

NINTH SESSION OF IPCC WORKING GROUP III AND 26TH SESSION OF THE IPCC: 30 APRIL - 4 MAY 2007

The ninth session of the Intergovernmental Panel on Climate Change (IPCC) Working Group III (WGIII) met at the UN Conference Centre in Bangkok, Thailand, from 30 April to 4 May 2007, followed by the 26th session of the IPCC on Friday, 4 May. Nearly 300 participants attended the meeting, including Lead Authors and representatives from governments, UN agencies, non-governmental organizations, industry and academia. The meeting resulted in the acceptance of WGIII's contribution to the IPCC Fourth Assessment Report (AR4), titled "Climate Change 2007: Mitigation of Climate Change," including approval of the Summary for Policy Makers (SPM) and acceptance of the underlying report and technical summary.

The key findings of the SPM emphasize that greenhouse gas emissions have increased by 70% since 1970 and that with current policies their growth is projected to continue over the next few decades. The SPM identifies substantial economic potential to mitigate global emissions in the short, medium and long term, and points to mitigation opportunities in several sectors, with the building sector having the highest short- and medium-term potential. It indicates that the price of carbon could create incentives to reduce emissions, and provides estimates on the potential share of renewable energy and nuclear power in 2030. In addition to the role of technology and policies, the SPM also considers the influence of lifestyle changes, and highlights the nexus between mitigation and sustainable development.

The WGIII meeting was scheduled to end on Thursday, 3 May. However, negotiations concluded at 4:16 am on Friday, 4 May, and formal approval of the SPM and closing of the meeting was on Friday morning.

The 26th session of the IPCC opened on Friday, 4 May 2007. Participants discussed and approved decisions on the IPCC budget for 2008-2010, the IPCC terms of reference, further work of the IPCC on emissions scenarios, admission of observer organizations and the future work programme of the IPCC Task Force on National Greenhouse Gas Inventories (TFI). They also discussed the actions taken at the tenth session of WGI,

the eighth session of WGII and the ninth session of WGIII, and heard progress reports about ongoing activities of each working group.

A BRIEF HISTORY OF THE IPCC AND AR4

The IPCC was established in 1988 by the World Meteorological Organization (WMO) and the UN Environment Programme (UNEP). The purpose of the IPCC is to assess scientific, technical and socioeconomic information relevant to understanding the risks associated with human-induced climate change. The IPCC does not undertake new research, nor does it monitor climate-related data, but bases its assessments on published and peer-reviewed scientific and technical literature. The IPCC Secretariat is located in Geneva, Switzerland, and is staffed by the WMO and UNEP.

The IPCC has three working groups: Working Group I (WGI) addresses the scientific aspects of the climate system and climate change; Working Group II (WGII) addresses the vulnerability of socioeconomic and natural systems to climate change, negative and positive consequences of climate change, and adaptation options; and Working Group III (WGIII) addresses options for limiting greenhouse gas emissions and otherwise mitigating climate change.

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The IPCC also has a Task Force on National Greenhouse Gas Inventories. The Task Force oversees the IPCC National Greenhouse Gas Inventories Programme, which aims to develop and refine an internationally-agreed methodology and software for the calculation and reporting of national greenhouse gas emissions and removals, and to encourage the use of this methodology by countries participating in the IPCC and by UNFCCC signatories. The IPCC Bureau, comprised of 30 members elected by the Panel, assists the IPCC Chair in planning, coordinating and monitoring progress in the work of the IPCC.

Since its inception, the IPCC has prepared a series of comprehensive assessments, special reports and technical papers, which provide scientific information on climate change to the international community, including policymakers and the public, which are subject to extensive review from experts and governments. This information has played an important role in negotiations under the UN Framework Convention on Climate Change (UNFCCC) and in framing national and regional policies.

The IPCC completed its initial comprehensive assessment of climate change in the First Assessment Report in 1990 and the Second Assessment Report in 1995. The IPCC's Third Assessment Report (TAR), completed in 2001, addresses policy-relevant scientific, technical, and socioeconomic dimensions of climate change, and concentrates on findings since 1995 at both regional and global levels. The TAR is composed of a comprehensive assessment from the three IPCC working groups, a Summary for Policy Makers (SPM) and Technical Summary of each working group report, and a Synthesis Report.

Special reports prepared by the IPCC include the Special Report on Safeguarding the Ozone Layer and the Global Climate System, accepted at IPCC-23 (8 April 2005, Addis Ababa, Ethiopia) and the Special Report on Carbon Dioxide Capture and Storage, accepted at IPCC-24 (26-28 September 2005, Montreal, Canada).

The IPCC Guidelines for National Greenhouse Gas Inventories were first released in 1994, and a revised set was completed in 1996. In 2000 and 2003 the Panel approved additional good practice guidance reports that complement the Revised 1996 Guidelines. In 2006 the IPCC approved the 2006 IPCC Guidelines.

AR4: The IPCC decided to continue preparing comprehensive assessment reports at IPCC-18 (24-29 September 2001, London, UK). Subsequent meetings discussed the timing and other details of the next report, with participants agreeing to late 2007 as the completion date for the AR4. The overall outline of the working groups' contributions to the AR4 was accepted at IPCC-21 (19-21 February 2003, Paris, France). That same year, the scope and outline of AR4 were developed during two scoping meetings (April, Marrakesh, Morocco, and September, Potsdam, Germany), and the author teams were assembled. Another scoping meeting was held in 2004 in Geneva, Switzerland, on the AR4 Synthesis Report (SYR). IPCC-22 (9-11 November 2004, New Delhi, India) decided the SYR outline of topics to be addressed. At its 35th session, the IPCC Bureau agreed on the

composition of the Core Writing Team and Review Editors for the SYR, and the list was presented to the Panel at IPCC-25 (26-28 April 2006, Port Louis, Mauritius).

The AR4 is structured in three volumes, one for each working group. The working groups' contribution comprises the underlying assessment report, a Technical Summary, Executive Summary, and a Summary for Policymakers, each of which undergoes a thorough review process. The review process generally takes place in three stages: a first review by experts, a second review by experts and governments, and a third review by governments. In addition to the three working groups' contributions, the AR4 SYR which, like the SPMs, will be approved line-by-line by the IPCC. More than 2500 expert reviewers, 800 authors, 450 lead authors, and 130 countries have participated in the elaboration of the AR4.

The tenth session of WGI met from 29 January to 1 February 2007 in Paris, France. The eighth session of WGII met from 2-6 April in Brussels, Belgium. Both groups approved their respective contributions to the AR4, including the SPM, the Technical Summary and underlying reports. *Earth Negotiations Bulletin* coverage of these meetings can be found at: <http://www.iisd.ca/climate/ipwg1> and <http://www.iisd.ca/climate/ipwg2>.

The final AR4 is scheduled to be adopted at IPCC-27, in November 2007, in Valencia, Spain.

NINTH IPCC WGIII REPORT

WGIII Co-Chair Ogunlade Davidson (Sierra Leone) opened the ninth session of Working Group III on Monday, 30 April 2007. Chartree Chueyprasit, Thailand's Ministry of Natural Resources and Environment, highlighted Thailand's mitigation activities, including the promotion of alternative energy and improvements in energy efficiency in the transport sector. Noting the impacts of climate change on water resources and agriculture, he stressed national efforts to plan for adaptation. He commended WGIII for identifying opportunities and challenges of climate change mitigation, saying its report is certain to benefit policymakers.

David Goodrich, World Meteorological Organization (WMO), said the WGI report reinforced global consensus on climate change, and the WGII report provides scientific evidence on the need for mitigation and adaptation. He emphasized WGIII as a vital forum to further discuss adaptation and mitigation, indicating that this work will assist negotiations under the UNFCCC and Kyoto Protocol.

IPCC Chair Rajendra Pachauri (India) said WGIII has produced an "excellent" report. He highlighted discussion on short- and medium-term mitigation measures and adaptation, and noted the importance of industry's involvement regarding technology issues.

Delegates then approved the agenda (WG-III:9th/Doc.1).

Noting that WGIII received approximately 1500 comments from governments (WG-III:9th/INF.1, WG-III:9th/INF.1 Add.1), Co-Chair Davidson appealed to delegations to focus on key issues. WGIII Co-Chair Bert Metz (the Netherlands) explained how Lead Authors addressed general government comments and drew attention to the importance of full conformity with

the underlining report. He noted that for conciseness, it was not possible to address certain general comments, including proposals for incorporating more detailed comparisons to the TAR, beginning the SPM with a short summary of findings, adding a section of text on gaps in knowledge, and illustrating concepts with examples of particular countries and circumstances.

SUMMARY FOR POLICYMAKERS

Assisted by the nearly 50 Lead Authors, WGIII discussed the SPM line-by-line in plenary, in small drafting groups and in contact groups for the rest of the week. Discussions were based on the draft SPM (WG-III:9th/Doc.2a) with a number of changes introduced to reflect comments by governments and organizations (WG-III:9th/INF.1). Discussions and key outcomes of the SPM are summarized below based on the structure of the approved SPM, which includes the following sections:

- A – Introduction
- B – Greenhouse gas emission trends
- C – Mitigation in the short and medium term (until 2030)
- D – Mitigation in the long term (after 2030)
- E – Policies, measures and instruments to mitigate climate change
- F – Sustainable development and climate change mitigation, and
- G – Gaps in knowledge.

Discussions on tables, figures and boxes are summarized separately at the end of the section where they appear.

The WGIII SPM is now available for download on the IPCC website at <http://www.ipcc.ch/>.

