



Photo: Neil Chatterjee

Theme Report – Water and Climate

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Context

The links between climate change and water were discussed extensively throughout the 2008 World Water Week, culminating in two dedicated Water and Climate days. More than 30 international organisations, governmental agencies, knowledge institutes and NGOs contributed to the water and climate sessions.

While much of the discussion focused on adaptation, the links to mitigation were debated as well. There was a consensus that the water sector has to make a contribution to climate change mitigation, and needs to be a leader in adaptation.

Status of Water Resources

The World Water Week presenters built on knowledge of the limited nature of the Earth's surface and groundwater resources and ecosystems, and the degradation that is occurring, with a number of new and more emphatic findings, namely that:

- Climate change is occurring and is impacting on freshwater resources and ecosystems first and hardest.
- The relative impact of climate change needs to be considered against the demands and threats to water resources arising from growing wealth, consumption and populations and a recent addition to the development agenda.
- Growing water scarcity is heightening the management challenges and potential for conflicts.

Vulnerabilities in Water Resources from Climate Impacts

The Intergovernmental Panel on Climate Change (IPCC)'s recent reports highlighted the likely changes in water quality and quantity, and with extreme events. Globally, the negative impacts of future climate change on freshwater systems are expected to outweigh the benefits. There was a clear consensus that it was no longer possible to manage water based on stationarity.

The vulnerability of the world's 263 transboundary river basins was a focal point for discussions as interstate agreements

cover only 40 percent of these rivers, and agreements based on stationarity may fail.

Links between Sanitation, Water and Climate Change

Increasing water scarcity in many parts of the world may further limit access to water for sanitation, and consequently exacerbate health impacts and limit the ability of natural ecosystems to assimilate wastes. In large cities water scarcity is reducing the self-cleaning capacity of sewers and flooding is exacerbating stormwater overflows and resulting pollution. Water supply and treatment is likely to become increasingly energy intensive and expensive with climate change. Pumping will likely be needed from longer distances and greater depths and lead to further depletion of aquifers worldwide and increased application of water treatment and desalination. There was also discussion of the opportunities for human waste to be used in biogas generators as an energy source.

Progress

There is an increasing degree of knowledge about the nature of the climate change challenge, and most speakers emphasised that enough is known to start taking action now. Many presentations highlighted major adaptations that are being applied now, especially no regrets measures like restoration of ecosystems as infrastructure.

Progress in developing the institutions required to manage climate adaptation in the water sector, ranging from enhanced local institutions, to river basin organisations, to various national plans, was evident. Concern was raised at poor integration of national adaptation plans with national sectoral plans. New mechanisms are also developing in existing international frameworks such as the watercourses conventions for transboundary river management.

A high level discussion between developed (Netherlands and Denmark) and developing (Indonesia, Costa Rica and Lesotho) country ministers saw apparent agreement between them on

ways forward in search of wider agreement on solutions on adaptation that will be taken forward to future events. These include the 5th World Water Forum and UN Framework Convention on Climate Change (UNFCCC) conferences of parties.

Prospects and Opportunities for Further Progress

There was widespread discussion on the institutions needed for better adaptation at the local, basin, national and international scales.

A great many practical adaptation tools and methods were identified during the World Water Week. The EU proposed a useful schema with three classes of proposed actions to enhance: a) human capital, b) green infrastructure – working with nature to minimise climate impacts, and c) grey infrastructure – climate proofing existing and new infrastructure.

A group of multi-lateral development banks stated that they will continue to consider funding for all “no regrets” projects and noted that funding is generally not the limiting factor where projects are well prepared.

Challenges and Obstacles to Progress

Water professionals are familiar with: the lack of integrated decision-making in planning and governance; drivers of increasing water demand; and limited capacities of developing countries to manage water better.

The World Water Week raised new concerns at climate change policies for generation of low carbon energy using water, and greater storage and diversion of water, because they may increase water scarcity and further impact on freshwater habitats.

Knowledge Gaps

The decline in hydrological monitoring networks and lack of knowledge on the likely impacts of climate change on water resources and ecosystems saw many urge major investments to plug these gaps. Knowledge gaps identified include methods and data to: downscale climate models; distinguish climate change from variability; assess the impacts of climate change on groundwater; understand the relationship between the impacts of glacier and snow pack melt on hydrology; and see the inter-linkages between energy and water and climate.

It was also strongly argued that there would always be a large degree of uncertainty concerning the likely impacts of climate change on water resources and ecosystems, and that societies and governments need to commence adaptation measures in spite of the uncertainties.

Publication of experiences and lessons in climate change adaptation was urged so that these can be drawn on by the global community. The World Meteorological Organisation (WMO) proposal was supported by key participants for the establishment of a global Climate Information Framework, to capture and make available information to assist adaptation efforts.

Regional Dimensions

The 2008 World Water Week included a focus on climate and water issues in three key regions: Africa, Asia and the Himalayas, and Europe.

African presenters emphasised the need to invest in adaptations to cope with climate variability. Presentations highlighted the progress a number of countries had made in developing national plans and vulnerability assessments.

In Asia at least 1 billion people – depending mainly on the “Himalayan water towers” – are projected to be affected by decreasing fresh water availability by 2050. The Asian Development Bank reported that it is supporting capacity building through interdisciplinary collaboration and integration of adaptation strategies in national water policies.

The European Commission outlined its climate adaptation white paper that it plans to finalise and publish in late 2008. The paper plans to assess proposed adaptation measures against eight principles: synergies; no regrets; the precautionary principle; solidarity, flexibility and subsidiarity; knowledge; proportionality; and sustainability. Presentations highlighted the role of river basin institutions in managing adaptation, growing water scarcity in southern Europe, and the likely impacts of flooding, and on river navigation and hydropower.

