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Item 3 of the provisional agenda

Scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change

**Views on the topics agreed at the twentieth session of the
Subsidiary Body for Scientific and Technological Advice and on the
workshop on adaptation to be held during its twenty-first session**

Submissions from Parties

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its twentieth session, agreed that, at its twenty-first session, it will focus on the exchange of information and sharing of experiences, views and lessons learned, taking into account different national circumstances, on the following topics:
 - (a) Application of methods and tools, including regional models, for assessing impacts, vulnerability and adaptation
 - (b) Linkages between adaptation and sustainable development.
2. The SBSTA requested the secretariat, under the guidance of the Chair of the SBSTA, to organize a workshop during its twenty-first session allowing for in-depth discussion to exchange information and share experiences and views on the topics referred to in paragraph 1 above.
3. To facilitate the discussion at the workshop, the SBSTA invited Parties to submit to the secretariat, by 31 August 2004, their views on the topics referred to in paragraph 1 above, and on the workshop referred to in paragraph 2 above, for compilation into a miscellaneous document.
4. The secretariat has received 11 such submissions. In accordance with the procedure for miscellaneous documents, these submissions are 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.

FCCC/SBSTA/2004/MISC.12

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* This submission is supported by Bulgaria and Romania.

PAPER NO. 1: AUSTRALIA

Scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change

Submission by Australia

The twentieth session of the Subsidiary Body for Scientific and Technological Advice agreed (document FCCC/SBSTA/2004/L.13) to continue its consideration under the agenda item on adaptation, by focusing on exchanging information and sharing experiences, views and lessons learned, taking into account different national circumstances, with respect to the following topics:

- a) Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation
- b) Linkages between adaptation and sustainable development

Australia welcomes the opportunity to provide views on the topics identified above together with other information that may be of use to the Chair of SBSTA in organising the next workshop.

Operation of the workshop

Australia acknowledges the work of the Secretariat in organising the workshop at SBSTA 20 and considers that the workshop provided an effective forum for participants to share experiences and exchange information in an open manner. Australia suggests that in order to provide participants with greater opportunity to explore issues in more detail, the Secretariat may wish to consider building more discussion time into the agenda for the forthcoming workshop.

The SBSTA requested the Secretariat to prepare a background paper on the application of methods and tools, including regional models, for assessing impacts and vulnerability and developing adaptation responses. Australia supports the synthesis of this information and acknowledges that it will be an important tool in improving our collective understanding of the issues surrounding impacts, vulnerabilities and adaptation to climate change.

In relation to the request by the SBSTA that the Secretariat make available through the UNFCCC web site published papers relating to the linkages between adaptation and sustainable development, Australia suggests the following documents may be useful to other parties:

Climate Change: An Australian Guide to Science and Potential Impacts:
www.greenhouse.gov.au/science/guide/index.html

Living with Climate Change: A National Conference on Climate Change Impacts and Adaptation:
www.greenhouse.gov.au/science/impacts/conference/index.html

Topics for Discussion and Agenda Items

Given that many countries are at the early stages of designing and implementing domestic adaptation programs, Australia would find it useful under topic a) to learn from other countries about the successes and challenges they have experienced in modelling the impacts of extreme weather events, particularly storms and droughts, on vulnerable sectors such as the agriculture sector. It would also be useful to discuss possible tools and approaches for making information about climate change impacts and adaptation options available to stakeholders in a format that is timely and relevant.

Australia recognizes that early and effective adaptation to potential climate change impacts can help minimise risks, generate economic benefits, and reduce the costs associated with the effects of climate change. As such, Australia would also find it useful under topic a) to discuss with other participants their thoughts and experiences on conducting integrated assessment covering biophysical and socio-economic impacts of climate change, as well as ways to identify and manage the risk associated with climate change impacts. Risk management could include a discussion of options for incorporating adaptation considerations into decision-making particularly in the area of long-term human settlement planning. This could also include a discussion of work that has been done to identify options for building resilience within vulnerable sectors.

Australia recognises the strong links between adaptation to climate change and broader sustainable development objectives. As such, Australia would find it useful under topic b) to discuss with other participants work they have done to identify cost-effective adaptation options that may be useful in developing countries. This could include a discussion of options for enhancing the adaptive capacity of developing countries to respond to climate change impacts. It would also be useful to discuss options for developing adaptation responses that achieve not only climate change objectives but also broader natural resource management and sustainable development objectives.

Australia would welcome the opportunity to share our experiences with other participants and would be happy to speak on Australia's experiences to date and our future work program in the area of climate change impacts and adaptation.

Participation

Australia acknowledges the importance of the workshop in increasing participants' understanding of the circumstances and challenges faced in different countries and regions and in assisting participants to learn from the experiences of others. Australia encourages the secretariat to ensure the broadest possible participation in the forthcoming workshop. It is important that the workshop continue to provide the opportunity to hear a balance of perspectives from both developed and developing countries, including the views of those that did not have an opportunity to present at the previous workshops, such as Pacific Island countries.

PAPER NO. 2: CANADA

Submission by the Government of Canada

Views on the workshops on the scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change

Canada commends the Secretariat for its organisation of the information exchange workshop held during the Twentieth Session of the Subsidiary Body for Scientific and Technological Advice, SBSTA20. The informal workshops are a useful means to share the growing wealth of information and important lessons being learned by Parties and other stakeholders as they move forward in implementing the Convention and its Kyoto Protocol. This information will be of valuable assistance to all Parties in their future decision-making.

Organization of the workshop

During the SBSTA 20 deliberations under these agenda items, many Parties requested that any subsequent workshops provide more opportunity for in-depth discussion. Although the in-session format attracted a large number of participants, this, together with a seating arrangement more characteristic of a negotiating session, made in-depth discussion and informal exchange of views difficult. Canada prefers a less formal and more interactive format. Canada would further urge that country flags not be used and that delegates be encouraged to ask questions and speak freely from the floor. As you may recall at the first workshop (directly preceding CoP9), country flags were not used until the "summary" sessions. Noting that many delegates expressed difficulty to participate in the in-session due to parallel activities, the workshop should be scheduled in a manner to minimize overlap with other activities. It may be appropriate to consider going back to pre-session arrangement if necessary.