A – INTRODUCTION: This section was addressed on Monday, 30 April, and Tuesday, 1 May. All text was agreed with minor amendments except for a paragraph describing how uncertainty is addressed in the SPM. WGIII agreed to postpone its decision until a presentation on uncertainty by the Lead Authors and then begin discussion in a contact group co-chaired by Arthur Rolle (Bahamas) and WGIII Vice-Chair Olav Hohmeyer. The uncertainty contact group met on Monday evening, and Tuesday morning and afternoon. In addition to the paragraph in the introductory session, the contact group also considered a draft Annex I on how uncertainty is represented. The main issues under discussion were the definitions for “evidence” and “agreement.”

During an informal presentation during lunchtime on Monday, Chair Pachauri explained the history of uncertainty treatment in AR4, a 2005 paper on guidance for AR4 Lead Authors on addressing uncertainty (<http://www.ipcc.ch/activity/uncertaintyguidancenote.pdf>). A Lead Author discussed the differences between the uncertainty approach in WGI, WGII and WGIII. On the proposed two-dimensional approach to uncertainty in WGIII, which has “agreement” on the vertical axis and “evidence” on the horizontal axis, he said “agreement” meant the degree of convergence in the literature, and “evidence” the number of independent studies, quality of the studies, data points, model runs, etc.

On “evidence,” China, India, South Africa and others noted that “evidence” can be understood as 100% proof, particularly in other languages, and proposed alternative terminology. This was

resolved by introducing a footnote with a dictionary definition for evidence and adding an explanation for evidence in the glossary.

On “agreement,” China, US and others noted the need to express that the agreement is in the published literature and not among experts. On text defining “agreement,” Australia proposed “convergence in the literature,” and Canada proposed “concurrence.” While participants granted that “convergence” was preferable to “concurrence,” they agreed to “concurrence in the literature” because the word “convergence” in climate change is often associated with a mitigation strategy known as “convergence and contraction.” WGIII agreed to specify that “literature” refers to “literature qualifying under the IPCC rules,” and to add an explanation for “agreement” in the glossary.

Final Text: The final text introduces the other six sections of the SPM. This section also refers to the following box:

Box on uncertainty representation (Endbox 1): This endbox, explaining uncertainty treatment in WGIII report, was initially included as an annex to the draft SPM, and discussed in the uncertainty contact group. The endbox highlights: the inadequacy of approaches to uncertainty in WGI and WGII for WGIII; explains how uncertainty is addressed in WGIII; and notes extensive use of the scenarios.

B – GREENHOUSE GAS EMISSION TRENDS: The section on greenhouse gas emission trends was first addressed by plenary on Monday morning, and in contact group meetings co-chaired by Ramon Pichs (Cuba) and Ian Carruthers (Australia) until Wednesday night, when the text was approved by WGIII. Discussions focused, *inter alia*, on how and whether to refer to: additional mitigation; sustainable policies; the level of growth of greenhouse gas emissions; historical emissions; emissions by sector; ozone-depleting gases; emissions per capita and or per GDP; and emission scenarios. In the final SPM the section on greenhouse gas emission trends was divided into three paragraphs, one on past emissions, one on future emissions and one on emissions scenarios.

Past and future emissions and emission scenarios: On additional mitigation, India, opposed by many, contested proposed language that greenhouse gas emissions would continue to grow “without additional” mitigation. Switzerland and Germany said the same language is used in the IPCC Special Report on Emissions Scenarios (SRES). Sudan proposed the language “without sufficient,” and China, opposed by Belgium, preferred the words “without strengthened” or “without enhanced.” France suggested the language “without new and stronger” and India supported the phrasing “without stronger.” The US said “without stronger” would be too normative, and the UK said it would imply that a deepening of current strategies alone would be sufficient, while India expressed concern that a heading calling for “additional” climate change mitigation and related sustainable development policies would place the onus on developing countries. WGIII agreed to use “with current” mitigation.

On the same sentence, which noted that emissions would continue to grow without additional mitigation “and/or” sustainable development policies, Germany, supported by

Australia, France, Slovenia, Norway and others, said that “and/or” was misleading since sustainable development policies alone cannot stop emissions from growing and, opposed by China and India, proposed deleting the text. China, opposed by New Zealand, Norway, Belgium and others, expressed reservations on language that greenhouse gas emissions will continue to grow “significantly.” These issues were solved in the final SPM by indicating that with current mitigation policies “and related sustainable development practices, emissions will continue to grow over the next few decades.”

Cuba, China and the UK supported adding information on historical emissions from before 1970. Concerns from India and Sri Lanka regarding time periods for increased emissions were resolved by adding specific year ranges. China, supported by Brazil and Cuba, requested that additional data from before 1970 be included. China specifically called for the inclusion of findings from a 2006 report by the Oak Ridge National Laboratory about historical emissions. The US, Canada and IPCC Chair Pachauri opposed the inclusion of information not present in the underlying technical report. WGIII agreed to the US proposal, to note that CO₂ represented 77% of total anthropogenic emissions in 2004 and to South Africa’s wording on concentration increases since pre-industrial times.

On CO₂ emissions by sector, the US proposed to either include contributions from land-use change, or specify that emissions listed were only energy related. Brazil said if sectors were singled out, they should be listed in order of importance along with the percentages of emissions that correspond to each sector, and delegates agreed to this during subsequent contact group meetings. In the contact group, Brazil, seconded by Peru, also proposed, and WGIII agreed to, a footnote on uncertainty in land use, land-use change and forestry measurements. Regarding policies to decrease emissions, India and Austria queried whether noting effective reductions in “countries” or “regions” would be more appropriate. WGIII changed the language to locate these reductions in “different sectors and many countries.”

Brazil and India, supported by Norway, favored using the term “energy efficiency” as energy intensity and per capita income may not increase linearly with development. Argentina called for a reference to emissions from UNFCCC Annex I and non-Annex I countries. Brazil, supported by China, proposed a short qualitative sentence conveying that economic development is closely related to emissions. China proposed, and WGIII agreed to, a footnote indicating that the use of Purchasing Power Parity in describing the difference in per capita income among countries is used “for illustrative purposes only for this report.” India underscored the need for language to protect the right of developing countries to keep developing, and delegates decided to refer to both direct and indirect emissions from electricity in the industry and building sectors. India stressed that greater improvements in energy intensity are necessary to support population and income growth already taking place. He also noted that a statement tying the recent increasing in the carbon intensity of the energy sector to the increased use of coal was based on only a few years of data; as a result the text was reworded and the reference to coal removed.

Belgium proposed, and WGIII agreed, to include a number for the decrease in the global energy intensity from 1970-2004. The US, supported by India and the UK, cautioned against including averaged energy use per unit of GDP for Annex I and non-Annex I countries, suggesting that these numbers hide regional disparities. WGIII agreed to eliminate the sentence. India expressed concern over a sentence indicating that Annex I economies are projected to have a lower energy use per unit of GDP than non-Annex I economies. Lead Authors stressed that this information reflects what the studies project. WGIII agreed to insert wording that this projection was “according to SRES scenarios.”

In a paragraph on emissions scenarios, delegates agreed to indicate in a bullet point that non-SRES scenarios do not consider mitigation policies, and explain that the choice of exchange rate for GDP in terms of Market Exchange Rate (MER) or Purchasing Power Parity (PPP) did not appreciably affect emissions in the SRES scenarios. Switzerland and Sweden, opposed by the UK, Uganda and others, said that reference to expert debate on MER versus PPP was not interesting for policymakers and proposed deleting it. Kenya drew attention to past acrimonious debate on the issue, citing accusations that the IPCC used the wrong method in the TAR. Austria, Germany and the UK proposed language to clarify the sentence, and WGIII agreed to move reference to expert debate to a footnote.

Final Text: The final text discusses greenhouse gas emission trends both from pre-industrial times and from 1970-2004 and says a 70% increase in emissions has occurred during the latter period. It also discusses the projected growth in emissions over the next few decades, noting that fossil fuels are projected to maintain their dominant position in the global energy mix. It provides information on the emissions of developed and developing countries and states that existing climate policies have led to reductions, but these have not been large enough to be visible within the historic emissions trend. It explains that emissions levels in baseline emissions scenarios have not changed markedly from those in the SRES scenarios, discussing improvements in the understanding of aerosols and noting that the choice of exchange rate for GDP (MER or PPP) results in a small effect on projected emissions.

The final SPM also contains the following figures and box:

Figure SPM 1 on 1970-2004 global warming potential: When discussing the figure informally, delegates debated the inclusion of gases covered by the Montreal Protocol on Substances that Deplete the Ozone Layer. The final figure depicts warming potential associated with greenhouse gases, including these ozone depleting substances, from 1970-2004.

Figure SPM 2 on global trends on GDP, CO₂ emissions and population: The final figure highlights trends in income, energy, CO₂ emissions, population, income per capita, carbon intensity, energy intensity and emission intensity from 1970-2004.

Figure SPM 3a on regional distribution of per capita emissions and SPM 3b on regional distribution of per GDP emissions: On this figure, China requested that units of MER be included along with PPP, but other delegates explained

the difficulties with showing both graphically. Delegates also discussed potential errors in the proposed groupings of countries into regions, which the Lead Authors agreed to address. Figures SPM 3a and SPM 3b were presented to the plenary late on Wednesday evening, and agreed by WGIII. The final figure includes regional emissions of greenhouse gases in 2004 in terms of GDP and population.

Figure SPM 4 on projected emissions: Various changes were made to clarify the caption. The final figure contains global greenhouse gas emissions in 2000 and projected baseline emissions for 2030 and 2100.

Box SMP 1 on IPCC emission scenarios: The final box details the SRES emission scenarios.

C – MITIGATION IN THE SHORT AND MEDIUM TERM (UNTIL 2030): The section on greenhouse gas emission trends until 2030 was first addressed by plenary between Monday morning and Wednesday night, in contact group meetings co-chaired by David Warrilow (UK) and Richard Odingo (Kenya) and in informal consultations. Discussions focused on approaches to estimating mitigation potential; macro-economic costs; mitigation potential in various sectors, such as transport, industry, forests, agriculture, waste, buildings and energy, including renewable energies and nuclear power.

