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**THE IPCC FIFTH ASSESSMENT REPORT (AR5)**

**Progress Report of the Cross Working Group Consultation  
on Article 2 of the UNFCCC**

(Submitted by the IPCC Secretariat)



# Progress Report of the Cross Working Group Consultation on Article 2 of the UNFCCC

(Liege, 24 August 2010)

## 1 Background

This meeting was held pursuant to a decision by the Panel at the 31<sup>st</sup> Session in Bali, Indonesia, 26-29 October 2009. "Issues related to Article 2 of the UNFCCC - Proposal by the contact group" (28 October 2009) (**Annex 1**) was presented and approved by the Panel and suggested the following approach to dealing with this new Cross-Cutting Theme for the AR5: "Due to the importance of this CCT, the relationship and interactions related to this cross cutting theme between and within the three working group reports should be discussed up front and in the Lead Author meetings of the WGI, WGII, WGIII and the SYR, and assessed in concluding chapters or sections. ... It is proposed to arrange a Cross Working Group meeting early 2010. This meeting could provide further guidance including on the arrangement of an expert meeting on this Cross Cutting Theme. This group would prepare a progress report to inform subsequent lead author meetings and for further consideration by the panel at its 32<sup>nd</sup> session. The progress report would further provide recommendations from the cross working group on the arrangement of an expert meeting on this cross cutting theme."

Following the decision of the Panel to hold this meeting, the Cross Working Group Consultation on Article 2 of the UNFCCC was held in Liege, Belgium on the 24<sup>th</sup> of August 2010. The meeting was kindly supported by the Belgian hosts of this meeting (the Wallonia Government and the City of Liege), and by Prof. Jean-Pascal van Ypersele, IPCC Vice Chairman. The agenda of the meeting was provided in an information note (see **Annex 2**).

Conclusions of this Cross Working Group Consultation fed into the AR5 Synthesis Report Scoping Meeting which was held in Liege, Belgium from 25–27 August 2010.

## 2 Introduction

This consultation was attended by 33 people comprising the Chairman of the IPCC, Dr. Pachauri, the Secretary of the IPCC, Dr. Renate Christ, the Working Group and TFB Co-Chairs, the Vice-Chairs, invited experts, as well as observers from the Technical Support Units, and the IPCC Secretariat. The list of participants is provided in **Annex 4**. The meeting was chaired by Dr. Pachauri, who stated that the purpose of the meeting was to provide further guidance on the manner and process of dealing with Article 2 in the Working Group contributions to the Fifth Assessment Report (AR5) as well as the Synthesis Report, and on the need, or otherwise, for an expert meeting on Article 2 to provide a guidance paper to inform lead author meetings. The discussions were based on a background note that was prepared by Dr. Pachauri and circulated prior to the meeting, "Note on proposed meeting on Article 2 of the UN Framework Convention on Climate Change, *Submitted by the Chairman*" (**Annex 3**). The opening session also included presentations from the Co-Chairs of the Working Groups, outlining their perspectives on the contributions of their Working Group to consideration of Article 2 of the UNFCCC in the Fifth Assessment Report (AR5). The Working Group Co-Chairs' presentations would be shared with AR5 authors from all Working Groups.

The draft proceedings were initially prepared by Mr. David Wratt and Mr. Bill Hare who agreed to serve as rapporteurs for this meeting. The draft proceedings were distributed via the IPCC Secretariat to all meeting participants for their review and comments. This report was then revised based on comments and suggestions received.

### 3 Contributions from Working Group Co-Chairs

**Dr. Stocker** emphasized that Working Group I cannot define what is “dangerous” climate change. This is a value judgement for governments that draws on scientific knowledge. WGI will consider abrupt and irreversible changes, including commitments to change, and projected changes in mean climate variables, such as temperature and precipitation, for a range of different scenarios. This information will be essential for the assessment of risk by Working Groups II and III. After outlining the contributions that the individual chapters would make, he proposed that information relevant to Article 2 be provided by WGI in the form of summary boxes and FAQs. He suggested that other Working Groups could also take this approach.

