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**THIRD ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON
CLIMATE CHANGE (IPCC)**

Submissions from Parties

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its fifteenth session, invited Parties to provide their views on the information contained in the Third Assessment Report of the IPCC (TAR) and on possible IPCC activities in support of the United Nations Framework Convention on Climate Change and its Kyoto Protocol by 15 February 2002 for compilation in a miscellaneous document (FCCC/SBSTA/2001/8, para. 12 (c)).
2. Ten such submissions* have been received. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced in the language in which they were received and without formal editing.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO. 1: AUSTRALIA

- A) THE IMPLICATIONS OF THE INFORMATION CONTAINED IN THE THIRD ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
- B) POSSIBLE ACTIVITIES BY THE IPCC IN SUPPORT OF THE NEEDS OF THE CONVENTION AND ITS KYOTO PROTOCOL

The 15th session of the Subsidiary Body for Scientific and Technological Advice invited Parties to submit their views on:

- a) The implications of the information contained in the Third Assessment Report of the IPCC;
- b) Possible activities by the IPCC in support of the needs of the Convention and its Kyoto Protocol.

[Ref: Document FCCC/SBSTA/2001/L.17, paragraph 3(a) & (b)]

Introduction

Australia welcomes the opportunity to submit views on the Third Assessment Report (TAR) of the Intergovernmental Panel on Climate Change (IPCC). Australia commends the significant achievement of the IPCC in successfully concluding this body of work, and acknowledges the high quality and integrity of the outcomes. The outstanding contributions made by the IPCC Chair and Bureau members merit particular recognition, as do the dedicated efforts of the many teams of authors, reviewers and technical support staff.

a) The implications of the information contained in the TAR

Australia considers that the information contained in the four volumes of the TAR strongly reinforces the message that climate change is one of the most pressing concerns facing governments today. Key among the findings of the TAR are the conclusions that there is new and stronger evidence that human activity has contributed to observed changes in the climate over the past 50 years, and that the climate will continue to change in the future. The TAR concludes that the impacts of these changes are likely to be widespread and serious, and that some may be irreversible. The IPCC findings, however, point to significant global opportunities for abatement actions, and reach the important conclusion that the earlier action is taken, the lower the size and scale of the potential impacts will be.

These messages serve as a timely reinforcement of the importance of maintaining a strong global focus on tackling the question of climate change.

National Response Strategies

The findings of the TAR have significantly advanced the state of knowledge about climate change since the time of the Second Assessment Report (SAR) of 1995. Uncertainties have been more clearly enunciated and, in many cases, reduced, and confidence levels have increased in many key areas. This has provided a renewed imperative for developing, or reviewing and updating, national greenhouse response strategies for all countries.

Of particular significance for response strategies are increased certainty levels on past and present trends in, and relationships between, such things as CO₂ concentrations, temperature changes, sea level trends, systems and species sensitivity, risk factors, and value of adaptation measures. More robust information is presented on time lags and persistence of climate change effects. Confidence levels in relation to the impacts of climate change on human and natural systems have increased through the findings of Working

Group II, and there are improved regional emphases. Working Group III provides conclusions about mitigation options that take into account factors such as the Kyoto Protocol, sectoral and regional aspects of climate change, and barriers to technology uptake. As well, Working Group III identifies important synergies between action to mitigate climate change, and overall development and sustainability goals.

The Synthesis Report of the TAR delivers valuable resource material for addressing future climate change action, bringing together findings from both the TAR and other IPCC work to directly address the priority concerns of Parties. Particularly relevant are conclusions on the policy implications of the inertia inherent in the climate, ecological and socio-economic systems. Time lags and persistence in these interacting systems mean that delays in action may result in lost opportunities for adaptation and mitigation, and irreversible consequences of climate change. These findings (SYR Question 5) highlight the need for urgent global action to address appropriate strategies and timetables for climate change response.

National Adaptation Strategies

The TAR findings have reinforced adaptation as a critical issue. Working Group II conclusions have progressed understanding in this area, in particular underscoring the need for adaptation strategies at national and local levels to complement mitigation efforts. The TAR conclusions show that all countries and all regions of the world will need to anticipate climate change impacts. They also point to important synergies between addressing climate change risks and promoting equity and development objectives, which have significant implications for forward strategies in all countries.

Research and monitoring

The TAR findings acknowledge the significant progress that has been achieved in gaining the knowledge required to understand climate change and climate change response. The TAR has also provided clarity on the extent and nature of remaining uncertainties across the broad spectrum of climate change knowledge. This highlights the need for further and more targeted research to help reduce uncertainties in key areas and strengthen quantitative conclusions, as well as the need to address remaining gaps in information and understanding, to improve the ability to detect, attribute and understand climate change.

Working Group I places high priority on the need for systematic and sustained observations with a particular focus on reversing the decline of observational networks in many parts of the world, and for additional modelling and process studies. Working Group II concludes that there are significant differences in vulnerability to the effects of climate change both within and across regions, with the observation that, as available studies have not employed a common set of scenarios and methods, assessments of regional vulnerability are of necessity qualitative. Uncertainties regarding the sensitivities and adaptability of natural and social systems also contribute to this. Chapter 19 of Working Group II discusses this further, and offers directions for future research that could improve confidence levels. Working Group III also identifies knowledge gaps where further research is required, particularly with regard to technological, economic, social and institutional aspects of climate change in all countries, and research on options and costs.

Enhancement of biological mitigation

Working Group III concluded “Forests, agricultural lands and other terrestrial ecosystems offer significant carbon mitigation potential [which] may allow time for other options to be further developed and implemented.” This is a clear signal to governments, reinforced by the recent finalisation of the rules for inclusion of greenhouse sinks under the Kyoto Protocol, that land-use and forestry activities form a key part of an effective, low-cost response to climate change. Another critical message is that

biological mitigation options may have social, economic and environmental benefits that go beyond reductions in atmospheric CO₂. For example, Australia is seeking to maximise ancillary benefits of sinks activities including mitigation of salinity and other forms of land degradation, biodiversity conservation and protection of water quality, diversification of farm incomes, and increased employment.

Global response – beyond the Kyoto Protocol

One of the most significant conclusions of the TAR, from the point of view of the policy agenda, is that models indicate that emissions from all regions will have to move onto a lower trajectory at some point in order to achieve stabilisation of global greenhouse gas concentrations. Allied with this is the conclusion that, because of the pervasiveness of inertia and the possibility of irreversibility in the interacting climate, ecological and socio-economic systems, if anticipatory actions are delayed, opportunities to exercise adaptation and mitigation options may be lost. This is particularly relevant in the context of Working Group III conclusions that many opportunities already exist to reduce near-term emissions, and that substantial low-cost mitigation opportunities are already available.

Working Group III concludes that climate change is a problem with unique characteristics, involving complex interactions between climatic, environmental economic, political, institutional, social and technological processes. Climate change is global, long-term over several centuries, and has significant international and intergenerational implications. Collectively, these conclusions point to mounting evidence that climate change should be regarded as an issue of primary and central concern by all governments. Developing countries will need to play their part as well, and urgent attention must be given to building capacities in this respect, and to maximising synergies with other development objectives. The TAR conclusions clearly underscore the need for emissions limitation action to be urgently addressed in the short-term to take advantage of the substantial low-cost mitigation opportunities already available, for a wholly global response to be adopted, and for the maintenance of a strong momentum in progressing the climate change agenda.

Future action by the SBSTA and other bodies

The IPCC has striven to maintain its position as an independent and neutral source of scientific assessments, and has taken great care to ensure that its findings are relevant to policymakers, but not prescriptive. As a complementary source of scientific and technological advice to the Convention Parties, SBSTA has an important role to play in interpreting the TAR outcomes and debating them in a policy context for the Convention and the Protocol. Another important task for the SBSTA will be to develop a strategic approach to tackling the wide range of issues emerging from the TAR, and map out a work program and timelines for their consideration. The SBSTA should also be pro-active in clearly communicating its future needs to the IPCC to ensure that these are optimised in the development of the IPCC's forward work agenda. In particular, the SBSTA could:

- Review the current nature, structure and timing of assessment information provided by the IPCC, to determine its continued appropriateness for the information needs of the Convention and the Kyoto Protocol.
- Request the IPCC to review its future program of work and priorities in the light of the forward agenda emerging from the Marrakesh Accords.
- Identify synergies and possible partnerships with other bodies contributing to the climate change agenda, such as the GEF, UNEP, WMO and UNDP, in planning actions in respect of key TAR outcomes.
- Establish a forward work program for SBSTA that sets out appropriate action and timeframes that reflect key TAR outcomes. Key elements of this work program could include:
 - SBSTA's role in promoting capacity building in climate change research and systematic observation.

- SBSTA's role in promoting the establishment and development of national greenhouse response strategies, in particular linking the findings of the TAR to methodologies for designing response measures relating to both mitigation and adaptation.
- SBSTA's role in promoting cooperation among Parties in assessing and managing impact and adaptation options, including exchange of experience and capacity building.

This is a substantial and ongoing focus for SBSTA that needs to be progressed in an integrated and systematic way. To this end the SBSTA sessions ahead should contain as a standing agenda item the consideration of follow-up to the IPCC Third Assessment Report.

b) Possible activities by the IPCC in support of the needs of the Convention and its Kyoto Protocol

The completion of the Third Assessment cycle by the IPCC coincides with the finalisation of a distinctive phase in the international climate change negotiations, culminating in agreement on the rules for implementation of the Kyoto Protocol. It is reasonable to envisage that the focus of the negotiations will shift henceforward, and that the needs of the Convention and the Protocol will assume a different character. Australia's view is that there is a clear and ongoing role for the IPCC whatever the character of the next phase of the international agenda, in providing periodic assessments that will continue to strengthen the scientific, economic and technical underpinning for climate change decisionmaking. It is Australia's view that the IPCC should continue to do this principally through its existing suite of products, of which the Fourth Assessment Report should continue to be the centrepiece. Australia considers that it is timely for the IPCC to plan its detailed program of work and priorities in the context of:

- current gaps in knowledge
- Marrakech outcomes
- future needs of the Convention and the Protocol.

Emphases in future IPCC activities could include an increased focus on available knowledge and range of views about different emissions pathways, and associated economic, social and environmental implications. An important aspect of this would be to assess not only the costs and benefits of mitigation, but also the costs of taking no action – that is to align information about costs of abatement action with information on costs of projected impacts and necessary adaptation measures.

