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PUBLIC HEARING ON

CLIMATE CHANGE
AND
SMALL ISLAND STATES

LUXEMBOURG, 25 SEPTEMBER 1996

External Economic Relations Series

W-15

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FOREWORD

The ACP – EU Joint Assembly has expressed in different resolutions its concern for the possible repercussions of climate change on Small Island States. At its 22nd session in Windhoek (Namibia), 19 – 22 March 1996, the Joint Assembly adopted a resolution in which it instructed its Co – Presidents to organise at its 23rd session a hearing on the subject of climate change and the resultant environmental and health problems which are specifically associated with Small Island States. The Joint Assembly further called for the creation of a Working Group to assess the impact of climate change on the Small Island developing countries of the ACP and to propose strategies for heightening international awareness of the dangers caused by climate change to their fragile eco – systems and economies.

The present document contains the various contributions made at the hearing and could serve as a background document for the Working Group and other interested parties.

DIRECTORATE GENERAL FOR RESEARCH

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Opening remarks by Lord Plumb, MEP Co – President of the ACP – EU Joint Assembly

This morning this Assembly will discuss a subject that affects us all, whether we are living in an European industrialised city, in the desert of Africa, or on a small atoll in the middle of the ocean.

Climate Change is one of the main and, at the same time, most elusive environmental and development problems with which the world has to cope. Global warming will not necessarily lead to a disaster in the short term, its projected effects will be felt throughout the world over decades.

Scientists, working together in the International Panel on Climate Change (IPCC) have, in their Second Assessment Report in December 1995, confirmed that "**the balance of evidence suggests a discernable human influence on the global climate**". The IPCC expects that without specific policies to mitigate climate change, the average global surface temperature compared to 1990 is projected to increase by about 2°C; average sea – level is projected to rise by about 50 centimetres above present levels by the year 2100.

The IPCC notes as well that the projected changes in climate will result in significant, often adverse, impacts on many ecological systems and socio – economic sectors, including food supply and water resources, and on human health. In some cases, the impacts are potentially irreversible. Developing countries and Small Island States are more vulnerable to climate change.

It is precisely this analysis by the IPCC that brings the issue of climate change to our agenda. In this Assembly the representatives of many of the countries most vulnerable to the impact of climate change regularly exchange views with representatives of a major industrialised block – the European Union.

At the United Nations the Small Island States united in the debate on climate change. In 1990 they formed the **Alliance of Small Island States (AOSIS)**, currently representing 42 island states and overseas territories. "We are the canary in the coalmine" said once the Minister of the Environment in Barbados, Senator Harcourt Lewis. "We are the early warning system of global environmental problems that require urgent attention."

The representatives of the Small Island States and certain European Parliamentarians in this Assembly have taken the initiative to hold this hearing. Its aim is not only to draw attention to serious problems that small islands will face but also, as the canary in the coalmine, to show that the North will also be affected.

It was emphasised in the ministerial declaration that the principle of equity and of common but differentiated responsibilities, according to capability, applies to all signatories of the Climate Change Framework Convention. The industrialised countries have committed themselves to taking the lead in modifying longer – term trends in emissions at source, and to the removal by sinking of greenhouse gasses. The industrialised countries are further committed to supporting the developing countries, through specific timely action in their national priorities for sustainable development.

I hope that this hearing will encourage all our countries to implement their commitments in this regard in the framework of the Lomé Convention.

Today we have a selected group of speakers who are the leading world experts in the field of climate change, many of whom have travelled a great distance to be present today. I would like to welcome them all here in Luxembourg.

Opening statement by H.E. Michael I. King Ambassador of Barbados on behalf of the ACP Group

Mr Co – President, Members of the Joint Assembly, Excellencies, Invited Guests, Ladies and Gentlemen, it is indeed with great pleasure and deep satisfaction that I observe that this Public Hearing on Climate Change and Small Island States has become a reality.

This matter was first drawn to the attention of the Joint Assembly in July 1994. It was then, just three months after the United Nations Global Conference on the Sustainable Development of Small Island Developing States was held in Bridgetown, Barbados, and two years after the UN Conference on the Environment and Development was held in Rio de Janeiro; and it was at the Barbados Conference that the peculiar vulnerability of SIDS to climate change and sea – level rise was universally recognised.

Our efforts here in the Joint Assembly, coupled with the recent establishment of the ACP Subcommittee on Environment, Fisheries and Tropical Timber now provide the impetus for the ACP – EU partners to play a more significant and dynamic role in matters related to climate change. Indeed, it is hoped that future cooperation in this area will be a complement to the work being undertaken in the UN system, especially in those regions where the EU countries have special historical relationships.

You may recall that at the Second Session of the Conference of the Parties to the UN Framework Convention on Climate Change, held in Geneva last July, further calls were made for the creation of a legally binding agreement in time for the Third Conference of the Parties. The desired provisions should include a programme geared towards the phasing out of CO₂ emissions with the target years of 2005, 2010 and 2020.

While it is incumbent upon both the Small Island States of the ACP Group and the member states of the EU to limit harmful CO₂ emissions, there is a more pressing need for the developed countries of the EU to meet the proposed targets.

The decision taken to create a Working Group of the Joint Assembly on Climate Change now provides us with the opportunity to consider the views from both sides. The preliminary step in this dialogue is today's hearing to which experts from the affected regions and the major international institutions involved in the critical study of climate change have been invited.

This session would not have been possible without the persistent efforts of Mrs Maartje Van Putten, the support of the Secretariat of the European Parliament and the invaluable contributions from the invited experts.

I sincerely hope that after listening to today's presentations, the issue of climate change in Small Island States will receive the level of attention that the subject deserves.

Introduction by Mrs Maartje van Putten, MEP
Member of the ACP – EU Joint Assembly

Effective prevention of climate change requires global cooperation. So I am very happy that this hearing, with representatives from both the ACP – countries and the EU, is finally taking place. My expectations of this hearing are high.

Although climate change is a global phenomenon, the effects of it are obviously not identical for each and every region in the world. Without losing sight of the wider scale of the problem, it is necessary that some regions should get special attention to begin with. And as Lord Plumb said 'the Small Island States are the canaries of the mines'. Coming from the Netherlands, a country below sea – level with its famous dikes, it is totally clear to me why the Small Island States are at the forefront of the debate.

Little imagination is needed to foresee the potential impacts of climate change for those islands, but also for coastal zones in general. In the long term, their very existence. Cyclones are becoming more frequent and more violent and their incidence, or their pattern, is closely correlated to the rise of greenhouse gas emissions and the growth in GDP, as was pointed out at the Geneva meeting by the global Dynamics Institute based in Rome. Small Island States are already experiencing repeated and sometimes major damage from these global climate related storms and weather trends. The short – term effects of a rise in sea – level or changes in storm patterns could, for example, be the erosion of shores and associated habitats, increased coastal flooding etc. In many states, settlements, industrial complexes, ports and tourist resorts are located near the sea. These countries are therefore extremely vulnerable, not to mention the effects of higher temperatures on biodiversity, agriculture, ocean fisheries and human health.

Global warming also has dangerous effects in other places in the world. I understand that there is methane gas below the icecap for instance in the North of Canada and Russia. I visited the North – west Territories in the far North of Canada last year. The Inuit, the first nation people in this federal state were already alarmed by the decrease in the density of the icecap on the lakes. When this gas breaks through the ice, the effects will be disastrous. Moreover, the icecap is like a mirror for the sun. The heat of the sun is reflected by the icecap. In other words: break the mirror and the heat will be retained.

For those who do not yet know: forests can walk. When the temperature changes, as it has done during the history of the globe, forests start growing in other zones. But.. this change needs time. The migration of the forests can't keep up with temperature change. The forests will die and already fires are occurring more frequently in Canada and Russia.

In 1990, the year of the so – called Toronto target, emissions were already 25% higher than during the pre – industrial era at the beginning of the 1900's. If we really want to meet this target, we should immediately cut the human source emissions by 60%.

In July 1996, during the second session of the conference of parties to the United Nations Framework Convention on Climate Change, the second assessment report of the IPCC was endorsed. This is or should be, of vital importance for the future of climate policies and for future decision making on measures regarding climate change.

The IPCC report concluded that: "The balance of evidence suggests a discernable human influence on global climate". Although the precautionary principle is in itself reason enough to take action, this conclusion of the international community should encourage us to take decisive measures in the very near future.

WHAT IS NEEDED:

Global fossil fuel consumption has to be radically reduced towards targets which strongly limit further damage. Also, the implementation of these targets must be shared equitably between all the people that are at risk.

As a participant in the decision – making process and as a member of the EP, I feel that it is my responsibility to ask for progress. I therefore regret the incapacity of the European decision – makers to install an EU – wide CO₂ tax. Another important policy direction is the development of an energy policy which focuses on sustainable energy both for the so – called North and the South. The developing South is being drawn into further dependency on the unsustainable Northern economies. In 1993, the OECD – countries met in Paris and conceded that the biomass based communities, such as those in Africa, are more sustainable than the fossil fuel dependent economies of the North.

We must avoid failure at Kyoto in Japan next year when all parties sit around the table again. In fact, we remain hostages to the US standpoint, which is: Comprehensive agreement for all countries or nothing. The danger is that we only have 15 months to Kyoto, but some people are hoping the AOSIS protocol can be saved. The problem is that AOSIS only refers to industrial countries, which in itself is understandable, but which the US will veto all over again.

The real question is how can we overcome this veto or deadlock. The answer is that all countries must be involved. The price of all countries being involved is the equitable distribution of the remaining fossil fuel consumption, meaning that consumption should be more in proportion to people or populations. This is not communist talk of the past. Then, equity was for the sake of equity. But now we are talking about equity for survival.

We are close to a situation where the South rightfully puts forward compensation claims for damages caused by the impact of climate change. Two thirds of the world's population have 6% of the GDP whilst the remaining third has 94% of GDP. So the consumption of one third of the world creates the majority of the emission problem. If that is not worked out it will mean that the small group of rich countries will create the problem for everybody else. Crazy, it is the poor who are forced into subsidising the existence of the climate problem. Did we not proclaim that

subsidies should be abolished? But at the moment it seems that we are more prepared to abolish the people instead.

Presentation by Dr Leonard A. Nurse

Director, Coastal Zone Management Unit, Barbados

THE VULNERABILITY OF SMALL ISLAND DEVELOPING STATES TO THE IMPACTS OF PROJECTED CLIMATE CHANGE

While the global scientific community acknowledges that various uncertainties exist in current climate change model projections, THERE IS COMMON AGREEMENT THAT SMALL ISLAND DEVELOPING STATES ARE THE MOST VULNERABLE TO CLIMATE CHANGE IMPACTS.

CRITICAL ATTRIBUTES OF MOST SIDS

- Limited physical size;
- Limited natural resources;
- Generally low – lying;
- Heavily dependent on coastal and marine resources;
- Generally high population densities, especially along coasts;
- Limited availability of (and access to) capital;
- Generally weak infrastructure;
- Scarcity of scientific and technical skills.

VULNERABILITY INDEX FOR DIFFERENT CATEGORIES OF COUNTRIES

Highest vulnerability is indicated by values closest to 1.

COUNTRY GROUPS	INDEX
All Countries	0.376
Developed	0.208
SIDS	0.590
Other Island Developing Countries	0.539

Note: The index is calculated as the average of three variables: export dependence; insularity and remoteness; proneness to natural disasters

Source: IPCC Second Assessment Report, WG111 (1995).

CLIMATE CHANGE IMPACTS AND SIDS

BIOGEOPHYSICAL IMPACTS

- Sea – Level Rise: current best estimates, based on most reliable models, suggest a rate of 5.0 mm yr⁻¹ (range of uncertainty 2.0–9.0 mm yr⁻¹). While slightly lower than 1990 projections, still 2 – 5 times the rate experienced in the last 100 years. Moreover, model projections show that sea level will continue to rise beyond 2100, due to lags in climate response even with assumed stabilization of global GHG emissions.
- Although the response will vary from island to island, SLR of this magnitude would have severe implications for SIDS – particularly very low-lying atolls e.g. Tokelau, Marshall Islands, Tuvalu, Maldives, Kiribati could possibly disappear; major population displacements would be experienced in Micronesia, Palau, Nauru, French Polynesia, Cook Islands and Tonga, among others (IPCC SAR, 1995, WG11).
- SIDS with extensive coastal plains and little highland would also be highly vulnerable e.g. Bahamas, Antigua, Barbados.

COASTAL PROTECTION COSTS FOR SELECTED SIDS

COUNTRY	PROTECTION COST (% of annual GNP)
Anguilla	10.31
Cocos (Keeling Is.)	5.82
Kiribati	18.79
Maldives	34.33
Marshall Islands	7.04
Seychelles	5.51
St. Kitts – Nevis	2.65
Tokelau	11.11
Turks and Caicos	8.10
Tuvalu	14.14

Sources: IPCC First Assessment Report, WG11 (1990);
IPCC Second Assessment Report, WG11 (1995).

Extreme Events: given the limitations of the climate models, it is not possible to state with certainty, at this stage, whether there will be a change in the behaviour (including distribution and tracks) of tropical storms and hurricanes (typhoons/cyclones). However, it is highly probable that an increase in frequency and intensity of these phenomena could occur in a 'warmer world'. Many scientists do in fact support this view (Ryan et al. 1992; Haarsma et al. 1993; Houghton, 1994).

One study (Emanuel, 1987), predicts a 40 – 50% increase in destructive potential of hurricanes under 2 x CO₂.

The catastrophic events (loss of life, property damage, agricultural losses, damage to infrastructure and utilities etc.) associated with recent hurricanes in the Caribbean (e.g. Gilbert, 1988; Hugo, 1989; Luis and Marilyn, 1995) and similar events in the Pacific in the 1990's are unfortunate examples of what could be expected, should an increase in frequency and/or intensity of these systems prove to be a real trend.

SIDS SUFFER DISPROPORTIONATELY FROM SUCH EXTREME EVENTS.

JAMAICA AND HURRICANE GILBERT

- Hurricane made landfall on September 12, 1998.
- Winds of 220 km/hr.
- Total losses = \$US 1.0 billion, or 1/3 of island's annual Gross National Product.
- > 40% of housing stock destroyed.
- Heavy losses in agriculture, tourism, industry, public services and infrastructure.
- Financial consequences were severe: inflation doubled; trade deficit widened from 7% to 39% of GDP (Commonwealth Secretariat, 1991).
- The Jamaican dollar was further devalued as a direct consequence of the battered economy (Clement, 1990).

Coastal Land Loss: with SLR of 0.5 – 1.0m many SIDS (especially atolls and low islands) could experience severe erosion and inundation. It is projected that in the Maldives for example, this would convert some islands to sandbars, and significantly reduce available dry land on larger, more populated islands. In the Marshall Islands, as much as 80% Of all land would be lost. In kiribati, land loss though substantially lower, approx. 12.5% would also be significant (IPCC SAR, 1995, WG 11).

Saline Intrusion and loss of freshwater lens have been identified as critical concerns in SIDS. These effects would have potentially severe consequences for low-lying coral islands (e.g Barbados, Antigua in the C'bean; Nauru, Niue in the Pacific), which are almost completely dependent on ground water sources for potable and irrigation supplies.