The panel format itself can contribute to an enhanced discussion. Questions of clarification to one panelist should be addressed very briefly immediately after individual presentations. Following a set of presentations, all panelists should have the opportunity to respond to questions posed by the audience.

Presentations from both developed, economy in transition and developing country governments, experts and practitioners should be encouraged under each topic, with a goal of selecting themes where all Parties benefit from the discussion. Presenters should share suggestions on where the SBSTA might undertake activities to further facilitate implementation of the Convention.

Presentations on regional and bilateral cooperative activities should be considered where pertinent. A sectoral approach and the use of case studies to demonstrate practical and cooperative efforts underway and lessons learned, with an emphasis on no-regrets and win-win solutions, remains a useful approach for both topics.

Workshop Topics

- (a) Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation.

The previous adaptation workshop was not organized around sectors, but the use of sectoral sub-themes may help to provide focus under this topic. Possible sectoral themes of interest to

all Parties in addressing domestic adaptation issues might include water resources, human health and food supply, and cities / communities. However, it is also important to highlight examples of regional and integrated assessments (across sectors).

Attention should also be given to the importance of assessing the interaction of non-climate factors and other stressors with climate change impacts, vulnerability and adaptive capacity.

(b) Linkages between adaptation and sustainable development.

This topic should look at experience with assessing vulnerability and adaptation options in the context of development goals, policies and priorities at the community, regional and national level, and assessing consequences of investments for future vulnerabilities and adaptive capacity.

Tools to assist mainstreaming exercises and the linking climate policy with other policy objectives, such as the UNDP's Adaptation Policy Framework, should be highlighted. Experience and lessons learned within the UNFCCC process itself, such as through CGE and LEG activities, would be informative.

Donors and recipients are recognizing that the risks associated with climate change could undermine efforts towards poverty reduction. Canada would welcome a sharing of information on methods and tools for assessing vulnerability and adaptation in developing countries and pertinent to donor activities, such as those developed through projects under the Canada Climate Change Development Fund (CCCDF).

Finally, Canada highlights that both topics under this agenda item are dependent upon robust assessment of vulnerability to climate change. All components of vulnerability assessment - assessment of exposure to climate change, sensitivity of systems and adaptive capacity - should be explored at the workshop. There is a particular need to share information on approaches to define and assess adaptive capacity.

Background Papers and Relevant Literature

It is Canada's view that it is not the best use of the secretariat's limited resources to develop background papers at this time, given that we remain at an exploratory stage of looking briefly at a wide range of topics under both new agenda items. Focused activities of this nature should be identified once a more specific work program under the agenda items is elaborated. Canada believes that thorough consideration by the Parties of specific background information products, and agreement on their precise scope and terms of reference, is needed to assist the secretariat to deliver products that would best serve Parties needs. Canada urges Parties to give more serious consideration to this in the future.

Next Steps

Canada expects that the lessons learned in the information exchanges will contribute to the SBSTA's report to CoP11 on progress under the two new agenda items, and to informing specific areas the SBSTA might focus its initial work under the two agenda items.

Canada looks forward to participating fully in the information exchange and to working towards further elaboration of the work program of the two new agenda items at SBSTA 21.

PAPER NO. 3: CHINA

Submission by China on the SBSTA Item

“Scientific, Technical and Socio-Economic Aspects of Impacts of, and Vulnerability and Adaptation to Climate Change”

China welcomes the opportunity to express its views on the focused topics and the workshop during its twenty-first session of SBSTA, referred to in paragraph 4 and paragraph 5, respectively, of FCCC/SBSTA/2004/L.13 (Scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change). In response to this conclusion agreed at the 20th session of SBSTA, China puts forward the views as following:

1. The topics during 21st Session of SBSTA

- For the topic of “Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation”, the following points should be paid attention to:
 - (a) Measures for SBSTA to consider to promote the development and the applications of integrated assessment methods and models;
 - (b) Measures to facilitate the worldwide applications of the advanced methods and tools for assessing impacts, vulnerability and adaptation, including the transfer of the methodologies, capacity building for the use of these methods and tools, and financial support for developing countries to conduct the assessment;
 - (c) Measures to facilitate the assessment of adaptive capacity, and adaptation options and constrains, including cost and effectiveness.
- For the topic of “Linkages between adaptation and sustainable development”, the following points should be included:
 - (a) Integration of policies and measures of adaptation with those of poverty alleviation;
 - (b) The financial and technical support for developing countries to develop adaptation strategy and long-term plan, and integrate adaptation strategy into national sustainable development strategy;
 - (c) Measures to promote the transfer of available technologies and know-how, and to provide financial assistance, to developing countries, for addressing the impact of, and adaptation to climate change to ensure sustainable development in the long term.

2. The in-session workshop

The form of the in-session workshop can be similar to the workshop held during SBSTA 20. The workshop should focus on:

- (a) Successful cases, experiences, and lessons, of the application of methods and tools to assessing impacts, vulnerability and adaptation;
- (b) Analysis on strengths and weaknesses of various methodologies and tools, and their improvements;
- (c) Analysis on the uncertainties of impact and vulnerability assessment results; methods and tools to reducing the uncertainties of the assessment
- (d) Methods and tools to analyzing cost and effectiveness, of adaptation options;
- (e) Introductions of policies and measures of successfully adapting technologies to climate variability;
- (f) Data and information requirements to supporting assessment of impact of, vulnerability and adaptation to climate change;
- (g) The experiences of incorporating adaptation to climate change into sustainable development strategies.

The selection of the presenters of the workshop should ensure the full participation by the developing countries

PAPER NO. 4: JAPAN

Submission by the Government of Japan

Views on Scientific, Technical and Socio-Economic Aspects of Impacts of, and Vulnerability and Adaptation to, Climate Change; and Scientific, Technical and Socio-Economic Aspects of Mitigation

This submission is in response to FCCC/SBSTA/2004/L.13 and L.14. Japan welcomes this further opportunity to share the views on the agenda items on the scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change; and the scientific, technical and socio-economic aspects of mitigation.