Other areas where the IPCC could provide valuable input to the negotiating agenda could be:

- greater focus on relative effectiveness of mitigation options and similarly of adaptation options
- assessment of alternative approaches to understanding and projecting the regional effects of climate change
- expanded focus on methodological issues in relation to emissions reporting, especially for biological mitigation measures.

The IPCC could also look to the longer term and give greater focus to mapping out new or alternative mitigation and adaptation options. Work to objectively assess knowledge about new technologies and innovative approaches could not only inform implementation strategies, but also help to stimulate further development in this direction.

PAPER NO. 2: CANADA

THE SCIENTIFIC, TECHNICAL AND SOCIO-ECONOMIC CONCLUSIONS OF THE IPCC THIRD ASSESSMENT REPORT (TAR) IN SUPPORT OF THE UNFCCC AND KYOTO PROTOCOL AND PROPOSED TERMS OF REFERENCE FOR THE UNFCCC WORKSHOP ON THE TAR (FCCC/SBSTA/2001/L.17, PARA.3 AND 4).

General Comments:

The Third Assessment Report (TAR) and Synthesis Report address issues of key concern to policy makers and can play a central role in advancing the Convention and implementation of the Kyoto Protocol in coming years. Canada intends to give full consideration to the findings in the TAR as we further develop and implement our national climate change strategy. In this submission we offer our views on ways the SBSTA might best integrate the information contained in the TAR towards achieving the global climate change mitigation and adaptation objectives of the UNFCCC.

Main Points:

Article 2 of the UNFCCC declares the ultimate objective of the Convention to be “stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. The IPCC assessments provide essential and up-to-date scientific, technical and socio-economic information that will be necessary to an eventual determination of what might constitute dangerous interference and critical GHG levels, as well as elaborating many responses that might be undertaken. The Third Assessment Report (TAR) makes considerable progress towards improving our understanding of global warming and assessing where major uncertainties exist and where further research efforts are needed.

The TAR demonstrates that decisions on what constitutes critical GHG levels will be intricately linked with further monitoring and research on: detecting, attributing, and projecting climate change and the impacts of climate change; the vulnerabilities of natural and human systems and the adaptive and mitigative capacities of communities from the local to global scale; and the effectiveness of adaptation and mitigation options. These findings can provide Parties a useful basis on which to focus our attention and guide future research efforts.

To date IPCC assessments have focused on improving our scientific understanding of the changing climate, impacts and response options. The TAR differs from previous assessments in that it assesses not only possible mitigation and adaptation options but also the factors that may constrain the implementation of these options. The TAR identifies that it is the adaptive and mitigative capacities of nations, regions, communities, or individuals that determine the effectiveness of their implementation.

The concepts of adaptive and mitigative capacity put forth in the TAR offers an opportunity for a more comprehensive and global view of adaptation and mitigation questions and adds precision to the principles of cost-effectiveness, sustainable development and equity enshrined in the UNFCCC and the Kyoto Protocol. Parties need to reach agreement on what constitutes equitable and meaningful participation by countries. This debate will benefit from further development of the new information on countries respective mitigative and adaptive capacities for action put forth in the TAR. A framework organised around adaptation and mitigation capacity has the potential to foster more dynamic discussions based on a wider range of perspectives and to recognise important variations within and between countries.

It makes sense that by addressing the constraints and challenges to implementing adaptation and mitigation options the SBSTA can best contribute to facilitating actions that will lead to the global mitigation of GHGs and adaptation to the adverse effects of climate change. The importance of building global capacities to implement technological and policy options to mitigate GHGs and adapt to the adverse impacts of climate change should compliment parallel efforts in improving knowledge of climate science, impacts, vulnerabilities and adaptation and research to develop further adaptation and mitigation tools.

Background:

The scientific evidence put forth in the IPCC Third Assessment Report, taking into account the remaining uncertainties and possibilities for further precision, strongly enforces the need for governments to take immediate action to address climate change even if, at present, it is difficult to decide upon a target for atmospheric CO₂ concentrations and specific time-frames. According to the TAR, although the international community has made some progress towards reducing greenhouse gas emissions, primarily based on the UNFCCC and the Kyoto Protocol, these are small steps towards the global efforts required to avoid "dangerous anthropogenic interference with the climate system".

The TAR assesses possible pathways of future net emissions that might lead to stabilisation at different levels and these indicate that stabilization of CO₂ concentrations at any level will require substantive mitigation of global greenhouse gases. Due to the long atmospheric lifetime of CO₂ and the affect of cumulative emissions, even immediate and drastic reduction of global CO₂ emissions from today's levels, highly improbable given current emissions trends, would not be sufficient to avoid some climate changes and impacts throughout this century, including increases in temperature and sea-level rise.

Clearly some degree of climate change cannot be avoided and adaptation will be a necessary response to address the impacts. Mitigation and adaptation, however, must be seen as complementary responses to reduce climate change risks. Without commensurate and significant global emissions reduction efforts, costs of damages and adaptation needs will grow and impacts may even be irreparable.

The TAR provides a useful assessment of technologies and policy instruments for reducing emissions, enhancing sinks of greenhouse gases and adapting to the impacts of climate change, which leads to the question of how the SBSTA should encourage Parties to make use of the expanded set of possible options. While the TAR identifies many cost-effective/no regret actions that all countries might take immediately to both mitigate and adapt to climate change, it also identifies that there are a wide range of constraints and challenges which may influence the effectiveness and the cost of their implementation.

Taking an important step forward, the TAR identifies that it is the adaptive capacity of a nation, region, community, or individuals to cope with the impacts of climate change that is the key factor in assessing vulnerability and determining appropriateness of adaptation options. Likewise, the TAR proposes that unique circumstances of a nation, region, community, or individuals determine their relative capacities to mitigate GHG emissions, and as such mitigative capacity must be a key factor in assessing mitigation options.

The TAR reports that although there is not a lot of literature elaborating the determinants of adaptive capacity in the climate change context, the study of adaptive capacities in other related fields identify the determining factors as the technical, economic, political, cultural, social, behavioral and institutional realities in which adaptations take place (IPCC TAR WGII 18.5.2).

The TAR suggests the factors influencing adaptive capacity are likely the same factors influencing mitigation and there is information in the TAR that explores the possibility to also develop a range of

indicators of mitigative capacity that reflect national circumstances and relative capabilities (IPCC TAR WGIII 1.5). The TAR suggests eight “distinct but inter-related” determinants of mitigative capacity: the range of viable technological options; the range of viable policy instruments; the structure of critical institutions and allocation of decision making authority; the availability and distribution of resources; human capital including education and personal security; social capital including property rights; access to risk-spreading; and the ability of decision makers to manage information and the credibility of decision makers.¹

Approaching climate change issues from a capacity perspective has the potential to help to resolve many difficult issues. For instance, a capacity assessment framework would better define national circumstances and clearly elucidate the constraints and barriers Parties face in implementing domestic policies and measures. Elaboration of the determinants of adaptive and mitigative capacity could provide a systematic means of evaluating technological options and policy instruments against a range of other critical parameters. This will help nations set national policy and project priorities and tailor their climate change plans to be most cost-effective and best contribute to reduction of their vulnerabilities and reinforcement of their long term mitigative capacity. It will also help to highlight areas where exchange of information on policies and measures would be the most useful to Parties.

The TAR emphasises that climate change policy choices will influence development and likewise that development choices will affect climate change adaptation and mitigation. The TAR also concludes that adaptation and mitigation policies are more likely to be implemented if they are pursued in conjunction with other policy objectives. However, to a large extent climate change issues have not been incorporated with other environmental, social and economic issues. The determinants of mitigative and adaptive capacity are not unique to climate change, but are shared across many policy domains. Focusing on these factors offers a straightforward strategy for the integration of climate change considerations with other policy objectives, in particular sustainable development and poverty eradication goals.

Building adaptive and mitigative capacity into the system produces immediate short-term benefits while improving ability to mitigate future risks. This provides policy makers with a tool to avoid problems in dealing with an uncertain future and to focus on pressing issues that, in addition to addressing climate change, have important consequences for immediate priorities associated with development and poverty reduction. It provides a better means of evaluating incremental progress towards a long term goal than levels of GHG emissions alone as it incorporates the constraining factors and recognises the long-term structural changes a country is undertaking to meet its climate change objectives.

Approaching climate change response from an adaptive and mitigative capacity perspective also has the potential to contribute to thinking on ancillary benefits. Present studies look at benefits additional to reduction in GHG emissions arising from climate policy, or GHG emissions reductions arising from policies not aimed directly at climate change. In addition, we should consider the fact that the enhancement of underlying capacities as a product of climate policy produces benefits which resonate throughout the system, and likewise adaptive and mitigative capacity may benefit as a result of non-climate policy. Ancillary benefits studies should incorporate these activities which have significant benefits for adaptation and GHG mitigation over the long-term.

Assessing differences in capacity among groups from the local to global scale and working to improve these capacities can contribute to equity considerations. Furthermore, much of the work on climate change is focused at the global or regional level, however much of the impacts and necessary adaptation and mitigation responses are relevant mainly at the national and sub-national level.² Adaptive and

¹ Also see: Yohe, G.:2001, 'Mitigative Capacity- The Mirror Image of Adaptive Capacity on the Emissions Side', *Climate Change* 49,247-262.

² Guidance Papers on the Crosscutting Issues of the Third Assessment Report of the IPCC, July 2000, p.112.

mitigative capacity considerations focus attention on the full range of stakeholders from the local to global level and can therefore help to address these problems of scale.

Another challenge involves the need to allocate limited resources among mitigation and adaptation efforts. Even though mitigation choices affect adaptation costs, for the most part mitigation and adaptation issues have been looked at separately (IPCC TAR WGIII TS 7.2.4). The TAR points out that "a portfolio of strategies that enhance the capacity to mitigate most effectively should also be effective in enhancing the capacity to adapt" (IPCC TAR WGIII 1.5.3). In short, enhancing any one or more of the shared determinants, for instance improving access to information, can reduce the costs and improve the capacity for both mitigation and adaptation at the same time.