On Monday afternoon delegates heard a presentation on estimating emission reduction potentials and costs, where Lead Authors elaborated on bottom-up and top-down approaches, highlighting that these approaches are consistent in showing substantial mitigation potential. Discussion following the presentation revolved around sectoral mitigation potentials, the problem of different baselines, conservation as part of the forestry sector, new developments since the TAR, and the inclusion of studies from developing countries.

Costs and Estimates: On a paragraph in the draft SPM identifying significant economic potential for global mitigation in coming decades as shown by bottom-up and top-down studies, the UK, the US and Germany cautioned against implying that bottom-up and top-down approaches are exactly comparable. New Zealand requested redrafting a figure on global economic mitigation potential using both bottom-up and top-down approaches. Austria underscored the need for parallel metrics between bottom-up and top-down approaches, and Sweden stressed that economic potentials may be greater if externalities are accounted for. Canada asked to emphasize that difficult decisions and political trade-offs could be required of policymakers. Lengthy technical discussions continued in a contact group, where delegates considered differences between market potential and economic potential, and bottom-up versus top-down approaches. They also addressed two tables on economic potential estimates: one for bottom-up studies, and one from top-down studies; a figure on global economic mitigation potential in different categories (again for both bottom-up and top-down studies); and another figure on estimated sectoral economic potential for different regions as a function of carbon price.

Macro-economic costs by 2030: When considering a paragraph on 2030 macro-economic costs for mitigation, delegates discussed a bullet point highlighting GDP gains in models, which assume that baselines are not economically optimal and climate change mitigation policies reduce market imperfections. The UK proposed more specific text on substitution possibilities, reducing unemployment, and the rate of technological change. Austria, the US and others initially supported the proposal, but eventually agreed with Kenya, Sweden and others that it was too technical. A small group drafted text to clarify the language and include unemployed resources, distortionary taxes and subsidies as examples of market inefficiencies.

WGIII agreed to include a new bullet point indicating that multi-gas approaches and carbon sinks generally reduce cost substantially compared to CO₂ abatement only.

On a bullet point concerning regional costs, India, supported by Austria and Finland, questioned language on rules for allocating emissions, with Austria preferring reference to emission allowances. Lead Authors explained the key message that assumptions about baseline scenarios and stabilization levels are more important than allocation rules. WGIII agreed to text indicating that the allocation regime is important but “for most countries to a lesser extent than the stabilization level.”

On a bullet point noting that costs may be substantially lower if revenues from carbon taxes or auctioned permits under an emissions trading scheme are used to promote low-carbon technologies or the reform of existing taxes, China drew attention to the lack of definition of low-carbon technologies, and delegates agreed to add the term to the glossary.

On a footnote referring to cost increases over time, Belgium proposed adding language from the TAR stating that projected mitigation costs do not consider potential benefits of avoided climate change. Germany stressed that this important information should be in a separate bullet point instead of a footnote. China questioned language on increasing mitigation efforts, and preferred reference to intensifying mitigation. Sweden stressed that some models projected decreases in marginal abatement costs. The agreed footnote states that for a given stabilization level, GDP reduction would increase over time in “most models after 2030,” and long-term costs also become more uncertain.

On the confidence level, China, opposed by Germany, Austria, Switzerland, the US, Belgium, Canada and Spain, said the information the 445-535 ppm stabilization scenario did not support a “much evidence” confidence statement on language stating that the estimated costs of mitigation are between a 3% decrease of GDP and a small increase. The Lead Authors explained that, for a 445 ppm stabilization level, 3% is based on 11 studies and represents the highest estimate. After informal consultations, the confidence statement was changed to “medium” evidence.

Lifestyle changes: Early on Friday morning a new paragraph on the impact of lifestyle changes on mitigation was proposed by Belgium, in cooperation with the Lead Authors. WGIII made minor amendments and agreed to text indicating that lifestyle changes can contribute to mitigation across all sectors.

Spillover: On a paragraph on spillover and carbon leakage noting the effects of Annex I countries' actions on the global economy and emissions, the UK proposed adding information on recent sectoral studies besides indicating that the literature confirms the TAR findings, with Japan suggesting to spell out the TAR findings. The UK also emphasized continuing uncertainties. Co-Chair Davidson, Australia and the US noted that "medium agreement, medium evidence" already reflected uncertainties. The heading was referred to informal consultations, and text was agreed indicating that Annex I actions may have effects on the global economy and emissions but the scale of carbon leakage remains uncertain.

China, Germany, Sweden and others expressed concern over a sentence discussing carbon leakage outside the EU as a result of the EU Emissions Trading Scheme (EU ETS), with the US noting potential confusion of policymakers not familiar with the EU ETS. WGIII agreed to omit the sentence.

Canada, supported by the US, proposed deleting a sentence noting that the potential benefits of technology transfer to developing countries may be substantial but that no reliable estimates exist. China, Uganda and others stressed the importance of retaining the message. WGIII agreed to move the sentence to a paragraph on technology transfer.

Energy: On a paragraph on energy, discussions focused mainly on nuclear power, but also on carbon capture and storage, renewable energies and energy investment.

On a sentence on the additional investments required in the energy sector to return global emissions to 2005 levels by 2030, Sweden and China asked for clarification for why a date of 2005 was chosen. WGIII agreed to a proposal by China to change global emissions to global "energy-related" emissions.

On nuclear power, the US, opposed by Germany, proposed to remove reference to weapons proliferation risks associated with nuclear power. After informal consultations new text was presented stating that nuclear energy can make an increased contribution to mitigation. Spain opposed "increased" and proposed to change the language to "could make a contribution." Co-Chair Metz proposed specifying the percentages of increase in the text. Spain and Germany cautioned against this approach. IPCC Chair Pachauri appealed to delegates to accept wording on "a moderately increased contribution." Spain and Italy proposed "could make a moderately increased contribution." The US expressed disappointment at the weakening of the bullet point regarding nuclear energy and asked how delegates could accept modeling results for renewable energy and not for nuclear energy. After further informal consultations, new text was presented early on Friday morning mirroring that for renewable energies. The proposal indicated that nuclear power "which accounted for 16% of the electricity supply in 2005, can have an 18% share" in 2030. The text also refers to constraints related to safety, weapons proliferation and waste. Austria opposed, saying that the proposal did not reflect the decrease in nuclear power from 2002-2006. WGIII approved the text and, according to IPCC procedure, noted Austria's disagreement in a footnote.

Transport: Regarding biofuels, Brazil proposed, and WGIII agreed to, language noting the possible importance of biofuels in addressing transport sector greenhouse gas emissions depending on their production pathway. WGIII also agreed to Canada's proposed reference to cellulose biomass for biofuels.

On public transportation, there was debate on wording, including public/private/personal/road transport and mass transit. After informal consultations, the terms "low occupancy" and "high occupancy" vehicles were included.

Regarding aviation, the US said stress should be on mitigation potential and not on emission trends. France emphasized the need to refer to growth rates. Italy underscored that if market mechanisms are considered, emissions growth can be reversed. The issue was resolved after informal consultations, with text indicating mitigation potential can come from improved fuel efficiency, but improvements can only partially offset growing emissions.

Building sector: Regarding the building sector, discussions included the differences between economic and market potential, differences between economic benefits and co-benefits, the definition of the building sector, and how to note differences between developed and developing countries. China and India proposed, and WGIII agreed, to remove language saying that more than half of the mitigation potential is in developing countries.

Industrial sector: On a paragraph on the economic potential in the industrial sector, WGIII also agreed to delete language noting that more than 50% of the mitigation potential is in developing countries, indicating instead that full use of available options is not being made in either industrialized or developing countries.

Agriculture: On a paragraph on agriculture, discussions focused on soil carbon sinks, methane and nitrous oxide emissions, and impacts on the environment and food security.

On soil carbon sinks, Sweden, supported by Germany and the Netherlands, underscored the potential non-permanence of the sinks. The UK, supported by other delegations, suggested that long-term carbon cycle feedback better falls within the realm of the other working groups. After informal consultations delegates agreed to language stating that stored soil carbon may be vulnerable to loss through both land management change and climate change.

Regarding reductions in methane and nitrous oxide emissions, New Zealand, supported by China, proposed, and WGIII agreed, to add the clarifying text "in some agricultural systems" to reflect the non-universal nature of approaches. Tuvalu, supported by the US and Sudan, opposed a statement indicating that such reductions are permanent, and WGIII removed that language.

Regarding the widespread use of land for biomass production, Argentina asked to clarify potential environmental impacts such as deforestation and biodiversity loss. Sudan, supported by Djibouti, asked that potential impacts on food security also be mentioned. WGIII agreed to add reference to positive and negative environmental impacts and implications for food security.

Forests: Discussions on forests focused on: distinctions between reduced emissions from deforestation and avoided deforestation, the impacts of climate change on forests, and the cost of forest mitigation activities. Differences were addressed in informal consultations and in plenary.

Brazil expressed concern that “reduced emissions from deforestation” was sometimes used synonymously with avoided deforestation in the underlying chapter. Noting that natural forests are not always included in the forestry sector in some countries, Colombia further proposed referring to forests in general and WGIII agreed to “forest-related.”

On a paragraph stating that the impact of climate change in forests cannot be predicted with confidence, Tuvalu, with Belgium and Germany, opposed by Australia and the US, recalled statements from the WGII SPM and underlying chapters that refer to carbon uptake peaking and then declining this century. Tuvalu and the Russian Federation, opposed by Colombia, proposed deleting the sentence. Belgium suggested addressing the matter more clearly as was stated by WGII. After informal consultations, WGIII agreed to state that climate change can affect the mitigation potential of the forest sector and is expected to vary by regions and subregions, both in magnitude and direction.

