذاتها كما يمكن أن تساعد على حل مشاكل بيئية أخرى ،

وإذ تعلم أيضا بضرورة قيام البلدان المتقدمة النمو باتخاذ إجراءات
فورية على نحو من على أساس أولويات واضحة ، كخطوة أولى نحو وضع استراتيجيات
استجابة شاملة على الصعيد العالمي والوطني وكذلك على الصعيد الاقليمي ،
حيثما يتم الاتفاق على ذلك ، تأخذ في الحسبان جميع غازات الدفيئة ، مع
المراعاة الواجبة لإسهاماتها النسبية في استفحال ظاهرة الدفيئة ،

وإذ تعلم كذلك بأن البلدان المنخفضة وغيرها من البلدان الجزرية
المفيرة والبلدان ذات المناطق الساحلية المنخفضة والمناطق الجافة وشبه
الجافة أو المناطق المعرضة للفيضان والجفاف والتعمر ، والبلدان النامية
ذات النظم البيئية الجبلية الضعيفة معرضة بصفة خاصة للأثار الضارة لتغير
المناخ ،

وإذ تعلم بالمعاب الخاصة للبلدان نتيجة للإجراءات المتخذة من أجل
الحد من انبعاثات غازات الدفيئة ولا سيما البلدان النامية ، التي تعتمد
اقتصاداتها بصفة خاصة على إنتاج الوقود الاحفوري واستخدامه وتمديده ،

وإذ تؤكد وجوب التنسيق المتكامل بين الاستجابات لتغير المناخ والتنمية الاجتماعية والاقتصادية بنية تفادي أن تلحق آثار ضارة بالتنمية الاقتصادية والاجتماعية ، مع المراعاة الكاملة للاحتياجات المشروعة ذات الأولوية للبلدان النامية لتحقيق نمو اقتصادي مطرد والقضاء على الفقر ،

وإذ تعلم بأنه يلزم لجميع البلدان ، ولا سيما البلدان النامية ، الوصول إلى الموارد اللازمة لتحقيق التنمية الاجتماعية والاقتصادية المستدامة ، وكي تحقق البلدان النامية تقدما صوب هذا الهدف ، تلزم زيادة استهلاكها من الطاقة ، مع مراعاة إمكانيات تحقيق المزيد من كفاءة الطاقة والتحكم في انبعاثات غازات الدفيئة بوجه عام ، وذلك بعدة طرق من بينها استخدام تكنولوجيات جديدة بشروط تجعل هذا الاستخدام ذا نفع من الناحيتين الاقتصادية والاجتماعية ،

وقد صممت على حماية النظام المناخي لمالحي أجيال الحاضر والمستقبل .

اتفقت على ما يلي :

المادة ١

التعاريف*

لأغراض هذه الاتفاقية :

- ١ - مصطلح "الآثار الضارة لتغير المناخ" يعني التغيرات التي تطرأ على البيئة الطبيعية أو الحيوية من جراء تغير المناخ والتي لها آثار ضارة كتهديد على تكوين أو مرونة أو إنتاجية النظم الأيكولوجية الطبيعية والمسيرة أو على عمل النظم الاجتماعية - الاقتصادية أو على صحة الإنسان ورفاهه .

* تدرج عناوين المواد للتمييز على القارئ فقط .

٢ - مصطلح "تغير المناخ" يعني تغيرا في المناخ يعزى بصورة مباشرة أو غير مباشرة إلى النشاط البشري الذي يفضي إلى تغير في تكوين الغلاف الجوي العالمي والذي يلاحظ ، بالإضافة إلى التقلب الطبيعي للمناخ ، على مدى فترات زمنية متماثلة .

٣ - مصطلح "النظام المناخي" يعني كامل عمليات الغلاف الجوي والغلاف المائي والمحيط الحيوي والمحيط الأرضي وتفاعلاتها .

٤ - مصطلح "الانبعاثات" يعني إطلاق غازات الدفيئة و/أو ملابثها في الغلاف الجوي على امتداد رقعة محددة وفترة زمنية محددة .

٥ - مصطلح "غازات الدفيئة" يعني تلك العناصر الغازية المكونة للغلاف الجوي ، الطبيعية والبشرية المصدر معا ، التي تمتص الأشعة دون الحمراء وتعيد بث هذه الأشعة .

٦ - مصطلح "المنظمة الاقليمية للتكامل الاقتصادي" يعني منظمة تكونها دول ذات سيادة في منطقة معينة ويكون لها اختصاص فيما يتعلق بالمسائل التي تنظمها هذه الاتفاقية أو بروتوكولاتها ، وتكون مفضولة حسب الامول ، وفقا لإجراءاتها الداخلية ، بالتوقيع على الصكوك المعنية أو التمديق عليها أو قبولها أو إقرارها أو الانضمام إليها .

٧ - مصطلح "الخزان" يعني عنصرا أو عناصر أي من مكونات نظام المناخ تحتزن فيه أو فيها غازات الدفيئة أو ملابث غازات الدفيئة .

٨ - مصطلح "المصرف" يعني أي عملية أو نشاط أو آلية تزيل غازات الدفيئة أو الهباء الجوي أو ملابث غازات الدفيئة من الغلاف الجوي .

٩ - مصطلح "المصدر" يعني أي عملية أو نشاط يطلق غازا من غازات الدفيئة أو الهباء الجوي أو ملابث غازات الدفيئة في الغلاف الجوي .

المادة ٢

الهدف

الهدف النهائي لهذه الاتفاقية ، ولاي صكوك قانونية متعلقة بها قد يعتمدها مؤتمر الاطراف ، هو الوصول ، وفقا لاحكام الاتفاقية ذات الملة ، إلى تشيبت تركييزات غازات الدفيئة في الغلاف الجوي عند مستوى يحول دون تدخل خطير من جانب الإنسان في النظام المناخي . وينبغي بلوغ هذا المستوى في إطار فترة زمنية كافية لتتيح للنظم الايكولوجية أن تتكيف بصورة طبيعية مع تغير المناخ ، وتضمن عدم تعرّض إنتاج الأغذية للخطر ، وتسمح بالمضي قدما في التنمية الاقتصادية على نحو مستدام .

المادة ٣

المبادئ

تسترشد الاطراف ، في الإجراءات التي تتخذها لبلوغ هدف الاتفاقية وتنفيذ احكامها ، بما يلي ، في جملة أمور :

١ - تحمي الاطراف النظام المناخي لمنفعة أجيال البشرية الحاضرة والمقبلة ، على أساس الإنصاف ، ووفقا لمؤولياتها المشتركة ، وإن كانت متباينة ، وقدرات كل منها . وبناء على ذلك ، ينبغي أن تأخذ البلدان المتقدمة النمو الاطراف مكان العدارة في مكافحة تغير المناخ والاثار الضارة المترتبة عليه .

٢ - يولي الاعتبار التام للاحتياجات المحددة والظروف الخاصة للبلدان النامية الاطراف ، ولا سيما تلك المعرّفة بشكل خاص للتأثر بالنتائج الضارة الناجمة عن تغير المناخ ، وللأطراف ، ولا سيما البلدان النامية الاطراف ، التي سيتعين عليها أن تتحمل عبئا غير متناسب أو غير عادي بمقتضى الاتفاقية .

٣ - تتخذ الاطراف تدابير وقائية لاستباق أسباب تغير المناخ أو الوقاية منها أو تقليلها إلى الحد الأدنى وللتخفيف من آثاره الضارة . وحيثما توجد تهديدات بحدوث ضرر جسيم أو غير قابل للإصلاح ، لا ينبغي التذرع بالافتقار إلى يقين علمي

قاطع كسب لتأجيل اتخاذ هذه التدابير ، على أن يؤخذ في الاعتبار أن السياسات والتدابير المتعلقة بمعالجة تغير المناخ ينبغي أن تتم بفعالية الكلفة ، بما يضمن تحقيق منافع عالمية بأقل كلفة ممكنة . ولتحقيق ذلك ، ينبغي أن تأخذ هذه السياسات والتدابير في الاعتبار مختلف السياقات الاجتماعية - الاقتصادية ، وأن تكون شاملة ، وأن تغطي جميع مصادر ومبارك وخزانات غازات الدفيئة ذات الملء ، والتكيد ، وأن تشمل جميع القطاعات الاقتصادية . ويمكن تنفيذ جهود تناول تغير المناخ بالتعاون بين الأطراف المهمة .