The UNDP/GEF work to develop an Adaptation Policy Framework (APF) provides an excellent illustration of capacity-oriented assessment framework that builds on the contribution of science to impacts and response options in order to develop relevant tools for adaptation policy making. According to UNDP-GEF literature on the subject, the framework is being designed to provide a flexible and inclusive approach for development of national adaptation strategies that can be modified according to the specific needs of countries in any region, and can be integrated into countries sustainable development plans. While previous studies have been oriented to the longer-term, the APF studies recent experiences with climate variability and extremes and is therefore relevant to current policy concerns. Rather than grappling with uncertainties involved with the timing, extent and distribution of future impacts, the APF focuses on strengthening adaptive capacity, building from the bottom-up capacities that have short-term benefits and will also reduce overall vulnerabilities.

The Adaptation Policy Framework may also offer a useful model for the development of a capacity-oriented assessment framework for mitigation, which would be well placed to compliment adaptation strategies and integrate with sustainable development plans.

Future Work on Response Options:

The SBSTA should continue to provide a forum for further dialogue on the development and evolution of adaptation and mitigation methods and tools and support for their dissemination. The SBSTA should consider a new agenda item focused on defining a capacity-oriented mitigation policy framework that will compliment the adaptation policy framework and explore the potential for these to form the basis of an integrated assessment.

Elements of a **new SBSTA agenda item** on mitigation and adaptation capacity could include:

- To elaborate the determinants of mitigative and adaptive capacity and the components of sustainable development and equity important to adaptive and mitigative capacity assessments;
- To pursue a better understanding of how each determinant works, how determinants are inter-related, and how they work to compliment or conflict with one another; and to examine the synergies and conflicts between mitigation and adaptation capacity;
- To explore criteria for measuring and comparing capacities;
- To discuss the opportunities that the determinants of adaptive and mitigative capacities raise for integration of climate change with other policy goals as well as other multilateral environment agreements.

Opportunities to incorporate adaptive and mitigation capacity assessment concepts into **on-going SBSTA agenda items** include:

- Given the close relationship between mitigation and adaptation, the methodological work on the adaptation policy framework should be expanded to incorporate mitigative capacity concepts into the decision-making criteria. The SBSTA should continue to support elaboration of the APF and further pilot projects in more regions in order to accelerate experience with modifying the framework to suit national or regional needs;
- The Policies and Measures debate would benefit from a more detailed discussion, drawing from information contained in the TAR and national communications, of the barriers to adaptation and mitigation taking into account local conditions and unique national circumstances that might affect adaptive and mitigative capacities, and the relative benefits of different P&Ms under varying conditions; work on Ancillary Benefits of policies and measures can be furthered by evaluating the benefits of enhancing capacity across policy domains;
- The integrated assessment of both adaptive and mitigative capacity concepts could contribute to the Article 4.8 capacity building decision by providing countries a basis to identify their priorities and define which activities should be the object of national efforts and those that call for international support;
- Parties may also benefit from an analysis of how adaptive and mitigative capacity concepts may interact with other issues of key importance to the UNFCCC such as technology transfer.

IPCC contributions to work on adaptive and mitigative capacity might include:

- In the next assessment report, a more detailed account of the barriers, climate and non-climatic, to implementing adaptation and mitigation policies and measures;
- Examining the linkages between adaptation, mitigation and sustainable development paths, including the synergies and conflicts between mitigation and adaptation capacity and factors influencing development, and identify data priorities and methods in support of their integrated assessment. The proposed IPCC Technical Paper on Climate Change and Sustainable Development could take first steps in this direction and this should also be a key focus for the next assessment report;
- Assessments within developing countries are often constrained by a lack of research and data. The IPCC might consider developing improved modelling approaches that focus specifically on developing countries development drivers, capture the diversity of developing countries possibilities for alternative development paths, and take into account barriers to implementing sustainable development possibilities.

Future Work on Climate Science and Impacts:

One key gap to be addressed is further refinement not only of the magnitude, but also the rate of anticipated climate changes, and how these changes affect climate variability and climate extremes. Further research is needed to improve our knowledge of climate system processes and feed backs, including a better understanding of the cyrosphere and the affects of clouds and aerosols. Other gaps include how unique and threatened systems will respond to climate changes and the thresholds at which unacceptable or irreparable damage may occur. To address these questions there is a need for, *inter alia*, additional global monitoring capacity, a better resolution of models to understand regional and local features of climate change, and improved capacity to better reconstruct past climates, to differentiate

climate change from natural variability and to understand how climate change impacts may interact with other stresses.

Opportunities and issues which merit **consideration by the SBSTA** include:

- Further research and advances in science are crucial to improve our understanding of the climate system and the impacts of climate change. The IPCC's role is to assess existing literature. If better information is to be available, Parties will need to invest in research and monitoring programmes and training of scientists in their countries. The SBSTA might explore how to optimize research efforts among the many needs;
- The SBSTA should continue to look to the IPCC for up-to-date scientific assessments with particular emphasis on closing the knowledge gaps identified above;
- The SBSTA should continue to explore methods and tools for dissemination and use of the scientific, technical and socio-economic information contained in the TAR;
- The SBSTA should continue to promote the strengthening of international co-operation (i.e. through cooperation with the World Climate Research Program and the Global Climate Observing System (GCOS)), particularly in developing countries;
- The SBSTA should continue to encourage and support work with organizations such as the CBD and CCD that can contribute to our understanding of the impact of climate change on populations, species and ecosystems, and their adaptive capacities. The IPCC Technical Paper on Climate Change and Biodiversity is a good example of how interactions across the Conventions can be elucidated;
- The SBSTA may explore how best to incorporate uncertainties and gaps identified in the TAR into climate change policymaking; and discuss how the IPCC might frame uncertainties and levels of confidence in order to best serve policy makers;
- What constitutes non-hazardous interference with the climate system for one community may not be acceptable for another. Parties should be encouraged to further their own research and develop their own understanding of their most sensitive ecological and socio-economic systems so that discussion can eventually begin to reach a global view of vulnerability.

Other possible **activities by the IPCC** to support the work of the UNFCCC include:

- Priority on improved models that reflect more detailed regional and local climate change features, including vulnerabilities and the costs of damages;
- Further research into the effect of timing of emissions reductions, including inertia in socio-economic systems- time lags between adoption of mitigation goals and their achievement, and time lags involved with identification of climate change impacts, developing effective adaptation strategies and implementing adaptive measures;
- To achieve stabilisation of GHGs at relatively low levels emissions would have to peak early in this century. However, many of the technological improvements involve capital turnover interventions that may take many years to realise. It may be useful to give careful consideration to reducing emissions of GHG gases other than CO₂ that may be more effective in the short-term, as well as mitigation options such as geological carbon storage. IPCC assessment of the short, medium and long-term potential, including implementation issues, of both CO₂ and non-CO₂ mitigation options,

such as via The IPCC Technical Paper on Geological Carbon Storage Technologies, may contribute alternative means and increased flexibility in meeting early GHG reduction targets.

Future Work on Climate Science and Impacts- Polar Regions:

Some of the most pronounced climate change impacts will occur, and are already occurring, in the Polar Regions. The IPCC assessments provide evidence that the Arctic is likely to respond rapidly and more severely than any other area on Earth (the Antarctic will change more slowly). Decreasing sea-ice extent and thickness, lengthening snow and ice free seasons and melting permafrost, are among the many impacts already being observed in the Arctic, all with implications for northern human populations. There are several reasons for global concern. Changes in the Arctic provide an early warning of the kind of climate changes that will affect other regions of the planet in the future (IPCC TAR WG II 16.3.4). Polar Regions play a substantial role in forcing global climate change and feed backs from changes in polar climate systems will amplify impacts of climate change on other regions of the world. Furthermore, for northern countries, major physical, ecological, sociological, and economic impacts are expected and socioeconomic life is particularly vulnerable to climate change in these regions.

- To date, the SBSTA has not discussed Polar Regions in any significant detail. More research is essential to improve our understanding of the global consequence of polar changes. Canada would like to encourage the SBSTA to give closer attention to Arctic climate change issues. Adaptation methodologies being developed should reflect the needs of Polar Regions.

Workshop Terms of Reference:

We suggest the following three aims may provide a useful structure for the UNFCCC workshop (FCCC/SBSTA/2001/L.17, para.3 and 4) on the findings of the TAR:

1. To identify areas the SBSTA believes should be the priority of future IPCC work, for example Technical Papers, Special Reports or key focuses for the Fourth Assessment Report;
2. To allow opportunity for discussion of TAR conclusions that are important to current/ongoing SBSTA work and are relevant for planned workshops;
3. To allow opportunity for discussion of TAR conclusions that could be the object of new SBSTA agenda items and future workshops.

The workshop format could combine presentation by experts on relatively new concepts for the SBSTA, such as adaptive and mitigative capacity, followed by roundtable discussions of how to incorporate TAR conclusions into the UNFCCC process. The results should be reflected in a workshop report to be discussed at SBSTA16, with a view to identifying which items, if any, might be incorporated into SBSTA work.

PAPER NO. 3: CHINA

SUBMISSION ON THE IPCC TAR BY THE CHINESE GOVERNMENT

The Third Assessment Report (TAR) of the IPCC reflects the major progress in current understanding of climate change during the last five years, while large uncertainties remain in many conclusions of the TAR.

The information contained in the TAR

The TAR provides an assessment of new scientific information for policymakers. The following information would be useful for governments in making the response decisions:

- (1) Human activities have increased the atmospheric concentrations of greenhouse gases and aerosols since the pre-industrial era. Carbon dioxide concentrations, globally averaged surface temperature, and sea level are estimated to increase under all IPCC emissions scenarios during the 21st century;
- (2) Estimated climate change will have beneficial and adverse effects on both environmental and socio-economic systems;
- (3) Numerous possible adaptation options for responding to climate change have been identified that can reduce adverse and enhance beneficial impacts of climate change, but will incur costs;
- (4) The development and adoption of new technologies can be accelerated by technology transfer and supportive fiscal and research policies;
- (5) The impact of climate change is estimated to have different effects within and between countries. The challenge of addressing climate change raises an important issue of equity;
- (6) There are many opportunities including technological options to reduce near-term emissions, but barriers to their deployment exist. Development and transfer of environmentally sound technologies could play a critical role in reducing the cost of stabilizing greenhouse gas concentrations;
- (7) The costs of stabilizing CO₂ concentrations in the atmosphere increase as the concentration stabilization level declines;
- (8) The climate change issue is part of the larger challenge of sustainable development. Local, regional, and global environmental issues are closely linked and affect sustainable development. Therefore, there are synergistic opportunities to develop more effective response options to these environmental issues that enhance benefits, reduce costs, and more sustainably meet human needs.