Japan found that the SBSTA 20 in-session workshops on both agenda items were valuable processes. Parties submitted their views to formulate the workshop agenda, and as such the workshop provided an excellent opportunity to highlight the different views of Parties and to exchange concrete and practical information. Given the success of the aforementioned workshops, Japan fully supports the continuation of such practices. In Japan's view, the workshops need to concentrate on promoting mutual understanding among different parties. Parties need to identify a scope where different parties could share common interests so that they could work together pragmatically to exchange practical information. Japan has accumulated various experiences and knowledge in the following fields, and looks forward to actively participating in the future discussion with its expertise.

I. Scientific, Technical and Socio-Economic Aspects of Impacts of, and Vulnerability and Adaptation to, Climate Change

1. Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation

Since adaptation means regional proactive measures to cope with the risk associated with the impacts of the climate change, adaptive measures must coincide with the region-specific characteristics borne out of geography, local climate and vulnerability. To allow such a fine-tuning, each country needs to identify the most vulnerable sector and the region and to conduct reliable assessments on impact and adaptive capacity so that it could estimate where the impact of the climate change becomes critical and severe for specific sector or region. At present, few impact assessments were conducted, and the resulting information is of limited availability. Therefore, first of all, Japan proposes that these few examples should be thoroughly examined to derive important lessons to be shared by the Parties. In addition, to increase examples of impact assessments, Japan proposes the following measures to be taken by the parties in different regions of the world:

- (1) Establishing databases on the essentials, such as the current and future climate data and climate scenarios, especially the regional climate scenarios.
- (2) Establishing methodologies (i.e. models) for impact and vulnerability assessment
- (3) Human resource development in the research area of the impact and vulnerability assessment
- (4) Sharing of resulting information with policy makers, and promote their understandings.

Japan stresses that it is important for Parties to share information and practices on how to implement the above measures. In light of this, Japan has engaged itself in activities such as Asia-Pacific Network for Global Change Research, Asia-Pacific Environmental Innovation Strategy Project, AP Seminar, IGES Seminar, GEO to name a few.

In addition, beyond the sharing of information on methodologies of assessments (e.g. models), Parties need to exchange views on the effective scope and limits of the modelling exercise, and on how adaptation policies could integrate the results of modelling exercise.

In implementing adaptation measures, Parties need to consider the lead-time necessary to develop and disseminate technology. This necessitates the Parties to share information about adaptation measures and technology as early as possible. At present, little information is available on adaptation-specific measures and technologies. In this case, it would be useful for Parties to start examining conventional practices in the areas such as disaster reduction, water-resource development and management, agriculture, health, finance and insurance, with the aim of examining if the insights gained from these sectors could be applicable to climate change. Since quantitative effect of adaptation measures remains mostly unknown and its estimated effects and available options vary with place and time, it is important for each country to refer such information whenever necessary.

2. Linkages between adaptation and sustainable development

Sustainable development is a common goal among nations. It is vital that adaptation measures are implemented in the context of the sustainable development. The strong linkage with the sustainable development will be a prerequisite for the social acceptance of adaptation measures at the national level, and will ensure the secure, sustainable and cost-effective implementation of the long-term adaptation policy, and as a result, it will allow a high performance of the adaptation policy. To promote the linkage, collecting, analysing and synthesizing good practices are necessary. So far these good practices are limited in number, and should be shared at the SBSTA in-session workshop. Japan understands that "Development and Climate Change Project" of the OECD is working on a similar project, and could be used as a useful reference.

Adaptation measures and mitigation measures are both indispensable for the sustainable development, and the quantity and quality of one measure affect the other. Therefore the global climate change can only be addressed by implementing both adaptation and mitigation measures as an integrated whole, and it is beneficial to share information about the relation between adaptation and mitigation. Integration of mitigation and adaptation is one of the cross-cutting themes in the Fourth Assessment Report (AR4) of the IPCC. The crux of the discussion is on how to harmonize mitigation measures and adaptation measures that will be implemented at different time scale, and with different scope. Japan stresses that adaptation and mitigation measures should be synthetically examined from the sustainable development perspective, to explore possible win-win options.

II. Scientific, Technical and Socio-Economic Aspects of Mitigation

1. Mitigation technology innovation, deployment and diffusion, including identification of and removal of barriers

To achieve the ultimate objective of the Convention, and to address the climate change, both the use of existing technology and the development of innovative technology and its dissemination are equally important. At present, some existing technologies are not widely used around the world yet, and the development of innovative technologies and its dissemination accompanies uncertainty and additional time. Considering the gap of the timing to introduce these technologies, Parties should tackle both the technologies in a well-balanced manner. Japan has always attached importance to the role of technology in addressing climate change, and it will continue to participate in the discussion in an active and constructive manner.

In designing infrastructures for technology development and its dissemination, cares should be taken to look at different requirements for each of them. Therefore information

exchange about existing and innovative technologies should be enhanced in the area of both development and dissemination, in a manner which maximizes common interests of all countries. For the SBSTA 21 workshop, Japan proposes that it should concentrate on specific experiences of each country rather than general technological arguments. More precisely, the following two types of case studies are worth discussing:

- (1) Examination of the past technology development and dissemination (e.g. renewable energies, such as solar power, biomass, wind power, thermal generation plant, thermal recycle plants, etc.) and identification of the driving force (e.g. technology development policy by the government, regulations, private sector initiatives, etc.).
- (2) The potential for the GHG emission reduction through future, innovative technology (e.g. hydrogen, carbon sequestration technology) and possible issues to be addressed in the development and utilization of the new technologies (e.g. consistency with other legal systems and international rules).

In the first category, how to integrate technologies and know-hows originally owned by developing countries into the discussion could be one focus.