On language saying that forest-related mitigation activities can considerably reduce emissions and increase removals by sinks at low cost, Tuvalu objected to the word “considerably” and, opposed by Canada, Colombia and Australia, proposed “initial” low costs. Co-Chair Metz said there is no basis in the underlying chapter for use of “initial” low costs. Brazil underscored that the potential of mitigation is short term. WGIII agreed to retain the reference to “low costs” and insert a footnote to express Tuvalu’s disagreement.

Waste: On waste emissions, Belarus proposed, and WGIII agreed, to add reference to soil protection and pollution prevention. China proposed to specify that technology is available “in the market,” and WGIII agreed to the US suggestion “commercially available.” Responding to Belarus, a Lead Author underscored the need to distinguish between direct mitigation and avoided emissions from the waste sector.

On a sentence noting that lack of local capital is a key constraint for waste management in developing countries, Belarus said the problem also applies to economies in transition, while Mauritius drew attention to lack of technical knowledge. The sentence was modified to address these comments.

Geo-engineering: Many countries agreed on the need for clear language stating that geo-engineering options such as ocean fertilization or blocking sunlight remain speculative, unproven and with the risk of unknown side-effects. Belgium, supported by New Zealand, and opposed by the US, proposed to have only a header section for this paragraph and remove an additional bullet point giving examples of the limited impacts of some geo-engineering technologies such as the effects of blocking sunlight on ocean acidification for fear that it would weaken the message. WGIII agreed to delete the bullet point and retain the

heading noting the “largely speculative and unproven” nature of geo-engineering options also involving “the risk of unknown side-effects.”

Final Text: Section C finds that there is substantial economic mitigation potential as indicated in both bottom-up and top-down studies, which could offset the projected growth or reduce emissions below current levels by 2030. The text estimates the costs of stabilization at 445-710 ppm CO₂ equivalent (CO₂-eq) by 2030 to be between a 3% decrease and a small increase of global GDP, notes that carbon leakage and spillover effects are uncertain, and points to the positive role of lifestyle changes and the substantial co-benefits of mitigation, particularly in health. The SPM further elaborates on the mitigation potential for different sectors:

- In energy supply, the text: notes opportunities in new infrastructure investments in developing countries and in upgrades in developed ones, with additional co-benefits in energy security, pollution abatement and employment; notes that while capping emissions in 2030 at 2005 levels requires a large shift in the pattern of investment, the net additional investment would only range between negligible and 5-10%; and states that renewable energies and nuclear power can have respective shares of 30-35% and 18% by 2030.
- In transport, although multiple options exist, their effect may be counteracted by growth in the sector and barriers such as lack of policy frameworks.
- In buildings, energy efficiency options could reduce emissions with net economic benefits.
- In industry, the greatest reduction potential is in energy intensive industries.
- In agriculture, low-cost options could contribute by increasing sinks and providing biomass for energy use.
- In forests, reduced deforestation and sinks can mitigate at low cost and create synergies with adaptation and sustainable development.
- In waste, post-consumer waste is a small contributor to global emissions, but mitigation in the sector can be low-cost and contribute to sustainable development.

Section C states that geo-engineering options remain largely speculative, unproven, and with unknown risks. Section C also includes various tables and graphs, including a table identifying mitigation technologies currently in the market and those projected to be commercialized by 2030 by sector, and a figure showing the sectoral potential for different regions.

Section C also contains the following figures:

Figures SPM 5a and SPM 5b on global economic potentials: The final figures show global economic potential in 2030 estimated from both top-down and bottom-up studies.

Figure SPM 6 on sectoral economic potential: China voiced concerns over the credibility of the figure, indicating that baselines for different sectors were not comparable, while Canada stressed the relevance of the figure for policymakers. The Lead Authors proposed a caption that included four bullet points explaining the ranges for global mitigation potentials as assessed in each sector and the different baselines used, noting, *inter alia*, that estimated potentials are constrained by relatively

few studies at high carbon price levels; different baselines are used for each sector, and that only global totals for transport are shown because international aviation is included.

Brazil proposed wording from the underlying chapter stating that potentials from the transport sector were an underestimation and that there may be significant potentials in areas such as biofuels, heavy duty vehicles, shipping, modal split change and public transportation. Several parties opposed the singling out of the transport sector and WGIII agreed instead to reinsert language from the previous version of the SPM with a long list of categories excluded from the figure, noting that the underestimation of the total economic potential from these emissions is of the order of 10-15%. The final figure depicts economic potential for mitigation by sector for different regions as a function of carbon price in 2030 and in 2100.

Table SPM 1 on 2030 economic mitigation potentials from bottom-up studies: The final table highlights global economic mitigation potential in 2030 estimated from bottom-up studies for carbon prices between US\$0-100 relative to SRES scenarios.

Table SPM 2 on 2030 economic mitigation potentials from top-down studies: The US proposed to add a sentence stating that the mitigation potentials estimated from top-down studies were derived from stabilization scenarios. After consultations with the Lead Authors, this proposal was included in a bullet point. The final table highlights global economic mitigation potential in 2030 estimated from top-down studies for carbon prices between US\$20-100 relative to SRES scenarios.

Table SPM 3 on key mitigation technologies and practices by sector: Canada asked limiting the table to only the most significant technologies, and Germany requested ranking in order of mitigation potential, stating that renewable energy should come before nuclear power. Co-Chair Davidson cautioned that such a ranking could prove difficult. Delegates agreed to Germany's proposal to note in the caption that the technologies and practices are listed in arbitrary order.

Belgium called for the inclusion of a reference to changes in behavior in addition to technology and activities. India, supported by Brazil and Peru, called for an additional category for sustainable lifestyle choices, emphasizing their overriding importance. Co-Chair Metz stressed that lifestyle changes had not been formally quantified in the underlying chapter, thus could not be included within the table. China suggested lifestyle changes are best addressed elsewhere, asking that a footnote be added to state that lifestyle changes were important and would be addressed in a separate paragraph in the text. Belgium highlighted that they were preparing wording for a paragraph of this nature to be added in the SPM. Delegates agreed to include in the caption text proposed by Cuba and New Zealand stating that non-technological practices, which are cross-cutting, such as lifestyle changes, are not included, but addressed in the new paragraph on lifestyle changes.

Canada called for the inclusion of hydrogen powered fuel cell vehicles in the transport sector. Colombia called for using the term forests instead of forestry, as policymakers may assume forestry includes only commercial practices. The US requested that more fuel-efficient aircraft be included under transport.

Germany called for listing alternative refrigeration fluids under buildings. Delegates agreed to accept the table with these modifications.

The final table focuses on currently available mitigation technologies and practices and those projected to be commercially available before 2030 in the following sectors: energy supply, transport, buildings, industry, agriculture, forestry/forests, and waste.

Table SPM 4 on macroeconomic costs in 2030: Following a query from Australia, the Lead Authors explained that there was only enough literature to support a range, not a median, for the 445-535 ppm stabilization level. Denmark requested that the projected global mean temperature be added as a column in the table, but the Lead Authors stated that temperature increases were better addressed later in the report. Delegates agreed to the US proposal that the term "least-cost" be used in the table title to describe the trajectories toward different long-term stabilization levels. In response to a suggestion by India, WGIII replaced the term "stabilization targets" with "stabilization levels." Austria asked for clarification about the nature of costs reflected in the table; the issue was addressed by changing the title to include the term "macro-economic." The final table includes the global costs in 2030 for least-cost trajectories towards different long-term stabilization levels.

Box SPM 2 on mitigation potential and analytical approaches: On a box providing various definitions related to mitigation potentials, China, supported by Germany, the US and others, suggested adding language explaining the relation between economic and market potentials, and with Benin, Norway and others, called for clarifying the reference to costs in the definition of economic potential. The UK suggested making clear what the bottom-up and top-down approaches are each able to do. During contact group discussions, the US said introducing reference to mitigation potential might be confusing, and suggested explaining what is included in the estimates. Co-Chair Odingo cautioned against too much fine-tuning and technical detail and reminded delegates that the SPM would also have to be clear to policymakers in rural Africa. Delegates agreed to add reference to existing barriers in explaining market potential, and to "appropriate" policies and inclusion of social costs and benefits in explaining economic potential. Belgium proposed, and delegates agreed, to add a sentence from the TAR noting that projected mitigation costs do not take into account potential benefits of avoided climate change. Various other changes were introduced for clarity, including a reference to definitions in the glossary.

The final box explains the concept of "mitigation potential," its further differentiation into "market potential" and "economic potential," and the broad classes of "bottom-up" and "top-down" approaches.

Box SPM 3 on assumptions in studies on mitigation portfolios and macro-economic costs: Saying that it was critical that the meaning of least-cost approach used in most top-down models be clearly stated, the US, supported by Canada and others, proposed inserting language from the underlying chapter explaining that these models assume transparent

markets, no transaction costs, and thus perfect implementation of policy measures throughout the 21st century. This proposal prompted China to suggest addressing also the lack of equity considerations. After some discussion, delegates agreed to add the reference to equity at the end of a sentence noting that models exclude climate benefits and co-benefits of mitigation measures. On text noting that global modeled costs would increase if some regions, sectors or gases are excluded, the US, supported by the Lead Authors, proposed to call attention to land use as a sector. The European Community proposed to insert reference to auctioned permits alongside carbon taxes. WGIII agreed to both insertions.

The final box underscores the assumptions in studies on mitigation portfolios and macro-economic costs used in the report.