The information contained in the TAR, however, should be thought as of being tentative due to the following uncertainties.

(1) Observation and detection of climate change

Caution should be paid to the uncertainties of the palaeo-records and palaeo-analyses. Due to the problems with tree ring indicator and other proxy data, the hemispheric or global temperature reconstructions in the last years could be only thought as preliminary ones. The range of natural variability in climate is known to be large over time scales of decadal to centuries. In addition, the ability of models to accurately simulate natural variability on long time scales and time histories of the various forcings in the last one or two centuries are also questionable. They obviously need to be improved before a robust conclusion about attribution of climate change could be obtained.

(2) Estimation of future climate

The following factors continue to hinder the progress in estimating the future climate change:

(a) Knowledge gaps in understanding of processes and feedbacks in climate system. Improvements will surely be realized in addressing biogeochemical sequestration and cycling, in determining the spatial-temporal distribution of carbon dioxide sources and sinks, and in understanding and characterizing more completely dominant processes and feedbacks in the climate system; (b) Large uncertainty for forcings including aerosols. The present estimates of the uncertainty are partly subjective and the true forcing is likely to fall outside the estimated range of uncertainty in some cases; (c) Incomplete simulation skill of climate models due to the uncertainties in their formulation and the limited size of their calculations. Presently, the climate models cannot perfectly simulate the state of climate system. Works are needed to improve the global and regional climate models so that the regional details and extreme events could be well simulated.

(3) Impacts and vulnerability assessment

Climate change will excite both negative impact and positive impact. There may be many positive aspects of warming, such as the lengthened growing season in mid-to high latitude belts, the increased grain production in heat-restricted areas of higher latitude or altitude, the decreased energy consumption for heating in winter, and the improved water resource condition in some originally drier regions. In addition, little attention has been given to the uncertainties in assessing regional impacts of climate change and regional vulnerability to the change. Impact studies are based on regional projection or future regional scenarios of climate change, which is generally regarded as being premature.

(4) Risks of climate change impacts

The TAR tried to explain the risks induced by greenhouse gas concentration increase or temperature rise for human beings. However, this conclusion is largely dependent on expert judgments about climate effects at different temperature changes and their likelihood rather than quantitatively impact studies. In fact, it is extremely difficult at this stage to decide a specific level of greenhouse gas concentration critical or dangerous to ecosystems or human society due to the substantial uncertainty inherent in climate change impact studies. The basis for determining what constitutes "dangerous anthropogenic interference" varies among regions and depends upon the impacts of climate change and adaptive and mitigate capacity available to cope with climate change. Obviously more relevant research needs to be done.

(5) Economic analyses of mitigation policies

The TAR states that the amount of emissions reductions may be achieved with direct benefits exceeding direct costs. The finding remains a subject of active argument. Models for mitigation assessment need to be improved. The TAR also gives emphasis on market-based instruments for emission reduction and notes that the market based instruments are more efficient than administrative ones. However, Fairness and responsibility are important criteria, and the market instruments cannot solve the problems related to equity, which is a major issue in greenhouse gas emission reduction. Therefore, the cost-effective criterion could not be taken as the only factor for assessing the policies and measures. Moreover, the effectiveness of the market instrument depends on completely shared information. At present, serious dissymmetry in information sharing exists between developed and developing countries.

(6) Equity and climate change mitigation

In the TAR, attempts were made to address climate change mitigation in light of development, equity and sustainability (DES). However, the treatment of equity concerns over climate change mitigation is inadequate and biased towards economic implications of climate change mitigation actions. This observation may be drawn from the following points: (a) Mitigative capacity, as an important concept with equity implications, was not included in the SPM/WG3/TAR; (b) All the barriers, options, and potentials were assessed largely from a developed country perspective without paying attention to the specific situation of developing countries. For instance, market potentials and opportunities are

meaningless to people in poverty; (c) The impacts on developing countries were given insufficient treatment. The models and assumptions were based on those in developed nations; Even there are some inclusions of such impacts, the understanding may be irrelevant if not wrong; (d) Development needs in developing countries should receive priority consideration in policy making. In the assessment exercise, however, climate change mitigation was by default number one objective. The emission in developed countries is different from that in developing countries in sense of their implications to human well-being. The former is the luxury emission, and the latter the survival emission.

It is evident that a common but differentiated responsibility could not be realized without properly resolving the difficulties mentioned above in mitigating climate change.

Possible activities by the IPCC

The following questions should be further tackled in the future assessments:

- (1) The nature and causes of the natural variability of climate and its interactions with human-forced changes;
- (2) The detection and attribution of climate change;
- (3) The global carbon cycle;
- (4) The direct and indirect effects of changing distributions of aerosols;
- (5) The feedbacks in the climate system;
- (6) Details of regional and local climate change including climate extremes;
- (7) Socio-economic impacts of the past climate changes;
- (8) Equity issues for dealing with climate change and historical responsibilities of the developed countries.

The following activities are important in order to ensure the objectiveness and completeness of the IPCC assessments:

- (1) To help developing countries in diffusing the information contained in the IPCC reports to the public and policy-makers;
- (2) To start the future assessment in a staggered manner to sufficiently guarantee the use of the relatively reliable scientific information contained in the Working Group One by the two other groups;
- (3) To raise special funds for training the young scientists of developing countries and for supporting the relevant workshops as a part of capacity building in developing countries;
- (4) To ensure more authors and reviewers from the developing countries to participate in the IPCC activities;
- (5) To initiate the technical papers or special reports, assessing the impact on developing countries of global climate change and the uncertainties in climate change science particularly in climate change detection and projection research.

PAPER NO. 4: JAPAN

VIEWS ON THE THIRD ASSESSMENT REPORT (TAR) OF THE IPCC

1. The seventh session of the Conference of the Parties to the UNFCCC (COP7) reached the agreement on the implementation of the Buenos Aires Plan of Action. It is expected that this would increase international momentum towards the entry into force of the Kyoto Protocol. It is also time to consider further steps to address climate change as a global issue for our coming generations.
2. Japan believes that the commitments for the subsequent period should be elaborated in a reasonable way on the basis of:
 - (a) Preamble of the Convention: 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 and;
 - (b) Article 2 of the Convention: 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.
3. The IPCC Third Assessment Report (TAR) contains the scientific information on what has happened to the climate and how the climate change will proceed under the various conditions related to the human activities and what might be the consequences of such climate change. The workshop should make the most of the TAR to facilitate preparatory work necessary for starting discussion on future commitment periods. From this point of view, the workshop should focus on the dissemination of the following information of the TAR, in particular, to developing countries, and discussion on how the following information will contribute to the future consideration by the SBSTA on long-term response options.
 - (a) Relationship between the magnitude and change rate of atmospheric concentrations of GHGs, and impacts on the climate system
 - (b) Possible impacts on ecosystems and socio-economy
 - (c) Possibility of risk reduction by adaptation measures
 - (d) Response strategies considering the integration of mitigation and adaptation measures, and timeframe
 - (e) Future development paths and their consequences and implications on climate change
 - (f) Technology innovation for mitigation and adaptation, and its expected effect
 - (g) Gaps in scientific knowledge and capacities, in particular, in developing countries
4. With the view to initiating the consideration of commitments for subsequent periods no later than 2005, the workshop should also consider the key items listed below by utilizing the information of the TAR and, if necessary, recommend appropriate items, in addition to the items specified in paragraph 3, as future IPCC activities to be requested by the SBSTA for providing comprehensive scientific information to specify and achieve the objective of the UNFCCC.

- (a) What are the causes of the trends of increasing greenhouse gases emissions?
 - (i) Total emissions in the world
 - (ii) Emissions from various sectors
 - Sectors inscribed in the Annex A to the Kyoto Protocol
 - Sectors included in land use, land-use change and forestry
 - (iii) Emissions by group of countries from:
 - Developed countries;
 - Countries that are undergoing the process of transition to a market economy and;
 - Developing countries
 - (iv) Causes of growing emissions
- (b) What are effective integrated mitigation and adaptation measures and technologies based on the development stage in each country?
 - (i) Effectiveness based on individual social and economic situations in each group of countries
 - (ii) Estimation of the effects and potential
 - (iii) Cost effectiveness of various measures and technologies
 - (iv) Ancillary benefits and negative effects of various measures and technologies
 - (v) Integration of mitigation and adaptation measures and technologies
- (c) Consideration on parameter of measuring performance of mitigation and adaptation
- (d) Detailed review and analysis on current status, gaps, needs and possible measures relating to scientific knowledge on climate change and its impacts and response options in developing countries
- (e) The role of advocacy and education for business and individuals for promoting reduction

5. The workshop should also consider possible measures to further strengthen international and national research activities focussing on the above key subjects in order for the IPCC to address these requirements. One possibility includes that the SBSTA, in collaboration with the IPCC, would consult with and request international programs such as IGBP (International Geosphere-Biosphere Programme), WCRP (World Climate Research Programme) and IHDP (International Human Dimensions Programme on Global Environmental Change), and intergovernmental research networks such as APN (Asia Pacific Network for Global Change Research), IAI (Inter-American Institute for Global Change Research) and

ENRICH (European Global Change Research Networks) to take upon such subjects as their target research areas, as well as to enhance participation of developing countries.

6. The workshop should consider a work plan including time schedule and, if necessary, requests to the IPCC necessary for the preparation of starting discussion on future commitment periods. Based on the results of the workshop, the SBSTA, at its 16th session, should develop the work plan which is to be recommended to COP8 for adoption.

PAPER NO. 5: KAZAKHSTAN

SUBMISSION ON THE IPCC TAR

Referring to the documents FCCC/SBSTA/2001/INF.6 and FCCC/CBSTA/2001/L.17 we would like to offer the following submissions to the IPCC TAR.

The Republic of Kazakhstan would like to express its high appreciation for the significant progress in understanding of climate change, the assessment of climate change causes, impacts, and adaptation and mitigation strategies, contained in the IPCC TAR and its Synthesis Report. The large information of the TAR would be useful for taking the political decisions addressed to combat against climate change and its negative consequences. The nature and economics of Kazakhstan is extremely vulnerable to climate change impacts. That is why it is very important to have a competent scientific understanding of climate change.