2. Practical opportunities and solutions for mitigation that contribute to sustainable development

Many mitigation measures directly bring about sustainable development, and Parties should exploit such an opportunity. It is important to assemble and analyze past examples of sector-based (e.g. steel, cement, power etc.) mitigation policies that led to the sustainable development of a region. For example, mitigation measure through improved energy efficiency can develop industries, increase employment, and reduce air pollution. These examples may prove the model cases for further replication in other countries.

Japan's past experience shows that oil shock in 1973 provided an opportunity to implement energy saving policies through reforming product management system, and upgrading plant infrastructures to save energy, and as a result, it earned the double gains of reduction in energy costs, improvement in productivity and product quality, as well as of reduction of air pollutions. Japan also possesses an excellent range of renewable technologies, such as photovoltaic power generation, and has successfully disseminated such technologies. In the both areas of existing and new technologies, Japan has many exemplary cases to share with other Parties. Other informative project examples could include the independent and dispersed supply of renewable energy in regions where no grids were formerly available, or the acquisition of new supply of energy through conventional mitigation technology to capture methane emissions.

These are some of the win-win cases of mitigation and sustainable development. Similar examples could be collected for the reference by Parties so that they will help countries develop and select appropriate policies that will lead to sustainable development and mitigation in different countries.

Soumission du Royaume de Maroc au sujet des aspects scientifiques, techniques et socio-économiques des impacts de la vulnérabilité et de l'adaptation en liaison avec le développement durable

Document : FCCC/SBSTA/2004/L.13

Concernant les aspects scientifiques, techniques et socio-économiques des impacts de la vulnérabilité et de l'adaptation en liaison avec le développement durable, la proposition du SBSTA, document FCCC/SBSTA/2004/L.13, paragraphe 4, visant à donner lors de sa 21^{ème} session un grand intérêt aux échanges des informations et au partage des expériences sur ces aspects, nous paraît très importante.

En effet, la connaissance de l'évolution possible de notre climat en Afrique du Nord en relation avec les changements climatiques reste à ce jour très limitée.

Le manque de modèles climatiques régionaux, en mesure de donner des informations précises est un handicap crucial. Aussi, notre région aurait besoin d'appui pour appliquer un grand modèle climatique, à maillage particulièrement fin pour l'Afrique du Nord, pour estimer les prévisions climatiques futures.

Une fois mieux connue l'évolution possible de notre climat, il sera possible d'appréhender notre vulnérabilité et de définir une politique d'adaptation en conséquence.

Le secteur de l'eau, élément vital et hautement stratégique pour notre région, est particulièrement vulnérable face aux changements climatiques. L'avenir de notre région, tenant compte des prévisions climatiques faites pour les décennies à venir, est critique en relation avec la rareté et la dégradation attendues de cette ressource. Il y a un besoin urgent de définir et de mettre en œuvre des stratégies de gestion et d'utilisation de l'eau adaptées au contexte hydrique futur de la région.

Aussi nous proposons que l'atelier prévu (paragraphe 5 du document FCCC/SBSTA/2004/L.13) soit l'occasion **de montrer des éléments concrets mettant en relief des expériences d'adaptation réussies, avec des bénéfices directs pour les populations locales et pour les pays**. Nous souhaiterions voir un intérêt particulier donné au secteur de l'eau. **L'axe financement de l'adaptation devrait y être abordé avec des suggestions pratiques et réalisables.**

PAPER NO. 6: NETHERLANDS ON BEHALF OF THE EUROPEAN COMMUNITY
AND ITS MEMBER STATES

**SUBMISSION BY THE NETHERLANDS ON BEHALF OF THE
EUROPEAN COMMUNITY AND ITS MEMBER STATES**

This submission is supported by Bulgaria and Romania.

Brussels, 3 September 2004

Subject: The Scientific, Technical and Socio-economic Aspects of Impacts of, and Vulnerability and Adaptation to, Climate Change. Views on the topics raised in document FCCC/SBSTA/2004/L.13 and on the workshop to be held during the 21st session of the SBSTA

The Netherlands, on behalf of the European Community and its Member States, welcomes the opportunity to submit their views regarding agenda item 7 on the topics “Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation” and “Linkages between adaptation and sustainable development”, as well as on the format, organisation and scope of the workshop, as requested in document FCCC/SBSTA/2004/L.13.

Introduction

The EU is strongly committed to combating the causes and consequences of anthropogenic climate change jointly with other Parties through the UN Framework Convention on Climate Change and the Kyoto Protocol. We consider the exchange of information and sharing of experiences and views, which is taking place through the in-session workshop process started at SB20, to be a useful contribution to joint learning. This will contribute to the achievement of the objectives of the convention. The EU wishes to suggest a number of improvements as follows.

Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation

Content for Workshop at SBSTA21

The EU suggests that the workshop should focus on examples that illustrate the application of methods and tools as supported and implemented by governments and stakeholders. These tools should include the application of regional models for assessment of impacts, vulnerability and adaptation requirements. Existing activities relevant to the Convention, such as the Arctic Climate Impact Assessment, could report to the SBSTA at a future session on their experiences in using different methods and tools. The secretariat could also invite the representatives of these types of activities to contribute to the discussions at the workshops in order to allow SBSTA to build upon such experiences under this agenda item. The EU would further welcome an exchange of views on key vulnerabilities identified by parties through applying these methods and corresponding approaches to adaptation and its limits.

EU-experiences

The EU and individual member states have many practical examples of the application of methods and tools, including regional modeling, for assessing impacts and vulnerability and adaptation. These examples include:

- early warning systems for extreme weather events and the connected plans to deal with these events,
- identification of key impacts and vulnerabilities for different areas and at different scales e.g. on glacial extent, sea-level rise, long term hydrological trends, forests, coral reefs and identification of thresholds for key impacts for different global mean temperature increases,
- integrated assessment studies including application of the safe landings and the tolerable windows approaches,
- development of climate change and socio-economic scenarios,
- guidelines for impact assessment and the development of adaptation strategies,
- guidelines for decision making on adaptation in the context of uncertainties.