4 - للأطراف حق تعزيز التنمية المستدامة وعليها هذا الواجب . وينبغي أن تكون السياسات والتدابير ، المتخذة لحماية النظام المناخي من التغير الناجم عن نفاث بشري ، ملائمة للظروف المحددة لكل طرف ، كما ينبغي لها أن تتكامل مع برامج التنمية الوطنية ، مع مراعاة أن التنمية الاقتصادية ضرورية لاتخاذ تدابير لتناول تغير المناخ .

5 - ينبغي أن تتعاون الأطراف لتعزيز نظام اقتصادي دولي معاند ومفتوح يفضي إلى نمو اقتصادي مستدام وتنمية مستدامة لدى جميع الأطراف ، ولا سيما البلدان النامية الأطراف ، ومن ثم يتيح لها المزيد من القدرة على تناول مشاكل تغير المناخ . وينبغي ألا تكون التدابير المتخذة لمكافحة تغير المناخ ، بما في ذلك التدابير المتخذة من جانب واحد ، وسيلة لتمييز تعسفي أو غير مبرر أو تعقيد مقنن للتجارة الدولية .

المادة 4

الالتزامات

1 - يقوم جميع الأطراف ، واضعين في الاعتبار مسؤولياتهم المشتركة ، وإن كانت متباينة ، وأولوياتهم وأهدافهم وظروفهم الإنمائية المحددة على الصعيد الوطني والإقليمي ، بما يلي :

(أ) وضع قوائم وطنية لحصر الانبعاثات البشرية المصدر من مصادر جميع غازات الدفيئة التي لا يحكمها بروتوكول مونتريال ، وإزالة المصادر لهذه الغازات ، وامتثالها دوريًا ، ونظرها وإشاعتها لمؤتمر

الأطراف ، وفقا للمادة ١٣ ، وذلك باستخدام منهجيات متماثلة يتفق عليها مؤتمر الأطراف ؛

(ب) إعداد برامج وطنية ، وحيثما يكون ذلك ملائما ، اقليمية ، تتضمن تدابير للتخفيف من تغير المناخ عن طريق معالجة الانبعاثات البشرية المصدر من غازات الدفيئة التي لا يحكمها بروتوكول مونتريال ، بحسب المصدر ، وإزالة هذه الانبعاثات ، بحسب المصدر ، واتخاذ تدابير لتخفيف التأكيد بشكل ملائم مع تغير المناخ ، وتنفيذ تلك البرامج ونشرها وامتثالها بمفنة دورية ؛

(ج) العمل والتعاون على تطوير وتطبيق ونشر ، بما في ذلك نقل التكنولوجيا والممارسات والعمليات التي تكبح أو تخفف أو تمنع الانبعاثات البشرية المصدر من غازات الدفيئة التي لا يحكمها بروتوكول مونتريال في جميع القطاعات ذات الملء ، بما في ذلك قطاعات الطاقة والنقل والمناعة والزراعة والحراجة وإدارة النفايات ؛

(د) تعزيز الإدارة المستدامة والعمل والتعاون على حفظ وتعزيز ، حسبها يكون ذلك ملائما ، معارف وخزانات جميع غازات الدفيئة التي لا يحكمها بروتوكول مونتريال ، بما في ذلك الكتلة الحيوية والغابات والمحيطات ، فضلا عن النظم الأيكولوجية الأخرى البحرية والساحلية والبحرية ؛

(هـ) التعاون على الإعداد للتكيف مع آثار تغير المناخ ، وتطوير وإعداد خطط ملائمة ومتكاملة لإدارة المناطق الساحلية ، والموارد المائية والزراعة ، والحماية وإنعاش مناطق ، لا سيما في أفريقيا ، متضررة بالجفاف والتصحر ، وبالفيضانات ؛

(و) أخذ اعتبارات تغير المناخ في الحسبان ، إلى الحد الممكن عمليا ، في سياساتها وإجراءاتها الاجتماعية والاقتصادية والبيئية ذات الملء ، واستخدام أساليب ملائمة ، مثل تقييمات الأثر ، تماغ وتحدد على الصعيد الوطني ، بغية التقليل إلى أدنى حد من الأثار الضارة التي تلحق بالاقتصاد والصحة العامة ونوعية البيئة من جراء المشاريع أو التدابير التي ينظمون بها من أجل التخفيف من تغير المناخ أو التكيف معه ؛

(ز) العمل والتعاون على إجراء البحوث العلمية والتكنولوجية والفنية والاجتماعية - الاقتصادية وغيرها ، والرصد المنتظم وتطوير محفوظات البيانات المتعلقة بالنظام المناخي والرامية إلى زيادة الفهم وتخفيف أو إزالة الشكوك المتبقية فيما يتعلق بأسباب وآثار ومدى وتوقيت تغير المناخ وفيما يتعلق بالنتائج الاقتصادية والاجتماعية لاستراتيجيات الاستجابة المختلفة .

(ح) العمل والتعاون على التبادل الكامل والمنتج والمعاجل للمعلومات العلمية والتكنولوجية والفنية والاجتماعية - الاقتصادية والقانونية ذات الصلة المتعلقة بالنظام المناخي وتغير المناخ ، وبالنتائج الاقتصادية والاجتماعية لاستراتيجيات الاستجابة المختلفة ؛

(ط) العمل والتعاون على التعليم والتدريب والتوعية العامة فيما يتعلق بتغير المناخ ، وتشجيع المشاركة على أوسع نطاق في هذه العملية ، بما في ذلك المشاركة من جانب المنظمات غير الحكومية ؛

(ي) إبلاغ مؤتمر الأطراف بالمعلومات المتعلقة بالتنفيذ ، وفقاً للمادة ١٢ .

٢ - تلتزم البلدان المتقدمة النمو الأطراف والأطراف الأخرى المدرجة في المرفق الأول ، على وجه التحديد بما هو منصوص عليه فيما يلي :

(١) يعتمد كل من هؤلاء الأطراف سياسات وطنية^(١) ويتخذ تدابير مناظرة بشأن التخفيف من تغير المناخ ، عن طريق الحد من انبعاثات غازات الدفيئة البشرية المصدر من قبله وحماية وتعزيز مزارع وخزانات غازات الدفيئة لديه ، ومتظهر هذه السياسات والتدابير أن البلدان المتقدمة النمو آخذة بزمّام المبادرة إلى تعديل الاتجاهات الأطول أجلا للانبعاثات البشرية المصدر بما يتفق مع هدف الاتفاقية ، مع الإقرار بأن العودة بحلول نهاية هذا العقد إلى مستويات سابقة للانبعاثات البشرية المصدر من ثاني أكسيد الكربون وغيره من غازات

(١) يشمل هذا السياسات والتدابير التي تعتمد عليها المنظمات الإقليمية للتكامل الاقتصادي .

الدفيفة التي لا يحكمها بروتوكول مونتريال ، ستهم في تحقيق ذلك التمدليل ، ومع مراعاة الاختلافات في نقاط البدء بالنسبة لهذه الاطراف ونهجها وهياكلها الاقتصادية وقواعد مواردها وضرورة الحفاظ على نمو اقتصادي قوي ومستدام ، والتكنولوجيات المتاحة وغير ذلك من الظروف المنفردة ، فضلا عن ضرورة تقديم مساهمات منصفة ومناسبة من جانب كل من هذه الاطراف في الجهد العالمي المتعلق بهذا الهدف . ويمكن لهذه الاطراف أن تنفذ تلك السياسات والتدابير بالاشتراك مع اطراف أخرى ويمكن أن تساعد أطرافا أخرى في المحاممة في تحقيق هدف الاتفاقية ، وبخاصة هدف هذه الفقرة الفرعية .