Based on the document FCCC/CBSTA/2001/L.17 we maintain the importance of the workshop that should take place before the 19th IPCC session and prior the sixteenth session of SBSTA to explore the implications of the information contained in the TAR. We believe that this workshop can develop guidance in the future work of IPCC and facilitate the work of the SBSTA. The workshop should define the practical implications of the TAR and the activities of the IPCC in support of the UNFCCC and the Kyoto Protocol needs.

We insist on the needs to disseminate the information of the TAR in all aspects: educational, technical and scientific, economical, social, and political. It should be useful for both SBSTA/SBI and IPCC in their future efforts addressed to achieving the UNFCCC and the Protocol objectives and finally to provide sustainable economical development. In this regard we would like to support the proposal to continue the preparation of the IPCC Fourth Assessment Report and to give our view on the questions contained in FCCC/SBSTA/2001/INF 6.

Questions contained in paragraph 27: *What role, if any, should the SBSTA play with regard to identifying/assessing/promoting research relating to climate change science and impacts, adaptation and vulnerability? What specific activities should be given priority, bearing in mind the roles of other international organizations and bodies and the capacities of the SBSTA?*

We consider that it is very important to provide scientific and technological basis on defining “dangerous anthropogenic interference with climate system” if possible by carrying out the additional studies or research programs, or preparing technical or special reports.

Questions contained in paragraph 29: *What role, if any, should the SBSTA play with regard to identifying/assessing/promoting research relating to climate change science and impacts, adaptation and vulnerability? What specific activities should be given priority, bearing in mind the roles of other international organizations and bodies and the capacities of the SBSTA?*

The SBSTA should encourage or initiate international organizations or other bodies/donors to support such research programs, extensively used the experience of the countries gained in conducting such investigations.

Questions contained in paragraph 32: *What role, if any, should the SBSTA play with regard to addressing the “gaps in knowledge” identified in the WG III report, inter alia, with regard to furthering the exploration of regional, country and sectoral potentials for technological and social innovation options? Given the trends in government expenditures over the past decade, what should the SBSTA do to*

encourage investments in research and development on mitigation technologies, particularly for the energy sector?

As the energy sector is a key in GHG emissions and has the most significant mitigation potential it might be important to generalize the innovation options to spread the existing technologies in the developing and transition countries.

Questions contained in paragraph 34: *What role, if any, should the SBSTA play regarding cooperation among Parties in developing methodologies to assess impacts and adaptation options, to exchange information on their experience with adaptation measures and to develop new management strategies and technologies?*

It might be useful to request IPCC to compile a special report on adaptation, or new technical guidelines to assess impact and adaptation options/measures, management strategies and technologies if positive results were reached or potentially can take place.

Questions contained in paragraph 37: *Does the SBSTA wish to initiate a process for considering scientific information in the TAR, e.g. on tropospheric ozone, including its precursors, aerosols and the updated information on GWPs, with the aim of informing the SBI about aspects relevant to the implementation of the Convention, and if so, how?*

New information on tropospheric ozone, its precursors, aerosols and updated GWP potentials from the TAR should be discussed among the Parties at the COP to make a decision how to use it in national GHG inventories. It may take reconsideration of all previous national reports on national emissions. SBSTA should prepare the notes to initiate the discussions or instructions to assimilate this information in a proper way.

Questions contained in paragraph 39: *Should the SBSTA encourage or request Parties to consider the information on technologies in Volume 3 of the TAR in the preparation of national communications under the Convention, and if so, how? Should the SBSTA encourage non-Annex I Parties to consider the IPCC information on technologies in the preparation of projects as noted above. Should the SBSTA take steps to expand the information on the new technologies in Volume 3 of the TAR, and if so, for what purpose?*

These technologies might be acceptable in some non-Annex I countries. It is important for SBSTA to provide free information exchange on good practice in project implementations or initiate a number of workshops on technology transfer.

PAPER NO. 6: SAMOA
ON BEHALF OF THE ALLIANCE OF SMALL ISLAND STATES (AOSIS)

VIEWS OF SAMOA, ON BEHALF OF AOSIS ON THE INFORMATION CONTAINED IN THE
THIRD ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE
CHANGE (IPCC) AND POSSIBLE ACTIVITIES BY THE IPCC IN SUPPORT OF THE
NEEDS OF THE CONVENTION AND ITS KYOTO PROTOCOL

Samoa, on behalf of the Alliance of Small Island States (AOSIS) welcomes the opportunity to submit some views on the Third Assessment Report (TAR) of the IPCC. AOSIS has already commented on the TAR at the 7th Conference of the Parties, and these further views should be considered as flowing from those statements. AOSIS reserves the right to make further comments in light of views submitted by other Parties.

AOSIS wishes to express its warm appreciation to the Chairman and Members of the IPCC for the sterling work that they have carried out in recent years. The TAR represents the culmination of the best scientific work available on climate change and its effects, and the elaboration of scientific findings in a manner that stakeholders and decision-makers can easily understand and relate to.

AOSIS experts have carefully studied the TAR, and have made certain recommendations on the basis of the reports of the three working groups. Following these sections AOSIS will make recommendations on possible activities that IPCC could undertake in support of the Convention and its Kyoto Protocol.

Working Group I, Climate Change 2001 - Scientific Basis

The WG I Report on the Scientific Basis highlights the fact that ‘an increasing body of information gives a collective picture of a warming world’.

AOSIS is particularly concerned about the implications of the following main conclusions from the Report:

- The global average surface temperature increased by 0.6 degrees centigrade over the twentieth century.
- Sea levels rose by between 0.1 and 0.2 meters over the twentieth century.
- Atmospheric concentrations of CO₂ have increased by 31% since 1750. The present concentrations have not been exceeded in 420,000 years and likely not in the past 20 million years. About three quarters of the anthropogenic emissions of CO₂ to the atmosphere in the last twenty years are due to fossil fuel burning, the rest due to LULUCF.
- Despite some reservations, confidence in the ability of complex physically based climate models to project future climate has increased.
- In the light of new evidence and taking into account remaining uncertainties, most of the observed warming over the last fifty years is likely to have been because of an increase in GHG concentrations due to human activities. Furthermore human influences will continue to alter the climate in the twenty-first century.
- The global average temperature is predicted to rise by 1.4 to 5.8 degrees centigrade

- The global sea levels are predicted to rise by 0.09 to 0.88 meters by 2100. (This is lower than earlier predictions, but has a stronger degree of certainty) and would continue to do so for many centuries after atmospheric greenhouse gas concentrations are stabilized.³
- For mid-range stabilization scenarios examined by the IPCC models project that the Greenland Ice sheet could melt yielding around 3 metres sea level rise in 1000 years.⁴
- Anthropogenic climate change will continue for several centuries after atmospheric stabilization, as many long-lived GHGs have a lasting effect on atmospheric concentration, radiative forcing and climate.

These figures and findings highlight the need for immediate action from Annex 1 Parties, not only by ratifying the Kyoto Protocol and meeting their targets, but, most importantly, by taking action well beyond those targets. Many Small Island Developing States and low-lying coastal areas will be severely and dangerously affected by the effects of these scenarios. The recent presentation by the Maldives of its first National Communication to the FCCC impressively shows the destruction of its capital Male under these scenarios. These findings also invalidate the position taken by the largest emitter in regards to the notion that there is an incomplete state of scientific knowledge of the causes of, and solutions to, global climate change.

Working Group II, Climate Change 2001 - Impacts, Adaptation and Vulnerability

The WG II Report on Impacts, Adaptation and Vulnerability reiterates and reinforces the earlier conclusion that those with the least resources have the least capacity to adapt and are the most vulnerable. The effects of climate change are likely to be the highest in developing countries in terms of loss of life, land and other natural resources, and impacts on investment and the economy for any level of warming.

In relation to Small Island Developing States, the report underscores the following:

- Adaptive capacity is low; they are likely to be among the countries most seriously impacted by climate change
- The projected sea level rise would cause enhanced coastal erosion, loss of land and property, dislocation of people, increased risk from storm surges, reduced resilience of coastal ecosystems, saltwater intrusions into fresh water resources and high resource costs to respond to and adapt to these changes.
- Future sea surface warming would increase stress on coral reefs, leading to increased frequency of coral bleaching events and result in increased frequency of marine diseases.
- Limited arable land and soil salination would make agriculture highly vulnerable to climate change.
- Tourism would face severe disruption.

³ IPCC WGI TS page 77 *If greenhouse gas concentrations were stabilised (even at present levels), sea level would nonetheless continue to rise for hundreds of years. After 500 years, sea level rise from thermal*

expansion may have reached only half of its eventual level, which models suggest may lie within a range of 0.5 to 2.0 m and 1 to 4 m for CO₂ levels of twice and four times pre-industrial, respectively. The long time-scale is characteristic of the weak diffusion and slow circulation processes that

⁴ FROM WGI TECHNICAL SUMMARY PAGE 77 Models project that a local annual average warming of larger than 3°C, sustained for millennia, would lead to virtually a complete melting of the Greenland ice sheet with a resulting sea level rise of about 7 m. Projected temperatures over Greenland are generally greater than globally averaged temperatures by a factor of 1.2 to 3.1. For a warming over Greenland of 5.5°C, consistent with mid-range stabilisation scenarios (see Figure 26), the Greenland ice sheet is likely to contribute about 3 m in 1,000 years.

AOSIS is concerned that the impacts of climate change will, with increasing scientific certainty, be very severe for Small Island Developing States and low-lying coastal areas. AOSIS countries are among those that will be most seriously impacted, and among those that will be impacted first. IPCC WGII shows that the level of greenhouse gas stabilization has important equity implications with the poorest countries and peoples suffering substantial damages at even low levels of warming with some richer countries not projecting net market damages until warming exceeds two degrees. In addition, the acknowledged lack of capacity for planning, research and adaptation in AOSIS countries raises great concerns about the ability to take effective adaptation response measures. A gigantic task lies ahead, not only for all AOSIS countries, but for the entire world, to provide the technical and financial assistance necessary to allow AOSIS countries to adapt.

Working Group III, Climate Change 2001 – Mitigation

The WG III Report on Mitigation stresses the fact that climate change mitigation activities will be affected by and have impacts on broader socio-economic policies and trends, such as those relating to development sustainability and equity. It recognizes and highlights an important issue of equity, that the challenge of addressing climate change can create or exacerbate inequities both within and across nations and regions.