Linkages between adaptation and sustainable development

Achievement of the objective of the UNFCCC is intrinsic to sustainable development. The EU considers adaptation to climate change as a key component of strategies for sustainable development and for achieving the Millennium Development Goals. The EU suggests to the secretariat to invite Parties who have formulated National Adaptation Plans of Action and National Strategies on Sustainable Development to provide examples of linkages between adaptation and sustainable development as a contribution to this workshop. This would provide a useful introduction to an important but complicated subject that could be further developed at SBSTA22. The contribution from Parties could include discussion on the following items.

- *Examples of synergies, ancillary benefits and trade offs.*
- *Risks of climate change impacts for sustainable development and limits to adaptation.*
- *Potential of sustainable development to reduce vulnerability to climate change.*
- *The linkage between climate change adaptation and mitigation strategies and their integration with sustainable development plans and Poverty Reduction Strategies.*

Examples can be derived e.g. from climate change adaptation activities that also contribute to sustainable use of biodiversity and sustainable land management.

Format and organisation of future workshops

The EU considers that the contributions should be more focused and that sufficient time for discussion should be provided. The use of breakout sessions with Parties and experts, under the guidance of experienced facilitators, could stimulate more detailed discussion and provide enhanced opportunity for exchange of views. The EU also stresses the importance of providing abstracts of the presentations in advance. As many participants deal with SBSTA agenda items 6, 7 and 8 the secretariat is kindly requested to facilitate attendance at meeting for these agenda items, including meetings dealing with GCOS, by avoiding concurrent meetings for these areas.

PAPER NO. 7: NEW ZEALAND

Submission by New Zealand on the SBSTA workshops on (i) scientific, technical and socio-economic aspects of impacts and vulnerability and adaptation to climate change and (ii) mitigation of climate change

This submission responds to both FCCC/SBSTA/2004/L.13 and FCCC/SBSTA/2004/L.13. New Zealand welcomes this further opportunity to share its views regarding the themes of and arrangements for the SBSTA workshops on the agenda items on scientific, technical and socio-economic aspects of impacts and vulnerability and adaptation to climate change and mitigation of climate change.

Previous submissions by New Zealand have identified a general approach to the workshops and a number of specific topics that we believe would help SBSTA to explore the adaptation and mitigation agenda items in the context of implementing the objectives of the Convention. Those suggestions are not reiterated in detail here. We refer readers to submissions by New Zealand contained in FCCC/SBSTA/2004/Misc6 and FCCC/SBSTA/2003.Misc11. This submission specifically focuses on the subject matter New Zealand would find useful to have addressed by each of the two workshops to be held during SBSTA 21, in the context of the agreed themes.

Adaptation

Under the “methods and tools” theme, New Zealand would find it valuable to hear presentations by practitioners experienced in meeting adaptation challenges that relate to the effects of climate change on natural resource based economies. New Zealand would be happy to share its own experiences in this context at the Adaptation Workshop.

New Zealand considers that the “sustainable development” theme provides a useful opportunity to address the benefits and risks of early decision making to adapt to climate change in sustainable development pathways. Changes in climate, environmental and socio-economic systems are all subject to long response lags and irreversibility that coupled with the additional inertia of responses to those changes is one of the key reasons why anticipatory adaptation can be beneficial and may in some circumstances be necessary. At the same time, early action based on incomplete knowledge may also create unnecessary cost. In some situations early and anticipatory adaptation as a response to the changing climate is necessary to avoid lock-in of future vulnerabilities. In other situations adaptation occurs most effectively in the course of longer term decision making processes. The SBSTA workshop may be able to facilitate an exchange of information and experiences to assist Parties with decisions on adaptation priorities and timeframes for implementation of practical responses.

Mitigation

The “technology innovation, deployment and diffusion” theme provides an opportunity to consider the dual importance of ensuring that present day investment in technology deploys the most appropriate climate-friendly technologies in major investments and also ensures that the best future technology is successfully brought to market as soon as possible. New Zealand would welcome more information about the nature of major current investment decisions and the barriers that may exist to decisions to implement those climate-friendly technologies that are available now or are able to be brought to the market with minimal additional cost.

The mitigation workshop may usefully consider the contribution of carbon sequestration in forests to a balanced portfolio of mitigation actions in the context of both sustainable development and deployment and diffusion of technology. As part of the portfolio of mitigation actions, forest sinks can contribute to sustainable development plans by way of sustainable land use (achieving the co-benefit of emission reductions and, if properly managed, contribution to other environmental objectives such as prevention of soil erosion and maintenance and enhancement of biodiversity). Planted forests can also contribute as a renewable energy resource facilitating switching to bio-energy from fossil fuel energy sources.

New Zealand is also interested in learning about mitigation initiatives that not only have positive climate change outcomes but also directly address sustainable development objectives including sustainable long-term emission patterns and pathways. The "sustainable development" theme could usefully facilitate a presentation on management of climate change which also benefits wider sustainable development objectives. This could include global and/or regional initiatives designed to address the Johannesburg Plan of Implementation (such as WSSD Type 2 partnerships), and national-level action (such as initiatives that might be prioritised in national sustainable development strategies). A presentation of views, information and experiences of climate change relevant aspects of WSSD's Chapter 3 on "Changing unsustainable patterns of consumption and production" would also be useful.

PAPER NO. 8: PERU

Aspectos científicos, técnicos y socio económicos de los impactos, y vulnerabilidad y adaptación al cambio climático

Opinión del Perú sobre los temas a tratar en el taller a realizarse durante la 21ra sesión del OSACT

Lima, 31 de agosto de 2004

El Perú presenta, según lo solicitado en el documento de conclusiones FCCC/SBSTA/2004/L.13, su posición respecto a la ejecución de un taller orientado al intercambio de información, experiencias y opiniones, así como de lecciones aprendidas en el uso de métodos y herramientas para la evaluación de impactos y la vulnerabilidad y adaptación al cambio climático.