(ب) من أجل تعزيز إحراز تقدم لبلوغ هذه الغاية ، يقوم كل من هؤلاء الاطراف ، في غضون ستة أشهر من بدء نفاذ الاتفاقية بالنسبة له وبصفة دورية فيما بعد ، ووفقا للمادة ١٣ ، بإيلاغ معلومات مفصلة بشأن سياساته وتدابيره المشار إليها في الفقرة الفرعية (أ) أعلاه وكذلك بشأن انبعاثاته البشرية المصدر المسقطه الناتجة من مصادر غازات الدفيفة التي لا يحكمها بروتوكول مونتريال وإزالة الممارف لهذه الانبعاثات وذلك للفترة المشار إليها في الفقرة الفرعية (أ) ، بغرض العودة بصفة منفردة أو مشتركة بهذه الانبعاثات البشرية المصدر من ثاني أكسيد الكربون وغيره من غازات الدفيفة التي لا يحكمها بروتوكول مونتريال إلى مستوياتها في عام ١٩٩٠ . ويستعرض مؤتمر الاطراف هذه المعلومات في دورته الأولى وبعد ذلك بصورة دورية ، وفقا للمادة ٧ ،

(ج) تراعي حسابات الانبعاثات من مصادر غازات الدفيفة وإزالة موارفها لها ، لأغراض الفقرة الفرعية (ب) أعلاه ، أفضل المعارف العلمية المتاحة ، بما في ذلك القدرة الفعالة للممارف وما يحتم به كل غاز من هذه الغازات في تغير المناخ . وسينظر مؤتمر الاطراف في منهجيات هذه الحسابات ويوافق عليها في دورته الأولى ، ويستعرضها بصفة منتظمة فيما بعد ؛

(د) يستعرض مؤتمر الاطراف ، في دورته الأولى ، مدى كفاية الفقرتين الفرعيتين (أ) و (ب) أعلاه . ويجري هذا الاستعراض في ضوء أفضل المعلومات والتقييمات العلمية المتاحة بشأن تغير المناخ وأثاره ، فضلا عن المعلومات الفنية والاجتماعية والاقتصادية ذات الصلة . واستنادا إلى هذا الاستعراض ، يتخذ مؤتمر الاطراف إجراءات مناسبة ، قد تشمل اعتماد تعديلات للالتزامات الواردة في الفقرتين الفرعيتين (أ) و (ب) أعلاه . كما يتخذ مؤتمر الاطراف ، في دورته

الاولى ، مقررات بشأن معايير التنفيذ المشترك على النحو المبين في الفقرة الفرعية (أ) أعلاه . ويجري استعراض شأن للفقرتين الفرعيتين (أ) و (ب) في موعد لا يتجاوز ٢١ كانون الاول/ديسمبر ١٩٩٨ ، وبعد ذلك على فترات منتظمة يحددها مؤتمر الاطراف ، إلى أن يتحقق هدف هذه الاتفاقية ؛

(هـ) يقوم كل من هؤلاء الاطراف بما يلي :

١١' ينسق ، حسبما يكون ذلك ملائماً مع الاطراف الاخرى ، المكوك الاقتصادية والإدارية ذات المصلحة التي تعد لتحقيق هدف هذه الاتفاقية ؛

١٢' يحدد ويستمع بمودة دورية مياماته وممارساته التي تشجع الأنشطة التي تؤدي إلى زيادة الانبعاثات البشرية المعدر مسن نمازات الدفينة التي لا يحكمها بروتوكول مونتريال إلى مستويات أعلى مما كانت متبلغه بعد ذلك ؛

(و) يستعرض مؤتمر الاطراف ، في موعد أقصاه ٢١ كانون الاول/ديسمبر ١٩٩٨ ، المعلومات المتاحة بنية اتخاذ قرارات بشأن ما قد يكون ملائماً مسن تعديلات للقوائم الواردة في المرفقين الاول والثاني بموافقة الطرف المعني ؛

(ز) يجوز لأي طرف غير مدرج في المرفق الاول أن يقوم ، في مك تمديقه أو قبوله أو موافقته أو انضمامه ، أو في أي وقت لاحق لذلك ، بإشعار الوديع بأنه يعتمزم الالتزام بالفقرتين الفرعيتين (أ) و (ب) أعلاه . ويقوم الوديع بإخطار الموقعين والاطراف الاخرين بأي إشعار من هذا القبيل .

٣ - تقوم البلدان المتقدمة النمو الاطراف والاطراف المتقدمة النمو الاخرى المدرجة في المرفق الثاني ، بتوفير موارد مالية جديدة وإضافية لتغطية التكاليف الكاملة المتفق عليها التي تتكبها البلدان النامية الاطراف نسى الامتثال لالتزاماتها بموجب الفقرة ١ من المادة ١٢ . وتقوم تلك البلدان أيضاً بتوفير الموارد المالية ، بما في ذلك موارد لنقل التكنولوجيا ، اللازمة للبلدان النامية الاطراف لتغطية التكاليف الإضافية الكاملة المتفق عليها لتنفيذ التدابير المشمولة بالفقرة ١ من هذه المادة والتي يتفق عليها بين

البلد النامي الطرف والكيان الدولي أو الكيانات الدولية المشار إليها في المادة ١١ ، وفقا لتلك المادة . ويراعى في تنفيذ هذه الالتزامات الحاجة إلى توفير عنصر الكفاية والقابلية للتنسيق في تدفق الأموال وأهمية التقييم المناسب للأعباء فيما بين البلدان المتقدمة النمو الأطراف .

٤ - تقوم البلدان المتقدمة النمو الأطراف المتقدمة النمو والأطراف الأخرى المدرجة في المرفق الثاني أيضا بمساعدة البلدان النامية الأطراف المعرفة بمفصلة خاصة لأشياء تغيير المناخ الضارة في تغطية تكاليف التكيف مع تلك الأضرار الضارة .

٥ - تتخذ البلدان المتقدمة النمو الأطراف والأطراف المتقدمة النمو الأخرى المدرجة في المرفق الثاني جميع الخطوات الممكنة عمليا ، حسبما يكون ملائما ، بتعزيز وتيسير وتمويل نقل التكنولوجيات السليمة بيئيا والدراية الفنية إلى الأطراف الأخرى ، وبخامسة البلدان النامية الأطراف ، أو إتاحة الوصول إليها ، لتمكينها من تنفيذ أحكام الاتفاقية . وفي هذه العملية ، تدعم البلدان المتقدمة النمو الأطراف تطوير وتعزيز القدرات والتكنولوجيات المحلية للبلدان النامية الأطراف . ويمكن أيضا للأطراف والمنظمات الأخرى التي بوسعها ذلك أن تساعد في تيسير نقل تلك التكنولوجيات .

٦ - بالنسبة إلى الأطراف المدرجين في المرفق الأول الذين يملكون بعمليات التحول إلى اعتماد سوقى يسمح لهم مؤتمر الأطراف بقدر من المرونة في تنفيذ التزاماتهم بموجب الفقرة ٢ أعلاه وذلك من أجل تعزيز قدرة هؤلاء الأطراف على معالجة تغير المناخ ، بما في ذلك ما يتعلق بمستوى ما أطلقه في الماضي من الانبعاثات البشرية المعتمد من غازات الدفيئة ، التي لا يحكمها بروتوكول مونتريال الذي اختير كمنهج مرجعي .

٧ - يتوقع مدى تنفيذ البلدان النامية الأطراف بفعالية لالتزاماتها بموجب الاتفاقية على فعالية تنفيذ البلدان المتقدمة النمو الأطراف لالتزاماتها بموجب الاتفاقية فيما يتعلق بالموارد المالية ونقل التكنولوجيا ، ويأخذ بعين الاعتبار تماما أن التنمية الاقتصادية والاجتماعية والقضاء على الفقر هما الأولويات الأولى والفعالية للبلدان النامية الأطراف .