The impact is compounded where aquifer recharge and island width decrease (as result of SLR), the effect of which would be a likely reduction in quality and quantity of freshwater (IPCC SAR, 1995, WG 11).

Coral Reefs: critical ecosystems to SIDS:

- (i) nursery/habitat for variety of reef fish;
- (ii) dissipate incident wave energy (natural breakwaters);
- (iii) source of sediment/sand to beaches;
- (iv) recreational attractions e.g scuba diving, snorkelling.

Corals are temperature – sensitive, particularly so where there are departures above 'normal' seasonal maxima. They often respond by 'bleaching' (loss of symbiotic zooxanthellae), as demonstrated by recent episodes in the Caribbean and Pacific (e.g. 1982/83, 1987).

If there is significant increase in H₂O temperature (3 – 4° C) for extended period (> 6 months), considerable mortality is likely.

If temperature increase is lower (1 – 2° C) for limited period, bleached corals may recover, but show reduced growth and reproductive capacity.

While most reefs could cope with projected SLR, elevated H₂O levels, coupled with existing maninduced stresses (e.g. pollution), would be disastrous.

SOCIO – ECONOMIC IMPACTS

IT CAN BE STATED WITH HIGH CONFIDENCE THAT SIDS ARE LIKELY TO EXPERIENCE CONSIDERABLE ECONOMIC, SOCIAL AND CULTURAL DISLOCATION, RELATED TO CLIMATE CHANGE AND SLR.

- **Tourism:** this is a significant sector of economies of most SIDS in Caribbean, Pacific and Indian Ocean. Tourism is the largest contributor to GNP in many SIDS (Antigua – 69%; Bahamas – 53%). The sector earns valuable foreign exchange (e.g. in Maldives – \$US 94.0 million in 1994 = 74% of total foreign exchange earning for that year. Moreover, Tourism generates significant employment in SIDS.
- Climate change and SLR would impact on tourism in many ways, directly and indirectly: beach erosion – ; ecosystem and related amenity degradation; infrastructure damage; diminution in quantity and quality of freshwater supplies etc.

Agriculture: Few specific studies conducted on the impact of climate change on agriculture in SIDS. Little quantification of sensitivities directly related to agriculture. However, those investigations conducted conclude the following:

Generally crop yields would be lower due to reduced solar radiation (resulting from increased cloudiness), higher temperature (shorter growth duration and increased sterility), and water availability (drought and inundation). Salinity intrusion would also reduce soil fertility (IPCC SAR, 1995).

Singh (1994) projects that for Pacific SIDS:

(i) extension of the dry season (by as few as an additional 45 days) would DECREASE maize yields by 30 – 50%, sugar cane by 10 – 35% and taro by 35 – 75%.

(ii) Significantly increased rainfall (50%+) in wet season would INCREASE taro yields by 5 – 15%, but would REDUCE rice yields by 10 – 20 % and maize yields by between 30 – 100%.

Human Health: with an increase in frequency and intensity of extreme weather events (storms, floods etc.), more deaths, injury, infectious diseases (vector and non-vector borne) and psychological disorder would result, especially in the poorest, most vulnerable countries (IPCC SAR, 1995, WG11). Many SIDS fall into this category.

The negative impact of climate change on crop yields, fisheries and food availability in general, could increase the prevalence of malnutrition and hunger, especially in children. Again SIDS would undeniably be a high risk group.

Since many SIDS are likely to experience reductions in available freshwater supplies, there is a high probability that deteriorating sanitary and hygienic conditions would lead to increased proliferation and transmission of infectious diseases.

CASE STUDY

IMPACT OF SLR ON THE MARSHALL ISLANDS

Assumption: Accelerated sea level rise of 1.0m by 2100.

Impacts:

i. 10 – 30% shoreline retreat/erosion.

ii. Dry land loss of 65 hectares (160 acres) out of a total of 202 hectares (500 acres), on most densely populated part of atoll.

iii. Significant increase in frequency of severe floods by wave run up and overtopping; flooding of half of atoll even from normal yearly run up events.

iv. Reduction in size of freshwater lens – critical during periods of drought.

- v. Loss of significant amount of arable land (> 60%) increased dependence on imported foods.
- vi. Coastal protection costs 4 – 6 times current GDP.

Presentation by Mr Donald Stewart

Acting Director of the South Pacific Regional Environment Programme (SPREP)

A Regional Approach to Climate Change

Introduction

1. The Pacific Ocean is the largest geographical feature on earth. It covers about one third of the planet's surface. On my journey here, it took 4 hours to fly from Samoa to New Zealand and another 14 hours from New Zealand to the west coast of the United States – all of it over water – and still I was only half way to Europe.

2. Within the immensity of this great ocean lies an area long known to Europeans in legend and fable as the South Pacific. In fact, this region extends well north of the equator to include the many islands of Micronesia, the high islands of Melanesia in the west and the scattered islands of Polynesia to the east and south.

3. Some 3,000 individual islands are dispersed across the map of the South Pacific. History and the colonial experience have led to their being consolidated into 22 separate political entities. Sixteen of these are today independent nations, the other six still being territories of France, New Zealand and the United States. While most of these islands are tiny, and their populations minuscule by global standards, the combined area of their exclusive economic zones totals a staggering 30 million square kilometres. The geographical uniqueness arising from such factors, plus strong traditional cultures, give rise to circumstances and conditions peculiar to this region and consequently to the need to seek unique solutions to its problems; or, at the very least, to adapt methods tried elsewhere to ensure that they fit into the Pacific context.

4. In 1982, the region's 22 countries and territories combined with Australia, France, New Zealand and the United States to establish the South Pacific Regional Environment Programme – known as SPREP. From small beginnings we have grown into an autonomous, intergovernmental, regional organisation with headquarters in Apia, Western Samoa. Our aim is to promote cooperation in the South Pacific region and to provide assistance in order to protect and improve its environment and to ensure sustainable development for present and future generations. To achieve these, we are guided by an Action Plan which requires us to address several broad areas of environmental concern, but none more critical than Climate Change.

Background

5. Climate change and sea level rise are among the most serious environmental threats in the region. This is because the majority of Pacific peoples live in low-lying coastal areas which are vulnerable to sea-level rise and the adverse effects of climate change. The increased frequency and intensity of storms and cyclones combined with even minor increases in sea level may, at

most, threaten the very existence of countries and, at least, be a significant impediment to sustainable development. As far back as 1988, the South Pacific Forum – the annual gathering of the political leaders of the region's independent states – identified changes in climate and sea levels from global warming as a priority concern requiring urgent action so as to mitigate or reduce its impacts in the region.

6. Since then, considerable effort has gone into raising awareness of climate change issues and into monitoring research developments, developing methodologies for vulnerability assessments, monitoring sea levels and strengthening national capacities to improve understanding of the science, impacts and responses to climate change and sea level rise. This process involves environment officials, planners, meteorologists and the general public. Pacific island countries and territories have also been closely associated with international efforts to address climate change. Reflecting their concern, most SPREP members have ratified the United Nations Framework Convention on Climate Change (UNFCCC).

7 Integrated coastal management (ICM) is being promoted as a means of managing the range of human activities and natural processes which affect coastal systems, including climate change and sea level rise. The development of national capacities to avoid or mitigate coastal degradation and to develop and implement adaptation strategies for climate change and sea level rise will rely greatly upon the development and implementation of ICM approaches relevant to Pacific islands.

SPREP's Climate Change Programme

8. The objective of SPREP's Climate Change Programme is to develop an understanding of, and the capacity to respond to, climate change and sea level rise, particularly through integrated coastal management, in the Pacific region. To achieve this objective the Programme coordinates and implements activities related to the science and the impacts of climate change and the development of viable response options for Pacific island countries. It also provides advice to countries concerning their obligations under, and ongoing development of, the UNFCCC.

Science of climate change

9. The following projects provide the focus for activities within this area of SPREP's Climate Change Programme:

- South Pacific Sea Level and Climate Monitoring Project – which involves monitoring and measuring sea level rise and climate change parameters and training of personnel from member governments on the results in order to develop appropriate policies, with financial assistance from Australia, a network of 12 satellite – linked sea level measuring stations has been installed across the region;
- Atmospheric Radiation Measurement (ARM) Project for the tropical Western Pacific which involves the monitoring and assessment of in – coming and out – going solar radiation and

studies the role of different cloud types in global warming, this project is assisted by the United States;

- Climate Monitoring Project – which involves upgrading meteorological instrumentation, training and capacity building in national meteorological offices of the region;
- Enhancing Meteorological Capacity – which involves training, improving data archiving systems and instrumentation, strengthening regional co-operation between Directors of Meteorology and increasing collaboration with the World Meteorological Organization (WMO);
- Other collaborative work involving UNESCO's Intergovernmental Oceanographic Commission (IOC), WMO, the Intergovernmental Panel on Climate Change (IPCC) and other South Pacific regional institutions such as the South Pacific Applied Geoscience Commission.

Impacts of climate change

10. In order to improve understanding of the impacts of climate change and sea level rise in the region, the following activities are being or have been undertaken:

- SPREP/UNEP Preparatory Missions – which focused on the impacts of climate change and sea level rise on the socio-economic, cultural, and traditional sectors in 9 countries; these studies laid the foundation for improving understanding of and response to these issues,.
- National Vulnerability Assessment Studies – which closely examined the natural vulnerabilities and resilience of the islands, studies were conducted in 9 countries with financial assistance from Australia, France, Japan and the United States, they also attempted to trial the IPCC's Common Methodology and its Guidelines for Impacts and Adaptation in the region with a view to modifying them in developing a regional framework methodology applicable to the countries of the region; the studies identified some very important mitigation and adaptation options in dealing with climate and environmental changes – but particularly the development of Integrated Coastal Management Plans.

Implementing the UNFCCC Obligations

- An important regional role for SPREP is to coordinate and facilitate the process of attracting much needed financial assistance for Pacific Islands Parties to UNFCCC from the Global Environment Facility (GEF) for National Communication Plans (NCPs). Two GEF funded projects – CC:TRAIN (Phase 2) and the Pacific Islands Climate Change Assistance Programme (PICCAP) – will be coordinated by SPREP over the next three years. Under the NCPs the following areas will be addressed:
 - (i) inventories of greenhouse gas sources and sinks;
 - (ii) evaluations of mitigation options;

- (iii) national vulnerability assessments;
- (iv) evaluations of adaptation options;
- (v) national implementation plans, and;
- (vi) first NCP reports.

Response Options

11. So far, little attention has been paid to the development of specific response options. However, it is expected that the outputs from the activities concerning the science and the impacts of climate change and sea level rise, along with the work required to prepare the NCPs, will provide the necessary foundation for effective capacity building in this particular area.

The Way Ahead

12. Pacific island countries continue to put considerable effort – mainly through the Alliance of Small Island States (AOSIS) – into securing meaningful reductions in greenhouse gas emissions. However, while reducing emissions remains a priority, it is recognised that efforts are also required to prepare for adaptation. The outputs from the SPREP climate change programme and implementation of the UNFCCC obligations indicate that an ICM framework is potentially the most effective and realistic strategy for the Small Island States of the Pacific for achieving ecological and economic sustainability in dealing with sea level rise and other global, environmental changes

The ICM concept

13. ICM can be used to establish a framework for planning and management and SPREP is currently seeking funding to develop an ICM framework tailored to the Pacific islands. The uniqueness of the Pacific Islands will necessitate exploring and piloting the ICM concept and its methodologies and approaches in a small number of islands representative of each of the Pacific sub – regions. The end result may not be a single solution or methodology but rather a set of principles that can be applied either on a national or regional level.

Past experiences

14. Until recently, coastal problems and issues in the Pacific region have been dealt with on a case – by – case – basis as though they were individual concerns. Projects have tended to be based on the concept of sectorally targeted coastal management approaches developed in continental countries or by other inappropriate processes. Some of the shortcomings of this sectoral approach which, it is now being realised, have actually been constraints to the adoption of an appropriate coastal management process in the Pacific, include:

- culturally inappropriate zoning – the use of zones to delimit marine areas adjacent to Pacific islands can be difficult to administer and enforce, especially where customary ownership of those areas takes precedent over common property ownership;

- a paucity of data and information about climate change, sea level rise and values of the marine environment in general needed for the establishment of complex planning and management strategies;
- the lack of centralized coastal planning and management institutions and human and financial resources for effective implementation of planning projects at the national and community levels.

15. These approaches tend not to take account of the unique circumstances of Pacific Islands. Most problems are too simply defined which results in their being dealt with in a cursory manner. Projects also suffer from lack of coordination. The end result is that a number of coastal management and protection plans are sitting on shelves, serving as a reminder that planning and management processes for Pacific Island countries need to be much improved.

Lessons learned

16. The nature and geography of the Pacific islands has a direct bearing on the style of and the approach to sustainable management and development of those islands. For this reason the ICM approach needs to recognise that the impacts of poor decisions will be magnified on small Pacific islands principally because of their very 'smallness'. On small islands, the 'coast' may not be easily separated into components with well defined boundaries. Integrated coastal management in these instances will need to involve management of an island, and sometimes even of a country, in its entirety.

17. It is now recognised that successful implementation of integrated coastal management plans which enable appropriate sea level rise response strategies will require:

- education and awareness programs;
- human and institutional capacity building;
- full stakeholder participation;
- long term stable institutions and funding; and
- appropriate methodologies

18. During the process of building and implementing management plans under an ICM framework, it will also be important to implement those results the 'Pacific Way' wherever possible. The Pacific Way recognizes:

- the high level of community involvement in coastal resource management;
- the high level of subsistence economic activity based on coastal resources and therefore intimate involvement with the resource;
- strong customary land and marine tenure systems;

- the existence of strong indigenous cultures and traditional decision making;
 - cultures and communities that are closely attuned to the concepts of family and community and the need for sharing of resources;
 - the consensus approach to decision making;
 - customary resource management practices which are largely of an integrated, not sectoral nature
- Conclusion

19. The South Pacific region's unique geographical & cultural factors give rise to the need for unique, or tailored, solutions to its environmental problems. Climate change and sea level rise are among the most serious of these problems because nearly everyone lives at sea level, in many cases entire countries rise no more than two or three metres above sea level. Within the region, ICM is seen as the principle framework for addressing this issue, but its implementation needs to take account of the region's specific geographic and cultural factors. A precautionary and flexible approach which involves all stakeholders will assist Pacific island countries to respond and adapt to climate change and sea level rise now and in the future within an ICM framework. The key to success may well be to combine the experience of a 'top down' approach.

Presentation by Dr Robert Watson

Senior Scientific Adviser, Environment Department, World Bank,
Washington and Chairman of Working Group II of the IPCC

Addressing Climate Change: The Political Context

- Ultimate Objective of the UNFCCC (Article 2)

"...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: (i) allow ecosystems to adapt naturally to climate change; (ii) ensure that food production is not threatened; and (iii) enable economic development to proceed in a sustainable manner."

- Other key issues covered by IPCC include: human health, water resources and human settlements.