En este sentido, proponemos que el objetivo principal de este taller, y de espacios adicionales para el trabajo de este tema de agenda, deberán estar orientados a identificar maneras de adaptarse al cambio climático, mediante la mejora del entendimiento de los aspectos científicos, técnicos y socioeconómicos de los impactos del cambio climático, considerando las particularidades y la vulnerabilidad de los países, en especial en aquellos más vulnerables y en vías de desarrollo.

Queremos proponer que, con miras a obtener una óptima asistencia y participación, el taller se lleve a cabo un día antes de la apertura de la 21ra sesión del OSACT. Esto permitirá que países con pequeñas delegaciones puedan asistir al taller, sin interrumpir su participación en las negociaciones.

De no ser viable la anterior propuesta, solicitamos que se realicen las coordinaciones pertinentes para que el taller se desarrolle en una fecha que no interfiera con la negociación y/o trabajo en puntos de agenda relacionados.

Por otro lado, es muy importante lograr la efectiva retroalimentación entre las experiencias e información a ser presentadas y los asistentes al taller. Para tal efecto, se propone que como parte del taller se cuente con sesiones paralelas o grupos de trabajo paralelos en los principales temas o secciones identificados, a través de los cuales se pueda llegar a mayor profundidad y comprensión de las propuestas y experiencias presentadas.

Se sugiere que los siguientes temas sean tratados en el taller:

- *Intercambio de experiencias en la aplicación de herramientas y métodos para la reconstrucción y validación de **datos climáticos** a ser utilizados en el diagnóstico de la vulnerabilidad y la evaluación de impactos del cambio climático.*

Para el Perú y para muchos países en desarrollo la información climática de base para la investigación del cambio climático resulta deficiente. Este problema hace que los trabajos orientados a proveer información sobre los impactos y la vulnerabilidad al cambio climático sean muy costosos en términos de dinero, esfuerzos y tiempo y, por lo tanto difíciles de replicar.

Es por eso que, a pesar de algunos esfuerzos realizados a nivel nacional y regional en este tema, consideramos que se puede lograr un importante aporte si se promueve el

intercambio de experiencias y métodos para la reconstrucción y validación de datos climáticos, tales como:

- o Análisis de componentes principales y de redes normales para el establecimiento de correlaciones en las series de datos disponibles, tanto a nivel nacional como regional.
- o Posibilidades y limitaciones del reanálisis, para la reconstrucción de datos meteorológicos y su uso en la construcción de la climatología y análisis de la variabilidad climática.
- o Manejo de incertidumbre en la regionalización (downscaling) de datos observados para la reconstrucción de series meteorológicas.
- o Alternativas aplicadas en el tratamiento y reconstrucción de series meteorológicas
- o Iniciativas globales sobre este tema y posibles sinergias
- o Disponibilidad de estudios realizados sobre paleoclima.

- *Experiencias y métodos para la **valoración de impactos***

Para países en vías de desarrollo y además particularmente vulnerables (art. 4.8 de la CMNUCC) resulta estratégico conocer cuáles son los impactos del cambio climático y contar con una valoración de estos, ya que ponen en riesgo su proceso de desarrollo.

La disponibilidad y comprensión de esta información permitirá a su vez y como un primer paso estrechar la comunicación entre la comunidad científica y las autoridades, los tomadores de decisiones y la sociedad civil, orientando sus acciones hacia la identificación y aplicación de medidas de adaptación.

En apoyo a este objetivo proponemos que el taller cuente con presentaciones sobre:

- o Experiencias en la valoración de impactos al cambio climático (tanto aproximaciones sectoriales como enfoques integrados)
- o Características y alcances de las diferentes metodologías utilizadas en la valoración de estos impactos.
- o Experiencias de cómo los gobiernos han incorporado esta información y métodos en sus políticas de desarrollo.

- *Investigación y/o estudios en progreso sobre impactos del cambio climático en **Ecosistemas Frágiles y Biodiversidad**.*

La comunidad científica internacional ha establecido que el cambio climático representa un peligro a la existencia de ecosistemas frágiles, tales como los glaciares tropicales. Asimismo se ha reconocido que uno de los mayores problemas que enfrentará la población en el futuro será la disponibilidad de agua, poniendo en alto riesgo la seguridad alimentaria, salud y habitabilidad en muchas ciudades.

Para países como el Perú la progresiva desaparición de los glaciares, importante fuente de agua, se convierte año a año en una gran preocupación. Reconociendo que sobre el particular se han realizado recientemente algunos estudios, al momento sin embargo no se logra tener respuestas confiables para la toma de decisiones.

Esto se debe en gran parte a que los sistemas de glaciares tropicales son particularmente complejos y no hay larga información histórica sobre el retroceso de los glaciares, que pueda apoyar el desarrollo de estos estudios.

Es por eso que proponemos que dentro del taller se realicen exposiciones orientadas dar luces sobre los siguientes temas:

- o ¿Qué estudios han tenido un aporte significativo en la evaluación de los impactos sobre ecosistemas frágiles como los glaciares tropicales?
- o ¿Cuál es la validez de las técnicas utilizadas para la evaluación de dichos impactos?
- o ¿Cuáles son los impactos de la desaparición de dichos ecosistemas frágiles en el clima global?
- o ¿Cuáles son y cómo se pueden evaluar los aspectos socio-económicos de la desaparición de estos ecosistemas?

Asimismo, el impacto del cambio climático sobre la Diversidad Biológica llega a ser de vital importancia. Proponemos que dentro del taller se cuente con espacios para la discusión e intercambio sobre los estudios realizados y metodologías utilizadas para la evaluación de los impactos del cambio climático en la diversidad biológica, incluyendo su valoración.