**Dr. Field** outlined the contributions of the WGII chapters to the consideration of the elements of Article 2 of the UNFCCC including the meanings of “prevent”, “dangerous anthropogenic interference”, ability of “ecosystems to adapt naturally”, “food production is not threatened”, and “enable economic development to proceed in a sustainable manner”. The prime responsibility of WGII is to assess the scaling of impacts with the degree and rate of climate change, and put this in the context of existing foci of work including “reasons for concern”, the WEHAB<sup>1</sup> framework and the “five numeraires<sup>2</sup>”. He identified cross-working group collaboration opportunities, including risk-based assessment of climate change and impacts (including extremes), implications of climate change for infrastructure, the role of development paths, interactions of adaptation and mitigation, and the consequences of “second best” responses to the climate change problem. In addition he outlined research challenges in relation to Article 2, such as whether observed impacts might already constitute “dangerous anthropogenic interference” in the spirit of Article 2. Another research challenge is the level of confidence appropriate for highlighting possible dangerous anthropogenic impacts. Finally, he elaborated on issues such as the meaning of ecosystem adaptation in the context of Article 2.

**Dr. Edenhofer** explained that WGIII will explore the scope of options leading to various warming levels, [e.g. 1.5 °C, 2° C, 3° C] and the costs, benefits and risks of different mitigation options. He emphasized that WGIII also will examine the unintended consequences of policies, in particular of second-best policies. For example many low stabilization scenarios deploy biomass carbon capture and storage technologies at a scale that could have a significant adverse effect on the terrestrial biosphere and/or food production. He outlined the contributions of particular WGIII chapters to Article 2 considerations. The need for regional and sectoral information and integration across the working groups was emphasized where the new scenarios process plays a pivotal role, for example in relation to the scaling of climate impact patterns, the downscaling of socio-economic data, the evaluation of extreme scenarios, impacts/damages, land and water availability, and biomass patterns and use.

### 4 Process for cross-working group collaboration and guidance related to Article 2

On the question of how to foster cross-working group collaboration on Article 2 issues, there was general agreement that an on-going and continuous process of smaller focused meetings dealing with particular issues related to Article 2 (arising in one or multiple Working Groups) would be more effective and productive than one large expert meeting. This would enhance the integration and collaboration between working groups including development of the proposed boxes and FAQs relevant to Article 2 for use in the SYR.

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<sup>1</sup> WEHAB = Water, Energy, Health, Agriculture and Biodiversity

<sup>2</sup> This refers to five ways of quantifying vulnerabilities to climate change: Market impacts (monetary value or relationship), human lives lost (number of persons), biodiversity loss (species or other metric describing biodiversity loss), distributional impacts (income redistribution or other measure of change in distribution of economic well being), quality of life (measures such as forced migration, loss of amenities, etc.).

Dr. Field agreed to work with all Working Group Co-Chairs in the writing of a brief document (i.e. 3-4 pages) providing guidance to the Lead Authors on the expected contributions of chapters to Article 2 issues in the Working Group reports. This guidance document would be produced by October 2010 in advance of the First Lead Author meetings of the Working Groups. The draft will be circulated to the participants of the Liege Cross-Working Group Consultations.

## **5 Discussion of aspects of Article 2 in the AR5**

As the role of the IPCC is to produce relevant information to help policymakers – not to re-interpret the wording of Article 2 – it was emphasized that the Working Group contributions to the AR5 needed to be policy-neutral and firmly supported by the underlying scientific material assessed.