D – MITIGATION IN THE LONG TERM (AFTER 2030):

This section was first addressed by plenary on Wednesday night, discussions on many issues continued informally and the section was finalized early on Friday morning.

Long-term stabilization: Discussions focused on critical climate thresholds, projected results of stabilization scenarios and peaking of emissions.

In the plenary on Wednesday, China questioned WGIII's mandate to define a critical climate threshold. Norway stressed the importance clarifying risk related to overshoot scenarios, and the UK cautioned against mentioning them.

Regarding the results of stabilization scenarios, China also expressed hesitation about including projected temperatures from WGI, and called for a parallel structure for Sections C and D. Co-Chair Metz highlighted differences in data availability regarding short- and long-term assessments, to explain why the two sections were structured differently. Chair Pachauri stressed the practice of using overlapping material and noted the approved outline, and the mandate of WGIII to address the relationship between mitigation and impacts. The Lead Authors defended linking radiative forcing and concentration levels to temperature in order to make the document accessible to policymakers. China stressed that temperature was not mentioned in the outline for WGIII, nor was it included in the TAR, but Belgium underscored that temperature served as the common thread through the IPCC working groups.

New text was brought to the plenary after midnight on Thursday. Brazil indicated that he had not participated in the contact group, and suggested adding reference to "past emissions" in the heading to indicate that historic emissions affect the scale of future mitigation efforts. Many others opposed, indicating that the focus of the section was on long-term mitigation and reference to "past emissions" would distort it. Belgium, the UK, Netherlands, Germany, the US, Co-Chair Davidson and others stressed that many hours had been spent discussing every word and urged Brazil to accept the compromise. China acknowledged long discussions but, with Argentina and India, expressed sympathy for the Brazilian position. Informal consultations resumed again at around 3:30 am on Friday morning, after which the question was brought back to plenary. As a compromise, Australia proposed a footnote

to referring to emissions trends since pre-industrial levels. After discussing various wordings, WGIII agreed to insert a footnote using China's proposed language on "historical GHG emissions since pre-industrial times."

Induced technological change: China and India highlighted the need to overcome barriers to technology transfer, diffusion and deployment in long-term mitigation. WGIII agreed to address issues of technology transfer in the paragraph on technology transfer. India proposed, and WGIII agreed to, language on effectively addressing barriers to development, acquisition, deployment and diffusion of technologies.

The US questioned reference to "high agreement, much evidence," suggesting it might not be appropriate given the low number of scenarios being assessed. Austria proposed using the term "likely," but Co-Chair Metz cautioned against this given the meaning ascribed to that term in WGI. Delegates agreed to more cautious language proposed by Co-Chair Metz to transmit a sense of ambiguity while maintaining emphasis on the importance of incentives and retained the "high agreement, much evidence."

Decision-making about the appropriate level of mitigation: Switzerland questioned treatment of cost-benefit analysis. Tuvalu and Germany stressed limits to adaptation. India highlighted the level of uncertainty in cost-benefit analysis. Australia noted the differences between the cost functions of climate change impacts and of mitigation.

Regarding costs and benefits of various abatement pathways, the UK, supported by Switzerland, Tuvalu and Norway, underscored losses from the previous version of the draft text. Co-Chair Davidson called for delegates to consider the Lead Authors' proposed text, a compromise mindful of several government comments. He then called for an informal group to address the issue. Additional text highlighting the uncertainty of analyses of costs and benefits and describing the concept of climate sensitivity was agreed.

Final Text: The final text of Section D on long-term mitigation indicates that to stabilize greenhouse gas concentrations, emissions need to peak and then decline. It states that mitigation efforts over the next decades will have a large impact on opportunities to achieve lower stabilization levels. According to the SPM, a range of stabilization levels can be achieved by technologies that are currently available or expected to be commercialized in coming decades. Regarding incentives, the SPM discusses energy efficiency, low-carbon energy sources, land use and forestry, and modern bioenergy. It identifies the need for technology investment; research, development & demonstration (RD&D); and addressing barriers.

The SPM states that the costs of mitigation in 2050 for stabilization between 710-445 ppm range from a 1% gain to 5.5% decrease of global GDP. It explains factors to be considered during an iterative risk-management process to decide on appropriate mitigation levels, including actual and avoided climate change damages, co-benefits, sustainability, equity and attitudes. Stressing limited and early analysis, the SPM states that costs and benefits of mitigation are broadly comparable. It indicates that economically optimal timing and

level of mitigation depend on the uncertain shape and character of the climate change damage cost curve. It identifies climate sensitivity as the key uncertainty for mitigation scenarios aiming to meet a specific temperature level. The SPM further explains that delayed emission reductions lead to investments that lock in more emission-intensive infrastructure and development pathways, significantly constraining opportunities to achieve lower stabilization levels and increasing the risk of more severe climate change impacts.

The section also contains the following figures, tables and box:

Figure SPM 7 on emissions pathways of mitigation scenarios: The final figure presents emissions pathways for mitigation scenarios for different stabilization levels.

Figure SPM 8 on stabilization scenario categories: The final figure illustrates the stabilization scenarios and their relationship to global temperature increases.

Figure SPM 9 on emissions reductions for alternative mitigation measures: In discussing the future, Brazil proposed to change language on “avoided deforestation” to “reducing emissions from deforestation” and WGIII approved the figure without mention of avoided deforestation (only forest sinks). The final figure portrays the cumulative emissions reductions for different mitigation pathways for 2000-2030 and 2000-2100.

Table SPM 5 on post-TAR scenarios: The final table highlights characteristics of post-TAR stabilization scenarios.

Table SPM 6 on macro-economic costs in 2050: The final table includes the global costs in 2050 for different long-term stabilization trajectories.

Box SPM 4 on modeling induced technological change: The final box discusses models that adopt approaches based on induced technological change.

E – POLICIES, MEASURES AND INSTRUMENTS TO MITIGATE CLIMATE CHANGE: Government policies and instruments: Discussion focused on creating incentives for mitigation, evaluation criteria, taxes and charges, voluntary agreements, information instruments and voluntary actions.

On a sentence identifying the main criteria for evaluating policies and instruments, China questioned reference to “political feasibility,” and the UK said this is not relevant for technical evaluation of policies. WGIII removed reference to political feasibility.

The US and Belarus questioned language noting that taxes and charges are cost-effective. The Lead Authors explained that taxes are more cost-effective to implement than other instruments. India, supported by the US, proposed specifying that taxes are cost-effective for setting a price for carbon. Sweden proposed replacing “taxes and charges” by “carbon tax” but India opposed, referring to India’s high petroleum tax, which is not called a carbon tax but has a similar impact. The UK, opposed by Switzerland, proposed an alternative formulation that separates the impacts of taxes and charges from their implementation. After informal consultations, the text was agreed indicating that “taxes and charges can set a price for carbon but cannot guarantee a particular level of emissions.”

On text on the role of voluntary agreements, Japan expressed concern over whether agreements “that have an implicit threat of future taxes” are really voluntary. The Lead Authors explained that even if such agreements are not strictly voluntary, literature shows that they are being applied. After discussions on the effectiveness of voluntary agreements and experiences in Japan and Germany, delegates agreed to indicate that “some recent agreements in a few countries” have led to emissions reductions.

On information instruments, WGIII agreed on a proposal by the UK to remove language indicating that information instruments can improve the effectiveness of other policies.

On text on voluntary actions independent of national of government authorities, WGIII agreed to text replacing “sub-national governments” by “local and regional authorities” and omitting “independent of national governments.”

Price of carbon: A paragraph noting that the price of carbon would create incentives for consumers and producers to invest in “low greenhouse gas products” was discussed in plenary and informally. China asked for clarification on carbon prices used, and Switzerland called for additional sectoral information. The Lead Authors explained their choice of carbon prices from top-down models and stated that there was less data for some sectors, such as the power sector, than for others, such as the transport sector. China said that the underlying report included studies that do not fall within the carbon price ranges of US\$20-50 suggested in the draft text, and proposed an upper bound exceeding US\$100/ton of carbon. The final SPM refers to carbon prices from US\$20-80 in 2030, and US\$30-155 in 2050 and also includes lower price information from studies that consider technological change.

Switzerland, with Slovenia, proposed a new sentence on the power sector response to carbon prices. The US queried if studies extend through 2050 for the power sector, and the Lead Authors responded that such information was available, citing a major study by the International Energy Agency. WGIII agreed to the new sentence. The final SPM indicates that carbon prices from US\$20-50 could lead to low-emission power generation by 2050.

Technology transfer: Discussions focused on the level of CDM financial flows to developing countries. Several alternatives for the original wording indicating that financial flows from the CDM are “reaching levels on the order of several billion US\$ per year,” which is “higher than the flows through the Global Environment Facility” (GEF). Brazil proposed language that financial flows “have the potential” to reach levels on the order of several billion US\$ per year, while Germany preferred “has mobilized” and “is very likely to generate.” Kenya, supported by Sudan and Canada, highlighted inequitable distribution, noting the lack of CDM projects in Africa. India and Colombia preferred noting that both financial flows and distribution of projects have been limited. Spain emphasized the CDM’s role in technology transfer and, with Peru, in sustainable development. The UK, US, and others opposed language comparing CDM flows to the GEF and to total foreign direct investment flows. Belarus and the US asked for clarification on how CDM carbon prices had been calculated. After informal

consultations WGIII agreed to the text indicating that CDM financial flows “have the potential to reach” several billion US\$, and retaining reference to the GEF. The text also notes that CDM, GEF, and development assistance for technology transfer have been limited so far, and “geographically unevenly distributed.”

Achievements of the UNFCCC and the Kyoto Protocol:

Australia questioned language on their “most notable achievements” and “international” carbon markets. The Lead Authors referred to literature indicating that the UNFCCC and the Kyoto Protocol are a unique response to an environmental problem, and explained that carbon trading is already taking place between European countries, and is likely to expand. The US then proposed, and WGIII agreed, to delete reference to “most” notable achievements.