Article 3

"take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are serious or irreversible effects, lack of full scientific knowledge should not be used as a reason for postponing such measures ..."

"global benefits at the lowest cost"

Climate Change Objectives:

Implementation Issues

- Formidable complications for decision – making:
 - considerable remaining scientific/technical uncertainties (SAR)
 - potential for irreversible damages
 - long lag time between emissions and effects (decades – centuries)
 - irreducibly global problem
 - wide regional variations in causes and effects (winners and losers)
- Decisions on implementation entail at least three elements:
 - choice of optimal stabilization level
 - choice of optimal emissions pathway
 - choice of technologies and policies
- Sequential decision – making approach on all elements of decision

Time Constants

- Emissions to Concentrations - - - - - Centuries for CO₂
- Concentration to Temperature - - - - - Decades to Centuries
- Temperature to Sea Level - - - - - Many Centuries
- Ecosystem Restoration - - - - - Decades to Centuries
- Species Loss - - - - - Irreversible
- Capital Stock Turnover - - - - - Years to a Century

Conclusion

If anthropogenic emissions of greenhouse gases cause unwanted environmental damage, the time to reverse the damage would be centuries even with a complete cessation of greenhouse gas emissions. Therefore, governments cannot wait until cause and effect has been definitively established

Key Findings from IPCC

- Human activities are increasing the atmospheric concentrations of green house gases and in some regions, aerosols
- Greenhouse gases warm the atmosphere, aerosols tend to cool the atmosphere
- The Earth's temperature has warmed over the last 100 years
- The balance of evidence suggests a discernible human influence on the Earth's climate
- Without global climate specific policies to mitigate greenhouse gas emissions, the Earth's temperature is projected to increase by between 1.5 to 6.5 degrees Fahrenheit by 2100: a rate faster than anything observed during the last 10,000 years:
- Greenhouse gas induced global warming can only reversed very slowly because of the century – scale atmospheric residence times of the gases and the large thermal inertia of the oceans

Key Findings from IPCC

- Projected changes in climate will result in adverse effects on human health (particularly via vector – borne diseases) and many ecological systems (especially forests) and socio – economic sectors (e.g., the regional production of food)
- Developing countries will be particularly vulnerable to the impacts of climate change

- A range of cost-effective technologies and policies can be used now in both developed and developing countries to markedly reduce the emissions of greenhouse gases from the energy supply sector, energy demand sectors, and land management practices
- Intranational and intergenerational equity issues are critical for policy formulation
- There is justification for going beyond a no-regrets strategy

Observed Changes in Global Climate

- Major finding: "The balance of evidence suggests a discernible human influence on climate."
- Atmospheric concentrations of GHGs have increased since 1750 due to fossil fuel use, land-use/cover change, and agricultural practices
 - CO₂: +30%
 - CH₄: +145%
 - N₂O: +15%
- Climate has changed over the past century
 - Global mean surface temperature has increased 0.3–0.6° C
 - Recent years the warmest since 1860; this century the warmest since 1400
 - Sea-level has risen by 10–25 cm over the past 100 years

Projected Changes in Climate

- 1–3.5° C by 2100 (best estimate of 2° C)
- 15–95cm sea-level rise by 2100 (best estimate of 50cm)
- Projections lower than in 1990 due to aerosols
- Projections include key uncertainties;
 - rate of emissions (population growth, economic growth, technology change)
 - climate sensitivity (equilibrium temp. change from a given increase in radiative forcing)

Anticipated Changes due to Enhanced Greenhouse Warming (in rough order of confidence)

- Increase in mean surface temperature, more pronounced in the cold season
- Increase in precipitation, especially during the cold season
- Reduction in Asian monsoon precipitation (when aerosols are included)
- More severe, longer-lasting droughts, particularly during the warm season
- Slightly greater increase of night-time temp. (compared with day-time temp)

- More warm – season precipitation in heavy convective rainfall
- Decrease in day – to day variability of temperature
- Little agreement between models on increases in storminess

Vulnerability of Climate Change:

Common Conclusions

- Human – induced climate change adds an important new stress
- Most systems are sensitive to climate change (rate and magnitude)
- Vulnerability increases as adaptive capacity decreases: hence developing countries are most vulnerable
- Climate change increases the urgency of improving baseline conditions in human resource and socioeconomic systems
- Impacts are difficult to quantify and existing studies are limited in scope
 - regional scale predictions of climate change are limited
 - processes are not well understood
 - multiple stresses affect most systems
- Aggregate estimates of damages from 2–3°C warming tend to be "a few percent of world GDP" with higher estimates for developing countries (WG III)

Vulnerability of Human Health

- Increases in mortality and illness due to an anticipated increase in the intensity and duration of heat waves (temperature increases in colder regions should result in fewer cold – related deaths). Increases in the potential transmission of vector – borne infectious diseases (e.g., malaria, dengue, yellow fever, and some viral encephalitis) resulting from extensions of the geographical range and season for vector organisms. Potential malaria transmission could increase from approximately 45% to 60% of the world population by the latter half of the next century
- Some increases in non – vector – borne infectious diseases – such as salmonellosis, cholera, and giardiasis – also could occur
- Adaptive responses available, but health infrastructure currently inadequate in many countries and regions

Ecosystem Vulnerability

- Importance: food, fiber, medicines, energy, nutrient cycling and storage, water purification, regulating water runoff, recreation and tourism
- Forests: A sustained increase of 2 – 3° C in global mean temp. changes a substantial fraction (a global average of 1/3, varying by region from 1/7 to 2/3) of existing forest species
- Forests: Climate change will occur rapidly compared to rate of forest establishment (150 – 650km/century): paleo records show migration rates of 4 – 200km/century
- Cryosphere: models project 1/3 to 1/2 of existing mountain glacier mass could disappear
- Desertification: Deserts and semi-deserts may become both hotter and drier, potentially worsening desertification, which is caused by both human mismanagement and climate variability/change

Vulnerability of Agricultural Systems

- Global agricultural production could be maintained relative to baseline production (at doubled equivalent CO₂ equilibrium conditions)
 - beneficial effects of carbon dioxide fertilization included
 - changes in agricultural pests and climatic variability NOT included
- Regional effects would vary widely: reduced production in the tropics and subtropics
- Increased risk of hunger and famine in some locations (sub Saharan Africa; South, East, and Southeast Asia; and tropical areas of Latin America, as well as some Pacific island nations)
- Incremental costs of adaptation could burden developing countries (although some savings possible)
- Significant uncertainties about adaptation capacity given population growth

Vulnerability of Coastal Systems

- A 50 – cm rise in sea level would double the number of people per year risk of flooding (46 million to 92 million) – – given current population and infrastructure
- A 1 – metre rise in sea level leads to est, land losses of 1% for Egypt, 6% for the Netherlands, 17.5% for Bangladesh, 80% for the Majuro Atoll (Marshall Islands), displacing tens of Millions of people

- Coastal infrastructure and, hence the property insurance industry are especially vulnerable to both sea – level rise and more frequent and severe storms
- Sea – level rise and changes in storms or storm – surges would erode shores and habitat, increase salinity of estuaries and freshwater aquifers, change patterns of microbial contaminations

Vulnerability of Water Systems

- Quantity/quality of water supplies already serious problems in many regions
 - Currently less than 1,000 m³ per person per year in Kuwait, Jordan, Israel, Rwanda, Somalia, Algeria, Kenya; expected to fall below this benchmark in the next two to three decades in Libya, Egypt, South Africa, Iran, Ethiopia
- Impacts will depend on the baseline condition of the water supply system and the ability of water resource managers to respond given other stresses
- Substantial economic, social, and environmental costs possible, particularly in regions that already are water – limited and where there is a considerable competition among users
- Experts disagree over whether water supply systems will evolve substantially enough in the future to cope

Mitigation Options: Common Conclusions

No Regrets

- Significant reductions in net greenhouse gas emissions are technically possible and can be economically feasible
- By the year 2100, the world's commercial energy system will be replaced at least twice, offering opportunities to use new, better performing technologies without premature retirement of capital stock (see "Asset lifetimes")
- An extensive array of technologies in energy supply and demand management is available
- Policy measures to accelerate technology development, diffusion, and transfer are available but need wider application if emissions reductions are desired
- 10 – 30 percent efficiency gains are available in many countries at little or no net cost (WG II and III)

Examples of Asset Lifetimes in the Energy, Industry, and Transportation Sectors

Short Life (up to 15 years)

Conventional light Bulb	up to 3 years
Cooking stoves in developing countries	2–3 years
Consumer goods	5–10 years
Motor vehicles	10–15 years
Space heating boilers/air conditioning systems	up to 15 years
Fuel supply contracts	up to 15 years

Medium Life (15–50 years)

Industrial plant	10–30 years
Renewable energy projects (e.g., solar energy)	10–30 years
Commercial/residential buildings	20–30 years
Conventional power plant	30–50 years

Long Life (> 50 years)

Older residential buildings	50 years plus
Infrastructure (roads, railways port facilities)	50–100 years or longer
Tidal barrage	120 years

Mitigation Options

Supply Side

- Fuel switching (coal to oil to gas)
- Increased power plant efficiency (30% to –60%)
- Carbon dioxide sequestration
 - Nuclear power
 - Renewables (biomass, solar, wind, hydro, etc.)
- Demand Side
 - Transportation
 - Commercial and residential buildings
 - Industry
- Agriculture, Forestry and Rangelands
 - Sequestration in above and below ground biomass

Mitigation Options: Transportation

- Transport sector energy use and related CO₂ emissions have been the most rapidly growing of end – use sectors over the past two decades
- Projected energy use in 2025 could be reduced by about a third using very efficient drive – trains light – weight construction and low – air – resistance design
- Smaller vehicles, altered land – use patterns, transport systems, mobility patterns and lifestyles, shifting to less energy – intensive transport modes, and using alternative fuels offer the potential for further reductions
- These measures, taken together, provide the opportunity for reducing global transport emissions by as much as 40% of projected emissions by 2025
- Actions to reduce greenhouse gas emissions from transport can simultaneously address other problems such as local air pollution

Mitigation Options:

Agriculture and Forestry

- Substantial amounts of carbon (approx. 60 – 90 GtC) can be sequestered/ !conserved in the forestry sector alone over the next 50 years, for example by slowing deforestation and establishing tree plantations
- Practices in the agriculture sector could reduce emissions of other GHGs:
 - Altered management of agricultural soils and rangelands
 - Improving efficiency of fertilizer use
 - Restoration of degraded agricultural lands and rangelands
 - Methane, recovery from storage of manure
- Uncertainties include (I) the amount of land available; (ii) amount that deforestation can be reduced; and (iii) the continued suitability of some practices for particular locations given possible climate changes.

Policy Instruments

Policies, which may need regional or international agreement, include:

- Energy pricing strategies and taxes
- Removing subsidies that increase GHG emissions
- Tradable emissions permits – – domestic and global
- Voluntary programs

- Regulatory programs including energy –efficiency standards
 - Incentives for use of new technologies during market build – up
 - Education and training such as product advisories and labels
- Accelerated development of technologies as well as understanding the barriers to diffusion into the marketplace requires intensified R&D by governments and the private sector

Equity Issues

- International equity
 - who is responsible for the emissions
 - who will bear the burden of climate change
 - how do we "equitably" allocate emissions
 - current distribution
 - per capita
 - per GDP
- Intergenerational equity
 - discount rate
 - example: For every \$1000 in damages in 2100 the present day value would be
 - (I) \$1000 with a 0% discount rate
 - (ii) \$367 at a 1% discount rate
 - (ii;) \$7.6 at a 5% discount rate
 - (iv) <\$1 at a 10% discount rate

Presentation by H.E. Tuiloma Neroni Slade

**Ambassador and Permanent Representative of Western Samoa to the U.N.,
Vice – chairman of AOSIS and AOSIS coordinator on Climate Change**

Mr President,

I am honoured to present this statement on behalf of the Alliance of Small Island States (AOSIS).

The Alliance

AOSIS is a trans – national grouping formed during the Second World Climate Conference in 1990 by countries which are most vulnerable to the adverse effects of climate change, in particular to sea level rise. The global character of the problem and the international support required, the urgency of the climate change threat to island existence and the need for small states to be heard and taken seriously in the international negotiations, were the motivating factors for the establishment of the alliance.

As AOSIS, the Small Island States participated actively in the negotiations which produced the United Nations Framework Convention on Climate Change, and have since been fully engaged in all the processes for the review and strengthening of the Convention. They are concerned to remain at the forefront of the negotiations on climate change quite simply because these negotiations are about their very survival as states. They look to the industrialised countries for urgent and effective action because small island communities make virtually no contribution to the emissions of greenhouse gases which are seriously changing the global climate and threatening their existence.

Small islands are the most vulnerable because their ecological and socioeconomic systems are among those with the greatest sensitivity to climate changes and having the least adaptability. They are constantly exposed to the threats of climate change: the loss of low – lying coastal areas; salt water intrusion of ground water resources; devastation by storms and cyclones; and the potentially serious social disruptions among coastal populations.

There are 38 states in the current membership of AOSIS, the majority of which are members of the United Nations. Of the 160 state parties to the Convention on Climate Change, 30 are AOSIS states – or close to 20% of the Convention membership.

AOSIS Protocol

The AOSIS decision taken in 1994 to draft and submit the AOSIS Protocol is a direct response to the requirement of the Convention for the first Conference of the Parties (COP) in 1995 to review the adequacy of the commitments of industrialised contained in Article 4.2 (a) and (b) of the Convention. AOSIS had repeatedly expressed the view that the current commitments of Annex I parties are inadequate in the light of the Convention's objective (to stabilise greenhouse gas

concentrations in the atmosphere at a level to prevent dangerous interference with the climate system) and the best available scientific evidence.

The Berlin Mandate accepted by all Convention parties at COP-1 in 1995 not only confirmed the inadequacy of Annex I commitments, but also agreed to begin as a matter of urgency the negotiation process for action to take the Convention beyond 2000 and to strengthen Annex I commitments through a protocol or another legal instrument for adoption at COP-3 in 1997. AOSIS believes that by acknowledging the urgent need for additional commitments, Annex I parties have implicitly agreed to accelerate efforts to implement their current commitments to stabilise CO₂ emissions at 1990 levels by the year 2000.

The AOSIS Protocol seeks to strengthen the Convention by responding to these inadequacies. We consider that a protocol to the Convention, rather than an amendment, is the appropriate way to deal with this. Protocols have been successfully developed in other areas of international environmental law, and generally offer greater flexibility in the review and strengthening of the Convention processes in the future.

The AOSIS Protocol builds on the Convention provisions. Its primary aim is to strengthen the specific commitments of developed country parties to reduce their emissions of carbon dioxide by the year 2005 to a level at least 20 per cent below that attained in 1990; and requires developed country parties to adopt specific targets and timetables for other greenhouse gases.

The Protocol proposes a single or flat rate target for all Annex I parties, and concentrates on CO₂ emissions, that gas being the most prominent and perhaps the best understood of the greenhouse gases.

This target and timetable were not chosen arbitrarily, but because they accord with the unilateral pledges many industrialised countries have already accepted domestically since the World Conference on the Changing Atmosphere in 1988 which put forward the "Toronto target" as an initial basis for further global action.