Dr. Field suggested that the issue in Article 2 of “the timeframe sufficient to allow ecosystems to adapt naturally to climate change” may be dealt with by focusing on the following key properties: 1) eco-system services [biodiversity, food and livelihoods, cultural values, etc.], 2) protection of iconic species, 3) overall growth forms of existing systems [e.g. moist tropical forest vs. dry savannah], and 4) spatial extent and geographic location of ecosystems. There was significant debate over the implied value judgement when identifying iconic species. It was emphasized that there would need to be a clear rationale for the choice of iconic species.

There was recognition that the IPCC’s consideration of Article 2 in the AR5 is considerably enhanced by including greater regional detail. In the context of food production, for example, global increases in food production could be accompanied with substantial deficits at regional levels whose consequences for food security would depend upon the regional context and the socio-economic scenarios assumed both globally and regionally.

Although the WEHAB framework used in the AR4, including the emphasis on water-related issues, remains relevant, it was recognized as too narrow to deal with the full range of issues, including those related to sustainable development, such as human security, well-being, and possible forced migrations. The potential co-benefits of climate mitigation at different stabilization levels were emphasized by several experts.

It was recognized that the issues related to economic development in Article 2 potentially involve two kinds of effects. On the one hand, effective mitigation of climate change may be a prerequisite for some aspects of sustainable economic development while delayed mitigation could lead not only to increased costs but also hamper sustainable development. But on the other hand, some kinds of climate mitigation might pull funds away from sustainable economic development. As a consequence, development pathways, adaptation, and mitigation interact in diverse, nuanced ways. The relationship between adaptation and mitigation in the context of different stabilization levels will need to be synthesized in the context of Article 2.

## **6 Article 2 as a synthesizing theme in the SYR**

Dr. Stocker proposed to consider including Article 2 as a new fifth topic at the end of the SYR. This will provide an opportunity to synthesize policy-relevant assessments from the Working Groups and address key policy-relevant issues identified by governments at the 31<sup>st</sup> Session of the IPCC and in their recent submissions on the scope of the AR5 SYR.

## ANNEX 1

### Issues related to Article 2 of the UNFCCC

#### As agreed by the Panel at its 31<sup>st</sup> Session

(Bali, 26-29 October 2009)

#### 1. Aim

The aim of this Cross Cutting Theme is to provide comprehensive and consistent scientific information in the AR5 that is relevant to and informs the consideration of Art. 2 of the UNFCCC, including key vulnerabilities and development.

#### 2. Background

The United Nations Framework Convention on Climate Change (UNFCCC)'s Article 2 states: "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."

Document IPCC-XXXI/Doc. 4 (*Scoping of the IPCC 5<sup>th</sup> Assessment Report – Background, Cross cutting issues and AR5 Synthesis Report*) addresses the treatment of Cross Cutting Themes in the AR5. Document IPCC-XXXI/INF.3 (*Scoping of the IPCC 5<sup>th</sup> Assessment Report Cross cutting issues – Previous IPCC work related to Article 2 of the UNFCCC*) provides further background on how previous IPCC reports have addressed issues related to Article 2 of the UNFCCC. Furthermore, Document AR5-SCOP/INF. 2 (*Treatment of Cross Cutting Themes (CCTs) in TAR and AR4, and Questionnaire Result*) provides an evaluation of the treatment of the cross-cutting issues in the Third Assessment Report (TAR) and the Fourth Assessment Report (AR4). The AR4 CCT "Key vulnerabilities (including issues relating to Article 2 of the UNFCCC)" was covered by this report.

The Expert Meeting on the Science to Address UNFCCC Article 2 including Key Vulnerabilities was held in Buenos Aires, Argentina in 2004 ("IPCC Expert Meeting on The Science to Address UNFCCC Article 2 including Key Vulnerabilities" Expert Meeting – Long and Short Report). The Expert Meeting considered how this issue could be incorporated in AR4, particularly for an integrated treatment of the subject across the three Working Groups.