The report outlines a series of options for mitigation, and concludes that:

- Significant technical progress has been made since the Second Assessment Report relative to GHG mitigation and this has been faster than anticipated.
- The choice of energy mix over the next decades and associated investments will determine, whether and if so at what level and cost greenhouse gas concentrations can be stabilized. Currently such investment is directed towards discovering and developing more conventional and unconventional fossil resources.
- Economically feasible technologies are available that could allow global emissions to be reduced below 2000 levels in 2010-2020 at zero net costs, with about half of this at negative cost. Hundreds of energy efficient technologies and practices can contribute to improving efficiency, but much of this potential will require Government policies.
- Forests, terrestrial ecosystems and agricultural lands offer significant GHG mitigation potential. Although not necessarily permanent, conservation and carbon sequestration may allow for time for other options to be developed.
- Social learning and innovation and changes in institutional structure could contribute to climate change mitigation.
- Some sources of GHG can be limited at no cost or no net negative cost to the extent that no-regrets policies can be exploited.
- On costs of compliance, the majority of global studies indicate that in the absence of emissions trading, there would be a estimated reduction in projected GDP in the range of 0.2 to 2% in 2010 for different Annex B regions. With full trading between Annex B Parties, the estimated reductions are likely to be between 0.1 and 1.1 % of projected GDP.
- Emissions constraints in Annex I countries will have spillover effects on non-Annex I countries. Estimates for the possible impact on the OPEC vary widely. One study estimates that with Annex B trading there will be less than 0.05% reduction in projected GDP for non-Annex I oil-exporting countries in 2010.

AOSIS is concerned that the major and most intense emitters have not taken appropriate note of these findings. AOSIS has been aware for some time that there are readily available technologies and policy options at the present time that could significantly reduce the emissions of GHGs. The report has underscored that these can be implemented at relatively low costs, and that there are numerous win-win or no cost options available. In addition it is now clearly demonstrated that the projected doomsday

losses of revenue are exaggerated. This vindicates the view held by AOSIS countries, and advocated at previous sessions of the FCCC, that such projections were spurious.

AOSIS is also concerned that these findings be seriously considered in the context of the review of articles 4.2 (a) and (b) of the Convention. These findings give added urgency to develop strategies that would reduce Annex 1 emissions well beyond the targets contained in the Kyoto Protocol.

IPCC TAR Synthesis Report

The IPCC included a synthesis report as part of the TAR. The purpose of the synthesis report is to provide a policy relevant, but not policy prescriptive, synthesis and integration of information contained within the TAR. The synthesis report is crafted around a series of policy relevant questions submitted by governments.

One of the questions, for instance, is, what can scientific, technical and socio-economic analysis contribute to the determination of what constitutes dangerous anthropogenic interference with the climate system as referred to in FCCC Article 2? The IPCC responds at some length to this question but essentially argues that the basis for determining what constitutes dangerous anthropogenic emissions will vary among regions and depends on adaptive and mitigative capacity. In so responding, the IPCC has collapsed together the two distinct issues of how dangerous climate change might be prevented with the question of what might constitute dangerous climate change.

AOSIS is of the view that this response does not adequately reflect the issue, and that in future sessions of the subsidiary bodies the IPCC may be asked to elaborate on these two topics separately.

Possible activities in support of the Convention and its Kyoto Protocol

As mentioned above, AOSIS is of the view that a consideration of the issues raised by the IPCC warrant consideration under the review of articles 4.2 (a) and (b). AOSIS would also be interested to hear the views of the IPCC experts in the discussions on adaptation and the generation and use of funds for adaptation, including those generated under the Clean Development Mechanism (CDM).

In conclusion, AOSIS is extremely interested in seeing the continuation of the relationship between the Convention processes and the IPCC, and would view with great concern any attempts to downgrade the advice provided by the IPCC.

PAPER NO. 7: SAUDI ARABIA

THE KINGDOM OF SAUDI ARABIA VIEWS ON ANY FURTHER ASSESSMENTS/WORKSHOPS UNDERTAKEN BY THE SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE (SBSTA) ON THE IPCC THIRD ASSESSMENT REPORT

The Kingdom of Saudi Arabia stresses that any assessment or terms of reference of any workshop organized under SUBSTA to review the outcome or implication of the IPCC Third Assessment Report must be limited to its mandate under the Convention. Article 9 of the Convention states that the Subsidiary Body for Scientific and Technological Advice (SBSTA) is to provide the Conference of the Parties (COP) and, as appropriate, its other subsidiary bodies with timely information and advice on **scientific and technological matters. Policy related matter clearly falls outside SBSTA mandate.** Therefore SBSTA must not organize any workshop on policy implication arising from the IPCC Third Assessment Report.

The Kingdom of Saudi Arabia insists that any review of the IPCC Third Assessment Report be limited to SBSTA mandate as stated in Articles 9.1 and 9.2 of the Convention. Article 9.2 specifies that the term of reference of any work under SBSTA be limited to:

- (a) Providing assessments of the state of scientific knowledge relating to climate change and its effects;
- (b) Preparing scientific assessments on the effects of measures taken in the implementation of the Convention;
- (c) Identifying 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) Providing 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) Responding to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

If there is a need for a workshop, the Kingdom of Saudi Arabia suggests that terms of reference to be subparagraphs (c) and (d), the scientific uncertainty of climate change model predictions and a review of the adequacy of the assumptions used to generate future forecasts.

PAPER NO. 8: SPAIN
ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES, AND BULGARIA,
CROATIA, CYPRUS, CZECH REPUBLIC, ESTONIA, LATVIA, LITHUANIA, POLAND,
ROMANIA, SLOVAKIA, SLOVENIA

THIRD ASSESSMENT REPORT OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

Spain, on behalf of the European Community and its Member States and Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia hereby provides comments on

(a) The information contained in the TAR;

(b) Possible IPCC activities in support of the needs of the Convention and its Kyoto Protocol;

according to the document FCCC/SBSTA/2001/ 8 (Section III.A.2, paragraph 12 (c)).

1. Introduction

Spain, on behalf of the European Community and its Member States and other Parties mentioned above would like to express its appreciation for the work done by the IPCC (Intergovernmental Panel on Climate Change) to complete its Third Assessment Report (TAR), including the Synthesis Report.

As it was stated in COP 7, in the view of the European Union, the TAR represents a significant progress since the Second Assessment Report (SAR) in the assessment of the causes, impacts, and possible response strategies to climate change, and clearly constitutes the best available scientific information and assessment of these issues. Systematic consideration of the information contained in the TAR (or in other IPCC reports and technical papers) is highly relevant to the work of the Conference of the Parties and its Subsidiary Bodies.

In its Conclusions adopted in preparation of COP7, the Council of Ministers of the European Union expressed deep concern about the findings of the latest IPCC Assessment Report, and considered that this report should give all Parties a new sense of urgency to implement the Kyoto Protocol and to take further action to achieve the objective laid down in Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC).

Outreach, education, and training efforts based on the information contained in the IPCC TAR should be promoted, as they would contribute to the implementation of Article 6 of the Convention, and are important for the COP process. This should be done in collaboration with IPCC (see the EU and CG11 submission sent on 21st December 2001 on the draft terms of reference contained in Annex to the document FCCC/SBSTA/2001/L.13). We would like to emphasise that the timely availability of UN languages translation of the approved SPMs would significantly help the outreach, education, and training efforts based on the information contained in them.

The EU and other Parties mentioned above recognise that the IPCC already has a demanding list of outputs expected within the next few years. We consider essential that especially the tasks agreed upon at COP7 will be accomplished as a first priority within the timeframe envisaged.

We look forward to the continuation of the work of IPCC, and urge Parties to improve their financial support of IPCC activities and to nominate and support more scientists to become authors of assessments and reports. We also encourage Parties to contribute generously to the IPCC Trust Fund so that more scientists from developing countries can participate in the IPCC work.

In Section 2 of this Submission we outline the views of the EU and other Parties mentioned above about the foreseen UNFCCC IPCC workshop, including the priorities to be addressed in it. Section 3 deals with the key issues that arise from the IPCC TAR and its implications for the work of the Convention. The last part (Section 4) contains our views regarding the future work of the IPCC.

2. Views about the UNFCCC IPCC workshop

The EU and other Parties mentioned above consider that the UNFCCC workshop prior to SBSTA 16 foreseen in paragraph 12 (d), Section III.A.2, of the document FCCC/SBSTA/2001/8 would be very useful to allow further progress and to give inputs to SBSTA and IPCC.

It would be preferable to hold the workshop before the next IPCC Plenary (17-20 April 2002), so that its results might be considered when the work plan of IPCC for the coming years will be defined.

The EU and other Parties mentioned above would like the workshop to give Parties the opportunity for a wide ranging and open discussion on what the conclusions of IPCC TAR mean for the work of the Convention. We consider that the workshop should address the most policy-relevant research areas and data gaps from the perspective of the needs of the Convention, in particular the following priority issues:

- a) stabilisation criteria relating to dangerous anthropogenic climate change
- b) regional vulnerability, extreme events and adaptation methods and costs
- c) mitigation opportunities, including new technologies and costs of policies and measures

3. Key issues arising from the TAR

Here, we address the very relevant questions raised in document FCCC/SBSTA/2001/INF.6.

3.1. Assessing dangerous anthropogenic interference with the climate system (paragraph 27)

The European Union and other Parties mentioned above consider this to be a major issue. We acknowledge that the IPCC, in its Synthesis Report to the TAR recognises that decisions on what constitutes “dangerous anthropogenic interference with the climate system” are value judgements determined through socio-political processes, taking into account considerations such as development, equity, and sustainability, as well as uncertainties and risk. The TAR provides an assessment of new scientific information and evidence as an input for policy makers.

The European Union and other Parties mentioned above consider that it is the responsibility of the Conference of the Parties to decide what constitutes “dangerous anthropogenic interference with the climate system” in the context of Article 2 of the Convention. Therefore given the increased knowledge reflected in the TAR about future climate projections, and the biophysical and socio-economic impacts of climate change, the COP, with the advice of SBSTA, should be able to assess the risks associated with a range of GHG concentration levels and the corresponding emission pathways required to avoid specific levels. It will also be necessary to analyse the costs, co-benefits and damages for the different pathways.