- *Intercambio de información y experiencias sobre los obstáculos que enfrentan los países en vía de desarrollo para cumplir con las metas del Milenio*
 - o Los procesos de desarrollo de los países se ven interrumpidos por los eventos climáticos extremos. Sin adaptación al cambio climático es prácticamente imposible mantener los esfuerzos par lograr un desarrollo sostenible. En este contexto, este punto del taller podría enfocarse en el intercambio de información sobre los posibles mecanismos para evaluar el cumplimiento de las metas del Milenio en relación la baja capacidad de adaptación de los países en desarrollo a los impactos del cambio climático.
 - o Inicitaivas o esfuerzos que se están realizando para vincular cambio climático con desastres naturales

PAPER NO. 9: SAUDI ARABIA

SAUDI SUBMISSION ON
“SCIENTIFIC, TECHNICAL AND SOCIO-ECONOMIC ASPECTS OF
IMPACTS OF, AND VULNERABILITY AND ADAPTATION TO
CLIMATE CHANGE”

Saudi Arabia would like to thank the UNFCCC Secretariat for the successful preparation of the in-session workshop on the Scientific, technical and socio-economic aspects of impacts of, and vulnerability and adaptation to, climate change on the 20th session of SBSTA, Bonn, Germany and welcomes the opportunity to submit its views on the topics referred to in Paragraphs 4 of document FCCC/SBSTA/2004/L.13 and on the workshop to be held during the 21st session of the SBSTA as been invited by the SBSTA.

Saudi Arabia would like to emphasize that any exchange of information and sharing of experiences and views, and lessons learned on practical opportunities and solutions for this agenda item must be within the context of Article 4 of the Convention, where commitments for Annex I and non-Annex I have been clearly outlined and identified. To be concise, all issues to be considered here must emanate from a certain Article within the Convention that mandates it. We also would like to stress that any deliberations of this agenda item **must not lead to or become a means for introducing any new commitments on the developing country parties**. Scientific and technical information in the Third Assessment Report within the context of Article 4 of the Convention has to be considered too when dealing with the issue of adaptation. To do so, the ground must be provided to share experiences and to take up opportunities on adaptation to integrate it within the sustainable development plan precisely in the area of economic adaptation to the impact of response measures.

The exchange of information and sharing of experiences and views should promote the following:

- a) Understanding of the scientific, technical and socio-economic impact of climate change and the impact of response measures,
- b) Identifying innovative efficient and state of the art adaptation technologies for both the impacts for climate change and the impact of response measure,
- c) Advising in the ways and means of promoting development and/or transferring adaptation technologies in (b).

The Modalities of work within this agenda item should also be flexible and should evolve as work develops and within SBSTA mandate as outlined in Article 9 of the Convention.

Saudi Arabia is highly concerned about economic adaptation to the impacts of response measures. A clear process is needed to advance solutions and opportunities to contribute to sustainable development through economic adaptation to the impact of response measures. Hence, any program of work needs to incorporate economic diversification as a mean to adapt economies of vulnerable countries to respond to the impact of response measures. It is also recommended that this work program focus on capacity building and transfer of adaptive and advanced technologies to adapt to climate change and response measures and also address the following:

- 1) Assess cost effective options including capacity building and transfer of technology for adaptation to contribute to sustainable development in the area of adaptation to climate change and adaptation to the impact of response measures,

- 2) Emphasize the integration of economic diversification in the sustainable development efforts
- 3) Promote an exchange of views on experiences in economic diversification and lessons learned

Economic adaptation to the impacts of response measures is a crucial contribution segment of the sustainable development. The subsidization of coal and nuclear production as well as the relatively high taxation on petroleum products are both environmentally unfriendly and have adverse impacts on economic growth of developing countries, in particular oil exporting countries, **which contradicts the aim of assisting economic development and world sustainable growth and contravenes the requirements of Article 4, Paragraph 8 of the convention.** Hence, the economic impacts of policies and measures taken by Annex I Parties on Non-Annex I Parties need to be evaluated. In the implementation of the commitments, the Parties shall give full consideration to what actions are necessary under the Convention. This includes, and not limited to, actions related to economic diversification, funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing countries arising from the adverse effects of climate change and/or the impacts of the implementation of response measures. In particular, countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels, such as Saudi Arabia, and associated energy-intensive products.

PAPER NO. 10: UNITED STATES OF AMERICA

**Submission of the United States
FCCC/SBSTA/2004/6
Views on Scientific, Technical and Socio-economic Aspects of Impacts of, and Vulnerability
and Adaptation to Climate Change
September 21, 2004**

The Twentieth Session of the Subsidiary Body for Scientific and Technical Advice in June 2004 (SBSTA-20) invited Parties to submit their views on the topics of “(a) Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation; and (b) Linkages between adaptation and sustainable development” as well their views on the workshop to be held during SBSTA-21. The United States welcomes the opportunity to provide views on these items.

The United States considers that the goal of this work should continue to be to provide SBSTA participants with detailed information regarding opportunities and experience at the practical level, so as to better inform the future work of the UNFCCC. We believe that SBSTA can play an important role in facilitating much needed discussion of current work on impacts, vulnerability and adaptation to climate change as these issues take on more importance in the negotiations as a whole.

We found the in-session workshop on impacts of, vulnerability and adaptation at SBSTA-20 to be very useful in beginning the process of facilitating the sharing of experiences and views among Parties on these topics. We found the various presentations on risk and risk assessment to be enlightening, especially those that focused on the way that the perception of risk can affect adaptive response. We noted from the presentations that there was general agreement among the presenters that mainstreaming adaptation concerns into sustainable development strategies and activities was an important way to ensure that adaptive action was in keeping with national and local priorities. The presentations pertaining to on-the-ground activities in Africa, Asia, Europe, Latin America and North America were a beneficial way to see how various methodologies were employed to achieve practical solutions.

It is our view that the form of discussions at SBSTA-20 provides a useful model for the future consideration of adaptation issues. The work program over the next several sessions could usefully consider a broad range of technical and analytical topics. In-session workshops will provide an opportunity to explore a few specific topics in greater detail, and will give direction to future discussions.

Application of methods and tools, including regional models, for assessing impacts and vulnerability and adaptation

A discussion of methods and tools for assessing impacts and response is an essential component of the discussion of impacts, vulnerability and adaptation in these SBSTA deliberations. The workshop could showcase the different methodologies appropriate for assessing impacts and vulnerabilities at various temporal or spatial scales. It would be useful to better understand the data, information, and capacities needed to support the assessment of vulnerabilities and adaptive response. In addition, a discussion of the appropriate level of vulnerability/risk assessment required to inform immediate and appropriate action on adaptation (e.g., rapid assessments, national action plans) would be relevant to SBSTA deliberations.