#### 2. Scope

This cross-cutting theme is to provide comprehensive and consistent scientific information, drawing from the assessments of the working groups in the AR5 that are relevant to and inform the consideration of Art. 2 of the UNFCCC. The theme is very relevant to all working groups, and to the synthesis report. There is a need to coordinate approaches and outputs among the chapters and groups. An initial consideration of relevant material in each working group and the cross cutting issues is outlined in the following indicative list:

#### WGI

- Anthropogenic and natural radiative forcing; detection and attribution of climate change: from global to regional
- Near-term and long-term climate change projections, including sea level change and regional aspects
- Abrupt climate change, extremes and irreversible climate change
- Scenarios/stabilisation levels, including rate of change
- Other relevant issues

## **WGII**

Related to different magnitudes and rates of climate change under stabilization and other scenarios, including regional aspects, information on:

- Emergent risks and key vulnerabilities
  - Aggregate impacts, thresholds, irreversible changes, and reasons for concern
- Natural and managed resources and systems, and their uses
- Food production systems and food security
- Human settlements, industry, and infrastructure
- Adaptation opportunities, constraints, and limits
- Adaptation planning and implementation
- Climate-resilient pathways: adaptation, mitigation, and sustainable development
- Other relevant issues

## **WGIII**

- Integrated risk and uncertainty assessment of climate change response policies
- Drivers, trends and mitigation
- Climate stabilization: concepts, costs and implications for the macro-economy, sectors and technology portfolios, taking into account differences across regions
- Sustainable development and transformation pathways, taking into account differences across regions
- Integrating long and short-term perspectives
- Integrating technological and societal changes
- Social, economic and ethical concepts and methods
- International cooperation: agreements & instruments
- Regional development and cooperation
- National and sub-national policies and institutions
- Cross-cutting investment and finance issues
- Other relevant issues

There are a number of cross-cutting issues including:

- Linkages and feedbacks between and among: greenhouse gas emissions, atmospheric greenhouse gas concentrations, temperature increase, precipitation, ocean acidification, sea level rise, impacts, adaptation, mitigation and sustainability
- Consistent use of scenarios and treatment of uncertainties and risks throughout the three working group reports

### **3. Working group involvement**

This CCT involves WGI, WGII and WGIII. All three working groups are asked to provide comprehensive and consistent scientific information pertaining to the consideration of Article 2 of the UNFCCC and to draw from their contributions to these issues.

### **4. Suggested approach**

Due to the importance of this CCT, the relationship and interactions related to this cross cutting theme between and within the three working group reports should be discussed up front and in the Lead Author meetings of the WGI, WGII, WGIII and the SYR, and assessed in concluding chapters or sections. It is proposed that the indicative list of topics above could be further developed at the scoping meeting of the SYR in 2010 based on the approved scoping documents of the AR5.

It is proposed to arrange a Cross Working Group meeting early 2010. This meeting could provide further guidance including on the arrangement of an expert meeting on this Cross Cutting Theme. This group would prepare a progress report to inform subsequent lead author meetings and for further consideration by the panel at its 32<sup>nd</sup> session. The progress report would further provide recommendations from the cross working group on the arrangement of an expert meeting on this cross cutting theme.

## ANNEX 2

### Cross Working Group Consultation on Article 2 of the UNFCCC

#### Information Note

*Registration of participants at the Palais des Congrès on 24 August 2010  
from 9:00 a.m.*

10:00 – 10:30	Opening Approval of agenda Programme of work
10:30 – 11:30	Introductory presentations by the Chair, one Co-Chair from each Working Group
12:00 – 13:00	Discussion
13:00 – 15:00	Lunch
15:00 – 16:00	Defining parameters for assessment of impacts on ecosystems, food security and poverty, water security, housing and settlement, etc.
16:00 – 17:00	Integrating Article 2 issues across Working Groups I, II and III
17:00 – 18:00	Discussion and next steps



## ANNEX 3

### **Note on proposed meeting on Article 2 of the UN Framework Convention on Climate Change**

*Submitted by the Chairman*

#### **1. Preamble**

- 1.1 The question of holding a meeting to deal with the cross cutting theme related to Article 2 of the UN Framework Convention on Climate Change (UNFCCC) was discussed and agreed on at the 31<sup>st</sup> Plenary session of the IPCC held in Bali in October 2009.
- 1.2 It would be useful to carefully read the wording of Article 2 of the UNFCCC: “The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems (i) to adapt naturally to climate change, (ii) to ensure that food production is not threatened and (iii) to enable economic development to proceed in a sustainable manner.”