Therefore, the 20% we propose in the AOSIS Protocol is just a first step, and a moderate one. But we believe that this first step is nonetheless a very significant one because it would place emissions on a downward track for the first time since the beginning of the industrial revolution.

It is important to appreciate fully the fact that the largest share of historical and current emissions originates in developed industrialised countries. The Convention notes this, and recognises also the differentiated capabilities, financial and otherwise, of countries to respond. Both these elements point to the need for developed countries to bear a greater burden of combating climate change and its adverse effects, and require of developed countries to demonstrate they are taking the lead in doing so.

Let me note here that we have taken this initiative because of our unique position of vulnerability and the sense of urgency that we feel about the threats of climate change. It does not make it a

small island problem, nor indeed can it take away the very serious implications for low-lying areas in many other developing countries in Asia, the Mediterranean and elsewhere, nor the other equally serious impacts of climate change on health, food production and desertification in many places, especially in Africa.

Because it is based on the Convention's principle of common but differentiated responsibility, the AOSIS Protocol does not impose specific emissions reduction obligations on developing country parties additional to those already contained in the Convention. We think there is a powerful argument of equity that asks those who have contributed the most, historically, to the build up of concentrations of greenhouse gases, that they should take the lead in reducing their emissions.

However, from our perspective, uncontrolled greenhouse gas emissions from whatever source, developed country or developing, is bad for the global climate system. Recognising that all countries must play their role in reaching common goals, the Protocol encourages developing country participation in the progressive development of climate change policy through the mechanism for co-ordination of measures, and by focusing on the need for accelerated transfers of relevant technologies to developing countries. It also provides for regular reviews to ensure commitments remain dynamic and effective.

Role of the Protocol in climate change negotiations

The AOSIS Protocol was the first and remains the only formal proposal for targeting emissions on the table. The Berlin Mandate calls for its consideration in the context of the ongoing negotiations on strengthening of the Convention commitments. We believe that the time has come for other parties to the Convention to develop their views on the targets and timetables, especially the nature or size of shorter term targets and timetables, and to state these more precisely.

The current round of negotiations has raised a number of questions about the AOSIS target. Two important concerns are: (i) the appropriateness and efficiency of a flat rate target; and (ii) the size of the reduction required and the timescale.

A number of countries have expressed a preference for differentiated, rather than flat rate, targets to recognise the fact that there are different starting points, opportunities and capabilities amongst Annex I countries.

To date, the differentiated target debate has not resulted in any concrete suggestions that could command a consensus. Proponents of differentiated targets seem able to elaborate long lists for differentiation criteria – GDP, per capita, carbon intensity – and also to provide what they see as compelling reasons why a particular country should have to do less than others. But it is difficult to work out the implication of these suggestions in terms of individual country targets, and in particular no country seems to have come forward with a scheme which would require it to do more than others. All this would indicate the practical and political difficulties inherent in negotiating this kind of "equitable burden-sharing" exercise.

By contrast, flat rate targets are perhaps more readily understood, have a long history of use in international environment law, and have the additional merit of easier monitoring and verification. This is especially so of a single target such as the AOSIS is proposing for CO₂.

We believe that good faith negotiations are in essence about considering the merits of views of others, other than one's own. Accordingly, AOSIS is ready to consider the merits of differentiated approaches to establishing targets. However, it is obvious that unless major countries as those in the EU can put forward a serious differentiation scheme – one that commands confidence from its own members and potentially those outside the EU – and do so in time for the forthcoming AGBM sessions, then we feel that the EU should at least be able to support the concept of a flat rate target as an initial way forward. At this stage, the AGBM process requires evidence of leadership. We think the EU should claim that leadership.

The AOSIS target

The AOSIS target was first put forward in 1994. One would need to acknowledge that the passing years necessarily renders achievement that more difficult. But we do not accept any broad assessment that the AOSIS target is now unrealistic.

Since the early 1990s, the 20% reduction target has been supported by or is consistent with, the national targets of many OECD countries. It was chosen by AOSIS, not because it was in accordance with the kind of emission reductions AOSIS members felt comfortable with, but in large part precisely because it seemed to have been accepted as an appropriate first step by others.

We remain of the view that problem requires proper international focus and the necessary declaration of political will. The problem our group of countries face has not changed since we put forward our target. The scientific realities are the same, if not firmer. The IPCC continues to tell us it is imprudent to gamble with the future. The reductions implied by the AOSIS target are of a kind we should be aiming at in the short to medium term if we are to avoid imposing draconian measures at a future date. The technical and economic realities also remain largely unchanged. Experts agree that such reductions are feasible and achievable with existing technologies and measures at negative to low costs.

AOSIS/EU co – operation

There is significant agreement amongst EU and AOSIS countries on a number of important climate change issues. Clearly we would need to continue to work closely in the development of these issues, as well as others.

One such possibility might be the creation of a co – ordinated mechanism of the kind suggested by AOSIS in its Protocol which might facilitate an alternative way of bridging, perhaps more successfully, the different approaches to the question of policies and measures debate which, as we understand it, the EU insists must be legally binding in all cases. It is another difficult issue over which the EU might consider exercising its special position of leadership.

There are essentially two strategies to deal with climate change: mitigation and adaptation. As negligible emitters, mitigation through the reduction of emissions of greenhouse gases is not a major issue for Small Island States. However, adaptation is the only option through engineering, economic restructuring and other activities. AOSIS could benefit from additional assistance from EU member states through the Global Environment Facility (GEF), the replenishment of which is scheduled to begin next year, as well as through specific EU assistance for vulnerable ACP countries to support adaptation projects.

Mr President,

Common fear has given birth to the alliance of Small Island States. In the interests of our home Earth, the international community has really no other choice but to come together in an alliance of urgent global effort for our common future.

Thank you

Summary of the debate following the presentations

The debate focused on two main topics: Assessment of the present and future situation, and the action to be taken.

Assessment

As far as assessment of the situation was concerned several participants stressed that climate change was not only an issue affecting the Small Island States but all countries, developing as well as developed. It was not only a question of global warming but also of climate disruption leading to a climate characterized by extremes. Strong lobbying on the part of the fossil fuel industry was one of the reasons that attempts to reduce CO₂ emissions until now had failed.

The methods of economic loss calculation of the IPCC were criticized as being immoral when basing the calculation of loss of life on the average income in the developing countries. The answer given to this criticism was that the economic calculation was one of several ways of presenting the problem. It was a political decision how much weight should be attributed to one or the other element.

There was general agreement that the creation of public awareness of the problem of climate changes was essential.

Action to be taken

This point was mainly covered by the Commission representatives (Mr. Teodorakis and Mr. Van Opstal). The Commission had presented proposals to meet targets for reduction of green – house gases set for 2005 – 2010.

Since 1976 3.8 billion ECU had been committed under the ACP Convention to 26 island communities. 791 million ECU were committed under the 7th EDF, of which 39 million ECU specifically went to environmental projects. Special attention would be devoted to the issue in connection with the implementation of the 8th EDF. The Commissions strategy was to integrate the issue of climate change into all policy fields rather than launch specific projects concerning climate change.

Following the initiative to have a hearing on climate change the Commission was prepared to take concrete measures and set up a working group within the framework of DG VIII. The Commission was ready to launch a specific programme together with the ACP countries.

In reply to criticism concerning lack of coherence in the overall policy of the Commission the Commission representatives declared that policy coordination between the various Directorates General took place on a regular basis.

Lord Plumb closed the proceedings stating that public awareness was important, but, on the other hand it was essential to avoid distortions or exaggerations in the debate. It was first and foremost a question of political will to deal with the problems.

CONTRACTION AND CONVERGENCE

Draft Proposals for a Climate Change Protocol

A Contribution to Framework Convention on Climate Change,
Ad Hoc Group on the Berlin Mandate

Contents:...

Overview

Part I: Core tasks to achieve "Contraction and Convergence".

- 1 Recognise the prevention of dangerous climate change as an essential global security interest
2. Agree Danger Indicators
3. Decide CO2 concentration target and timetable
4. Set annual global CO2 emission budgets according to contraction formula.
- 5 Calculate relative national shares of the global budget according to a convergence formula
6. Allocate national CO2 emissions quotas
- 7 Establish criteria and mechanisms for quota management

Part II. Proposals for contraction and convergence

A. Draft proposals for control of greenhouse gas emissions

- 2 1. Set up a system for CO2 emissions trading
- 2.2 Require International Airline and Shipping companies to purchase CO2 emission quotas.
- 2 3. Consider national targets for anthropogenic emissions of other greenhouse gases
- 2 4. Agree potential Sanctions, Penalties, and Compensation

B Draft proposals on climate damages

- 2.5. Monitor climate damages
- 2 6 Plan for emergencies
- 2 7. Consider options for damage compensation and historic debt

C. Draft proposals on Policies and Measures to aid implementation

- 2 8. Establish financial mechanisms to aid implementation
- 2 9 Establish mechanism for development and transfer of sustainable technologies
- 2 10 Phase out fossil fuel subsidies
- 2 11 Require consistency in international policy making
- 2 12 Establish a forum for local governments

D Proposals on research and education

- 2 13. Enhance education, training and awareness
- 2 14 Strengthen climate research particularly into feedback processes
- 2 15 Examine responsibilities of trans-national corporations and finance

Documents available separately on request

Appendix A contraction formula

Appendix B convergence formula

Appendix C cumulative credit/debit formula

Definition of terms

Overview

The Prevention of dangerous climate change is now an essential global security interest. Recognising this interest, this GCI draft document sets out some key tasks necessary for a protocol to stabilise greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system.

Pre-eminently, this requires a rapid "*Contraction*" of all human CO₂ emissions globally. Moreover, unprecedented international co-operation will be required to achieve this. Such a "*comprehensive approach*" is only likely to be adopted by most if not all nations, if it is linked to the simultaneous task of "*Convergence*" towards an equitable and sustainable level of emissions on a per capita basis globally.

This interlinked configuration of "*Contraction and Convergence*" is fundamental to GCI's view of the entire climate change dilemma and its solution. GCI has crafted such an approach, which provides the basis for this document. Part One of the document presents the core tasks of this approach. The first proposal develops the well-established concept of national security interest to include dangerous climate change as a *global* security interest. This emphasises the urgency of this issue and has practical implications for the decision making process and technology development and transfer. The next six proposals spell out practical steps from agreement of danger indicators through to a mechanism for the management of national quota allocations according to a scientific assessment, a contraction formula and a convergence formula.

Additionally, the document presents further proposals for a protocol. These have been drafted in response to events at the Second Conference of Parties (COP2) to the Framework Convention on Climate Change in Geneva in July 1996. While we received remarkably wide-ranging support for our proposals for "*Contraction and Convergence*", many questions were raised about the detailed implications of such an approach.

These further proposals are an attempt to map out some of these implications and are set out in Part Two. The first set concern emissions trading, air/shipping bunker fuels, other greenhouse gases and measures to deter non-compliance. The next set outlines the assessment of and compensation for climate damages, past, present and future. The next four points outline measures to aid implementation, including funding and technology transfer. The final three are concerned with education and research.

At COP2, the US Government stated that all protocols currently on the table were "*unrealistic and unachievable*". This effectively sank the AOSIS Protocol proposed by the island-states most vulnerable to climate change. However, many states considered that our "*Global Commons Initiative*" for contraction and convergence was the most plausible basis for a comprehensive long-term protocol.

We, therefore, invite all far-sighted governments to consider incorporating all or part of these proposals into their submissions to the Secretariat by 15th October 1996 for discussion at the next AGBM meeting in Geneva this December, and as the basis for a draft protocol by March 1997 in time for consideration at COP3 in Kyoto. Please always bear in mind that this is a draft document and that we would greatly welcome your opinion and expertise in developing these proposals into a viable protocol.

I. Core tasks for achieving "Contraction and Convergence"

1: Recognise the prevention of dangerous climate change as an essential global security interest.

The reduction of greenhouse gas emissions shall be regarded as an essential global security interest for humanity.

RATIONALE AND POLICY IMPLICATIONS

This proposal generalises the accepted concept of "essential security interest" to the whole of humanity. The gravity of global climate change is greater than the essential security interests of any nation and fundamental to the maintenance of international peace and security during the coming century. This justifies the urgent development of measures proposed in this protocol and places a duty on governments to regard climate change as an international emergency. This also means that action may be taken to secure the use of sustainable technology for the benefit of humanity in much the same way as governments may protect the use of military technology under the Security Exceptions for intellectual property rights as set out in Article 73 of Annex 1C of the Final Act of the Uruguay Round of Multilateral Trade Negotiations as well as national security legislation.

2. Agree danger indicators

Agree a list of specific, quantifiable indicators to define "dangerous anthropogenic interference to the climate system" as stated in Article 2 of the Framework Convention. The indicators shall be listed in the protocol and their quantitative values shall be reviewed annually by SBSTA with advice from IPCC. The values should reflect the precautionary principle and take account of the time lag between emissions and climatic changes. The indicators shall be applicable on any geographical scale to include local damages induced by global climate change.

CoP shall commission detailed recommendations for suitable indicators and their appropriate values. The following suggestions are put forward as a starting point.

- a) relative sea level rise to a threatening level at any location;*
- b) increased coastal erosion that forces evacuation of inhabited land or loss of wetlands,*
- c) global mean surface temperature rise or significant regional temperature changes over a given time period;*
- d) an annual increase in the number of tornadoes or tropical cyclones in any region beyond current natural variability;*
- e) a significant reduction in permafrost area, resulting in release of natural methane;*
- f) significant changes in regional or sub-regional precipitation resulting in prolonged droughts or frequent flooding,*
- g) an increase in bush and forest fires above natural variability;*
- h) loss of marine and terrestrial ecosystems and species,*
- i) substantial prolonged reduction in marine primary production (plankton, algae)*
- j) a significant contraction of either polar ice cap and / or glaciers,*

k) a major prolonged change in ocean circulation, such as the north Atlantic current or El Nino / Southern Oscillation;

l) a spread attributable to climate change of any human, animal or plant disease,

m) direct impact of climate change on human health;

n) economic damages attributable to climate change.

These danger indicators should be reviewed on a regular basis by IPCC as new scientific evidence becomes available and revised by the CoP when prudent to do so.

RATIONALE AND POLICY IMPLICATIONS

This Task puts key scientific indicators for dangerous climate change at the centre of the protocol. The "definition of adverse climate change" (FCCC Article 1, 1) and "dangerous anthropogenic interference with the climate system" (Article 2) need to be set out in the form of specific danger indicators based on best scientific advice and the precautionary principle (Article 3).

Each indicator should reflect a distinct impact resulting from climate change and should be defined in quantifiable terms on a global, regional and subregional scale. Where possible they should indicate both the danger threshold and potentially dangerous rates of change. The choice of indicators should take into account the considerable time lag between greenhouse gas emissions and subsequent climatic response.