We would like to point out in this respect that a particularly important section of the Synthesis Report to the TAR deals with the inertia and time scales associated with the changes in the climate system,

ecological systems, and socio-economic sectors and their interaction (Question 5 of the TAR Synthesis Report). The European Union and other Parties mentioned above consider that the implications of that section for timing and extent of climate mitigation and adaptation policies under the Convention should be addressed by SBSTA at its next session. Therefore, special attention should be given during the UNFCCC Workshop to the policy implications of inertia, contained in the Summary for Policymakers of the IPCC Synthesis Report. This includes consideration of major changes to the Climate System such as partial loss of polar ice sheets and the long term implications for sea level rise.

The EU and other Parties mentioned above are convinced that it is essential to act according to precautionary principle in setting strategies, targets and time tables for avoiding dangerous levels of interference with the climate system and to exercise prompt adaptation and mitigation options to achieve the Climate Convention and the Kyoto Protocol objectives.

3.2. *Identifying, assessing and promoting research relating to climate change science and impacts, adaptation and vulnerability, and questions contained in paragraph 32, about addressing the “gaps in knowledge” identified in WG III report, and about how to encourage investments in R&D on mitigation technologies, particularly for the energy sector (paragraph 29):*

The European Union and other Parties mentioned above believe the areas of further work identified by IPCC WG I, II and III provide a good basis for discussion. A debate would need to take place within the foreseen UNFCCC workshop to identify the most policy relevant research areas from the perspective of the needs of the Convention. Activities to target the gaps in refining and applying methods for treating uncertainties need to be addressed.

In particular it should be considered for discussion the need for additional systematic and sustained observations, modelling and process studies. and to consider the concern shared by the European Community on the decline of observational networks. Particularly important is the increase of observational and research capacities in developing countries.

Notwithstanding the gaps in knowledge concerning further exploration of regional, country, and sector specific potentials of technological and social innovation options, the view of the European Union and other Parties mentioned above is that emission reduction is the most important form of mitigation that should go together with more efficient conversion in production and use of energy, shift to low or no-greenhouse gas-emitting technologies, carbon removal and storage, and improved land use, land use change and forestry practices. Opportunities should be identified in the area of economic and social innovation leading to decreased greenhouse gas emissions.

More attention should be given to the quantitative evaluation of climate change impacts and their costs with and without adaptation, and to an integrated approach to adaptation and mitigation measures. Considering that the TAR is mainly focused on short-term mitigation, more emphasis for future IPCC work should be given to technical, social and economic aspects of adaptation and mitigation measures over the century.

More generally, in order to improve the policy-relevant character of the next assessment report of the IPCC, SBSTA should co-operate with IPCC with a view to:

1. Elaborate as soon as possible a list of policy-relevant questions of interest to the UNFCCC process to guide the preparation of the IPCC Fourth Assessment Report. Having this list at the beginning of the process will orient properly the work of the three IPCC working groups from the start.

2. Reflect on the most appropriate manner to:
 - a) Communicate research advances in terms that are relevant to decision making
 - b) Assess and express uncertainties or confidence levels in a comparable manner across the different IPCC Working Groups

3.3. *Methodologies to assess impacts and adaptation options, and experience with adaptation measures (paragraph 34):*

The European Union and other Parties mentioned above would like to draw the attention to its submission on this subject contained in document FCCC/ SBSTA/2001/MISC.6

We wish to emphasise that the methods and tools to evaluate adaptation are especially important. As the TAR notes the impacts of climate change will fall disproportionately upon developing countries. Numerous possible adaptation options for responding to climate change have been identified that can reduce adverse and enhance beneficial impacts of climate change. However, adaptation will not avoid all damages.

In our view to advance the development and assessment of methods and tools for evaluating impacts and adaptation, and the collection and dissemination of information is an urgent matter. This would be very beneficial for the development of national strategies and National Adaptation Programmes of Action (NAPAS). In this regard the advice of the IPCC might play an important role.

Specific attention should also be given to systematic observation on impacts including methodologies and possible developments.

The EU and other Parties mentioned above recognise that work relevant for the methodologies to assess impacts and adaptation options is also carried out under other multilateral Conventions, especially the Convention on Biological Diversity (CBD) and the Convention to Combat Desertification (CCD), as well as with other processes such as UN Forum on Forest (UNFF). We welcome the IPCC Technical Paper on Climate Change and Biodiversity to be considered by the SBSTA 16 and notes with appreciation that the Ad Hoc Technical Expert Group on Biological Diversity and Climate Change under the CBD/SBSTTA will provide scientific advice on how to integrate Biodiversity consideration into the implementation of the UNFCCC and its Kyoto Protocol.

3.4. *Aspects of the scientific information in the TAR relevant to the implementation of the Convention, e.g. on tropospheric ozone, including its precursors, aerosols and the updated information on GWPs (paragraph 37):*

The EU and other Parties mentioned above note that tropospheric ozone and other atmospheric components, such as aerosols, have radiative effects on the climate system which need to be further assessed. Existing data gaps will have to be reduced by increasing observational capacity on a regional and global level. In addition, national inventories should also be improved in this respect.

Question 8 of the TAR Synthesis report highlights the environmental benefits of measures which simultaneously reduce greenhouse gas emissions and precursors for ozone, aerosols/ particulate matter. These problems can be jointly tackled ensuring mitigation policies can be implemented in a cost-effective manner, and also benefit regional air pollution problems.

Furthermore, we draw attention to new developments in the coupling of atmospheric chemistry and physics and the climate system, in particular with respect to the interactions between stratospheric ozone depletion and climate change. These interactions need further scientific assessment by IPCC.

3.5. Possible ways to consider the information on options for mitigation in volume 3 of the TAR WGIII for the development of national strategies, the preparation of the National Communications and of project proposals (paragraphs 38 and 39):

The EU and other Parties mentioned above consider that the information on options for mitigation contained in volume 3 of the TAR WGIII is relevant for the work to be done under the Framework Convention on Climate Change and the Kyoto Protocol.

It would be useful to explore further the range of mitigation options which could be employed at cost efficiency, to consider the implications of different approaches to assessing overall costs, and to identify barriers to the deployment of new technologies etc. The workshop could review the conclusions of the IPCC report on this matter. Parties could be invited to indicate where their experiences confirmed, or otherwise, the IPCC findings. The meeting could also consider whether the IPCC should be invited to undertake further work in this important area.

4. Further views for future IPCC work

The EU and other Parties mentioned above would like to note that the issues dealt with in the context of the present Submission can serve as a guidance in defining the future IPCC work. In general we consider that the topics identified in the document "Priorities for future IPCC work" (IPCC-XVIII/INF.6) are a good starting point to facilitate the discussion about its future work. More specifically, we would like to remark the importance we confer to the issues suggested for the UNFCCC IPCC workshop (see Section 2 of the present submission).

We would wish the IPCC to undertake its next full assessment report in the same sequence as previous reports. So the next report should be completed in 2006.

In the interim period we note that discussions on further commitments under the Protocol would have to start by 2005 and so suggest that the IPCC considers reporting any new scientific findings relevant to the questions contained in the TAR Synthesis Report, and which may be relevant to the Conference of Parties, particularly by 2004.

PAPER NO. 9: UNITED STATES OF AMERICA
VIEWS ON THE THIRD ASSESSMENT REPORT (TAR)

I. Introduction

The United States welcomes the opportunity to present its views to the Subsidiary Body for Scientific and Technical Advice of the UN Framework Convention on Climate Change (SBSTA) on the TAR and its relevance for the work of the Intergovernmental Panel on Climate Change (IPCC), as well as on the TAR workshop referenced in the conclusions of the fifteenth session of the SBSTA (FCCC/SBSTA/2001/L8, paragraph 12(d)). Section II of this submission includes general comments; section III, the TAR Synthesis Report and Working Groups I, II, and III reports; section IV, the TAR workshop.

II. General Comments

As noted in the 2001 National Research Council (NRC) report on Climate Change Science, it is critical that the IPCC process remains truly representative of the scientific community. The NRC voiced concern that the process will become less representative in the future because of the growing voluntary time commitment required of authors. In addition, the NRC noted the potential for the scientific process to be viewed as being too heavily influenced by governments, which have specific postures with regard to treaties, emission controls, and other policy instruments. Because the United States is committed to promoting actions that improve the IPCC, we believe it is imperative that these concerns be taken seriously by the IPCC.

The United States believes that climate change policy must be grounded in science and an understanding of the social, economic and environmental consequences of policy options. Thus, the United States appreciates the considerable effort of the hundreds of members of the scientific and technical community who contributed to the development of the TAR. The United States recognizes that these experts serve without remuneration and is grateful for the time they gave to improving our understanding of climate change, its impacts, and responses. We respect their contributions as a scarce resource to be used wisely.

The success of the IPCC process in identifying and assessing much of the extensive international research on climate change has led other Conventions that lack assessment processes to look to the IPCC for help. We note two risks with respect to requests from other Conventions: (1) moving the IPCC away from its mandate and (2) undue emphasis on climate change in systems that demand a broader analytical framework. We urge the IPCC ensure that these risks are evaluated when future work is prioritized.

The United States believes there are several areas where the IPCC could usefully focus interim work. In making these suggestions, we are mindful of the need for SBSTA and governments of the IPCC to draw on the scientific and technical community in a manner that ensures the integrity of IPCC processes. Some potential areas of focus are:

- climate forcing by anthropogenic aerosols;
- projected changes in the hydrological cycle in response to increased heating;
- the implications of different mitigation strategies with respect to CO₂ and non-CO₂ gases;
- the potential of carbon capture, separation, and sequestration technologies, as well as associated environmental concerns;
- an integrated analysis of the relationship between adaptation and mitigation;
- relative impact of climate change on coral reefs;

- renewable energy resources, in particular the global distribution of such resources; and
- the energy budget at the surface and at the top of the atmosphere.

A critical component of much of this proposed work will be a global climate observing system capable of comprehensive measurements of key state variables and radiative forcings.

We further note that TAR projections often cite a wide range of potential changes with respect to temperature, precipitation and other climatic variables, without regard to the probability of various results, whereas best or central estimates would make the results more useful to policymakers.

We also note that the Summaries for Policymakers (SPMs) at times do not fully capture important nuances or contexts from the underlying reports. In particular, the NRC reported that the manner in which uncertainties are communicated differs between the WG I SPM and the WG I Technical Summary. The NRC stressed the critical importance of a thorough understanding of uncertainties to the development of good policy decisions.

