

AGENDA FOR THE FOURTH MEETING OF THE
**WORKING GROUP ON GLOBAL CLIMATE CHANGE AND
AGRICULTURAL WATER MANAGEMENT (WG-CLIMATE)**
New Delhi
07 December 2009: 09.30-13.15 hours

Year of Establishment: 2005

Completion of the Mandate: 2011

Mandate:

- To review the progression of and predictions for Global Climate Change (GCC) and climate variability,
 - To explore and analyze the medium-term implications of climate change and climate variability for irrigation, drainage, and flood control,
 - To stimulate discussion and raise awareness of water-related GCC issues within the ICID family,
 - To stimulate discussion at national scales among scientists, policy makers, and, through the media, the general public on GCC and water, and
 - To join the international dialogue on GCC and water
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Members: (1) VPH Dr. Mark Svendsen, Chairman (USA, 2006); (2) Dr. Tsugihiko Watanabe, Vice Chairman (Japan, 2006); (3) Prof. Roland E Schulze, Secretary (South Africa, 2006); (4) VPH Dr. Henri Tardieu (France, 2006); (5) VP Dr. Karim Shiati (Iran, 2006); (6) Prof. Andre Musy (Canada, 2007); (7) Mr. Ray Shyan Wu (Chinese Taipei, 2007); (8) Dr. Kim. Russell (Australia, 2007); (9) Ms. Nurgul Uzupek (Turkey, 2007); (10) Dr. Krishna Kumar Kanikicharla (India, 2007); (11) Prof. Heping Hu (China, 2008); and (12) Secretary General, ICID

Permanent Observers: (i) Mr. Avinash C. Tyagi (WMO); (ii) Dr. Claudia Ringler (IFPRI); (iii) IWMI Representative; and (iv) FAO Representative.

Item 1 : Confirmation of the minutes of the 3rd meeting of the Working Group held at Lahore

The minutes of the 3rd meeting of the Working Group held at Lahore in October 2008 will be confirmed.

Item 2 : Review of membership

The Pakistan National Committee (PANCID) has nominated Mr. Naseer Ahmed Gillani for the membership.

The following nominations were deferred at the Lahore meeting due to their non-attendance at the meeting:

- Dr. Edward Keith Weatherhead (UK)
- Dr. Juan A. Rodriguez-Diaz (Spain)
- Dr. Rolu Encarnacion y Pascua (Philippines)
- Ir. C.W.J. Roest (The Netherlands)
- Prof. Sue Walker (South Africa)

The Central Office in January 2009 had informed the WG's decision in accordance with By-laws that stipulate the need for their personal presence, at the time of their admission in any workbody, to all these nominees. Respective National Committees were informed to advise them the need for attending the forthcoming WG at New Delhi when their nominations once again will be put up for consideration. They were again reminded in August 2009.

CVs of the above nominees will be tabled at the meeting. The Group may like to take a view.

Attendance of members at the meetings held in 2007 and 2008 will be circulated at the meeting.

A. CONTINUING ITEMS

Item 3 : Work plan of the Group

Dr. Svendsen, Chairman had outlined WG's primary function of sharing information and knowledge among countries, science community and managers. The key points requiring the Group's attention were – reduction of consumption and adaptation to decreasing availability of water, likelihood of significant adverse impact on groundwater quantity and quality, global nature of the implications of population, climate and peak oil, and need for warning systems at the regional level useful to farmers and system managers.

It was also agreed that the WG should aim to engage itself by presenting outputs at various global forums like G-8, World Water Forum and working with other climate initiatives, such as workshops on the subject by other international agencies.

The WG may like to prepare a draft work plan of activities until 2011.

Item 4 : Webpage of the working group

The webpage of the Group <http://140.115.62.223/raywu/ICID/index.php> as prepared by Dr. Ray-Shyan Wu (Chinese Taipei) is functional. It is also accessible from a link on the ICID Work Bodies page for WG-CLIMATE. The website provides updated information on membership, agenda, minutes, presentation etc.