#### **2. Some conceptual issues**

- 2.1 As has been clarified in successive IPCC reports a scientific assessment cannot provide any direct answers to the issues raised in Article 2. However, science can provide adequate information to decision makers and negotiators by which they may be able to come up with a resolution of the issues embedded in this Article.
- 2.2 The concept of defining a time frame sufficient to allow ecosystems to adapt naturally to climate change essentially requires that we scientifically understand and assess the threshold rate below which ecosystems even though subjected to specific impacts would still find it possible to adapt naturally.
- 2.3 It would also be useful to examine specific stabilization trajectories, including low level stabilization scenarios, since they relate to the central action implied in Article 2, namely stabilization of GHG concentration levels whereby dangerous anthropogenic interference can be prevented.
- 2.4 We would need to come to a clear understanding of the whole issue of food security in the context of climate change. This would need to be seen not merely in aggregate measure but also on a localized basis. For instance, it is entirely possible that the world at any point of time may have adequate food available in the aggregate but that with the impacts of climate change, declining income levels and reduced yields from localized agriculture it may become impossible for specific communities and societies to attain a satisfactory level of food security and adequate nourishment.
- 2.5 Given the growing impacts of climate change and their implications for water availability, science can also inform decision makers on specific issues related to water security, implications for housing and settlements and their relationship with human security. This again would require location specific scientific information.

- 2.6 The third element of Article 2 deals with conditions that would enable economic development to proceed in a sustainable manner. Here the issue of extreme poverty and its nexus with the impacts of climate change would need to be understood on a scientific basis, so that we can identify conditions under which a society will suffer from such lack of financial resources which would prevent even minimal investments to ensure sustained economic development. Hence, the link between climate change and extreme poverty for specific communities would need to be assessed and understood far beyond that which has been achieved in past IPCC assessments.
- 2.7 It would also be useful to assess the effect of delays in mitigation, because the attendant costs to be incurred for achieving low stabilization can lead to negative impacts on economic activities and processes.
- 2.8 It is critically important to appreciate that the concept of "dangerous" cannot be measured through definition of some average universal value. Given the diversity of impacts of climate change and related vulnerability, it is localized scientific information that would be most relevant to an understanding of what may lead to a definition of dangerous. A focus on specific choices of localities and communities would in itself require the exercise of value judgements, but science can add to a more informed basis in this regard.

### **3. Building on P-31**

- 3.1 The contact group that dealt with this subject at the Plenary session in Bali provided a suggested approach as follows:

"Due to the importance of this CCT, the relationship and interactions related to this cross cutting theme between and within the three working group reports should be discussed up front and in the Lead Author meetings of the WGI, WGII, WGIII and the SYR, and assessed in concluding chapters or sections. It is proposed that the indicative list of topics above could be further developed at the scoping meeting of the SYR in 2010 based on the approved scoping documents of the AR5.

It is proposed to arrange a Cross Working Group meeting in early 2010. This meeting could provide further guidance including on the arrangement of an expert meeting on this Cross Cutting Theme. This group would prepare a progress report to inform subsequent lead author meetings and for further consideration by the panel at its 32nd session. The progress report would further provide recommendations from the cross working group on the arrangement of an expert meeting on this cross cutting theme."