The prospect of breaching any one of the indicators should be sufficient to require preventative action, on the grounds of the precautionary principle, even though it may only affect one area of the world directly. On the basis of equity, damages must be avoided on a local scale since many of the most vulnerable countries are neither responsible for global warming nor in a position to adapt to the harmful effects. Local climate-change-induced damages may not be traded off against the pursuit of global economic growth, because it is impossible to sensibly create a consensus around the quantification of such damages in terms of rising risks of ecological and political instability (see also II A 1).

----- 3. *Decide CO2 concentration target and timetable*

A stabilisation target and timetable shall be agreed for atmospheric CO2 concentrations. The target should be set by applying the precautionary principle to avoid the danger indicators agreed under Section I.1 (above). This target shall initially be 350 ppmv to be achieved by the year 2100. The target shall be reviewed every five years by IPCC as new scientific evidence becomes available and revised by the CoP if the danger indicators clearly show that it is prudent to do so.

RATIONALE AND POLICY IMPLICATIONS

Dangerous changes in the climate system are a result of specific greenhouse gas concentrations in the atmosphere, so it is necessary to set a specific ceiling on the amount of CO2 in the atmosphere. In absence of better scientific understanding of climatic feedback processes (listed in section II.D 2), the initial target of atmospheric CO2 stabilisation at 350ppmv by the year 2100 is chosen such that the system remains close to the bounds of our present knowledge. This can be achieved by following a future emissions scenario in which the cumulative CO2 emissions are similar to those of IPCC S350. When reviewing this target, IPCC should take into account predicted changes in the concentration of other greenhouse gases (considered further in section II A 3).

4. Set annual global CO₂ emissions budgets according to a "contraction" formula

The Conference of the Parties shall set a net global anthropogenic carbon emissions budget for each year throughout the period of contraction to meet the stabilisation objective as defined in 1.3 above. This shall be calculated according to a mathematical formula which defines an emissions scenario that leads to stabilisation of emissions at around 2045. The formula may be reviewed annually five years in advance to take account of revisions to the stabilisation target set under proposal 3 as well as changes in natural sinks and sources based on scientific advice of the IPCC.

RATIONALE AND POLICY IMPLICATIONS

Stabilisation of CO₂ concentrations requires a global ceiling on emissions which contracts over time until they reach the target of 350 ppmv. The "contraction" formula would define a realistic emissions scenario which avoids both unachievable annual emissions reductions and temporary net negative emissions in the future. The formula should refer to all anthropogenic sources and sinks of CO₂, i.e. changes in emissions resulting directly from human activity, including anthropogenic changes of natural sinks and sources. Natural "equilibrium" sources and sinks should be considered in the science behind the emissions scenario, but should not be included in this global anthropogenic emissions budget.

The formula will need to be reviewed annually to take account of changes both to the concentration target and of actual sinks and sources of CO₂. However, in order to reduce uncertainty for both planning and trading purposes each annual review will adjust the budgets five years in advance.

Implementation will require setting up a Scientific Panel drawn from the SBSTA and approved by the CoP to agree the formula and recommend annual CO₂ budgets.

The target date of 2045 is suggested because it lies within the window for realistic contraction and coincides with the centenary of the United Nations.

For the purpose of illustration only, a sample "contraction" formula is available from GCI.

5. Calculate relative national shares of the global budget according to a "convergence" formula.

Each country shall be allocated an annual, relative share of the global emissions budget (set according to section 1.4 above) using a consistent formula to calculate the proportion for each country for each year. The allocation shall be set such that national shares move gradually from present emissions levels to equal per capita emissions levels by a fixed "convergence" year (e.g. 2045). Provision shall be made for bunker fuels for shipping and air transport (see II.A.2).

RATIONALE AND POLICY IMPLICATIONS

This task gives effect to the principle of equity set out in Article 3.1 of the FCCC while recognising that equal per capita allocations would be neither acceptable nor feasible for Annex I countries if implemented immediately. The formula therefore provides a predictable and viable method of achieving a convergence to equity. National shares would be based initially on current emissions levels, or for Annex I countries, those levels already specified by commitments under the UNFCCC, and would then converge to the same per capita level by the target date of 2045. After this relative shares would remain constant.

Calculation with the convergence formula will use the UN median population estimates. These population statistics may be reviewed if necessary at the request of a majority of the CoP. However, after a fixed year (e.g. the convergence date) population figures could be frozen.

The relative national shares are independent of the annual scientific reviews, although the actual allocations of emissions (allocated in section 1.6) will of course vary according to the global budget agreed. Annual shares would be calculated for all countries, whether or not they are Parties to the Protocol, and shall be set out in an Annex to the protocol established.

For the purpose of illustration only, a sample "convergence" formula is available from GCI

The establishment of fixed national emissions budgets will encourage investment in appropriate technology and allow for the possibility of orderly emissions trading, but this depends crucially on having finite net CO₂ budgets calculated according to a formula that produces a predictable level of permissible emissions from the present to the stabilisation date, to achieve the concentration target set in Section I 3 above.

6. Allocate national CO₂ emissions quotas.

National emissions quotas shall be calculated for each year by multiplying each country's relative share set by the convergence formula (agreed according to Section I.5) by the annual global emissions budget (set by the "contraction" formula agreed according to Section I.4) These quotas shall be measured in tonnes of carbon.

RATIONALE AND POLICY IMPLICATIONS

The national allocations are described as 'quotas' rather than entitlements or rights to emit CO₂ in order to emphasise that the atmosphere and climate system are a global commons which cannot be appropriated by any state or person but whose use must now be shared by common consent. The formula approach provides for the most effective way of establishing a consistent and equitable allocation of emissions quotas.

7. Establish criteria and mechanisms for quota management

Establish a mechanism for the international management of quota allocation, accounting and verification based on criteria consistent with these proposals. The quotas shall cover "net anthropogenic emissions" resulting from human activities, including reduction of natural sinks minus deliberate natural sinks enhancement.

RATIONALE AND POLICY IMPLICATIONS

The allocations would refer to "net anthropogenic emissions" of CO₂. This is defined as all emissions resulting from human activities, including reduction of natural sinks minus deliberate natural sinks enhancement. However, this should exclude changes in natural sources and sinks caused directly by global climate change. This definition encourages sustainable forestry, for example, but avoids crediting the existing natural resource endowment of each country. We recognise that some countries have deliberately retained such resources whilst others have already diminished them, therefore this will be accounted for in the task concerning historic debt (section II B.3). Natural sink enhancement will only be credited within national boundaries, not within any global commons. For example, credit will not be given for enhancement of the CO₂ sink into the ocean.

The proposed mechanisms would also arbitrate in case of dispute over budgeting anthropogenic sources and sinks.

It is not necessary to allow for crediting of sink enhancement or emissions reduction within other countries, known as Joint Implementation, since this can effectively be achieved through the emissions quotas trading system (section II A 1).

This proposal completes the procedure for applying "contraction and convergence"

II. Draft proposals to achieve contraction and convergence

A. Related tasks for control of greenhouse gas emissions

1. Set up a system for emissions trading

Establish mechanisms for real-time emissions trading between parties to the Protocol under strict conditions of contraction and convergence. Trading shall be restricted to a proportion of the annual emissions quotas, defined as permits, and limited to one year in advance. The mechanism should be transparent and avoid financial feedbacks that would undermine the ultimate aim of the Convention and its protocols.

RATIONALE AND POLICY IMPLICATIONS

The criteria for a trading regime should set out the basis on which possible trading regimes will be assessed. These will inevitably need to balance the different interests and needs of parties to the Convention. In deciding on a suitable mechanism, parties should consider the work already done by UNCTAD in this area and continue to involve it in the development thereof.

A trading regime would initially be developed under the SBI which would continue to supervise the process for CoP. However, once agreed, emissions trading would require a set of robust institutions capable of acting on behalf and under the supervision of CoP. Trading must be open, transparent, efficient and well regulated. The regulatory bodies must also ensure that TEPs are not bought or sold under coercion of any kind.

Emissions trading would also address the issue of "carbon leakage" to countries with relatively lower emissions. This would particularly be the case if purchasing rights of permits were extended to TNCs.

As the mechanism comes into effect, Joint Implementation will no longer become an issue as the trade will help to redress emission imbalances, while the incentive to invest in climate friendly technology remains by releasing quotas for trade.

The mechanism must also ensure that trading is developed primarily as an efficient means of reducing emissions and must not compromise future generations on the principles of inter-generational equity. The implications of this international trade on intra-national equity will also need to be examined and addressed. The increased value of emission quotas from international trade must not detrimentally affect the disadvantaged in national societies. 'Contraction and convergence' applies within countries as well as between them.

Given the historic link between growth of monetary GDP and CO₂ emissions, there is a danger that trade in CO₂ quotas and any other increase in financial activity as a result of this Protocol will simply increase global purchasing power leading to an increase in CO₂ emissions. This would be contradictory to the purpose of the Convention. Another danger is that trade in Emissions Quotas increases international financial liquidity to produce inflation or other instability, as occurred following the OPEC oil price rises. These dangers might be addressed by the creation of a carbon-free "green currency". A study of the potential of carbon-free currency should be commissioned for consideration by CoP in future.

Moreover, existing purchasing power disparities between developing and developed countries can only be aggravated by creating a trade mechanism which continues to exploit the arbitrary advantage enjoyed in the international markets of economies based on hard currencies. This is especially relevant in view of the fact that it ignores the much higher efficiencies of soft currency based economies when national dollars-per-ton efficiencies are adjusted for purchasing power parity (PPP).

2 Require International Airline and Shipping companies to purchase CO2 emission quotas.

CO2 emitted by all aircraft or shipping must be accounted for within the global emissions budget by requiring international transport companies to purchase emissions permits

RATIONALE AND POLICY IMPLICATIONS

Currently, aircraft on international flights, or shipping in international waters, can purchase untaxed fossil fuel which is not included in any national carbon account. Air transport in particular is one of the fastest growing sectors of global CO2 emissions, and must be constrained in a similar manner to other carbon intensive economic activities. Fiscal measures which might achieve this, such as an international tax on bunker fuels, would require a global authority to predict and control demand. On the other hand, if airline or shipping companies have to purchase emissions permits the market will ensure a "level playing field" with land-based transport.

This measure will also ensure that all emissions are constrained within the contraction / convergence global budget (sections I 3,4,5), whilst the price of the quotas is passed on to the consumer of the transport, rather than becoming the responsibility of governments.

It may be possible to extend this option to purchase emissions quotas to other Trans National Corporations (TNCs). This would have the advantage of discouraging "leakage" or carbon-intensive production to countries where emissions are cheaper, since the TNCs could purchase emissions quotas from countries with a surplus, without needing to relocate.

3. Consider national targets for anthropogenic emissions of other greenhouse gases

Draw up a timetable for agreeing constraints on concentrations of greenhouse gases other than CO2, with specific targets for each gas, as scientific knowledge of their biogeochemical cycles becomes sufficiently reliable. The allocation of budgets should be based on the same task of equity as used above for CO2, whilst giving special consideration to each country's need to exploit its natural resources and agriculture.

RATIONALE AND POLICY IMPLICATIONS

Concentrations of greenhouse gases other than CO2 are rising fast and must be brought under the FCCC. Gases with similar sources and atmospheric lifetimes may be grouped together and some substitution of these may be possible within the national budgets. Some international trading of emissions quotas may also be considered. However, agreement on one greenhouse gas should not be delayed whilst awaiting better knowledge of the other greenhouse gases.

Greenhouse gases other than CO2 fall into two main categories:

For wholly man-made gases such as most CFCs, HCFCs and SF6, an early agreement could be reached. Production of some of these gases is already constrained under the Montreal Protocol for protection of stratospheric ozone. Their major sources and sinks are already sufficiently quantifiable. National budgets for these gases should be allocated using the same principles of "contraction and convergence", allowing for trading if necessary, as outlined for CO2 in Sections I 2 through to I 5 above. Some of these gases have long lifetimes, and therefore their Global Warming Potential relative to each other is effectively independent of the time horizon used. These gases could be substituted within national budgets. However, on the basis of inter-generational equity and long-term sustainability, production of the very long-lived gases should be tightly constrained and phased out as soon as possible. If a time horizon were agreed, the global emissions budget for the shorter-lived gases could be linked to that for CO2 by means of their Global Warming Potential (defined by IPCC).

Methane (CH4) and Nitrous Oxide (N2O) are significant greenhouse gases produced by a mixture of anthropogenic and natural sources. The sources and sinks are still poorly defined. Methane emissions are rapidly increasing both as a result of changing agricultural practice (cattle, irrigation) and leakage from

natural gas installations. However, Methane has a short atmospheric lifetime and therefore it is not helpful to define a Global Warming Potential relative to CO₂. To account for the greater potency of Methane as a greenhouse gas, international standards of best practice should be agreed for industry and agriculture. Financial penalties collected when these standards are breached, could be used to fund the development and transfer of improved technology to reduce Methane emissions.

Nitrous Oxide has a longer lifetime than Methane but makes a smaller contribution to current global warming, and is less well understood. More research is urgently needed on the cycles of both of these gases.

4 Devise potential sanctions, penalties, and compensation.

Request the Secretariat to draw up options for a system of proportional progressive sanctions and penalties for non-compliance with the protocol, taking account of experience of international, regional and national legal instruments and the review of selected non-compliance, dispute resolution and implementation review procedures (FCCC/CP/1995/Misc.2) prepared by the interim secretariat.

Income raised from penalties could contribute to measures to aid implementation and relieve damages, as listed in Section II.B.3 below.

RATIONALE AND POLICY IMPLICATIONS

There are at present no incentives to comply with the FCCC or the protocol. By contrast, the 1994 GATT agreement contains extensive procedures for dispute settlement, including conciliation, mediation, arbitration, establishment of panels, rights of third parties, remedies, and compensation. Penalties should be in proportion to excess emissions of greenhouse gases, and considerably higher than the current purchase price of tradable emissions entitlements or investment benefits from the excessive CO₂ emissions.

The virtue of a tough system of penalties is that it will encourage compliance and reduce the likelihood of it being used.

B. Tasks on climate damages

1. Monitor climate damages

Require Parties to prepare an inventory of damages and damage trends, both past and present, directly attributable to climate change. These should include human health and mortality; economic impacts, loss of habitats, species and biodiversity, impact on agriculture, and coastal erosion.

RATIONALE AND POLICY IMPLICATIONS

Damage due to climate change has already begun and estimates of possible future damage, casualties and refugees have been made. The aim of this measure is to compile a comprehensive database of damages which would provide both a benchmark for the danger indicators proposed in proposal 2 above.

Research on climate-related damages should be funded by an international programme whose emphasis should be on impacts to developing countries.

Data on damages should be presented in their original units rather than using monetised values. Such values based on the method of "willingness to pay" imply rights by income which is fundamentally inequitable. International aggregation of damage data for the purpose of a global cost-benefit analysis is not appropriate, since the majority of damages will be inflicted on developing countries whereas most of the CO₂ emissions, and hence mitigation costs, are currently the responsibility of the industrialised countries.

2 Plan for emergencies

Require all parties to draw up contingency provisions for future emergencies which may arise from climate change, such as flooding, drought, crop failure or disease.