International cooperation for reducing greenhouse gas emissions: The US questioned a statement that international efforts would have “stronger support” if they were environmentally effective. The text was changed to clarify that it is the literature that suggests stronger support.

In the same paragraph, concerning a bullet point identifying a link between global emissions and global cost of mitigation, Co-Chair Metz explained that there had been several written comments. China, opposed by Canada and Germany, proposed deleting reference to climate change being a global problem. China also questioned language in a statement indicating that “approaches that do not include a larger share of global emissions will have higher global costs” and proposed changing “larger share of global emissions” to “wider participation.” The US questioned the meaning of “wider participation” and Brazil opposed the language as policy prescriptive and prejudging future agreement since also “deeper cuts” would reduce emissions.

After informal consultations, the text was agreed early on Friday morning, referring to “greater cooperative efforts” being able to reduce global costs of mitigation.

Final Text: The final text in this section points to the availability of a wide variety of policies and instruments, states that their applicability depends on national circumstances and indicates that any given instrument has advantages and disadvantages. The SPM contains general findings on integrating climate policies in broader development policies; regulations and standards; taxes and charges; tradable permits; financial incentives; voluntary agreements; information instruments; and RD&D. According to the SPM, corporations, local and regional authorities, NGOs and civil society groups are also taking a variety of voluntary actions.

The SPM states that policies providing a real or implicit price of carbon could create incentives for significant investment in low-greenhouse gas products, technologies and processes. According to the SPM, modeling studies show carbon prices between US\$20-80 per ton of CO₂-eq by 2030, and US\$30-155 for stabilization at around 550 ppm, but studies taking into account induced technological change lower these price ranges. The SPM suggests that prices between US\$20-50 could lead to a power generation sector with low emissions by 2050. It states

that there are many barriers to implementation of mitigation options, related to financial, technological, institutional, informational and behavioral aspects.

The SPM discusses the importance of government action for technology development and technology transfer, noting institutional, policy, legal and regulatory frameworks. The SPM explains achievements and limitations of the UNFCCC and the Kyoto Protocol. It discusses the role of international coordination and environmental agreements, highlighting cooperation, improving market mechanisms, and a diversity of efforts in addressing climate change.

The section also contains the following table:

Table SPM 7 on sectoral policies, measures and instruments: Under the column for policies, measures and instruments shown to be environmentally effective, Brazil proposed, and delegates agreed, to insert reference to biofuel blend in the transport sector.

F – SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE MITIGATION: The section on sustainable development and climate change mitigation was discussed in plenary on Thursday evening. Discussions focused on reducing deforestation, adding information from the WGII report and barriers to sustainable development policies.

In the heading of a paragraph on synergies between mitigation and sustainable development, text was added at the request of India, supported by China, to indicate that changing development patterns “may require resources to overcome multiple barriers.”

Argentina, Chile, Colombia, Spain and others proposed, and WGIII agreed to, a sentence linked to the WGII report indicating that irrespective of mitigation, adaptation will be necessary. Tuvalu highlighted that adaptation activities are already being implemented.

On a bullet on reducing deforestation, Canada proposed, and delegates agreed, to add that reducing the loss of other natural habitat can also have beneficial effects. Brazil, supported by Peru, proposed deleting a statement on compensation for affected stakeholders. She stressed research showing that payment for environmental services does not guarantee emission reductions. The US proposed alternative wording on “positive incentives.” Japan, Colombia and others stressed the social aspect of sustainable development but eventually agreed to delete the reference to stakeholders. Concerning a statement that reducing deforestation “can be implemented sustainably,” Tuvalu expressed concerns on the concept of sustainability and its relation to permanence issues, and delegates agreed to replace “sustainably” with Japan’s proposal of “socially and economically sustainable manner.” Belarus drew attention to the adverse impacts associated with bioenergy plantations. Brazil proposed, and WGIII agreed, to specify that negative impacts to biodiversity can occur if measures are “not properly designed.”

Final Text: This section notes the major contribution that changing development paths towards sustainability can make, although resources may be needed to overcome multiple barriers to implementation, and elaborates on the potential for synergies in different sectors.

G – GAPS IN KNOWLEDGE: An additional section on gaps in knowledge was proposed by Austria on Monday and tabled on Thursday evening. WGIII agreed on Friday to include the section with minor amendments.

Final Text: This section briefly notes gaps in knowledge of some aspects of mitigation, especially in developing countries, and the need for additional research to reduce uncertainties and facilitate decision-making.

CLOSING PLENARY

Following the opening of IPCC-26 on Friday, 4 May, Chair Pachauri adjourned the session to allow WGIII to complete its work. The closing plenary opened at 10:38 am. The SPM was approved by WGIII at 10:42 am.

Tuvalu expressed concern about Chapter 9 on forestry in the underlying report. WGIII accepted the underlying report (WG-III: 9th/Doc. 2b) and the list of amendments to the Technical Summary and underlying report.

Morocco, supported by Libya and Sudan, called for regional meetings to explore the applications and use of the working group reports as quickly as possible, particularly in Africa. Co-Chair Davidson thanked participants and gavelled the meeting to a close at 11:28 am.

IPCC-26 REPORT

IPCC Chair Rajendra Pachauri opened the 26th session of the IPCC on Friday, 4 May 2007. Pungbun Na Ayudhya, Permanent Secretary, Ministry of Natural Resources and Environment, Thailand, encouraged partnerships and collaboration to address climate change, and suggested that economic and social dimensions of mitigation and adaptation need to be better understood. David Goodrich, WMO, said that IPCC AR4 findings are consistent with WMO findings on observed changes, and underscored the need for both adaptation and mitigation.

APPROVAL OF THE DRAFT REPORT OF IPCC-25

After minor editorial changes, the draft report of IPCC-25 was approved (IPCC-XXVI/Doc.2).

IPCC PROGRAMME AND BUDGET FOR 2008-2010

The IPCC Secretariat introduced the document containing the revenues and expenditures for 2006 (IPCC-XXVI/Doc.3). The Financial Task Team Co-Chair Marc Gillet described the document containing the budget for 2008, the forecast budget for 2009 and indicative budget for 2010 (IPCC-XXVI/Doc.3/Add.2).

Belgium asked whether the 2008 budget reflects the costs of translating the output on scenarios, and how many language translations were taken into account. Supported by Morocco, he stressed the importance of translations. He said the Technical Paper on water should be translated into all UN languages, given the importance of the issue. Chair Pachauri requested an estimate of the cost and more specific details to be reported at IPCC-27. The secretariat suggested an estimate of 150,000 Swiss francs to be provisionally allocated to the publication and translation of the scenarios report.

The IPCC Task Force on National Greenhouse Gas Inventories (TFI) asked about contingency budgeting arrangements, suggesting that part of the funds allocated for a brochure on the 2006 IPCC Guidelines could be used for contingency planning for a scoping meeting, should the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) come with additional requests following its 26th session in May 2007.

The Panel decided to discuss contingency planning at IPCC-27, and approved the 2008 budget and other proposals.

ACCEPTANCE OF ACTIONS TAKEN BY WGI, WGII AND WGIII

The Panel accepted the actions taken by the tenth session of WGI (IPCC-XXVI/Doc.12), the eighth session of WGII (IPCC-XXVI/Doc.13) and the ninth session of WGIII (IPCC-XXVI/Doc.14).

Tuvalu requested that reservations regarding Chapter 9 of the report of WGIII be noted in the minutes of IPCC-26.

IPCC TERMS OF REFERENCE

Regarding the IPCC terms of reference (IPCC-XXVI/Doc.4, INF.1 and INF.2), Chair Pachauri outlined results of a task group for this issue as well as discussions with the IPCC Bureau at its 36th session, which came to the conclusion that the current terms of reference serve the IPCC well. He stated that he would present these results to the 15th WMO Congress in May 2007 in Geneva, and noted that no refinement or revisions were necessary at present, but suggest they might be required in the future, as climate change is a rapidly evolving process.

FURTHER WORK OF THE IPCC ON EMISSIONS SCENARIOS

Chair Pachauri called attention to the document describing developments regarding further work of the IPCC on emissions scenarios (IPCC-XXVI/Doc.8). He explained that a steering committee had been established to prepare for an expert meeting with the scientific community, which will take place from 19-22 September 2007, in the Netherlands. Chair Pachauri proposed that experts define benchmark scenarios to replace the currently existing SRES scenarios based on stabilization concentrations of greenhouse gases, rather than emissions. He highlighted that emissions scenarios could be calculated and scaled based on benchmark concentration scenarios in preparation for a possible fifth IPCC Report. Pachauri underscored the decision of IPCC-25 that the IPCC should only play a facilitating role in this process.

Sweden noted that newly emerging models may benefit from emissions scenarios instead of concentration scenarios. Chair Pachauri emphasized that emissions scenarios could be inversely calculated. Australia stressed urgency and, with Egypt, highlighted the need for more information on aerosols.

Leo Meyer, Head of the WGIII Technical Support Unit, said that the steering committee would welcome suggestions from delegates, underscored a "catalytic but distant" role of the IPCC in defining scenarios, and clarified that the results of the expert meeting would be classified as IPCC supporting materials, not as an IPCC-approved technical paper.

The Russian Federation pointed to the link between concentrations and UNFCCC Article 2. Belgium highlighted that, according to IPCC procedure, the cover page of the report would make clear that the report had not been subject to the formal IPCC review process. Belgium also drew attention to the fact that users of the report would include modelers focusing on impacts, adaptation and vulnerability, and Chair Pachauri responded that the term “climate modelers” is meant to include all users.