Linkages between adaptation and sustainable development

This work could build on some of the ideas presented at SBSTA 20 by considering the ways in which adaptation factors into overall sustainable development strategies and planning. The workshop should

highlight the experiences countries have had incorporating impact, vulnerability, and/or risk assessments into adaptation and sustainable development strategies at the national and sub-national levels. It would be useful to understand which conditions stimulate or constrain adaptive response, including an exploration of the process of adaptation decision-making at various levels within countries. Case studies that highlight both planned and reactive adaptation in the context of sustainable development would be a useful comparison. Lastly, the United States would like to see a session or presentation dedicated to identification of win-win opportunities for advancing sustainable development and addressing adaptation.

PAPER NO. 11: UZBEKISTAN

The opinion of the Republic of Uzbekistan on the scientific, technical, social and economical aspects of climate effects and on the issues of vulnerability and adaptation to climate changes

Republic of Uzbekistan supports the efforts of FCCC Secretariat in the field of scientific, technical, social and economical aspects of climate effects and on the issues of vulnerability and adaptation to climate changes (FCCC/SBSTA/2004/L.13, pp. 4 and 7). Republic of Uzbekistan has conducted studies **on the scientific, technical, social and economical aspects of climate effects and on the issues of vulnerability and adaptation to climate changes** during working out the first National Report on UN FCCC and within framework of the international project “Uzbekistan – country study on climate change. Phase II” with financial support of GEF and UNDP.

Evaluation of the climate change effects on the principal social and economical sectors of economy of Republic of Uzbekistan was executed **basing on climate scenarios with application of the regional models and techniques**:

- **Agroclimatic resources and agricultural production** were evaluated with **empirical and statistical approaches** and “**Soil-Climate-Crop Yield**” model. For this it was planned to change only climatic parameters in accordance with **regional climate scenario** designed with consideration of realization of **scenario of IS92a emission**;
- **Water resources** were estimated considering only the climate effect, as **only** the flow formation zone was studied which was located in the alpine areas being not subjected too much to the **effect of climatic factors**. Different **climatic scenarios** (designed with consideration of realization of **scenario of IS92a emission** and also **in the moment of CO₂ doubling in atmosphere**) were considered. **The estimation techniques** were worked out basing on **the mathematical model of mountain rivers flow formation** developed at Central Asian research hydro-meteorological institute of the Centre of hydrometeorological service at the Cabinet of Ministers of Republic of Uzbekistan which provides for the **assessment of the climate change effect on the mountain hydrology, snow cover, glaciers** on the level of separate **river basins**. **The estimation** of the climate change effect on the area of **flow distribution** (plain territory with the irrigated lands) was made basing on **empirical data** and **expert estimations**.

For substantiating the **methodical** provisions of vulnerability estimation with the account of **national features** within the framework of project “Accelerated financing of stimulating activities on the solution of problems related to climate change” (“Uzbekistan – country study on climate change. Phase II”) the following was done:

- the **methodical approaches** applied to the estimation of **water resources vulnerability** with different options of agriculture and water economy development in the conditions of climate change both for the area of the flow formation zone and the area of its distribution were investigated, selected and tested ;
- the **methods** for the estimation of change of productivity of the main grown agricultural crops were **selected and adapted**;
- **«downscaling» technique** was developed for using **GCM** results with the aim of decreasing **the level of uncertainty of climatic scenarios including the estimates of the extreme values of temperature and total precipitation** of the preset probability for the scenario conditions;

- the **relationships** between **the climate change** and **desertification processes** were investigated;
- the **review** of possible adaptation measures (mitigation of negative effect of climate change) for the key sectors of national economy.

Priority adaptation measures on climate change in the Republic of Uzbekistan are related to:

- **optimization** of water resources use,
- **improvement** of productivity of **agricultural production**
- **rational land use**
- **mitigation** of aftereffects **of the Aral crisis**

The estimation of vulnerability to the climate change and **adaptation ability** is extremely important for a **sustainable development** of Republic of Uzbekistan, which is located in the arid zone, where the break of a fragile ecological balance can give a rise to negative consequences. Water, agricultural and climatic land resources are the most vulnerable to the climate conditions change, as they are very interrelated. The water resources play a **leading role** in a **social and economical well-being** of the country as their deficit has a negative influence primarily, on the agro-industrial complex and on the **social and economical aspects** defining the **sustainable development**, in a whole.

Republic of Uzbekistan is at a stage of the study of **vulnerability and adaptation** as our studies were based on a **sectoral approach** and made it possible to estimate a potential vulnerability of the different components of the environment to the climate change.

Further it is necessary to conduct a multi-purpose estimation of the climate change effect on the water, agro-climatic and land resources. **The integral estimation of vulnerability of the interrelated sectors** is foreseen.

For this **the following is required**:

- 1) **training** of national experts **to the methodical approaches** including the relevant instruments (tools) and necessary data sets;
- 2) identification, investigation and testing of **appropriate model**;
- 3) **data collection** and creation of a **technical potential** for carrying out the estimation;
- 4) **carrying out the estimation, comparison of results** with the expert estimates, **with** data of sector analysis, **estimation of uncertainties** of the obtained results.

The realization of all the above-mentioned will create a **relevant potential** which provides republic of Uzbekistan for the working out and estimation of **the national measures of adaptation** to climate change. **Further integration** of activities on different ecological Conventions will facilitate the solution of this problem with paying a special attention to **“bilateral”** and **“three-lateral”** measures which alleviate both the negative consequences of climate change, and provides for preserving the bio-diversity and/or prevent from desertification.

The development and realization of programs **on the adequate adaptation** to the climate change and, primarily, in the ecologically unsafe regions, will provide for the **significant** alleviation of its **negative consequences** and **influence positively** on social and economical conditions in the country, thus facilitating the **sustainable development** of Republic of Uzbekistan.