RATIONALE AND POLICY IMPLICATIONS

Damage due to climate change has already begun and estimates of possible future damage, casualties and refugees have been made. These should be updated regularly as a basis for arranging emergency relief and compensation payments. Liability for compensation payments is considered in Section II.B.3.

Contingency plans should be also prepared for the potential relocation of entire populations from small island states and low-lying regions to the territory of Annex 1 countries

3. Consider options for damage compensation and historic debt.

Request that the Secretariat prepare a study of options for damage compensation due to climate change based on best practice in insurance and national compensation schemes, and for historic debt in relation to emissions by Annex 1 countries prior to 1990, for consideration at CoP4

RATIONALE AND POLICY IMPLICATIONS

Insurance companies and governments are currently making large scale payments in respect of damages caused by asbestos, radiation and other anthropogenic causes. European and US law also include provision for civil, statutory and criminal liability for environmental damage. Countries and companies which emit CO₂ above the danger level should be under no illusion that they can avoid paying for damage caused by excess CO₂ emissions, thus increasing incentives to comply with the Convention and Protocol. Careful consideration needs to be given to historic emissions when foreseeability of damages could not reasonably have been expected and the precedents under tort thus become less relevant. The argument of historic debt, nevertheless, still holds as developing countries will, in future, not have the option of unrestrained emissions on which developed countries based their historic growth.

For these reasons, Annex 1 Parties should be required to make provision for climate change related damages in their national budgets and planning mechanism.

CO₂ has a long lifetime in the atmosphere, and historic data shows that a constant fraction of emissions has remained airborne, although there is no guarantee for this fraction to remain constant in the future. Therefore, to a first approximation, a country's responsibility for global warming depends on its cumulative emissions integrated over time. Industrialised countries have thus accumulated an historic debt compared to developing countries. Applying the principle of per-capita equity to historic data, it is possible to create a formula for calculating cumulative debits or credits, which might be used for allocating damage liability.

An international panel should be set up by SBSTA to resolve disputes over damage claims, this should include advice from both climate scientists and insurance experts.

For the purpose of such calculations, estimates of cumulative emissions of CO₂ should include historic deforestation and other land use changes. Some countries have preserved much of their natural forest resources, whereas others have exploited them and consequently have more land on which to replant new forests. For consistency in accounting, it is necessary to include this form of historic debt if national emission entitlements are to be based on net anthropogenic emissions (i.e. including changes in natural sources and sinks).

C. Tasks on Policies and Measures to aid implementation

1. Establish financial mechanisms to aid implementation

The SBI shall establish mechanisms by which money can be reliably collected and distributed for global programmes to implement the Convention. Decisions on spending shall be made through a fair and transparent mechanism accountable to CoP.

Funding is required for the following:

Climate Research (see section II.D.2)

Education, training and awareness (see section II.D.1).

Monitoring climate damage (see section II.B.1).

Technology Transfer (see section II.C.2).

Activities currently funded by the GEF

Administration of the CoP and the Secretariat

Administration of emissions trading (see section I.7 and II.A.1)

Emergency Relief and Damage Compensation (see section II.B.2 and II.B.3)

Funding sources may include:

A tax on trading of emissions entitlements (as in section II.A.1)

Penalties for non-compliance (as in section II.A.4)

According to cumulative historic debt (as in section II.B.3)

RATIONALE AND POLICY IMPLICATIONS

Activities which are critical to the success of implementing the Convention, should be able to rely on secure funding. This is already required for the Financial Mechanism under Art. 11 of the FCCC, and the commitments set out in Art. 4 c, d and h. However, present arrangements are unsatisfactory as funds are reliant on the goodwill of a few Parties which then control their use. Binding mechanisms must be set up to enable money to flow directly from the cause of the climate change problem (i.e. greenhouse gas emissions) towards funding its solution. This would encourage a reduction in CO₂ emissions, although the main mechanism for achieving this should remain the allocation of emission entitlements according to Contraction (section I.3) and Convergence (section I.4).

Liability to pay compensation for damages should be linked directly to cumulative historic debt as outlined in section II.B.3

2. Establish mechanism for development and transfer of sustainable technologies

The development, diffusion and use of the most sustainable technologies, practices and processes which minimise greenhouse gas emissions shall be regarded as an essential global security interest as defined in section I.1. To this end, a mechanism should be established under the protocol to aid the development within and transfer to developing countries of sustainable technologies

The transfer of outdated or second-hand, carbon-inefficient technology should be controlled and preferably prohibited

RATIONALE AND POLICY IMPLICATIONS

Explicit measures and positive incentives are urgently needed to stimulate the development and transfer of the most climate-friendly sustainable technology. Such technology should:

- (a) be carbon efficient or based on renewable energy sources
- (b) be an appropriate scale for the local community which it serves
- (c) be independent of expensive supplies or repairs from distant companies
- (c) not damage the local environment (as do, for example, large hydropower schemes)
- (d) not entail unacceptable risk (as do nuclear power stations)

Measures to stimulate the development and diffusion of climate-friendly technology would include

- (a) establish a technology transfer fund (paid for according to section II C 1)
- (b) fund research, development and diffusion of sustainable technologies, particularly in developing countries
- (c) create an international inventory of climate-friendly technology
- (d) promote best practice and sharing expertise between countries
- (e) identify gaps and opportunities in national and multilateral technology programmes
- (f) limit the period for which patents on relevant technologies may be held without being exploited for the benefit of humanity

A substantial transfer of outdated, carbon inefficient technology from developed to developing countries is currently widespread. This has the effect of prolonging the detrimental contribution of this machinery or technology on global carbon emissions.

3. Phase out fossil fuel subsidies

Agree mechanisms to phase out all subsidies for fossil-fuels. Transitional procedures and financial support shall be made available to developing countries in order to achieve a smooth transition and avoid penalising the poor.

RATIONALE AND POLICY IMPLICATIONS

Subsidies for the use of fossil fuels both increase global warming and distort the efficient allocation of resources through markets. Definitions of subsidies should be carefully established and the needs of the poor fully taken into consideration.

4. Require consistency in international policy-making

Set up an international task force to ensure that all international agencies, treaties and agreements actively contribute to reducing CO₂ emissions as an essential global security interest. This should be backed by a resolution to the United Nations General Assembly to require all international agencies, treaties and agreements take the climatic implications of their actions fully into account and to support the implementation of the UNFCCC and its protocols.

RATIONALE AND POLICY IMPLICATIONS

There is a danger that trade liberalisation under the 1994 GATT agreement, investment by the World Bank and economic measures by the IMF and central banking system as well as actions by other agencies increase CO₂ emissions or otherwise undermine the objectives of the FCCC. The aim of this task is to ensure that all international decision-making takes full account of the Climate Convention. A precedent for this task was established by the Ministerial Declaration on the Contribution of the World Trade Organisation to Achieving Greater Coherence in Global Economic Policymaking of 15 December 1993.

5. Establish a forum for local governments

Recognising the important contribution local governments make in implementing climate friendly policies and technologies at a local level, an international forum on climate change for local governments should be established with rights of representation as an observer to CoP under Art. 7 (6). The role of this forum would be to allow sharing of experiences and making relevant policy recommendations to national governments and CoP. This body could also discuss issues of intra-national equity arising from the restraint of carbon emissions.

RATIONALE AND POLICY IMPLICATIONS

A considerable proportion of sustainable policies and technologies are most effectively implemented at a local level and local governments can, therefore, play an important role in emissions reductions. The exchange of information on a local level would complement the transfer of technology on a national level as outlined in Section 2.9. The forum would also be the ideal organ to voice any problems of intra-national inequities arising from national and international implementation of the protocol and specifically the trade mechanism.

D. Tasks on research and education

1. Enhance education, training and awareness

Require all Parties to increase their commitment to education, training and public awareness of climate change under Article 6. This should encourage an holistic perspective emphasising the links between local and global processes, both natural and economic, and convey the full scale of the climate change problem as a survival issue. This must be underpinned by better understanding of the basic science of climate change.

Commission a feasibility study to establish options for an international system of greenhouse gas labelling to provide immediate public awareness of the extent to which a particular product or service contributes to emissions of CO₂ or other greenhouse gases and to create incentives to reduce carbon consumption.

Require parties to report annually to the CoP on the following matters:

- (a) the extent and nature of education, training and public awareness undertaken,*
- (b) organisation, finance and target audience thereof,*
- (c) independent evaluation of the effectiveness of such education and training,*
- (d) results of an independent poll of public awareness of climate change, its effects and measures needed to reduce emissions to a sustainable level,*
- (e) progress on greenhouse gas labelling*
- (f) actions to curb promotion of carbon consumption*

RATIONALE AND POLICY IMPLICATIONS

Most countries have done relatively little to fulfil their commitments under Article 6 of the UNFCCC. Raising awareness of the way in which fossil fuels and other products increase global warming has a significant role in motivating individuals, companies and countries to reduce such consumption. If all goods and services carried a conspicuous and unambiguous statement of the CO₂ or other greenhouse gases emitted by their production and disposal, this would enable people to make more informed choices. Public awareness and education on global warming is in constant competition with the advertising power of the air, car and fossil fuel industries. In view of the gravity of climate change, serious consideration should also be given to measures which curb the promotion of activities responsible for carbon emissions, similar to those currently applied to alcohol, tobacco, pharmaceuticals and other drugs. There is much public confusion over the science and impacts of climate change. This should be tackled both as a core part of school curricula, and as specifically tailored training.

programmes for employees, stressing measures for alleviating impacts of their field of work on global climate change, and vice versa

2. Strengthen climate research, particularly into feedback processes

Increase research into physical, biogeochemical, social and economic climatic feedback processes. Such research requires international consistency to ensure that the different processes can be combined in integrated models, whilst also encouraging researchers to investigate new processes. This should be co-ordinated principally through the International Geosphere Biosphere Programme (IGBP) and World Climate Research Programme (WCRP). IPCC and SBSTA (when calculating the emissions ceiling according to section I.2) should attempt to take account of the cumulative risk from low-probability positive feedbacks. When IPCC presents predictions or scenarios of global climate changes, there should also be less emphasis on global average temperature trends, and more on regional differences, particularly regarding the sulphate aerosol effect

RATIONALE AND POLICY IMPLICATIONS

There are particular dangers that the effects of climate change may trigger uncontrollable feedback loops that accelerate global climate change further than would be expected from current IPCC predictions, and exacerbate regional anomalies. Some known examples of such natural climatic feedback processes are listed below:

- a) Clouds: Different levels of clouds can have opposite effects on climate, since they both trap terrestrial radiation and reflect solar radiation. Clouds and water vapour also transport much latent heat. Thus it is difficult to resolve the feedbacks. Clouds may also be seeded by sulphate aerosols, both natural and anthropogenic.
- b) Ice sheets: Polar warming may increase ice melt, but also increase snowfall. This affects
 - * Global albedo (proportion of sunlight reflected to space)
 - * Sea level
 - * Local ocean salinity and albedo and hence circulation and ecology
- c) Ocean circulation
 - * Arctic warming or increased freshwater input to the North Atlantic (ice melt, rainfall) could halt deep water formation, weaken the North Atlantic Current, and thus make NW Europe much colder.
 - * Increased frequency of El Niño circulation in the Pacific affects climate world-wide
- d) Ocean ecology: Changes in phytoplankton ecology might be caused by.
 - * increased stratification of the water column, due to surface warming, would reduce nutrient (Nitrate, Phosphate, Iron) supply from bottom waters
 - * increased nutrient runoff from rivers due to changing land-use
 - * increased UV-B flux due to stratospheric ozone loss
 The effect of this might be to change
 - * the export of Carbon from surface water to deep water by the "biological pump"
 - * the alkalinity of surface water due to calcifying algae. Calcification puts CO₂ back into the atmosphere
 - * the production of greenhouse gases (N₂O, CH₄, other hydrocarbons)
 - * the production of Dimethyl Sulphide which (as sulphate aerosols) seeds clouds over the ocean and thus significantly influences global albedo
 - * ocean fish stocks
- e) Terrestrial ecology: warming and drying in high latitudes may cause
 - * release of greenhouse gases CH₄ and N₂O from melting permafrost
 - * release of CO₂ from peat bogs, if drying allows aeration
 - * increased forest fires and subsequent CO₂ release
 - * reduced snow cover, particularly if forest replaces tundra, with consequent change in albedo
 The "CO₂ fertilisation effect" may cause
 - * increased CO₂ uptake by terrestrial vegetation
 - * changes in evapotranspiration and hence local rainfall and groundwater
 Vegetation changes will affect albedo and also surface roughness which affects wind
- f) Flooding of coastal wetlands by rising sea level, particularly in the tropics, may cause substantial release of CH₄ and N₂O

There is presently much confusion among policymakers about the cooling effect of sulphate aerosols produced by fossil fuel combustion. It should be stressed that the aerosol effect is short-lived and local, whereas the warming by CO₂ is long-lived and global. Such differences are obscured by an emphasis on global average temperature trends, which should be remedied within IPCC.

3. Study the responsibilities of trans-national corporations and finance

Set up two working groups to examine the role of international finance and transnational corporations respectively in relation to CO₂ emissions, in order to report on

- (a) the extent to which their activities contribute to or abate global warming*
- (b) differential responsibilities between corporate sectors*
- (c) examples or models of good practice in regulation, incentives, statutory or voluntary codes, reporting requirements or other measures for encouraging corporations and investment fund managers to cut CO₂ emissions*
- (d) the contribution or otherwise of small and medium businesses to global warming*
- (e) recommendations for specific measures to enhance the contribution of investment finance and transnational corporations to stabilising CO₂ emissions*

RATIONALE AND POLICY IMPLICATIONS

Representatives of transnational corporations are active participants in the climate change negotiations and major players in both sustainable and carbon energy industries. The majority of world trade and a substantial proportion of global production is conducted by transnational corporations, while international financial flows are the driving force in trade and industry throughout the world, often more powerful than governments. The aim of these two study groups would be to examine the specific role of these two major types of economic agents to identify measures to enhance their contribution to stabilising greenhouse gas emissions.

If you support these Tasks and would like to keep in touch with their development into a protocol, please contact GCI.

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These tasks were mainly drafted by Titus Alexander, Tony Cooper, Ben Matthews, Aubrey Meyer, Phillippe Pernstich (in no particular order, and acknowledging other valuable contributions!)

ANNEX A

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 sea level 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 and, where agreed, regional levels that take into account all greenhouse gases, with due consideration of their relative contributions to the enhancement of the greenhouse effect;

RECOGNIZING FURTHER that low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change,

RECOGNIZING the special difficulties of those countries, especially developing countries, whose economies are particularly dependent on fossil fuel production, use and exportation, as a consequence of action taken on limiting greenhouse gas emissions,

AFFIRMING that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty,

RECOGNIZING that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial;

DETERMINED to protect the climate system for present and future generations,

HAVE AGREED AS FOLLOWS

Article 1

Definitions ⁽¹⁾

For the purposes of this Convention:

1. 'adverse effects of climate change' means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of 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;

⁽¹⁾ Titles of Articles are included solely for ease of reference.

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 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 (!) 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.