٨ - لدى تنفيذ الالتزامات الواردة في هذه المادة يولي الاطراف الاهتمام التام لاتخاذ ما يلزم من إجراءات بموجب الاتفاقية ، بما فيها الإجراءات المتعلقة بالتمويل والتأمين ونقل التكنولوجيا لتلبية الاحتياجات والاهتمامات المحددة للبلدان النامية الاطراف الناشئة عن الآثار الفارة لتغير المناخ و/أو أشر تنفيذ تدابير الاستجابة لتغير المناخ ، وبخاصة على :

- (١) البلدان الجزرية الصغيرة ؛
 - (ب) البلدان ذات المناطق الساحلية المنخفضة ؛
 - (ج) البلدان ذات المناطق القاحلة وشبه القاحلة والمناطق المحرجة والمناطق المعرضة لتدهور الاحراج ؛
 - (د) البلدان ذات المناطق المعرضة للكوارث الطبيعية ؛
 - (هـ) البلدان ذات المناطق المعرضة للجفاف والتصحر ؛
 - (و) البلدان التي يرتفع فيها التلوث الجوي في المناطق الحضرية ؛
 - (ز) البلدان ذات المناطق التي بها نظم ايكولوجية ضعيفة ، بما فيها النظم الايكولوجية الجبلية ؛
 - (ح) البلدان التي يعتمد اقتصادها اعتمادا كبيرا على الدخل الناشئ عن إنتاج وتجهيز وتمدير و/أو استهلاك أنواع من الوقود الاحفوري والمنتجات كثيفة الطاقة المرتبطة به ؛
 - (ط) البلدان غير الساحلية وبلدان العبور .
- وكذلك ، يجوز أن يتخذ مؤتمر الاطراف إجراءات ، حسبما يكون ذلك ملائما ، فيما يتعلق بهذه الفقرة .

٩ - يولي الاطراف اعتبارا كاملا للاحتياجات المحددة والاوزاع الخاصة لاقبل البلدان نموا فيما تتخذه من إجراءات تتعلق بالتمويل ونقل التكنولوجيا .

١٠ - يراعي الاطراف ، وفقا للمادة ١٠ ، عند تنفيذ الالتزامات المترتبة على الاشتغاقية ، وضع الاطراف ، لاسيما البلدان النامية الاطراف ، المعرضة اقتصاداتها للاثار الضارة الناجمة عن تنفيذ التدابير المتخذة للاستجابة لتغير المناخ . وينطبق هذا بوجه خاص على الاطراف الذين تعتمد اقتصاداتهم اعتمادا شديدا على إيرادات مستمدة من إنتاج و/أو تجهيز وتصدير و/أو استهلاك الوقود الاحفوري والمنتجات كثيفة الطاقة المرتبطة به و/أو استخدام الوقود الاحفوري الذي تواجه هذه الاطراف مخاطر كبيرة في التحول إلى بدائل له .

المادة ٥

البحث والرمد المنتظم

يقوم الاطراف ، لدى اضطلاعهم بالتزاماتهم بموجب الفقرة ١ (ز) من المادة ٤ ، بما يلي :

(أ) القيام بدعم ، حيثما يكون ذلك ملائما ، وزيادة تطوير برامج وشبكات أو منظمات دولية وحكومية دولية تهدف إلى تحديد وإجراء وتقييم وتمويل البحوث وجمع البيانات والرمد المنتظم ، مع مراعاة الحاجة إلى تقليل ازدواج الجهد إلى الحد الأدنى ؛

(ب) دعم الجهود الدولية والحكومية الدولية الرامية إلى تعزيز الرمد المنتظم والطاقت والقدرات الوطنية في مجال البحث العلمي والفني ، لاسيما في البلدان النامية ، وتعزيز إمكانية الوصول إلى البيانات وتبادل هذه البيانات وتحليلاتها التي تم الحصول عليها من مناطق خارج الولاية الوطنية ؛

(ج) ومراعاة الاهتمامات والاحتياجات الخاصة للبلدان النامية والتعاون في تحسين طاقتها وقدراتها الكامنة على المشاركة في الجهود المشار إليها في الفقرتين الفرعيتين (أ) و (ب) أعلاه .

المادة ٦

التعليم والتدريب والتوعية العامة

يقوم الاطراف ، لدى الاضطلاع بالتزاماتها بموجب الفقرة ١ (ط) من المادة ٤ ، بما يلي :

(١) العمل على المعيد الوطني ، وحيثما كان ملائما ، على المعيديين دون الاقليمي والاقليمي ، ووفقا للقوانين والأنظمة الوطنية ، وفي حدود قدرات كل منهم على تشجيع وتيخير ما يلي :

١١' وضع وتنفيذ برامج للتعليم والتوعية العامة بشأن تغير المناخ وآثاره ؛

١٢' إتاحة إمكانية حصول الجمهور على المعلومات المتعلقة بتغيير المناخ وآثاره ؛

١٣' مشاركة الجمهور في تناول تغير المناخ وآثاره وإعداد الاستجابات للمناخ ؛

١٤' تدريب الموظفين العلميين والفنيين والإداريين .

(ب) التعاون ، على المعيد الدولي ، وحيثما كان ملائما ، بالاستعانة بالهيئات القائمة في المجالات التالية وتعزيزها :

١١' تطوير وتبادل مواد التعليم والتوعية العامة بشأن تغير المناخ وآثاره ؛

١٢' تطوير وتنفيذ برامج تعليمية وتدريبية ، بما في ذلك تعزيز المؤتمرات الوطنية وتبادل أو انتداب الموظفين لتدريب خبراء في هذا الميدان ، ولا سيما للبلدان النامية .

المادة ٧

مؤتمر الاطراف

- ١ - ينشأ بموجب هذا مؤتمر للأطراف .
- ٢ - يبقى مؤتمر الأطراف ، بوصفه الهيئة العليا لهذه الاتفاقية ، قييد الاستعراض المنتظم لتنفيذ هذه الاتفاقية وأي صكوك قانونية أخرى ذات صلة يعتمدها مؤتمر الأطراف ، ويتخذ المؤتمر ، في حدود ولايته ، القرارات اللازمة لتعزيز التنفيذ الفعال للاتفاقية . وتحقيقا لهذه الغاية ، يقوم مؤتمر الاطراف بما يلي :
 - (أ) الفحص الدوري للالتزامات الاطراف والترتيبات المؤسسية بموجب الاتفاقية ، في ضوء هدف الاتفاقية ، والخبرة المكتسبة في تنفيذها ، وتطور المعارف العلمية والتكنولوجية ؛
 - (ب) تعزيز وتيسير تبادل المعلومات عن التدابير التي يعتمدها الاطراف لتناول تغير المناخ وآثاره ، مع مراعاة الظروف والمسؤوليات والقدرات المختلفة للأطراف والالتزامات التي يتحملها كل طرف بموجب الاتفاقية ؛
 - (ج) القيام ، بناء على طلب طرفين أو أكثر ، بتيسير تنسيق التدابير التي يعتمدها لتناول تغير المناخ وآثاره ، مع مراعاة الظروف والمسؤوليات والقدرات المختلفة للأطراف والالتزامات التي يتحملها كل طرف بموجب الاتفاقية ؛
 - (د) القيام ، وفقا لهدف وأحكام الاتفاقية ، بتعزيز وتوجيه وضع منهجيات قابلة للمقارنة ، يتفق عليها مؤتمر الاطراف ، من أجل جملة أمور من بينها إعداد قوائم تحمر الانبعاثات غازات الدفيئة من مصادرها وإزالتها بواسطة المصارف ، وتقييم فعالية تدابير الحد من الانبعاثات وتعزيز إزالة هذه الغازات ، والقيام بتعزيز وتوجيه تحسين تلك المنهجيات دوريا ؛

(هـ) إجراء تقييم ، على أساس جميع المعلومات-التي تتاح له وبقسما لاحكام الاتفاقية ، لتنفيذ الاتفاقية من قبل الاطراف ، وكذلك للاثار الشاملة الناجمة عن التدابير المتخذة عملا بالاتفاقية ، وعلى وجه الخصوص الاثار البيئية والاقتصادية والاجتماعية وكذلك اثارها التراكمية ومدى إحراز تقدم نحو هدف الاتفاقية ؛

(و) النظر في التقارير المقدمة بانتظام عن تنفيذ الاتفاقية واعتماد هذه التقارير وتأمين نشرها ؛

(ز) تقديم توصيات بشأن أية أمور تلزم لتنفيذ الاتفاقية ؛

(ح) السعي إلى تعبئة موارد مالية وفقا للفقرات ٣ و ٤ و ٥ من المادة ٤ والمادة ١١ ؛

(ط) إنشاء ما يرى ضروريا من الهيئات الفرعية لتنفيذ الاتفاقية ؛

(ي) استمرار التقارير المقدمة من هيئاته الفرعية وتقديم التوجيه لها ؛

(ك) الاتفاق على نظام داخلي وقواعد مالية له ولاي من الهيئات الفرعية ، واعتماد ذلك النظام وتلك القواعد بتوافق الآراء ؛

(ل) القيام ، حيثما كان ملائما ، بالتماس واستخدام خدمات وتعاون المنظمات الدولية المختصة والهيئات الحكومية الدولية والهيئات غير الحكومية المناسبة ، والتماس واستخدام المعلومات التي تقدمها ؛

(م) ممارسة أي مهام أخرى تلزم لتحقيق هدف الاتفاقية وكذلك مأسر المهام الموكلة إليه بموجب الاتفاقية .