Members are encouraged to access the webpage and provide relevant documents, pictures to Chairman/ Dr. Ray-Shyan Wu for their posting.

Item 5 : Group's contribution to World Water Forum 5, 2009, Turkey

ICID was the coordinator of Topic 2.3 "Water and Agriculture for ending Poverty and Hunger of the Theme 2 "Advancing Human Development and the Millennium Development Goals" (MDG). In addition, ICID has contributed to the Forum Topic 1.1 on "Adapting to Climate Change: Understanding the impact of Climate Change, Vulnerability Assessment and Adaptation Measures". The aim of the session 1.1.3 was to explore portfolios of local adaptation measures (structural and non structural) – their pros and cons and the various costs in light of uncertainty and what enabling mechanisms are needed for those portfolios to be implemented.

Dr. Shinsuke Ota (Japan), Vice President made a presentation on "A Strategy for Irrigation and Drainage adopted to Climate Change Asia", at the Round-Table 3 "Drying Rural Areas" of the Sub-Session 2 "Sharing" of the "Local Actions - Thinking beyond the water box: What adaptation to global and climate change?" of Topic 1.1 "Adapting to climate change in water resources and water services: understanding the impacts of climate change, vulnerability assessments and adaptation measures" on 17 March 2009 during the WWF5.

Item 6 : Presentations by Members and Observers

The Chairman will make a brief overview presentation highlighting recent developments in the area of water-related climate change impacts. Contributions from other members have been solicited and Australia and possibly other members will make presentations on recent adaptation activities in their countries.

Item 7 : UN Water Task Force on "Water and Climate"

UN Water initiated a Task Force on "Water and Climate" under the overall coordination of the World Meteorological Organization (WMO). The Task Force on Climate Change held its first meeting in August 2008. The consequences of climate change are complex and far-reaching. They will affect all water-related sectors, including drinking water, agriculture, ecosystems, navigation and hydropower. It is likely that the world's most vulnerable communities will be hardest hit.

The Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, developed under the United Nations Framework Convention on Climate Change (UNFCCC), has highlighted the need for comprehensive and cross-sectoral adaptation planning. The establishment of UN-Water's Task Force on Climate Change represents a response to this call for cross-sectoral collaboration. The Task Force provides an opportunity to discuss climate change and water linkages in their widest sense and supports the UN System as it prepares to meet the challenges posed by climate change.

UN-Water's Task Force aim to strengthen UN System coordination on activities related to water and climate change and support member countries in assessing the impacts of climate. The draft ToR under discussion was circulated at its 1st meeting held at Stockholm in August 2008. VPH Dr. Mark Svendsen and VP Dr. Karim Shiati were ICID nominees for the TF. The draft terms of references of the Task Force were included in the printed agenda of the 3rd meeting of the Group. Further details can be viewed at <http://www.unwater.org/TFclimate.html>

Mr. Avinash C. Tyagi, Director, Climate and Water Department (WMO), of the World Meteorological Organization (WMO), and the Permanent Observer of group had sent two draft documents viz., "White Paper – Needs of Climate Information for Decision Making in the Water Sector" and "Application of the Climate Information and Prediction in the Water Sector: Capabilities". WMO requested ICID (as one of the UN Water Partner organizations) to peruse the documents and provide comments with a view to include those in the final version of the document to be presented at the World Climate Conference-3 (WCC-3) working session on 1 September 2009. Central Office had requested Dr. Mark Svendsen, and Dr. Saeed Nairizi, Interim Chairman, WG-DROUGHT to provide their comments to the WMO. In response, Dr. Svendsen has sent his comments to Dr. Tyagi (*Annex*). The WMO documents of UN-Water Task Force on Water and Climate can be viewed at [http://www.waterandclimate.org/ UserFiles/File/WWW2009_Water%20Sector%20Needs-White%20Paper%20Ver%203_Numbered.doc](http://www.waterandclimate.org/UserFiles/File/WWW2009_Water%20Sector%20Needs-White%20Paper%20Ver%203_Numbered.doc)

Item 8 : WG related communications

Central Office has circulated the following information/ documents/ announcements (from other international organizations) and the Chairman among members from time to time.