### **4. The Meeting at Liege**

- 4.1 Against this background the meeting to be held in Liege would need to come to grips with the following issues:
- 4.1.1 An understanding of what policymakers expect from an objective scientific assessment in the AR5 to help in the interpretation of Article 2. Such scientific assessment would have to be objective, policy relevant (without being policy prescriptive) and totally devoid of any value judgement.
- 4.1.2 Understanding and defining what elements of the AR5 could provide scientific information to enable proper treatment and incorporation of Article 2 as a cross cutting theme.

- 4.1.3 Elaboration of those elements in the three Working Group reports which would help in providing a scientific basis for treatment of Article 2.
- 4.1.4 Laying down a process by which a guidance paper could be prepared involving some authors from the Working Groups and other selected experts. Such a guidance paper could provide a comprehensive basis for the AR5 author teams in all the three Working Groups to ensure adequate and appropriate scientific information in their respective reports which would help in the treatment of Article 2 as a cross cutting theme in AR5. The proposal by the contact group which was tabled in the Bali Plenary is provided as an annexure to this note for further information.
- 4.1.5 Deciding on the nature of an expert meeting on the subject and its timing as well as its expected output.

## ANNEX 4

### LIST OF PARTICIPANTS ARTICLE 2 OF THE UNFCCC (24 AUGUST 2010)

Surname	First name	Institution	Country
ALLENS	Myles	University of Oxford	UNITED KINGDOM
BARROS	Vicente Ricardo	CIMA-FCEN	ARGENTINA
BURTON	Ian	University of Toronto	CANADA
EDENHOFER	Ottmar	Potsdam Institute for Climate Impact Research (PIK)	GERMANY
EL GIZOULI	Ismail	Higher Council for Environment & Natural Resources (HCENR)	SUDAN
FIELD	Christopher	Department of Global Ecology Carnegie Institution	UNITED STATES OF AMERICA
HARE	Williams	Potsdam Institute for Climate Impact Research (PIK)	GERMANY
HIRAISHI	Taka	Institute for Global Environmental Strategies	JAPAN
HUQ	Saleemul	International Institute for Environment and Development	UNITED KINGDOM
KOLSTAD	Charles	Department of Economics & Bren School, University of California	USA
KRUG	Thelma	INPE, National Institute for Space Research	BRAZIL
LEE	Hoesung	Keimyung University, College of Environment	REPUBLIC OF KOREA
LEMKE	Peter	Alfred Wegener Institute for Polar and Marine Research	GERMANY
NAKICENOVIC	Nebojsa	Vienna University of Technology	AUSTRIA
NIANG	Isabelle	University Cheikh Anta Diop of Dakar	SENEGAL
NURSE	Leonard	University of the West Indies	BARBADOS
PACHAURI	Rajendra K.	Chairman of the IPCC	INDIA
PICHS MADRUGA	Ramon	Centro de Investigaciones de Economía Mundial (CIEM)	CUBA
QIN	Dahe	China Meteorological Administration	CHINA
SMITH	Neville	Bureau of Meteorology	AUSTRALIA
SOKONA	Youba		MALI
STOCKER	Thomas	Climate and Environmental Physics Institute, University of Bern	SWITZERLAND
van YPERSELE	Jean-Pascal	Institut d'Astronomie et de Géophysique, Université catholique de Louvain	BELGIUM
WRATT	David	National Institute of Water & Atmospheric Research (NIWA)	NEW ZEALAND
<b>IPCC Secretariat</b>			
CHRIST	Renate	IPCC Secretariat	SWITZERLAND
ZAITSEV	Alexander	IPCC Secretariat	SWITZERLAND
BURER	Mary Jean	IPCC Secretariat	SWITZERLAND
<b>Technical Support Units</b>			
PLATTNER	Gian-Kasper	IPCC WGI Technical Support Unit	SWITZERLAND
EBI	Christie	IPCC WG II Technical Support Unit	USA
MATCHOSS	Patrick	IPCC WG III Technical Support Unit	GERMANY
EGGLESTONE	Simon	IPCC TFI Technical Support Unit	UK