Ismail Elgizouli, Co-Chair of the steering committee, briefed delegates on developments in preparation for the September meeting.

The US stressed the IPCC’s function as an assessment body, distinct from a body that develops research. He suggested that the steering committee should not be involved in “preparing” scenarios, but rather in “facilitating” this process.

China suggested that taking into account economic scenarios developed elsewhere would help to remove inconsistencies between these different scenarios. And, with Mauritius, she urged for geographical balance of experts at the September meeting. In response, Meyer said there were 50 journeys budgeted for developing country experts, to ensure ample participation.

Chair Pachauri underscored the broad support for moving forward on scenarios. He confirmed that the steering committee’s role is only to design the meeting and review process, not to develop scenarios. He encouraged the steering committee to explore mechanisms for actively involving other organizations. Delegates approved the proposal.

ADMISSION OF OBSERVER ORGANIZATIONS

Chair Pachauri drew attention to a proposal for the admission of new observer organizations (IPCC-XXVI/Doc.6).

Morocco called for a clear procedure for admitting new observer organizations, particularly preparing to handle applicants whose presence could impair the work of the IPCC. Chair Pachauri called attention to the IPCC Policy and Process for Admitting Observer Organizations from IPCC-25. Chair Pachauri clarified that the Bureau had reviewed all the proposed organizations at its last session, and the IPCC agreed to their admission.

FUTURE WORK PROGRAMME OF THE TFI TASK FORCE ON NATIONAL GHG INVENTORIES

Regarding the future work programme of the TFI, Chair Pachauri asked TFI Co-Chair Taka Hiraishi to brief delegates on his group’s work. Hiraishi introduced the document (IPCC-XXVI/Doc.5) on the future of the national inventory programme and described three themes for the near-term work: awareness raising, facilitating the use of the 2006 IPCC Guidelines, and addressing technical issues.

Tuvalu called attention to the use of “managed lands/unmanaged lands” in the 2006 IPCC Guidelines, suggesting they were legally inconsistent with the UNFCCC and called for their review. Hiraishi noted that requests and clarifications could be considered at a scoping meeting. Hiraishi said a translation of the Guidelines into the additional five UN languages would be available in August.

PROGRESS REPORTS

WGI reported on activities following the adoption of the WGI SPM, including the completion of copy editing and layout of the chapters, with a pre-publication version available on the WGI website. In terms of outreach activities, she said presentations of the findings had been disseminated widely in international and national fora.

France, Belgium, Germany and Spain mentioned unofficial translations of the SPM into French, Dutch, German and Spanish.

WGII provided a progress report on the Technical Paper on water agreed at IPCC-21. He said the first draft for review will be available on 15 May, scheduled for completion in March 2008. Chair Pachauri said that given the findings of WGII on the impacts of climate change on water, the paper is even more relevant than expected.

Regarding WGIII, the Vice-Chairs mentioned a scoping meeting on a possible Special Report on Renewable Energy Sources scheduled for January 2008, as decided at IPCC-25, and described planned outreach activities.

Chair Pachauri reported on progress on the AR4 SYR report. He noted that the draft will be adjusted to reflect changes made to the WGIII SPM. He reminded delegates that the final approval of the report will take place from 12-16 November 2007.

Regarding progress of the Task Group on Data and Scenario Support for Impact and Climate Assessment (TGICA), New Zealand mentioned a TGICA regional meeting to be held in Nadi, Fiji, from 20-22 June 2007. He said this meeting and other meetings in the region would be combined with AR4 outreach activities.

OTHER BUSINESS

On other business, delegates considered the replacement of an IPCC Bureau member from Venezuela with a candidate proposed by Venezuela (IPCC-XXVI/Doc.10). Belgium, the Netherlands, Switzerland and Sudan questioned the circumstances of the replacement, recalling that the Rules of Procedure outline the situation of replacement only when a current Bureau member resigns or is otherwise unable to complete the terms of office or perform the necessary functions. Given that this did not appear the case with the current Bureau member, delegates asked for more information. The Panel agreed to postpone decision on this proposal until further information is available.

Chair Pachauri conveyed the message from the UN International Strategy on Disaster Reduction secretariat that it will be writing a document on links between adaptation to climate change, disaster risk reduction and sustainable development, using material from the AR4.

The Netherlands noted that his government would not be nominating another expert to replace WGIII Co-Chair Bert Metz following the completion of his term, and consequently will no longer be hosting the WGIII Technical Support Unit.

Switzerland proposed a scoping paper on the future of the IPCC for consideration at IPCC-27, and Chair Pachauri said this is already being planned.

TIME AND PLACE OF NEXT SESSION

The 27th session of the IPCC will be held from 12-17 November 2007, in Valencia, Spain.

CLOSING OF THE SESSION

In closing, delegates thanked the Government of Thailand for hosting the meeting. Chair Pachauri thanked delegates and gavelled the meeting to a close at 5:33 pm.

A BRIEF ANALYSIS OF IPCC WORKING GROUPS' CONTRIBUTIONS TO THE AR4

Since the IPCC's inception, its assessment reports have been linked to important milestones in the international climate change policy process: the First Assessment Report, released in 1990, played a major role in establishing the Intergovernmental Negotiating Committee, which led to the adoption of the UNFCCC in 1992; the Second Assessment Report, released in 1995, provided key input to the negotiations that led to the adoption of the Kyoto Protocol in 1997; and the TAR, released in 2001, preceded the adoption of the Marrakesh Accords. The release date of the AR4 was therefore carefully calculated (it was in fact a matter of contention at IPCC 22 in 2004). Due to be released in late 2007 just prior to the 13th UNFCCC Conference of the Parties, AR4 is expected to influence negotiations on a post-2012 climate policy framework. With the three working groups having completed their contributions, there is no longer room to question the role of anthropogenic greenhouse gas emissions or the impacts of climate change, and the appraisal of mitigation options provides the assurance that these are available at a relatively low economic cost. This analysis reviews the key aspects of the recent meetings of the three working groups, draws on lines of intersection and diversion between the meetings, and addresses the impact of the AR4 findings on the future climate policy framework.

WGI: SCIENTIFIC BASIS

In late January, WGI convened in Paris and relayed the message that global warming was unequivocal and "very likely" to be due to human activities. The "very likely" conclusion, associated with a 90% or more probability, was considerably more certain than the TAR, in which the link was assessed to be "likely," only a 66% or more probability. However, the "very likely" statement was not arrived at without contention. China and Saudi Arabia called for qualifying the probability of "very likely," replacing it with "likely" or "increasingly very likely." This controversial issue was finally withdrawn with a rather benign footnote stating that consideration of the remaining uncertainties was based on current methodologies.

In some cases, political agendas seemed evident. For instance, China repeatedly moved to avoid language on emissions in recent years, and Brazil and Peru tried to ensure that uncertainties in emissions surrounding land use change were clearly conveyed. These positions could be respectively related to the ongoing debate regarding greenhouse gas targets for the largest emitters, and interests in forestry.

The growing number and fast pace of release of climate change studies proved to be a difficult issue for WGI. The deadline for research that could be included in the WGI report was 31 December 2005. By 2007, new available data had superseded some of the 2005 research. This was most notable concerning projections of sea-level rise, with several recent studies showing high potential contributions from melting of the Greenland and Antarctic Ice Sheets. In addition, improved projections due to increased data resulted in smaller uncertainty ranges. Many delegates feared smaller uncertainty ranges would be misinterpreted by the public to mean that climate change was a smaller problem than previously thought, rather than a better understood one. According to many, however, the results of WGI were conveyed strongly enough to put an end to the debate surrounding the human role in climate change.

WGII: IMPACTS AND ADAPTATION

The WGII session, held in Brussels in the beginning of April, clearly revealed the underlying political tensions and complexity of the process. Originally scheduled to conclude on Thursday evening, the meeting did not end until Good Friday afternoon after an all-night session. The last two sections of the SPM were not even considered until 10:00 pm on the final day. The confusion and dragged manner of the negotiations prompted some participants to qualify it as one of the worst meetings they had ever attended.

Political tensions were evident from the strong opposition by China and Saudi Arabia on tables linking climate change impacts to greenhouse gas concentration levels and timelines, which, in the end, were not included in the final SPM. Sections on regional climate change and paragraphs on global mean losses of GDP brought to the fore frictions between the US and European countries.

Controversies also arose concerning specific reference to the UNFCCC. WGII was explicitly mandated to address UNFCCC Article 2 and, accordingly, authors had stated that assessment of potential key vulnerabilities was meant to provide guidance "for identifying levels and rates of climate change that, in the terminology of the UNFCCC Article 2, could result from 'dangerous anthropogenic interference' with the climate system." However, when the authors presented the text, the same IPCC that had mandated it opposed textual reference to the UNFCCC.

Tensions at the WGII meeting culminated in a conflict between some delegations and Lead Authors. China and Saudi Arabia steadfastly opposed a confidence statement in which the authors had stated with "very high confidence" that many natural systems are being affected by regional climate change. Having explained their rationale various times and from various angles, the authors formally requested that their disagreement should be indicated in a footnote if the "very high confidence" statement was removed. This incident raised the stress level in the plenary, which broke into applause in support of one of the authors who left the room after presenting her disagreement in writing. One is left to wonder if a different system of valuing confidence levels and uncertainty would have been as prone to this kind of dismissal.

And yet, for all the wrangling, the resulting WGII SPM is daunting in its presentation of the accumulated evidence that observed changes in many physical and biological systems are linked to anthropogenic warming. The impacts of these changes are projected to include hundreds of millions of people being exposed to increased water stress; many millions more people exposed to flooding every year; access to food in many African countries being severely compromised; and the likely extinction of 20-30% of plant and animal species with temperature rises exceeding 1.5-2.5°C.