(!) 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 of 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 pursuant to Article 12 (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 enable the ability of

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 pursuant to Article 4 (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 pursuant to Article 4 (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.
- (b) 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 (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;

(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 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 (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 (2) in order to assist the Conference of the parties in carrying out the reviews required by Article 4 (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 abovementioned provisions at its first session, reviewing and taking into account the interim arrangements referred to in Article 21 (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 (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 1 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 pursuant to Article 4 (2) (a) and (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 (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 (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 (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 pursuant to this Article, as well as in identifying the technical and financial needs associated with proposed projects and response measures pursuant to 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 pursuant to this Article, provided that such a communication includes information on the fulfilment by each of these parties of its individual obligations pursuant to 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 pursuant to 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 depositary 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 depositary.

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 12 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-quarter 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 90th day after the date of receipt by the depositary of an instrument of acceptance by at least three-quarters of the parties to the Convention.

5. The amendment shall enter into force for any other party on the 90th 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 prejudice to the provisions of Article 14 (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 (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 90th 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.

Article 23

Entry into force

1. The Convention shall enter into force on the 90th day after the date of deposit of the 50th instrument of ratification, acceptance, approval or accession

2. For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the 50th instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the 90th day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States members of the organization.

Article 24

Reservations

No reservations may be made to the Convention.

Article 25

Withdrawal

1. At any time after three years from the date on which the Convention has entered into force for a party, that party may withdraw from the Convention by giving written notification to the depositary.

2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

3. Any party that withdraws from the Convention shall be considered as also having withdrawn from any Protocol to which it is a party.

Article 26

Authentic texts

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention.

DONE at New York this ninth day of May one thousand nine hundred and ninety-two.

ANNEX III

**Draft Protocol to the United Nations Framework Convention on
Climate Change on Greenhouse Gas Emissions Reduction
("AOSIS Protocol")**

Preamble

The Parties to this Protocol,

Being Parties to the 1992 United Nations Framework Convention on Climate Change (the Convention),

Acknowledging that the ultimate objective of the Convention and of this protocol is to achieve stabilisation of atmospheric greenhouse gas concentrations at a level which would prevent dangerous anthropogenic interference with the climate system 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,

Nothing that Article 3 of the Convention requires developed country Parties to take the lead in combatting climate change and the adverse effects thereof,

Conscious of the need for developed country Parties to adopt specific targets and time frames for reducing emission of greenhouse gases to achieve the Objective of the Convention,

Reaffirming 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 advantages of coordinating relevant measures and strategies, including specific administrative and economic instruments to achieve the Objective of the Convention,

Acknowledging that in accordance with the principle of common but differentiated responsibility Parties to the Convention and this Protocol should in future re-examine the impact of global efforts to combat climate change and the adverse effects thereof,

HAVE AGREED AS FOLLOWS:

Article 1 – Definitions

For the purposes of the protocol:

1. "Annex I Parties" means the developed country Parties and other developed Parties included in Annex I of the Convention, that also Parties to this Protocol.

2. "Conference of the Parties" means the Conference of the Parties to the Convention established pursuant to Article 7 of the Convention.
3. "Convention" means the United Nations Framework Convention on Climate Change adopted on 9 May 1992, and unless the text otherwise indicates, the terms defined in Article 1 of the Convention shall have the same meaning in this Protocol.
4. "Meeting of the Parties" means the Conference of the Parties established pursuant to Article 8 of this Protocol.
5. "Montreal Protocol" means the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, as subsequently adjusted and amended.
6. "Objective" means the ultimate objective stated in Article 2 of the Convention.
7. "Parties" means the Parties to the present Protocol.
8. "Parties to the Convention" means Parties for whom the Convention has legally entered into force in accordance with the Convention's provisions.
9. "Principles" means, unless the context otherwise requires, the Principles stated in Article 3 of the Convention.
10. "Secretariat" means the Secretariat established under Article 8 of the Convention.

Article 2 – Basic Commitment

In accordance with the Objective and Principles of the Convention, all Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances shall implement 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.

Article 3 – Targets for Greenhouse Gas Reductions

1. Each of the Annex I Parties shall:
 - (a) Reduce its 1990 level of anthropogenic emissions of carbon dioxide by at least 20 percent by the year 2005; and
 - (b) Adopt specific targets and timetables to limit or reduce other greenhouse gases not controlled by the Montreal Protocol, including, targets and timetables for methane,

nitrous oxide and fluorocarbons, in accordance with a programme of additional commitments to be negotiated and adopted by the first Meeting of the Parties.

2. The Meeting of the Parties shall review and revise the commitments of the Annex I Parties contained in subparagraph (a), and the commitments adopted pursuant to subparagraph (b) above, in accordance with the precautionary principle and the best available scientific information and assessment of climate change, not later than five years after the entry into force of this Protocol and thereafter at regular intervals to be determined by the Meeting of the Parties.
3. Any Party not included in Annex I of the Convention that has expressed its intention to be bound by Article 4.2(a) and (b) of the Convention in accordance with Article 4.2(g) of the Convention, may in its instrument of ratification, acceptance, approval or accession to this Protocol, or at any time thereafter, notify the Depositary that it intends to be bound by Articles 3 to 5 of this Protocol. The Depositary shall inform the other signatories and Parties of any such notification.

Article 4 – Coordination Mechanism

1. A mechanism to facilitate Annex I Parties' coordination of measures developed to achieve the Objective of the Convention is hereby established to provide the Meeting of the Parties, and as appropriate, the institutions established by the Convention and other relevant international organisations, with timely advice on the coordination of such measures.
2. The mechanism shall provide advice on the full range of measures the coordination of which could assist Annex I Parties implement their commitments to combat climate change and the adverse effects thereof. These measures shall include, *inter alia*, the coordination of economic instruments such as taxes or subsidies, administrative instruments such as least cost or integrated resource planning, energy efficiency standards and recycling, and specific measures covering the industrial, energy, transportation, land use, agriculture, waste management and forestry sectors.
3. The mechanism shall be open to participation by all Parties to this Protocol and shall be multidisciplinary. It shall comprise governmental representatives competent in the relevant field of expertise. It shall report regularly to the Meeting of the Parties on all aspects of its work.
4. The functions, terms of reference, organization and operation of this mechanism shall be elaborated further at the first Meeting of the Parties.

Article 5 – Reporting Requirements

1. Each of the Annex I Parties shall communicate to the Meeting of the Parties, through the Secretariat, the following information:

- (a) A detailed description of the Policies, programmes and measures it has undertaken to implement its commitments under Articles 2 to 4 above; and
 - (b) A specific estimate of the effects that these policies, programmes and measures will have on anthropogenic emissions by its sources and removals by its sinks of greenhouses gases.
2. Each of the Annex I Parties shall also provide information on the full costs and benefits of the policies and measures described in subparagraphs (a) and (b), and indicate how such policies and measures form part of a least cost implementation strategy. At their first Meeting, Parties shall consider and agree on methodologies for Annex I Parties to undertake calculations of the full costs and benefits referred to above.
3. Each of the Annex I Parties shall make its initial communication within one year of the entry into force of the Protocol for that Party. The frequency of subsequent communications shall be determined by the first Meeting of the Parties.

Article 6 – Institutional Arrangements

1. Decisions under this Protocol shall be taken only by Parties to this Protocol. Parties shall bear in mind that the Conference of the Parties, as the supreme body of the Convention, must also keep under regular review the implementation of any related legal instruments, such as this Protocol.
2. This Secretariat, financial mechanism and subsidiary bodies established by the Convention or by the Conference of the Parties shall be available for use by the Parties subject to the prior approval of such arrangements by the Conference of the Parties.
3. To avoid duplication, overlap and conflicts between the institutional structures and reporting requirements established by the Convention and those established by the Protocol, the first Meeting of the Parties shall seek guidance on these matters from the Conference of the Parties.
4. The first Meeting of the Parties shall adopt by consensus financial rules, in accordance with guidance received from the Conference of the Parties, to ensure that any additional funds for the operation of this Protocol are provided by the Parties to this Protocol.

Article 7 – Transfer of Technology

Annex I Parties shall ensure:

- (a) That the best available 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 industrial, energy, transport, industry,

agriculture, forestry and waste management sectors, are expeditiously transferred to developing country Parties to this Protocol;

- (b) That every practicable step is taken to support the development and enhancement of the endogenous capacities and technologies of developing country Parties;
- (c) That the transfers referred to in subparagraph (a) occur under fair and most favourable conditions.

Article 8 – Meeting of the Parties

1. A Meeting of the Parties is hereby established. The Meeting of the Parties shall keep under regular review the implementation of the Protocol and shall make, within its mandate, the decisions necessary to achieve its effective implementation. To this end, it shall:
 - (a) Periodically review the commitments of the Parties and the institutional arrangements under the Protocol, in the light of Objective and Principles of the Convention, the experience gained in the Protocol's implementation and the evolution of scientific and technological knowledge;
 - (b) Adopt targets and timetables referred to in Article 3.1;
 - (c) Review and revise the commitments of Annex I Parties referred to in Article 3.2;
 - (d) Receive, review and ensure the publication of information submitted to it, including the reports submitted by Parties pursuant to Article 5;
 - (e) Regularly assess the overall aggregated effect of the steps taken by Annex I Parties in the light of the latest scientific assessments concerning climate change, and the Protocol's objective, and ensure the publication of such assessments;
 - (f) At its first Meeting, agree upon and adopt by consensus, rules of procedure and financial rules for itself and for any subsidiary body;
 - (g) Receive reports from, and if necessary give guidance to the financial mechanism and to subsidiary bodies on matters relating to the implementation of this Protocol;
 - (h) Seek and utilize, where appropriate, the services and cooperation of , and information provided by, competent international organizations and intergovernmental and non – governmental bodies;
 - (I) Establish further subsidiary bodies as may be deemed necessary for the implementation of the Protocol;

- (j) Make recommendations on any matters necessary for the implementation of this Protocol;
 - (k) Consider and if approved, adopt proposal for any amendment of or addition to this Protocol or any annex thereto; and
 - (l) Exercise such other functions as are required for the implementation of this Protocol, including any functions assigned to it by the Conference of the Parties.
2. The Secretariat shall convene the first Meeting of the Parties not later than one year after the date of the entry into force of this Protocol and if feasible, in conjunction with a meeting of the Conference of the Parties. Thereafter ordinary sessions of the Meeting of the Parties shall be held every year in conjunction with sessions of the Conference of the Parties, unless otherwise decided by the Meeting of the Parties.
 3. Extraordinary sessions of the Meeting of the Parties shall be held at such other times as may be deemed necessary by the Meeting of the Parties, or at the written request of any Party, provided that, within six months of such a request being communicated to the Parties by the Secretariat, it is supported by at least one third of the Parties.
 4. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not Party to this Protocol, may be represented at any Meeting 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 Protocol and which has informed the Secretariat of its wish to be represented at a session of the Meeting 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 Parties at their first Meeting.

Article 9 – Settlement of disputes

In the event of a dispute arising between any two or more Parties concerning the interpretation or application of the Protocol, the Parties shall seek a settlement in accordance with Article 14 of the Convention.

Article 10 – Amendments to the protocol

1. Any Party may propose amendments to the Protocol.
2. Amendments to the Protocol shall be adopted at a Meeting of the Parties. The text of any proposed amendment to the Protocol shall be communicated to the Secretariat who shall inform the Parties of the proposed amendment at least 6 months before the meeting at which it is proposed for adoption.

3. The Parties shall make every effort to reach agreement on any proposed amendments to the Protocol 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 two – thirds 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 two – thirds of the Parties to the Protocol.
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 11 – Adoption and amendment of annexes to the Protocol

1. The Meeting of the Parties may adopt annexes to this Protocol. Such annexes shall form an integral part thereof and, unless otherwise expressly provided, a reference to the Protocol shall constitute at the same time a reference to any annexes thereto.
2. Annexes to the Protocol shall be proposed and adopted in accordance with the procedure set out in Article 10, paragraphs 2 and 3 above.
3. An annex that has been adopted in accordance with paragraph 2 above shall enter into force for all Parties to the Protocol 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 Protocol shall be subject to the same procedure as that for the proposal and adoption of annexes to the Protocol 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 Protocol, that annex or amendment to an annex shall not enter into force until such time as the amendment to the Protocol enters into force.

Article 12 – Relationship between this Protocol and the Convention

Except as otherwise provided in this Protocol, the provisions of the Convention relating to its protocols shall apply to this Protocol.

Article 13 – Right to vote

1. Each Party to the Protocol shall have one vote, except as provided for in paragraph 2 below.
2. Regional economic integration organisations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Parties to the Protocol. Such an organisation shall not exercise its right to vote if any of its member States exercised its right, and vice versa.

Article 14 – Depositary

As provided under Article 19 of the Convention, the Secretary – General of the United Nations shall be the Depositary of the Protocol.

Article 15 – Signature

The Protocol shall be open for signature by States Members of the United Nations or any of its specialised agencies or that are Parties to the Statute of the International Court of Justice and by regional economic integration organisations at Berlin during the first session of the Conference of the Parties, and thereafter at the United Nations Headquarters in New York from 8 April 1995 to 7 April 1996.

Article 16 – Ratification, acceptance, approval and accession

1. The Protocol shall be subject to ratification, acceptance, approval or accession by States and regional economic integration organisations. It shall be open for accession from the day after the date on which the Protocol is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.
2. Any regional economic integration organisation which becomes a Party to the Protocol without any of its member States being a Party shall be bound by all the obligations under the Protocol. In such cases, the organisation and the member States shall not be entitled to exercise rights under the Protocol 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 Protocol. These organisations shall also inform the Depositary,

who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

Article 17 – Entry into force

1. The Protocol shall enter into force on the ninetieth day after the date of deposit of the thirtieth instrument of ratification, acceptance, approval or accession.
2. For each State or regional economic integration organisation which ratifies, accepts or approves the Protocol or accedes thereto after the deposit of the instrument of ratification, acceptance, approval or accession, the Protocol shall enter into force on the ninetieth day after the date of deposit by such State or regional economic integration organisation of its instrument of ratification, acceptance, approval or accession.
3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organisation shall not be counted as additional to those deposited by State members of the organisation.

Article 18 – Reservations

No reservations may be made to this Protocol.

Article 19 – Withdrawal

1. At any time after three years from the date on which the Protocol has entered into force for a Party, that Party may withdraw from the Protocol by giving notice in writing to the Depository.
2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depository of the notification of withdrawal or on such later date as may be specified in the notice of withdrawal.
3. Any Party which withdraws from the Convention shall, pursuant to Article 25 of the Convention, be considered to have withdrawn from this Protocol also.

Article 20 – Authentic Texts

The original of this Protocol, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary – General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorised to that effect, have signed this Protocol.

DONE at Berlin this _____ day of _____ one thousand nine hundred and ninety five.

Council conclusions on climate change adopted 9 March 1995

Following a discussion on preparation for the first Conference of the Parties to the UN Framework Convention on Climate Change (Berlin, March – April 1995), the Council adopted the following conclusions:

1. The Council confirms the conclusions which it adopted at the meeting on 15 and 16 December 1994. It reiterates its view that commitments to reduce greenhouse gases to their 1990 level by the year 2000 are insufficient to achieve the ultimate objective laid down in Article 2 of the Convention. It therefore considers Article 4(2)(a) and (b) of the Convention to be inadequate.
2. The Council reaffirms the European Union's determination to meet its existing commitments and to take such additional measures as may be necessary to achieve this, and urges all other Annex I Parties to do the same.