- A half-day Special Session on "Water Resource Governance" on 11 December 2009 (09.30-13.15 hours) is to be held on the sidelines of the 60th IEC meeting/ 5th Asian Regional Conference. The ReWaB project team, headed by Dr. Mark Svendsen, Dr. Mark Giordano of IWMI and Dr. Aaron Wolf of OSU, would be organizing the activities of the session. A brief concept note of the session can be viewed at <http://www.incid2009.delhi.org>
 - ICID has a liaison arrangement with the UN Convention to Combat Desertification (UNCCD). The Committee on Science and Technology (CST) of the UNCCD has called for a Scientific Conference, popularly known under the short title "Understanding Desertification and Land Degradation Trends" to be held on 22-24 September 2009 at Buenos Aires, Argentina. All members were requested to review the first draft of scientific analysis papers contributing to the world's fight against desertification and land degradation by accessing their website www.drylandscience.org and also to participate and contribute to the conference.
 - The Global Warming and Climate Change Network (GWCCN) is organizing the 3rd Global Warning and Climate Change Conference and Industry Exposition (GWCCN 09) on 24-28 August 2009 at London, United Kingdom. The theme of the conference is "Bringing Sustainable Development Down to Earth". The Conference theme/ highlights will attempt to the role of individuals, groups and grassroots efforts in "green-building" initiatives. WG members were encouraged to contribute by submitting papers on sub-theme "Water Resources Management" of the conference.
 - The African Ministerial Conference on Environment (AMCEN) held a Special Session on Climate Change from 25-29 May 2009 in Nairobi, Kenya. The event was attended by more than 363 delegates including African government delegates, non-governmental and intergovernmental organizations. Prior to the AMCEN meeting, over 60 civil society organizations from Africa held a Pre-Conference on 22-24 May, organized by Pan African Climate Justice Alliance (PACJA) to discuss climate change and strategies towards participation in the deliberations of the AMCEN.
 - A summary report on "East European Training of Trainers Workshop on climate and Water Affairs" held during 20-24 April 2009 at Skopje, Macedonia was received from Dr. Reza Ardakanian, Director, UN-Water Decade Program on Capacity Development (UNW-DPC). The Workshop was a joint activity of UNW-DPC and WMO and was organized with the support from the Consortium for Capacity Building of Colorado
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University (CCB). The report was circulated to members with a request to send their comments, if any to the UNW-DPC. The report can be viewed at <http://www.unwater.unu.edu/article/955>

- A printed document “Water Resources Policies under Global Climate Change in Taiwan” prepared by the Chinese Taipei Committee (CTCID) was distributed at the 15th meeting of the Asian Regional Working Group (ASRWG) held at Lahore. A power point presentation (PPT) on “Sustainable Management of Paddy Field in Adopting to Climate Change” by Dr. Shen Hsien Chen of International Society of Paddy and Environment Engineering (PAWEES) made at session 1.1.3 on 18 March 2009 during the 5th World Water Forum at Istanbul. The PPT can be viewed at <http://icerik.worldwaterforum5.org/files/ThematicDocuments/SessionDocuments>
- The Ministry of Environment of Ecuador through its project GEF/PNUD/MAE “Adaptation to Climate Change through effective water governance in Ecuador” (PACC-Ecuador) has developed an on-line application to visualize the Climate Change Scenarios developed for Ecuador on its webpage <http://www.pacc-ecuador.org/index.php?option=wrapper&itemid=58>
- A paper “Application of the Climate Information and Prediction in the Water Sector: Capabilities” authored by Sharma, K.D, National Rainfed Area Authority, New Delhi; Gosain, A.K., Indian Institute of Technology, New Delhi; and Arora, M., National Institute of Hydrology, Roorkee, India bringing out the Indian scenario can be accessed at <http://www.whycos.org/chy/e-board/documents/WS-Capabilities-White-Paper.doc>

NEW ITEM

Item 9 : Methane flux from irrigated wetlands rice fields

The Working Group on Environmental Impacts of Irrigation, Drainage and Flood Control Projects (WG-ENV) at its meeting held at Korea in 2001 took the item for discussion “*Methane flux from irrigated wetland rice fields: The effect of water management and rice variety*”. The topic was deliberated in successive meetings of the WG-ENV. Some discussions on research studies made in Korea, Japan and China were reported in those meetings. At the 23rd meeting of WG-ENV held at Lahore, the Group proposed to transfer this item to WG-CLIMATE as it is relevant to their activities. The Central Office communicated with Chairman Dr. Svendsen to which he agreed to include it in the agenda.