WGIII: MITIGATION

Three weeks after the WGII meeting, delegates gathered in Bangkok to approve the WGIII AR4 contribution on climate change mitigation. The Co-Chairs launched the proceedings swiftly, scheduling the first contact group meetings as early as the Monday lunch break. Some speculated that delegates were responding to the “Brussels syndrome,” still feeling the strain from their marathon negotiations in approving the WGII SPM, and strived to avoid repeating the exhausting experience. Nonetheless, despite the efficient organization, relatively good spirit of cooperation, and the notable absence of delegations and individuals viewed by many as disruptive to the process, it took until the early hours of Friday morning to finalize the substance of the SPM, and its formal approval necessitated night sessions and borrowing time from the IPCC plenary on Friday. This prompted questions as to whether it would even have been possible to complete the work by Thursday evening, as scheduled, and to whether it was necessary to rethink the time allotted to such lengthy undertakings.

The overall nature of the WGIII deliberations was often technical. Many characterized the mood as constructive, and clashes between divergent political interests were not as frequent and manifest in the plenary and contact groups as in the two other meetings. Perhaps the thorniest issue was nuclear energy. Many countries opposed including language on its “increasing” potential in climate mitigation. Others called for a balanced message on the potential of nuclear and renewable energy. The agreed compromise uses similar language on both options, but also draws attention to the safety and environmental aspects of nuclear power. The nuclear divide was not the typical polarization between developed and developing countries, or the EU-US Atlantic divide, but also showed divergent views among European Union countries.

Overall, the outcome of the meeting was largely conceived as positive. One of the key messages from the WGIII report is that with current policies, greenhouse gas emissions will continue to grow at high rates. However, it also offers hope by identifying a host of solutions to mitigate emissions at relatively low cost.

CONCLUSIONS

Many conclusions can be derived from a process as rich and complex as the preparation of an IPCC Assessment report.

A unique feature of IPCC SPMs is how the political negotiation of every line affects a text prepared by scientists, given that scientists and policymakers use different language and come from different professional cultures. On this, the

experience under the three working groups differs markedly. While in WGI the delegates reminded the authors that the SPM needed to have teeth, in WGII the authors were often opposing attempts to water down their findings, and WGIII seemed focused on making the text more understandable to policymakers.

The outside world certainly showed a lot of interest in the three meetings. The press coverage of WGI was extraordinary. Throughout the week, members of the media could be found waiting outside the closed-door proceedings, and the press turned out in force when the SPM was released Friday morning. While the buzz had somewhat subsided by the time of WGII in Brussels, the story of China’s and Saudi Arabia’s confrontation with the Lead Authors made the headlines around the world. The WGIII meeting also made headlines after the publication of the SPM, but received perhaps less attention than the previous two meetings.

The contribution of the working groups to international climate policy ends the debate about anthropogenic climate change and paints a striking picture of its impacts. It spells out that climate change mitigation is necessary and can be done in a way that does not necessarily prevent economic growth and development. Although it remains to be seen how these findings will impact negotiations on the post-2012 period, the draft AR4 pre-empted the argument that more science or more knowledge about technologies or policies are needed, thereby leaving the timely implementation of responses to climate change contingent only on political will. In view of the pace of change needed, implementation will require clear determination. With a comprehensive scientific package of all three working group reports in their hands, delegates left Bangkok also with some first hand experience of the difficulties that may arise when implementing mitigation policies: despite their clear consensus, and combined and continuing efforts, it proved impossible to warm the air of the UN Conference Center by turning down the frigid air conditioning.

UPCOMING MEETINGS

EWEC 2007 EUROPEAN WIND ENERGY

CONFERENCE AND EXHIBITION: This conference, organized by the European Wind Energy Association, takes place from 7-10 May 2007, in Milan, Italy. For more information, contact: EWEC Organizer; tel: +32-2546-1980; fax: +32-2546-1944; e-mail: info@ewea.org; internet: http://www2.ewea.org/06b_events/events_EWEC2007.htm

26TH SESSIONS OF THE UNFCCC SUBSIDIARY BODIES AND 3RD SESSION OF THE KYOTO PROTOCOL AD HOC WORKING GROUP:

The 26th sessions of the Subsidiary Bodies to the UN Framework Convention on Climate Change (UNFCCC) takes place from 7-18 May 2007, in Bonn, Germany. Alongside various workshops and other events, the third session of the Kyoto Protocol’s *Ad Hoc* Working Group on Further Commitments for Annex I Parties (AWG) will be held from 14-18 May 2007, and a third workshop under the Dialogue on long-term cooperative action

will take place from 16-17 May 2007. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; internet: http://www.unfccc.int

15TH CONGRESS OF THE WORLD

METEOROLOGICAL ORGANIZATION (WMO): This quadrennial meeting of the WMO's Congress takes place from 7-25 May 2007, in Geneva, Switzerland. For more information, contact: Carine Richard-Van Maele; tel: +41-22-730-8315; fax: +41-22-730-8181; e-mail: cvanmaele@wmo.int; internet: http://www.wmo.int/web/meetingsnew.php

27TH MEETING OF THE OPEN-ENDED WORKING GROUP OF THE MONTREAL PROTOCOL: OEWG-27 will take place from 4-7 June 2007, in Nairobi, Kenya. It will be preceded by a two-day dialogue on key challenges to be faced by the Montreal Protocol on 2-3 June and will be followed by the 38th meeting of the Implementation Committee on 8-9 June. For more information, contact: Ozone Secretariat; tel: +254-20-762-3850/51; fax: +254-20-762-4691/92/93; e-mail: ozoneinfo@unep.org; internet: http://ozone.unep.org/Meeting_Documents/upcoming_meetings.shtml

FIRST SESSION OF THE GLOBAL PLATFORM FOR DISASTER RISK REDUCTION: This multi-stakeholder meeting aims to raise awareness on reducing disaster risk, share experiences and guide the International Strategy for Disaster Reduction (ISDR). It will take place from 5-7 June 2007, in Geneva, Switzerland. For more information, contact: ISDR Secretariat; tel: +41-22-917-8895; fax: +41-22-917-8964; e-mail: globalplatform@un.org; internet: www.preventionweb.net/globalplatform

THIRD INTERNATIONAL GREEN ENERGY CONFERENCE: This conference will take place from 18-20 June 2007, in Västerås, Sweden, and will seek to provide a multi-disciplinary setting to exchange the latest technical information, research and developments. For more information, contact: Secretariat of IGEC III; tel: +46-21-10-13-67; fax: +46-21-10-13-70; e-mail: info@igec.info; internet: http://www.igec.info

IPCC-TGICA REGIONAL MEETING: This meeting, sponsored by the IPCC's Task Group on Data and Scenario Support for Impact and Climate Analysis (TGICA), the Global Change System for Analysis, Research and Training (START), and the Pacific Centre for Environment and Sustainable Development at the University of South Pacific (PACE/USP), will take place from 20-22 June 2007, in Nadi, Fiji. It will explore innovative research approaches for addressing the multi-scale and multi-disciplinary challenges associated with climate change impacts, adaptation, vulnerability and mitigation. For more information, contact: IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025; e-mail: ipcc-wg1@al.noaa.gov; internet: http://ipcc-wg1.ucar.edu/meeting/TGICA-Regional/

THIRD INTERNATIONAL CONFERENCE ON CLIMATE AND WATER: This conference, hosted by the Finnish Environment Institute, will take place in Helsinki from 3-6 September 2007. For more information, contact the Finnish

Environment Institute; tel: +358-20-490-123; fax: +358-20-490-2190; e-mail: esko.kuusisto@ymparisto.fi; internet: http://www.environment.fi/default.asp?contentid=232206&lan=EN

UNFCCC DIALOGUE AND KYOTO PROTOCOL

AWG 4: The fourth workshop under the "Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention" and the fourth session of the AWG, are expected to take place from 3-7 September 2007, in Vienna, Austria. For more information contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; internet: http://www.unfccc.int

19TH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL: MOP-19 will take place from 17-21 September 2007, in Montreal, Canada. It will be preceded by the 39th meeting of the Implementation Committee from 12-14 September 2007. For more information, contact: Ozone Secretariat; tel: +254-20-762-3850/51; fax: +254-20-762-4691/92/93; e-mail: ozoneinfo@unep.org; internet: http://ozone.unep.org/

8TH ANNUAL GLOBAL ENVIRONMENTAL TAXATION CONFERENCE: This meeting will take place from 18-20 October 2007, in Munich, Germany, with the focus of "Innovation, Technology and Employment: Impacts of Environmental Fiscal Reforms and Other Market-Based Instruments." For more information, contact: Green Budget Germany Team; tel/fax: +49-89-520-113-13; e-mail: foes@foes.de; internet: http://www.worldecotax.org/

27TH SESSION OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE: IPCC-27 will take place from 12-16 November 2007, in Valencia, Spain, and will focus on the adoption of the IPCC's Fourth Assessment Report (AR4). For more information, contact: Rudie Bourgeois, IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025; e-mail: IPCC-Sec@wmo.int; internet: http://www.ipcc.ch/

GLOSSARY

AR4	IPCC Fourth Assessment Report
CO2-eq	Carbon dioxide equivalent
COP	Conference of the Parties
EU ETS	European Union Emissions Trading Scheme
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
MER	Market Exchange Rate
PPM	Parts per million
PPP	Purchasing Power Parity
RD&D	Research, Development and Demonstration
SPM	Summary for Policymakers
SRES	IPCC Special Report on Emissions Scenarios
SYR	AR4 Synthesis Report
TAR	Third Assessment Report
UNFCCC	United Nations Framework Convention on Climate Change
WGI	IPCC Working Group I
WGII	IPCC Working Group II
WGIII	IPCC Working Group III