The Council, confirming its conclusions of 29 October 1990 inter alia to stabilize CO₂ emissions in the Community as a whole at 1990 levels by the year 2000, calls upon the other Annex I Parties also to commit themselves to stabilizing their CO₂ emissions individually or jointly at 1990 level by the year 2000, i.e. at least not to exceed this level after 2000.

3. INC 11 acknowledged the commitments in Article 4(2)(a) and (b) to be only a first step on the way to the Convention's ultimate objective and the need of their review at the first Conference of the Parties. The Council would emphasize that the second stage begins as of the year 2000, since the present commitments make no provision for the period after that date.
4. The Council notes that for the commitments regarding the period after 2000, in view of likely ratification times, a protocol on policies and measures as well as targets and timetables in order to limit and progressively reduce greenhouse gas emissions would need to have been adopted in 1997 in order to enter into force by 2000. If it is to be adopted in 1997, such a protocol would have to be drawn up in the course of a set of negotiations likely to extend over two years.
5. The Council therefore reaffirms that the first Conference of the Parties needs at least to map out the mandate for negotiations on a protocol and set a time limit for its conclusion.
6. The Council considers it desirable, drawing upon its conclusions of 15 and 16 December 1994, and in the light of the discussions at INC 11, that the mandate to be decided upon by the first Conference of the Parties contain, in particular, the following key elements:

- (a) Provision of a second step towards achieving the ultimate objective of the Convention.
- (b) Establishment of a special ad hoc working group, under the auspices of the Conference of the Parties, to elaborate a protocol, to which as many Parties as possible could adhere, building upon the principles in Article 3 of the Framework Convention on Climate Change and the findings of the IPCC including its Second Assessment Report. The AOSIS protocol proposal and the German delegation's suggestions will as well as others form part of the negotiations.
- (c) Report of the ad hoc group to the second Conference of the Parties on the state of negotiations on the protocol; completion of the negotiations six months before the third Conference of the Parties in order to allow adoption during that Conference.
- (d) Inclusion in the ad hoc group's working programme, in cooperation with the other subsidiary bodies, of an analysis or assessment to identify potential and possible policies and measures for achieving limitations and progressive reductions of greenhouse gas emissions.
- (e) Consideration of the following key elements for inclusion in the protocol:
 - (I) comprehensiveness of the protocol, covering all greenhouse gases, their sources and sinks and all relevant sectors;
 - (ii) common but differentiated responsibilities of Parties in line with their respective capabilities and possibilities:
 - lead responsibility of Annex I Parties through specific commitments, individually or jointly, strengthening and enlarging those undertaken in Article 4(2)(a) and (b) of the Convention,
 - participation, over time, of non – Annex I Parties as recognized in Article 4(2)(f) and (g); establishment of a framework leading to sustainable patterns of economic development that will secure steadily increasing economic growth while restraining the growth of greenhouse gas emissions;
 - (iii) combined approach including both policies and measures as well as targets and timetables such as 2005 and 2010, taking into account the differences in starting points and approaches, economic structures and resource bases as set out in Article 4(2)(a);
 - (iv) coordinated policies and measures covering CO₂ and other greenhouse gases, in particular in those areas where international coordination is called for in view of competitiveness concerns, priority being given to:

- measures subject to competitiveness concerns;
- measures concerning globally oriented industrial sectors;
- measures in sectors where decisions may have long term adverse effects on climate change;
- measures relating to tradeable products,

in particular when these measures represent:

- * potential or actual globally significant greenhouse gas emissions or sinks;
- * potential significant benefits in addressing other problems;
- * potential further steps towards better energy efficiency;

taking into account, inter alia, in an appropriate way the indicative list of possible policies and measures shown in the Annex to the present conclusions.

- (v) regular review of the commitments relating to the limitation and reduction of greenhouse gas emissions;
- (vi) provisions to coordinate and exchange experience on national policies and measures in areas of interest, particularly those identified in the review and synthesis reports as a major contributor to greenhouse gas emissions;
- (vii) provisions regarding public access to information on energy consumption and on national policies, regional institutes in charge of promoting a rational use of energy and energy labelling.

7. The key elements for the mandate outlined above should form the basis for consultations and negotiations.

INDICATIVE LIST OF POSSIBLE POLICIES AND MEASURES

Measures regarding energy use and CO₂

- use of economic instruments, including fiscal measures such as CO₂/energy taxation and elimination of disincentives to the efficient use of energy;
- CO₂ emissions from large combustion plants;
- energy consumption by household appliances;
- thermal insulation of buildings;
- CO₂ emissions from energy – intensive industrial sectors;
- CO₂ and other greenhouse gas emissions from vehicles, and more generally from the terrestrial transport sector;
- CO₂ and other greenhouse gas emissions from international transport, especially from aeroplanes and boats;
- promotion of the use of new and renewable sources of energy;
- storage of carbon in forests.

Measures regarding CH₄

- limitation of CH₄ emissions from extraction and transfer of coal and gas;
- limitation of CH₄ emissions from waste disposal.

Measures regarding N₂O

- N₂O emissions from some industrial processes (adipic acid, nitric acid, ...);
- N₂O emissions related to fertilizer use.

Measures regarding HFCs and PFCs

- limitation of HFCs and PFCs emissions through an optimization of their use in all activities, i.e. in refrigeration and air – conditioning systems.

Resolution¹

on all ACP Small Island States - climate change and the environment

The ACP-EU Joint Assembly,

- meeting in Luxembourg from 23 to 26 September 1996,
- A. having regard to its previous resolutions on Small Island States, climate change and the environment adopted in Libreville (Gabon) - (July 1994), Dakar (Senegal) - (January/February 1995), Brussels (Belgium) - (September 1995) and Windhoek (Namibia) - (March 1996) and to its earlier resolution on sustainable development adopted in Strasbourg (France) - (February 1994),
- B. recalling the resolutions and the programmes of action adopted by the Global Conference on the Sustainable Development of Small Island States (Bridgetown, Barbados, April/May 1994), which specifically identified 'Climate Change and Sea Level Rise' as the priority environmental issue for Small Island States,
- C. also recalling the report of the first session of the Conference of Parties to the Framework Convention on Climate Change, held in Berlin (Germany) from 28 March to 7 April 1995 and the proposals for a Protocol of the Alliance of Small Island States (AOSIS), which was formed as a result of the environmental concerns of small island developing states, whose very existence is threatened by the impacts of climate change
- D. drawing attention to the Ministerial Declaration adopted at the second session of the Conference of Parties to the United Nations Framework Convention on Climate Change (Geneva, July 1996) which recognized and endorsed the Second Assessment Report of the IPCC as currently the most comprehensive and authoritative assessment of the science of climate change, its impact and response options; and noting its findings, in particular the confirmation of human influence on the global climate and instructed that negotiations on a Protocol to encompass the remit of the Berlin Mandate be accelerated,

¹ Adopted by the ACP-EU Joint Assembly on 26 September 1996 in Luxembourg.

- E. recalling in this regard that the World's Bank's views has concluded that better environmental management is a necessity for improved health standards, more equitable development, economic growth and poverty alleviation,
- F. welcoming the conclusions on climate change of the June 1996 meeting of the Environment Council of the European Union, especially the reaffirmation of the Community's strong preference for a Protocol to advance the implementation of the Berlin Mandate and of its intent to reduce greenhouse gas emissions significantly after the year 2000, appreciating its attempt to define a dangerous level of climatic change but emphasizing that global average temperatures of two degrees above pre-industrial levels are an unacceptably high level,
- G. taking note of the recent WHO/WMO/UNEP Report on Climate Change and Human Health, which concludes that climate change is likely to disturb various natural and ecological systems, thus triggering a host of mostly adverse effects on human health, and to impact on agriculture, ocean fisheries and the emergence, resurgence and transmission of infectious diseases, including tropical vector-borne diseases, and their extension to previously unaffected areas,
- H. drawing attention to the view of forest experts that the decrease in the world's rainforests is affecting the global climate, while at the same time the climate change is affecting the forests,
- I. having heard the testimony of the experts and invited speakers at the Hearing on Climate Change and the resultant environmental and health problems which are specifically associated with small island states on 25 September 1996, which emphasized in particular
 - (i) the dangers posed by changes in the world's climate for human health,
 - (ii) the significant increase in recent years in the frequency and severity of hurricanes and cyclones in the Caribbean, Pacific and the Indian Ocean regions, the threat these pose to life and, property and their impact on social and economic development, including agriculture and tourism,
 - (iii) bio-diversity under threat and fragile ecosystems,
- J. knowing and deeply concerned that the increase in concentrations and emissions of greenhouse gases, including human-induced chlorofluorocarbons, will result in further warming of the earth and that this increase in the average surface temperature will have far-reaching consequences for rainfall patterns, sea-levels, the volatility of climate conditions and thus for rainforests, land use, coastal flooding and erosion, agriculture, human health etc. with all the attendant social disruption,
- K. recognizing the obligations of ACP/EU States in respect of the protection and enhancement of the Environment as provided under Part 2 Title 1 of the Lomé Convention (revised),

1. Extends its appreciation to the Co-Presidents, the experts from affected ACP Small Island States and other invited speakers for their contributions in the Hearing on Climate Change;
2. Welcomes the decision to create a Working Group to assess the impact of climate change on all the ACP Small Island States and propose strategies for heightening international awareness of the dangers posed by climate change to their fragile eco-systems and economies and to the health of their peoples;
3. Deplores the fact that the European Union can probably not reach its self-imposed target for CO₂ reduction;
4. Calls on the European Commission and the Member States of the European Union to do everything to achieve a reduction of CO₂, including tax reform (combining a CO₂/energy tax and the reduction of other taxes);
5. Welcomes the report of the Commission on the action taken pursuant to its previous appeals to the European Community, its Member States and the Commission in respect of:
 - (i) continued assistance to the Caribbean, Pacific and Indian Ocean countries hit by hurricanes and cyclones in 1994 and 1995,
 - (ii) the options for achieving the 'Toronto target';
 - (iii) the updating of its climate change strategy for the period post-2000 to achieve significant reductions in emissions in climate change gasses over the coming decades;
 - (iv) its assistance to ACP Small Island States on a regional basis, under separate and specific EDF allocation outside their National Indicative Programmes and Regional Indicative Programmes, in strengthening their disaster monitoring and preparedness programmes, including strategies and measures for adaption to climate change and lessening of the impact of its consequential effects on their environment,
 - (v) its acceleration of the transfer of appropriate technologies and practices to enable ACP States to develop coastal zone management strategies and to rehabilitate and protect areas affected by drought and desertification as well as by hurricanes and floods;
6. Deplores, however, the fact that measures for the protection of the climate were not sufficiently funded with resources from the EDF;
7. Appeals to the Commission and the ACP countries to ensure that every project must be environmentally compatible and respect especially the protection of the climate;
8. Calls on all Member States of the European Union and the ACP countries to do everything possible to ensure that the AOSIS protocol is adopted in Kyoto;

9. Calls on the contracting parties to the Climate Change Convention to pay greater attention to the important role which forests play in regulating climatic patterns at the local, regional and global levels,
10. Follows with interest the work of the Intergovernmental Panel on Forests (IPF) and urges this forum to place greater emphasis on the root causes of deforestation, such as inequitable land tenure systems and the overconsumption of forest products;
11. Again urges the developed partners of the Lomé Convention to take the lead in combating climate change and the adverse effects thereof in line with the principle that the world's climate and ecological system should be 'protected for the benefit of present and future generations of humankind';
12. Recognizes that, because of ecological and climatic conditions, only certain specific crops are suitable for cultivation in small island States and that such crops are not only environment-friendly but also help to deal with the problems of flooding, pollution and erosion;
13. Urges that the strategies and measures to assist ACP Small Island States in adapting to climate change and lessening the impact of its effects on their environment should be backed up by sufficient resources, exploiting fully the range of physical assets of the islands' economies in the way which is most environmentally friendly and which in the long term will contribute to stabilizing and reducing human impact on the global climate;
14. Requests the Commission to keep the Joint Assembly informed of its implementation of the recommendations of this resolution;
15. Instructs its Co-Presidents to forward this resolution to the ACP-EU Council, the Commission, the Caribbean Community (CARICOM), the South Pacific Forum, Cariforum, the ICDCS, the WAEC and the Indian Ocean Commission.

Alliance of Small Island States (AOSIS)

Members states (as at 1 September 1996)

Atlantic

1. Cape Verde*
2. Guinea – Bissau
3. Sao Tome and Principe

Caribbean

4. Antigua and Barbuda*
5. Bahamas
6. Barbados*
7. Belize*
8. Cuba*
9. Dominica*
10. Grenada*
11. Guyana*
12. Jamaica*
13. St. Kitts and Nevis*
14. St. Lucia*
15. St. Vincent and the Grenadines
16. Suriname
17. Trinidad and Tobago*

Indian Ocean

18. Comoros*
19. Maldives*
20. Mauritius*
21. Seychelles*

Mediterranean

22. Cyprus
23. Malta*

Pacific

24. Cook Islands**
25. Federated States of Micronesia*
26. Fiji*
27. Kiribati**
28. Marshal Islands*
29. Nauru**
30. Niue**
31. Palau
32. Papua New Guinea*
33. Samoa*
34. Solomon Islands*
35. Toga#
36. Tuvalu**
37. Vanuatu*

South China Sea

38. Singapore

Observers#

1. American Samoa
2. Guam
3. Netherlands Antilles
4. US Virgin Islands

* Parties to the UN Framework Convention on Climate Change

Not members of the United Nations

AOSIS is an alliance of small mostly developing island states which share common objectives on environmental and sustainable development matters. The alliance was formed during the Second World Climate Conference in 1990 and comprise small island and low – lying coastal states. Countries of the group are particularly vulnerable to the adverse consequences of climate change such as sea level rise, coral bleaching, and the increased frequency and intensity of tropical storms.

Abbreviations

AOSIS	Alliance of Small Island States
ARM	Atmospheric Radiation Measurement
CO ₂	Carbon dioxide
COP	Conference of the Parties
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gasses
GNP	Gross National Product
ICM	Integrated coastal management
IOC	Intergovernmental Oceanographic Commission
IPCC	International Panel on Climate Change
IUCN	World Conservation Union
NCPs	National Communication Plans
OECD	Organisation for Economic Cooperation and Development
PICCAP	Pacific Islands Climate Change Assistance Programme
SIDS	Small Island Developing States
SLR	Sea Level Rise
SPREP	South Pacific Regional Environment Programme
UNCED	United Nations Conference on Environment and Development (1992)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization
WWF	World Wide Fund for Nature

The following publications have appeared in the External Economic Relations Series:

- No 1 (10/1989): L'Association européenne de libre – échange et le marché unique communautaire. FR
- No 2 (10/1990): Third World Debt – Analyses. All official languages.
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