٣ - يعتمد مؤتمر الأطراف في دورته الاولى ، نظامه الداخلي والانظمة الداخلية للهيئات الفرعية المنشأة بموجب الاتفاقية ، وتتضمن اجراءات لاتخاذ القرارات في المسائل التي لا تشملها اجراءات اتخاذ القرارات المحددة في

الاتفاقية . وقد تتضمن هذه الاجراءات تحديد الاغلبيات اللازمة لاعتماد قرارات معينة .

٤ - تدعو الامانة المؤقتة المشار إليها في المادة ٢١ إلى عقد الدورة الاولى لمؤتمر الاطراف وتمعد الدورة بعد تاريخ بدء نفاذ الاتفاقية بفترة لا تتجاوز سنة واحدة . وتعد ، فيما بعد ، الدورات العادية لمؤتمر الاطراف مرة كل سنة ما لم يقرر مؤتمر الاطراف خلاف ذلك .

٥ - تعقد دورات استثنائية لمؤتمر الاطراف في أي وقت آخر يراه المؤتمر لازماً ، أو بناء على طلب خطي من أي طرف ، بشرط أن يحظى هذا الطلب بتأييد ثلث عدد الاطراف على الأقل في غضون ستة أشهر من تاريخ قيام الامانة بإبلاغه إلى الاطراف .

٦ - يمكن للأمم المتحدة ووكالاتها المتكفمة والوكالة الدولية للطاقة الذرية ، فضلاً عن أي دولة عضو فيها أو المراقبين لديها من غير الاطراف في الاتفاقية ، أن يكونوا ممثلين بعفة مراقب في دورات مؤتمر الاطراف . ويجوز الموافقة على حضور أية هيئة أو وكالة ، سواء كانت وطنية أو دولية ، حكومية أو غير حكومية ، ذات اهتمام في المسائل المشمولة بالاتفاقية ، وتكون قد أبلغت الامانة برغبتها في أن تكون ممثلة بعفة مراقب في إحدى دورات مؤتمر الاطراف ، ما لم يعترض على ذلك ثلث عدد الاطراف الحاضرين على الأقل . ويخضع قبول واشتراك المراقبين للنظام الداخلي المعتمد من قبل مؤتمر الاطراف .

المادة ٨

الامانة

١ - تنشأ بموجب هذا امانة .

٢ - تنطلع الامانة بالمهام التالية :

(١) اتخاذ الترتيبات المتعلقة بدورات مؤتمر الاطراف ودورات هيئاته الفرعية المنشأة بموجب الاتفاقية وتقديم الخدمات اللازمة إليها ؛

(ب) تجميع وإرسال التقارير المقدمة إليها ،

(ج) تيسير تقديم المساعدة إلى الأطراف ، لا سيما البلدان النامية
الأطراف ، بناء على طلبها ، في تجميع وإبلاغ المعلومات المطلوبة وفقا لاحكام
الاتفاقية ،

(د) إعداد تقارير عن أنشطتها وتقديمها إلى مؤتمر
الأطراف ،

(هـ) ضمان التنسيق اللازم مع أمانات الهيئات الدولية الأخرى ذات
الملة ،

(و) الدخول ، تحت التوجيه العام لمؤتمر الأطراف ، فيما يلزم من
ترتيبات إدارية وتعاقبية من أجل الاداء الفعال لمهامها ،

(ز) أداء المهام الأخرى للأمانة المحددة في الاتفاقية وفي أي مسن
بروتوكولاتها وأي مهام أخرى يحددها مؤتمر الأطراف .

٢ - يهي مؤتمر الأطراف ، في دورته الأولى ، أمانة دائمة ويتخذ الترتيبات
اللازمة لممارستها عملها .

المادة ٩

الهيئة الفرعية للمشورة العلمية والتكنولوجية

١ - تنشأ بموجب هذا هيئة فرعية للمشورة العلمية والتكنولوجية لتزود مؤتمر
الأطراف ، حسبما يكون ملائما ، وهيئاته الفرعية الأخرى ، بالمعلومات والمشورة
في الوقت المناسب بشأن المسائل العلمية والتكنولوجية المتعلقة بالاتفاقية .
ويكون باب الاشتراك في هذه الهيئة مفتوحا أمام جميع الأطراف ، وتكون
متعددة التخصصات . وتضم ممثلين للحكومات ذوي كفاءة في مجال الخبرة ذي
الملة . وتقدم الهيئة تقارير بانتظام إلى مؤتمر الأطراف بشأن جميع
جوانب أعمالها .

٢ - تقوم هذه الهيئة ، بتوجيه من مؤتمر الاطراف وبالاتماعة بالهيئات الدولية المختصة القائمة ، بما يلي :

(أ) إعداد تقييمات عن حالة المعارف العلمية فيما يتعلق بتفسير المناخ وأشاره ،

(ب) إعداد تقييمات علمية عن آثار التدابير المتخذة تنفيذا للاتفاقية ،

(ج) تحديد التكنولوجيات والدراية التي تنتم بالابتكار والكفاءة والحداثة ، وإسداء المشورة بشأن سبل ووسائل تعزيز تطوير و/أو نقل تلك التكنولوجيات ،

(د) إسداء المشورة بشأن البرامج العلمية والتعاون الدولي لسي البحث والتطوير المتمثلين بتغير المناخ وبشأن سبل ووسائل دعم بناء القدرة الذاتية في البلدان النامية ،

(هـ) الرد على الأسئلة العلمية والتكنولوجية والخامة بالمنهجية التي قد يوجهها إلى الهيئة مؤتمر الاطراف وهيئاته الفرعية .

٣ - يجوز لمؤتمر الاطراف أن يوضح وظائف واختصاصات هذه الهيئة بمزيد من التفصيل .

المادة ١٠

الهيئة الفرعية للتنفيذ

١ - تنشأ بموجب هذا هيئة فرعية للتنفيذ لتساعد مؤتمر الاطراف في تقييم واستعراض التنفيذ الفعال للاتفاقية . ويكون باب الاشتراك في هذه الهيئة مفتوحا أمام جميع الاطراف وتضم ممثلين للحكومات خبراء في المسائل المتعلقة بتغير المناخ . وتقدم الهيئة تقارير بانتظام إلى مؤتمر الاطراف بشأن جميع جوانب أعمالها .

٢ - تقوم هذه الهيئة ، بتوجيه من مؤتمر الاطراف ، بما يلي :

(أ) النظر في المعلومات المبلغة وفقا للفقرة ١ من المادة ١٣ ، لتقييم الاثر العام الإجمالي للخطوات التي اتخذها الاطراف في ضوء آخر التقييمات العلمية بشأن تغير المناخ ؛

(ب) النظر في المعلومات المبلغة وفقا للفقرة ٢ من المادة ١٣ ، بغية مساعدة مؤتمر الاطراف على إجراء الاستعراضات المطلوبة بموجب الفقرة ٢ (د) من المادة ٤ ؛

(ج) مساعدة مؤتمر الاطراف ، حسبما يكون ملائما ، في إعداد قراراته وتنفيذها .

المادة ١١

الالية المالية

١ - تحدد بموجب هذا آلية لتوفير الموارد المالية ، كمنحة أو على أساس تساهلي ، بما في ذلك الموارد اللازمة لنقل التكنولوجيا . وتعمل الالية المالية تحت إرشاد مؤتمر الاطراف وتكون مسؤولة أمام هذا المؤتمر الذي يقرر سياساتها وأولوياتها البرنامجية ومعايير الاهلية المتعلقة بهذه الاتفاقية . ويعهد بتشغيلها إلى كيان واحد أو أكثر من الكيانات الدولية القائمة .