Care should be exercised in characterizing the SPMs as representing a consensus of the scientific community or even the more limited universe of scientists participating in the IPCC process, because governments heavily negotiate the language of the SPMs. Ultimately, the SPMs may or may not accurately reflect the scientific assessments of the underlying reports.

We also note that the UN Framework Convention on Climate Change (UNFCCC) initiated a process designed over time to achieve its desired objective. Toward this end, Convention provisions (including Article 4.2(d) and Article 7.2(a) call for periodic reviews by the Parties. Article 4.2(d) calls for periodic reviews of the adequacy of subparagraphs (a) and (b) of Article 4 – reviews that are to be “carried out *in light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information* [emphasis added].”

Article 7.2(a) calls on the Conference of the Parties “periodically [to] examine the obligations of the Parties and the institutional arrangements under the Convention, in light of the objective of the Convention, the experience gained in its implementation and the *evolution of scientific and technological knowledge* [emphasis added].

In our view, the SBSTA could usefully consider the timing of periodic reviews called for under the UNFCCC in light of the periodic availability of IPCC assessment reports; concomitantly, the IPCC could usefully consider the timing of its assessment reports in light of the periodicity of the reviews called for by the UNFCCC.

III. TAR Synthesis Report and Working Group Reports

Synthesis Report

The IPCC’s TAR Synthesis Report represents a significant improvement over the previous effort under the Second Assessment Report. Concern persists, however, with the process used to develop the Synthesis Report. In that process, the IPCC began by asking the SBSTA to identify a set of key scientific and technical “policy-relevant” questions. The SBSTA solicited views from governments, but was unable to develop questions. The IPCC then embarked on an effort to produce questions that spanned three plenary sessions, consuming enormous time and energy. The scientific and technical policy-relevant questions that emerged from the IPCC were complex and not easily intelligible to the policy community. Moreover, they were posed not by policymakers, but by the IPCC – a scientific and

technical assessment body. Accordingly, can they be said to represent the questions of greatest policy significance, or of greatest significance to the policy community?

Second, the answers provided by the IPCC to the questions it posed were similarly complex, and it is not yet clear to what extent they will meet the needs of the policy community. Thus, the "value added" of the Synthesis Report to the IPCC full assessment report remains in question. Might the IPCC more profitably have focused its energy and resources in other areas?

Third, there is the risk that policy-relevant questions produced early in the assessment process will drive the assessment effort itself. A set of questions posed *a priori* may elicit a more narrow response -- to the detriment of a more comprehensive assessment effort. How will it be possible for the IPCC to avoid this risk, particularly if a set of scientific and technical policy-relevant questions is identified much earlier in the full assessment process, as some have advocated?

Finally, there is the risk that the Synthesis Report will vary from the underlying Working Group reports if it is drafted prior to the completion of the Working Group reports and hence the authors do not have access to final language. The IPCC avoided this risk in the TAR by delaying the initiation of the Synthesis Report until completion of the Working Group reports. However, there remains concern that the Synthesis Report came too late in the process to add value.

We urge that the IPCC seriously consider these points before deciding once again to make a Synthesis Report part of its Fourth Assessment.

Working Group I

The United States commends the IPCC on its effort to identify and assess the extensive research with respect to the science of climate change. However, the TAR's reliance on models without sufficient acknowledgement of their associated limitations and assumptions led to certain biases. In particular, undue attention was paid to global mean surface temperature, because some results are based solely on simple models, which do not fully incorporate the hydrological cycle.

We understand that there are grave uncertainties concerning the regional scale of regional climatic phenomena, but we also note that this type of information is critical to policymakers. The United States hopes the IPCC will explain to policymakers what must be in place to reduce the uncertainties in regional analyses and how long it will be before we can place confidence in regional projections.

It would be particularly useful if the next report could provide more information on the relative contributions to climate change of forcing factors, land cover and land use change. To narrow the range of future projections of climate change, it is essential that uncertainties be reduced in at least two key areas:

- human-induced factors such as atmospheric concentrations of greenhouse gases and aerosols, and land cover change, and natural factors, such as changes in solar radiation and volcanic aerosols; and
- feedbacks within the climate system that determine the sensitivity of the climate system to changes in forcing.

Accomplishing this will require both a vigorous research program and a more vigorous observation program. The UNFCCC can provide momentum for this process.

A long-term global climate observing system that provides a more definitive observational foundation to evaluate decadal-to-century-scale variability and change remains critical to future projections of climate change. Such a system must include observations of key state variables such as temperature, precipitation, humidity, pressure, clouds, sea ice and snow cover, sea level, sea-surface temperature, carbon fluxes and soil moisture.

Additionally, more comprehensive measurements of greenhouse gases would provide critical information about their local and regional source strengths. Such a system is critical to our ability to assess future climate change and the potential impacts of climate change. SBSTA and the IPCC can provide the impetus for a global observing system capable of providing the information and the continuity of data needed to support measurements of climate variability.

Working Group II

There is some evidence from both observational and modeling studies that recent climate changes have affected physical and biological systems, although factors such as land-use change, resource use and pollution also act on these systems, making attribution difficult. It is critical that the methods used to assess the role of these factors, such as aggregate measures and meta-analyses, must be rigorously tested, and transparent. It is also critical that studies using these methods must not be referenced in IPCC documents without prior publication in the peer-review literature.

Another important aspect of the TAR Working Group II report was the increased focus on adaptive responses to take advantage of, or ameliorate the deleterious effects of climate change. The United States believes that this is an important area for further investigation of potential responses, evaluation of their effectiveness, and estimation of their costs. Further, the application of integrated assessment and decision analytical frameworks, which take into account economic, social, and biophysical data could allow for the prioritization of adaptive responses, as well as the relative emphasis on adaptation and mitigation. SBSTA could play a key role in facilitating an exchange of information on methodologies, and the use of integrated assessment and/or decision analytical frameworks by policymakers.

The TAR Working Group II report identified many key uncertainties, including the reliability of local or regional details in projections of climate change. Reducing uncertainties will require extensive research and observational efforts.

Working Group III

Discussion of the relationship between technological change and cost is vital. Chapter 8 of the TAR reviews studies that have identified least-cost pathways for meeting a particular stabilization goal. These studies indicate that such pathways tend to depart gradually from the baseline in early years with more rapid reductions later on. This minimizes premature retirement of capital stock and permits sufficient time for the development and deployment of low-GHG emitting technologies. The question of a cost-effective transition to a low-emitting future is of critical importance, and has not been fully considered in discussions under the UNFCCC.

Many of the differences between model projections of costs to address climate change stem from different assumptions regarding technological change. Certain aspects of technology diffusion, including the rates of change that are possible, remain poorly understood and merit further research and assessment.

An acknowledged weakness of the TAR with respect to the SRES and post-SRES stabilization scenarios is its emphasis on CO₂ stabilization pathways. Further research and assessment are needed on the implications of different strategies with respect to CO₂ and non-CO₂ gases, as well as carbonaceous aerosols, and actions (e.g., sequestration), on the nature, timing and cost of climate change mitigation.

Future work should also focus on integrated analysis of the cost and effectiveness of mitigation and adaptation options. The question of an economically efficient transition to a future that minimizes the economic and environmental consequences of climate change can not be answered without simultaneous consideration of adaptation and mitigation.

We also suggest that the IPCC undertake work on the global distribution of renewable energy resources. Past studies have characterized renewable energy technologies, but not their cost-effective geographic distribution. This information would facilitate country-specific development efforts on those technologies with the greatest potential to replace CO₂-producing energy sources.

It is also important to further explore biological mitigation, including: (a) conservation of existing pools of sequestered carbon, (b) augmentation of existing pools, and (c) substitution of biomass and other materials for fossil fuels. Working Group III notes the importance of biological mitigation, and identifies questions about the uncertainty regarding the potential magnitude of biological mitigation and the lack of comparability between costs associated with various mitigation strategies. It is particularly important to address both the measurement of, and the costs and benefits associated with, preventing deforestation, especially in the tropics. As noted by Working Group III, improving the accuracy of global estimates of carbon emissions from deforestation remains an urgent and challenging task.

IV. TAR Workshop

The United States believes that the workshop referenced in the conclusions of SBSTA-15 can most usefully function as an exchange between authors of the TAR and governments of SBSTA. The TAR and the Synthesis Report are the relevant documents for the workshop, and should be its focus. For the workshop to be effective, it is important that the agenda be circulated as soon as possible and that the appropriate experts participate.

We believe that it would be useful to have a half-day session for each of the TAR Working Groups, with presentations by authors, and an opportunity for government participants to comment. This will allow authors from each of the Working Groups to provide an overview, and allow time for discussion. An additional session could focus on crosscutting considerations (as identified in the Synthesis Report). Time could also be allotted for preliminary views on future work for the IPCC, and how the TAR findings could affect or facilitate future work under the Convention.

The United States notes that the Secretariat will prepare a report of the meetings for SBSTA-16, that the views expressed will be based on informal input from individual experts, and do not represent those of SBSTA for the purpose of IPCC planning.

PAPER NO. 10: UZBEKISTAN

THIRD ASSESSMENT REPORT OF IPCC AND POSSIBLE ACTIVITY OF IPCC IN SUPPORT OF NEEDS OF THE CONVENTION AND KYOTO PROTOCOL (ITEM 3 OF SUMMARY TABLE OF UPCOMING DEADLINES FOR THE SUBMISSION OF VIEWS BY PARTIES)

Uzbekistan considers, that IPCC successfully has carried out the very important work on preparation and release of its Third Assessment Report (TAR), therefore correct and duly decision - to continue IPCC activity. The TAR results are widely used in activity of Uzbekistan on realization of the UNFCCC and attraction of attention of a public to this serious work.

To promote the further successful work of IPCC with the purpose of satisfaction of needs of the Convention and Kyoto Protocol, Uzbekistan proposes the followings:

- to expand participation of the experts of developing countries in all works of IPCC;
- to accept additional measures on strengthening the capacity in developing countries in connection with the future researches of climate change and its influence;
- the IPCC necessary works more closely with other conventions, in particular, a Convention on biodiversity and Convention to combat desertification. In droughty climate region of Central Asia questions of biodiversity and desertification are interconnected very closely. The preparation of the joint reports will bring doubtless benefit;
- to strengthen the IPCC activities on research of the current climatic variability in regions to define sensitivity of each region to climate change.