Methane (CH₄) is one of the reactive greenhouse gases and about 70% of the total GHG emission of atmospheric methane stems from anthropogenic sources, mainly from anaerobic decay of organic matters in rice fields, and from wetlands. Major Rice growing countries such as China, Japan, and Korea have been researching to decrease CH₄ emissions from agriculture through better management of rice paddies. Changes in cultivation practices, such as a shift from transplanting to direct seeding, and appropriate water management can also contribute towards a decrease in CH₄ emissions. A reduction in the use of organic materials or a shift to the use of mineral fertilizers will help decrease emissions, together with the appropriate application of these fertilizers. CH₄ emissions could also be reduced by improved treatment and management of animal wastes and by reducing biomass burning. These combined practices could reduce CH₄ emissions from agriculture by 15-56%.

Prof. Dr. Hu Heping, Chairman, WG-ENV and Member of the Group will make presentation including more recent findings and issues related to methane flux from irrigated rice fields in addition to a historical overview, besides highlighting key issues for the future and some possible solutions to this problem.

The Group will deliberate on this item at the meeting.

Item 10 : Any other business

COMMENTS ON TWO WMO DRAFT PAPERS ON GCC AND THE WATER SECTOR
Dr. Mark Svendsen, Chair WG-CLIMATE, ICID**Draft paper 1: Needs of climate information for decision making in the water sector - Stakhiv and Steward**

This paper reviews literature and personal experience to discuss the interface between “scientists” and “decision makers”. This is a dichotomy that is picked up in its reduced form in the second paper and will be discussed further there. In practice, the “Needs” paper does go on to describe a more nuanced and sophisticated view of the relationship between knowledge and decision making at other locations in the paper, though the second paper does not.

The paper is generally thoughtful, stimulating, and well written. The discussions of risk, uncertainty and decision making criteria were most interesting. There is a certain amount of repetition, e.g. relative to the limitations of GCMs or the ongoing relevance of existing historically-based hydrologic models, which could be reduced in a second draft. A copy edit at that point would also be useful for spelling, dropped words, and cut and paste anomalies. Include tables and figures in this. For example, the second table lacks a caption and is referred to in the text as a “figure”, and the cited “Equation 1” (line 619) is not shown. Page numbers would be useful.

A few general comments:

1. The focus of the paper and its discussion of the “water sector” is limited primarily to runoff- based surface drainage systems. Ignored are the hydrologic impacts of climate change on the rainfed agricultural systems that produce 60% of the world’s food supply. While this may be intentionally done to limit the scope of the paper, nevertheless, some of the information needs identified are readily applicable to these rainfed systems as well. The call for more reliable 30, 60, and 90 day forecasts is a case in point. Authors might consider making the restricted scope of the paper explicit, and/or pointing out cases where suggested information needs and tools can also apply to vulnerabilities in rainfed agriculture – an area that is likely much more relevant in, for example, Sub-Saharan Africa, that are impacts on river hydrology.
2. Likewise, the principal focus of the paper is on relatively-well regulated rivers, particularly North American ones. While true that without regulation fewer tools are available for adaptation, pointing out the dependence of many adaptation measures on a significant level of control would be useful.
3. The paper rightly highlights variability and the importance of extreme events in infrastructure design and operation. What seems to get short shrift in this is the importance of the shape of the typical annual hydrograph in those snow-fed river basins which supply one-sixth of the world’s population with domestic and irrigation water? These are already changing, with further shifts in the offing. Here it is not so much the extreme events that matter but the shifts in weekly and monthly discharge rates over the course of the year. This would seem to warrant some explicit discussion.
4. The most thought-provoking part of the paper, for me, was the brief suggestion at the very end (and the hint at the end of the Summary) that new ways of evaluating and justifying water resource investments that are less tied to cost-benefit analysis are required by increased variability and uncertainty. I was keen to read the next few paragraphs there, but, unfortunately, the paper ended at that point. I would urge the authors to give us another page spelling out what such an approach might look like.
5. The discussion of technological advances (section 4.5) is limited to biotechnology and cheaper energy – in particular fusion and solar. This discussion could be usefully expanded. Including drought resistance, drought avoidance, reduced transpiration in the biotech discussion along with tolerance of saline water, e.g. Also research on membranes for RO, low cost bio-treatment regimes for urban wastewater in developing countries, appropriate technology micro-irrigation technology. Here again the context seems to be developed economies, which may be intentional, but the discussion should be framed at the outset by indicating the boundaries of the discussion. Similarly section 5.4 on “Dissemination and communication aspects” seemed thin.
6. The listing of prominent organizations (line 927) might be expanded to include USBR, particularly given the references to Levi Brekke’s work.
7. Figure 1, if cited, should have some text to discuss it.

Draft paper 2: Application of the climate information and prediction in the water sector; Capabilities, Sharma, et al.

This paper explores the application of climate information in water management. It treats an interesting topic and makes a number of useful and interesting points. A particular strength is the good discussion of time scales of change and decision time horizons. The paper would benefit from a good edit for syntax.

A few comments:

1. The simple relationship posited between “scientists” and “decision makers” needs to be elaborated and developed to better reflect a much more complex reality. The term “stakeholders” is used at the outset and throughout the paper and explicitly equated with “decision makers”. The two terms are not equivalent. The former includes those with an interest or a “stake” in decisions related to water, such as irrigators, environmentalists, urban water consumers, and the like. “Decision makers” is a much smaller subset of those who actually have significant power to affect outcomes. Usually these are in the public sector, but they can also include leaders of independent regulatory agencies, funding agencies and banks, and sometimes private sector firms, such as those who might invest in developing and selling non-traditional sources of water. The first paper has some useful sections discussing this decision making complex that could be used to elaborate the simple model employed here. This matters, because the information needs of the different parties can differ significantly. The muddle is reflected in point 3 on page 2 which blends and confuses time scales, stakeholder groups, precision, and vulnerability.
 2. The simple two-party model also glosses over the fact that significant change involves change involves change at policy, legal, and organizational levels, each of which involves a different cast of characters. These are not simple technical “management” decisions we are talking about.
 3. “Social scientists” are mentioned periodically in the “scientist” camp. What exactly are the social scientists doing in this context? Could this be explained in a paragraph someplace?
 4. Figure 2 does not obviously include the environment as a water using sector, a significant omission.
 5. Unless I missed it, the discussion of water supply seems to ignore the “new storage” option in favor of simply modifying existing infrastructure and operating rules. Is this intentional, and is it correct? Including the new storage option could and should lead to discussion of new design tools that deal with expanded uncertainty and non-stationarity.
 6. Figure 2 has boxes only for supply and demand “variability” and not for changing averages or shifts in annual hydrograph shape. If these things are intended to be included in the term “variability” then this needs to be made clear, because many will see them only in their (misleading) stochastic sense.
 7. The section on Decision Support Tools (p10) is interesting. It would benefit greatly from a couple of half-page boxes – one giving an example of a “top down” scenario analysis and the other showing a “bottom up” sensitivity analysis.
 8. Likewise the discussion on indicators and indices is intriguing but not self-evident. A box here with some examples would be very helpful.
 9. The reference to better impact information Line 447 is excellent (and much understated). Paper would be greatly strengthened by a separate section describing how linking downscaled model results with impact models on GW recharge, cropping patterns, crop yields, and similar application models can be a very powerful tool in helping stakeholders and decision makers to visualize the potential impacts of different climate scenarios.
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