٢ - تمثل جميع الاطراف تمثيلا عادلا ومتوازنا في الالية المالية ضمن نظام شفاف لإدارة شؤونها .

٣ - يتفق مؤتمر الاطراف والكيان أو الكيانات التي يعهد إليها بتشغيل الالية المالية على ترتيبات لإنفاذ الفقرتين الواردتين أعلاه ، ويشمل ذلك ما يلي :

(أ) طرائق لضمان كون المشاريع الممولة لتناول تغير المناخ متفقتة مع السياسات ، والأولويات البرنامجية ، ومعايير الاهلية التي يحددها مؤتمر الاطراف ؛

(ب) طرائق يجوز بموجبها إعادة النظر في قرار تمويل معين على ضوء هذه السياسات ، والاولويات البرنامجية ، ومعايير الاهلية ،

(ج) تقديم الكيان أو الكيانات تقارير منتظمة إلى مؤتمر الاطراف بشأن عمليات التمويل التي تقوم بها ، مما يتفق مع اقتضاء المساءلة المبين في الفقرة ١ أعلاه ،

(د) القيام ، على نحو قابل للتنبؤ والتعيين ، بتحديد مبالغ التمويل اللازمة والمتوافرة لتنفيذ هذه الاتفاقية وتحديد الشروط التي بموجبها يعاد النظر في ذلك المبلغ دوريا .

٤ - يتخذ مؤتمر الاطراف ترتيبات لتنفيذ الاحكام المذكورة أعلاه في دورته الاولى ، مستعرضا ومراعيا الترتيبات المؤقتة المشار إليها في الفقرة ٣ من المادة ٢١ ، ويقرر إن كانت هذه الترتيبات المؤقتة ستستمر . وفي غضون أربع سنوات بعد ذلك ، يقوم مؤتمر الاطراف باستعراض الآلية المالية واتخاذ التدابير المناسبة .

٥ - للبلدان المتقدمة النمو الاطراف أيضا أن تقدم الموارد المالية المتعلقة بتنفيذ الاتفاقية والبلدان النامية الاطراف أن تستفيد من هذه الموارد ، من خلال قنوات ثنائية وإقليمية وقنوات أخرى متعددة الاطراف .

المادة ١٣

إبلاغ المعلومات المتعلقة بالتنفيذ

١ - وفقا للفقرة ١ من المادة ٤ ، يقوم كل طرف بإبلاغ مؤتمر الاطراف ، عن طريق الامانة ، بمناصر المعلومات التالية :

(١) قائمة وطنية تحصر الانبعاثات البشرية المنع من مصادر جميع غازات الدفيئة التي لا يحكمها بروتوكول مونتريال . وإزالة هذه الغازات بواسطة الممارف ، بقدر ما تسمح به طاقاته ، وذلك باستخدام منهجيات متماثلة يروجها ويتفق عليها مؤتمر الاطراف ،

(ب) عرض عام للتدابير التي اتخذتها الطرف أو يتوخى اتخاذها لتنفيذ الاتفاقية ،

(ج) أي معلومات أخرى يرى الطرف أنها ذات صلة بتحقيق هذه الاتفاقية وأن من المناسب إدراجها في بلاغه ، بما في ذلك ، إن أمكن ذلك عمليا ، مواد ذات صلة بحسابات الاتجاهات العالمية للانبعاشات .

٢ - يقوم كل بلد متقدم النمو طرف وكل طرف آخر من الأطراف المدرجين فسي المرفق الأول بإدراج عناصر المعلومات التالية في بلاغه :

(١) عرض مفصل للسياسات والتدابير التي اعتمدها لتنفيذ التزاماته بموجب الفقرتين ٢ (١) و ٢ (ب) من المادة ٤ ،

(ب) تقدير محدد للأثار التي تنتجم عن السياسات والتدابير المشار إليها في الفقرة الفرعية (١) أعلاه مباشرة بالنسبة إلى انبعاشات غازات الدفيئة البشرية المنع من مصادره هو وإزالتها بواسطة ممارفه خلال الفترة المشار إليها في الفقرة ٢ (١) من المادة ٤ .

٣ - بالإضافة إلى ذلك ، يقوم كل بلد متقدم النمو طرف وكل طرف متقدم النمو آخر من الأطراف المدرجين في المرفق الثاني بإدراج تفاصيل التدابير المتخذة وفقا للفقرات ٢ و ٤ و ٥ من المادة ٤ .

٤ - للبلدان النامية الأطراف أن تقترح ، على أساس طوعي ، مشاريع للتمويل ، بما في ذلك التكنولوجيات أو المواد أو المعدات أو التقنيات أو الممارسات المحددة التي ستلزم لتنفيذ هذه المشاريع ، مع إعطاء تقدير ، إن أمكن ، لجميع التكاليف الإضافية وللتخفيضات في انبعاشات غازات الدفيئة وإزالة المزيد من هذه الغازات ، وكذلك تقدير للمنافع الناتجة عن ذلك .

٥ - يقدم كل بلد متقدم النمو طرف وكل طرف آخر من الأطراف المدرجين فسي المرفق الأول بلاغه الأولي في غضون ستة أشهر من بدء نفاذ الاتفاقية بالنسبة إلى ذلك الطرف . ويقدم كل طرف غير مدرج في ذلك المرفق بلاغه الأولي في غضون ثلاث سنوات من بدء نفاذ الاتفاقية بالنسبة إلى ذلك الطرف ، أو من تاريخ توفر

الموارد المالية وفقا للفقرة ٣ من المادة ٤ . ويجوز للطرفين الذين هم من اقل البلدان نموا ان يقدموا بلاغهم الاولي في الوقت الذي يرونه مناسباً . ويحدد مؤتمر الاطراف تواتر تقديم البلاغات بعد ذلك من جانب جميع الاطراف ، واضعا في اعتباره المواعيد المختلفة المبينة في هذه الفقرة .

٦ - تحمل الامانة ، في اقرب وقت ممكن ، المعلومات التي يبلغها الاطراف بموجب هذه المادة ، إلى مؤتمر الاطراف وأي هيئات فرعية معنية . وإذا اقتضى الامر ، يقوم مؤتمر الاطراف بالنظر مرة أخرى في اجراءات إبلاغ عن المعلومات .

٧ - يقوم مؤتمر الاطراف ، من أول دورة له ، بالترتيب لتوفير الدعم الفني والمالي للبلدان النامية الاطراف ، حسب الطلب ، في مجال تجميع المعلومات وإبلاغها بموجب هذه المادة ، وفي تعيين الاحتياجات الفنية والمالية المرتبطة بالمشاريع المقترحة وتدابير المتابعة بموجب المادة ٤ . ويجوز تقديم هذا الدعم من قبل أطراف آخرين ، ومنظمات دولية مختصة والامانة ، حسبما يكون ملائماً .

٨ - يجوز لأي مجموعة من الاطراف ، رهنا بالمبادئ التوجيهية التي يمتد بها مؤتمر الاطراف ورهنا بتقديم إشعار مسبق إلى مؤتمر الاطراف ، أن تقدم بلاغاً مشتركاً للوفاء بالتزاماتها بموجب هذه المادة ، شريطة أن يشمل هذا البلاغ معلومات بشأن وفاء كل طرف من هؤلاء الاطراف بالتزامات التي يتحملها بمفرده بموجب الاتفاقية .

٩ - المعلومات التي تتلقاها الامانة ويمفها احد الاطراف بانها سرية ، وفقا للمعايير التي سيحددها مؤتمر الاطراف ، تقوم الامانة العامة بوضعها بشكل مجاميع لحماية طابعها السري قبل إتاحتها لأي هيئة من الهيئات المعنية بإبلاغ المعلومات واستعراضها .

١٠ - رهنا باحكام الفقرة ٩ اعلاه ، ومع عدم الإخلال بقدره أي طرف على نشر بلاغه في أي وقت ، تتيح الامانة للجمهور البلاغات المقدمة من الاطراف بموجب هذه المادة في الوقت الذي تقدم فيه إلى مؤتمر الاطراف .

حل المسائل المتعلقة بالتنفيذ

ينظر مؤتمر الأطراف ، في دورته الأولى ، في إنشاء عملية استشارية متعددة الأطراف ، تتاح للأطراف بناء على طلبها ، وذلك لحل المسائل المتعلقة بتنفيذ الاتفاقية .

تسوية المنازعات

١ - في حالة حدوث نزاع بين أي طرفين أو أكثر بشأن تفسير أو تطبيق الاتفاقية ، يسعى الأطراف المعنيون إلى تسوية النزاع عن طريق التفاوض أو بساي طريقة سلمية أخرى يختارونها .

٢ - عند التصديق على الاتفاقية أو قبولها أو الموافقة عليها أو الانضمام إليها ، أو في أي وقت بعد ذلك ، يجوز لأي طرف لا يكون منظمة إقليمية للتكامل الاقتصادي أن يعلن في مك خطي يقدم إلى الوديع أنه يقر بما يلي ، بوصفه ملزماً بحكم إعلان ذلك فيما يتعلق بأي نزاع بشأن تفسير أو تطبيق الاتفاقية ، إزاء أي طرف يقبل ذات الالتزام ، ودون حاجة إلى اتفاق خاص :

(أ) عرض النزاع على محكمة العدل الدولية ، و/أو

(ب) التحكيم وفقاً لإجراءات يعتمدها مؤتمر الأطراف ، بأسرع ما يمكن عملياً ، في مرفق بشأن التحكيم .

ويجوز للطرف الذي يكون منظمة إقليمية للتكامل الاقتصادي أن يصدر إعلاناً له ذات الأثر فيما يتعلق بالتحكيم وفقاً لإجراءات المشار إليها في الفقرة الفرعية (ب) أعلاه .

٣ - يظل الإعلان الصادر بموجب الفقرة ٢ أعلاه سارياً إلى أن تنقضي فترة

سريانه وفقا لاحكامه او بعد انقضاء ثلاثة اشهر من ايداع إشعار خطي بنقعه لدى
الوديع .

٤ - لا يؤثر إصدار إعلان جديد أو إشعار بالنقض أو انقضاء فترة سريان
الإعلان ، بأي وسيلة من الوسائل ، في الإجراءات التي تكون قيد النظر أمام
محكمة العدل الدولية أو هيئة التحكيم ، ما لم يتفق طرفا النزاع على خلاف
ذلك .

٥ - رهنا بتنفيذ الفقرة ٣ أعلاه ، إذا حدث بعد انقضاء اثني عشر شهرا على
إخطار طرف لآخر بان هناك نزاعا قائما بينهما ، إن لم يتمكن الطرفان المعنيان
من تسوية نزاعهما بالوسائل المذكورة في الفقرة ١ أعلاه ، يعرض النزاع
للتوفيق ، بناء على طلب أي من الأطراف في النزاع .

٦ - تنشأ لجنة للتوفيق بناء على طلب طرف من الأطراف في النزاع . وتتألف
اللجنة من عدد متساو من الأعضاء يعينهم كل من الأطراف المعنيين ومن رئيس يشترك
في اختياره الأعضاء المعينون من قبل كل طرف . وتصدر اللجنة قرارا بتوصية
ينظر فيها الأطراف بحسن نية .

٧ - يعتمد مؤتمر الأطراف إجراءات إضافية متعلقة بالتوفيق ، بأسرع ما يمكن
عمليا ، في مرفق بشأن التوفيق .

٨ - تسري أحكام هذه المادة على أي مك قانوني ذي صلة قد يعتمده مؤتمر
الأطراف ، ما لم ينص المك على خلاف ذلك .

المادة ١٥

تعديل الاتفاقية

١ - يجوز لأي طرف أن يقترح تعديلات للاتفاقية .

٢ - تعتمد تعديلات هذه الاتفاقية في دورة عادية لمؤتمر الأطراف . وتبلغ
الامانة الأطراف بنص أي تعديل مقترح للاتفاقية قبل انعقاد الاجتماع الذي يقترح

اعتماده فيه بمتة أشهر على الأقل . وتقوم الامانة أيضا بإبلاغ التعديلات المقترحة إلى موقعي الاتفاقية ، وللعلم إلى الوديع .

٣ - يبذل الاطراف قصارى جهدهم للتوصل إلى اتفاق على أي تعديل مقترح للاتفاقية بتوافق الآراء . فإذا استنفدت كل الجهود الرامية إلى تحقيق توافق للآراء دون التوصل إلى اتفاق ، يعتمد كملان أخير التعديل بأغلبية ثلاثة أرباع أصوات الاطراف الحاضرين والمموتين في الاجتماع . وتبلغ الامانة التعديل المعتمد إلى الوديع ، الذي يقوم بتمميمه على جميع الاطراف لقبوله .

٤ - تودع مكوك القبول التي تتعلق بالتعديل لدى الوديع . ويبدأ نفاذ التعديل المعتمد وفقا للفقرة ٣ اعلاه بالنسبة إلى الاطراف الذين قبلوا التعديل ، في اليوم التسعين من تاريخ استلام الوديع مك قبوله من جانب ما لا يقل عن ثلاثة أرباع عدد الاطراف في الاتفاقية .

٥ - يبدأ نفاذ التعديلات بالنسبة إلى أي طرف آخر في اليوم التسعين من تاريخ ايداع هذا الطرف مك قبوله للتعديل المذكور لدى الوديع .

٦ - لأغراض هذه المادة ، تعني عبارة "الاطراف الحاضرين والمموتين" الاطراف الحاضرين الذين يدلون بأصواتهم ملبا أو ايجابا .

المادة ١٦

اعتماد وتعديل مرفقات الاتفاقية

١ - تشكل مرفقات الاتفاقية جزءا لا يتجزأ منها ، وتشكل أي إشارة إلى الاتفاقية إشارة في ذات الوقت إلى أي من مرفقاتها ، ما لم ينص مراحة على غير ذلك ، ودون المسام بأحكام الفقرتين ٢ (ب) و ٧ من المادة ١٤ ، تقتصر هذه المرفقات على القوائم والنماذج وأي مادة أخرى ذات طابع وصفي لها صبغة علمية أو فنية أو اجرائية أو إدارية .

٢ - تقترح مرفقات الاتفاقية وتعتمد وفقا للإجراء المنصوص عليه في الفقرات ٢ و ٣ و ٤ من المادة ١٥ .

٣ - يبدأ نفاذ المرفقات المعتمدة وفقا للفقرة ٢ اعلاه بالنسبة إلى جميع اطراف الاتفاقية بعد ستة أشهر من تاريخ إبلاغ الوديع هؤلاء الاطراف باعتماد المرفق ، باستثناء الاطراف الذين يخطرون الوديع خطيا ، في خلال تلك الفترة بعدم قبولهم للمرفق . ويبدأ نفاذ المرفق بالنسبة إلى الاطراف الذين يسحبون اشعارهم بعدم القبول في اليوم التامين من تاريخ استلام الوديع لحسب هذا الإشعار .

٤ - يخضع اقتراح واعتماد وبدء نفاذ أي تعديل لمرفقات الاتفاقية لسذات الاجراء المتعلق باقتراح واعتماد وبدء نفاذ مرفقات الاتفاقية ، وفقا للفقرتين ٣ و ٢ اعلاه .

٥ - إذا انطوى اعتماد مرفق أو تعديل لمرفق على تعديل للاتفاقية ، فلا يبدأ نفاذ ذلك المرفق أو تعديل المرفق إلا عندما يبدأ نفاذ تعديل الاتفاقية .

المادة ١٧

البروتوكولات

١ - يجوز لمؤتمر الاطراف ، في أي دورة عادية ، أن يعتمد بروتوكولات للاتفاقية .

٢ - تبلغ الامانة الاطراف بنسب أي بروتوكول مقترح قبل انعقاد دورة من هذا القبيل بتمة أشهر على الأقل .

٣ - تحدد شروط بدء نفاذ أي بروتوكول بموجب ذلك المك .

٤ - يجوز لاطراف الاتفاقية وخدمهم أن يكونوا اطرافا فسي بروتوكول .

٥ - لاطراف البروتوكول المعنى وخدمهم أن يتخذوا القرارات المتخذة بأي بروتوكول .

المادة ١٨

حق التصويت

١ - يكون لكل طرف من أطراف الاتفاقية صوت واحد ، باستثناء ما تنص عليه الفقرة ٢ أدناه .

٢ - تمارس المنظمات الإقليمية للتكامل الاقتصادي ، في المسائل الداخلة في اختصاصها ، حقها في التصويت بعدد من الأصوات مساو بعدد دولها الأعضاء التي هي أطراف في الاتفاقية . ولا تمارس هذه المنظمة حقها في التصويت إذا مارست أي دولة من دولها الأعضاء حقها ، والعكس بالعكس .

المادة ١٩

الوديع

يكون الأمين العام للأمم المتحدة وديع الاتفاقية والبروتوكولات التي تعتمد وفقا للمادة ١٧ .

المادة ٢٠

التوقيع

يفتح باب التوقيع على هذه الاتفاقية للدول الأعضاء في الأمم المتحدة أو الأعضاء في أي وكالة من الوكالات المتخمة أو الأطراف في النظام الأساسي لمحكمة العدل الدولية وللمنظمات الإقليمية للتكامل الاقتصادي في ريو دي جانيرو أثناء انعقاد مؤتمر الأمم المتحدة المعني بالبيئة والتنمية ، ثم في مقر الأمم المتحدة بنيويورك من ٢٠ حزيران/يونيه ١٩٩٢ إلى ١٩ حزيران/يونيه ١٩٩٣ .

المادة ٢١

ترتيبات مؤقتة

١ - تظطلع الامانة ، التي انشأتها الجمعية العامة للأمم المتحدة في قرارها ٢١٢/٤٥ المؤرخ ٢١ كانون الاول/ديسمبر ١٩٩٠ ، بمهام الامانة المشار إليها في المادة ٨ على نحو مؤقت ، إلى حين انتهاء الدورة الاولى لمؤتمر الاطراف .

٢ - يتعاون رئيس الامانة المؤقتة المشار إليها في الفقرة ١ اعلاه بصورة وثيقة مع الفريق الحكومي الدولي المعنى بتغير المناخ لكي يكفل قدرة هذا الفريق على الاستجابة للحاجة إلى مشورة علمية وفنية موضوعية . ويمكن ايضاً التشاور مع الهيئات العلمية الاخرى ذات الصلة .

٣ - يكون مرفق البيئة العالمية التابع لكل من برنامج الأمم المتحدة الإنمائي وبرنامج الأمم المتحدة للبيئة والبنك الدولي للإنشاء والتنمية ، الكيان الدولي الذي يعهد إليه بتشغيل الآلية المالية المشار إليها في المادة ١١ بصورة مؤقتة . وفي هذا المدد ، يعاد تشكيل هيكل مرفق البيئة العالمية على النحو المناسب وتصبح عضويته عالمية لتمكينه من الوفاء بالمتطلبات الواردة في المادة ١١ .

المادة ٢٢

التمديق أو القبول أو الموافقة أو الانضمام

١ - تخضع هذه الاتفاقية لتمديق الدول والمنظمات الإقليمية للتكامل الاقتصادي أو قبولها أو موافقتها أو انضمامها . ويفتح باب الانضمام إلى الاتفاقية من اليوم التالي لتاريخ إقفال باب التوقيع عليها . وتودع موك التمهيد سبق أو القبول أو الموافقة أو الانضمام لدى الوديع .

٢ - تكون أي منظمة إقليمية للتكامل الاقتصادي تتيح طرفاً في الاتفاقية ، دون أن يكون أي من دولها الاعضاء طرفاً فيها ، ملزمة بجميع الالتزامات التي توجبها الاتفاقية/أما في حالة المنظمات التي يكون عضو واحد أو أكثر من دولها الاعضاء

طرفا في الاتفاقية ، فيتعين على المنظمة ودولها الاعضاء البت في
مؤوليات كل منها عن أداء التزاماتها بموجب الاتفاقية . وفي هذه
الحالات ، لا يحق للمنظمة والدول الاعضاء ممارسة حقوقها بموجب هذه الاتفاقية في
وقت واحد .

٢ - تعلن المنظمات الإقليمية للتكامل الاقتصادي ، في مكوك تصديقها أو
قبولها أو موافقتها أو انضمامها ، مدى اختصاصها بالمسائل التي تحكمها
الاتفاقية ، وتخطر هذه المنظمات أيضا الوديع ، الذي يخطر بدوره الاطراف ، بأي
تعديل ملموس لمدى اختصاصها .

المادة ٢٣

بدء النفاذ

١ - يبدأ نفاذ هذه الاتفاقية في اليوم التسعين من تاريخ ايداع المك
الخمسين للتصديق أو القبول أو الموافقة أو الانضمام .

٢ - يبدأ نفاذ الاتفاقية ، بالنسبة لكل دولة أو منظمة إقليمية للتكامل
الاقتصادي تصدق على هذه الاتفاقية أو تقبلها أو توافق عليها أو تنعم إليها بعد
إيداع المك الخمسين للتصديق أو القبول أو الموافقة أو الانضمام ، في اليوم
التسعين من تاريخ ايداع هذه الدولة أو هذه المنظمة الإقليمية للتكامل
الاقتصادي لمك تصديقها أو قبولها أو موافقتها أو انضمامها .

٣ - لاغراض الفقرتين ١ و ٢ أعلاه ، لا يعد أي مك تودعه أي منظمة إقليمية
للتكامل الاقتصادي اضافة للمكوك المودعة من جانب الدول الاعضاء في هذه
المنظمة .

المادة ٢٤

التحفظات

لا يجوز إبداء تحفظات على الاتفاقية .

المادة ٢٥

الانسحاب

- ١ - يجوز لأي طرف أن ينسحب من الاتفاقية ، بإشعار خطي يوجه إلى الوديع ، في أي وقت بعد ثلاث سنوات من تاريخ بدء نفاذ الاتفاقية بالنسبة إلى ذلك الطرف .
- ٢ - يسري أي انسحاب على هذا الوجه لدى انقضاء سنة واحدة من تاريخ استلام الوديع لإشعار الانسحاب ، أو في أي تاريخ لاحق لذلك يحدّد في إشعار الانسحاب المذكور .
- ٣ - يعتبر أي طرف ينسحب من الاتفاقية منسحباً أيضاً من أي بروتوكول يكون طرفاً فيه .

المادة ٢٦

حجية النموذج

- يودع أصل هذه الاتفاقية ، التي تتساوى في الحجية نصوصها بالاسبانية والانكليزية والروسية والميمنية والمغربية والفرنسية ، لدى الأمين العام للأمم المتحدة .
- وشهادة على ذلك ، ذيل الموقعون أدناه ، المفوضون حسب الأصول ، هذه الاتفاقية بتوقيعاتهم .

حررت في نيويورك في اليوم التاسع من شهر أيار/مايو من عام ١٩٩٢ .

المرفق الاول

- الاتحاد الاوروبي
- (١) الاتحاد الروسي
- اسبانيا
- استراليا
- (١) استونيا
- المانيا
- (١) اوكرانيا
- ايرلندا
- ايسلندا
- ايطاليا
- البرتغال
- بلجيكا
- (١) بلغاريا
- (١) بولندا
- (١) بيلاروس
- تركيا
- (١) تشيكوملوفاكيا
- الدانمرك
- (١) رومانيا
- السويد
- سويسرا
- فرنسا
- فنلندا
- كندا
- (١) لاتفيا
- لكسمبرغ
- (١) ليتوانيا
- المملكة المتحدة لبريطانيا العظمى وايرلندا الشمالية
- النرويج
- النمسا

المرفق الاول (تابع)

نيوزيلندا
هنغاريا (١)
هولندا
الولايات المتحدة الامريكية
اليابان
اليونان

(١) بلدان تمر بعملية انتقال إلى اقتصاد سوقى .

المرفق الثاني

الاتحاد الاوروبي

اسبانيا

استراليا

المانيا

ايرلندا

ايلندا

ايطاليا

البرتغال

بلجيكا

تركيا

الدانمرك

الحويد

مويسرا

فرنسا

فنلندا

كندا

لكمبيرغ

المملكة المتحدة لبريطانيا العظمى وايرلندا الشمالية

النرويج

النمسا

نيوزيلندا

هولندا

الولايات المتحدة الامريكية

اليابان

اليونان