Conclusions and Recommendations

The 2008 World Water Week discussions represented a more informed appraisal of the impacts of climate change on water resources and ecosystems, and greater confidence in the emerging suite of practical response measures. Key conclusions and recommendations emerging from the week are:

Knowledge

A lot has been achieved but a lot more remains to be done. Better communication is required to inform and encourage local communities and governments, to overcome the perception of adaptation as a complicated process requiring more expertise before adaptation can commence.

Recommendations:

1. All institutions, especially governments, should support the WMO’s proposal for the establishment of a climate information framework to make tailored climate change knowledge more readily available for water managers through appropriate channels to inform responses at the local and regional scales.
2. Further debate is undertaken at upcoming events (including World Water Weeks, World Water Forum, and Ramsar Convention and UNFCCC CoPs), on issues relating to climate change and water, such as: the links between climate, energy and water; taking good decisions despite uncertainty; and ways to better mainstream and upscale response measures.

3. Governments need to maintain and enhance hydrological and meteorological measurement station networks, especially in developing countries.

Impacts and Adaptation

A clear consensus emerged that the primary threats to water resources and ecosystems emerge from greater wealth and consumption and increasing populations. These threats will be exacerbated by climate change and must be addressed together.

Recommendations:

4. Better measures against the major threats to water resources and ecosystems, including greater water consumption and climate change, are urgently needed: all institutions should begin or enhance their measures for adaptation to climate change and mitigation of increasing water demands now. No regrets measures that should be targeted as priorities include: increased water use efficiency; treatment and re-use of wastewaters; application of virtual water and water footprint methods for better sourcing of thirsty commodities; enhanced rainwater harvesting; and investment in ecosystem restoration as infrastructure.
5. All institutions, particularly governments, should avoid maladaptations and better consider sustenance of water resources and ecosystems in crafting their climate change policies.

Local Scale Adaptation

Discussions identified a number of key factors for successful adaptation at local scales. These include local ownership and visible social and economic benefits or the demonstrable avoidance of losses. Predictability of funding more than the scale of funding was identified as essential for sustaining adaptive institutions. More work is required to identify how to better upscale and mainstream successful pilot projects. A dearth of peer-reviewed and published case studies of local adaptation lessons learnt is hindering development of more effective climate change responses. There may have been too little discussion of the perspectives and needs of local people. It appeared that many governments were struggling with decentralisation.

Recommendations:

6. All institutions, especially local institutions and NGOs, assess and publish lessons from their adaptation work.
7. National and international institutions redouble their efforts to learn from and support local institutions to undertake climate change response measures.

National Scale Adaptation

Country level planning has begun in many nations, but the levels of planning, integration, financing and implementing vary considerably. In particular, more effective integration of

national climate change and sectoral plans is required. There was extensive debate of effectiveness and integration of processes under the UNFCCC for national adaptation and mitigation. The high level debate at the World Water Week highlighted the potential for developed and developing country governments to agree on key climate change responses, and for adaptation policies to bring governments together.

Recommendation:

8. Governments strive to develop more effective water and climate change plans, including better integration of good water resources management into climate change and other national policies. In particular, developing country governments and donors should seek more effective means of integrating climate change adaptation into national conservation, water, poverty and development plans.
9. All institutions support developed and developing country governments to continue the productive discussions seen at the World Water Week on climate change adaptation and encourage them to reach global agreement on implementation measures, including for UNFCCC CoP15.

International and Regional Development Organisations

A substantial commitment to supporting better water and climate adaptation was expressed. Development banks and aid agencies outlined their plans to collaborate to identify best practices in adaptation and fund such action, and called for better project proposals to fund. Swedish sponsored "International Commission on Climate Change and Development" will report in 2009 on how poverty reduction strategies should consider climate change. The debate over whether climate change adaptation should occur as part of or in addition to poverty reduction funding and programmes was not resolved.

Recommendation:

10. All institutions support the stated intention of the development banks and aid agencies to identify and fund best climate change adaptation practices. Donors should find more flexible mechanisms for funding integrated national conservation, water, poverty and development plans that incorporate climate change.
11. Donors and developing country institutions should foster the debate about the interrelationship between water, poverty reduction and climate change policies, and funding mechanisms should be fostered in relevant international fora including the World Water Week and the 5th World Water Forum.

International and Regional Treaties

Treaties are drivers for better adaptation. River basin treaty organisations, such as those for the Rhine and the Danube, outline practical adaptation actions they were taking to manage water



quality, flooding and infrastructure. The UNECE Watercourses Convention demonstrated the advantages of an effective treaty process. There were calls for European governments to ratify the universal membership amendment. Similarly, many presenters called on governments to ratify the 1997 UN Watercourses Convention so that it may enter into force.

Recommendation:

12. Relevant national governments that are yet to do so should ratify the UNECE Watercourses Convention's universal membership amendment, and also the 1997 UN Watercourses Convention so that these measures may enter into force.

Industry sectors

Outside the finance, water, food and beverages sectors, relatively little business engagement on climate issues was evident at this World Water Week.

- a) Finance sector. Financial institutions present at the World Water Week indicated their desire to support water and climate adaptation projects more extensively but said they lacked adequate funding applications. Better communication of requirements and support to develop better applications is required.
- b) Energy sector. Understanding of the links between climate, energy and water was a major issue developed at this World Water Week.
- c) Water and sanitation sector. New data was presented at this World Water Week highlighting both the threat from climate change to water supply and sanitation, as well as the contributions this sector can make to mitigation through greater energy efficiency and conversion of waste into fertilisers and biogas for energy generation.
- d) Agriculture, food and beverages sector. Virtual water, water footprint and water stewardship were themes further developed at this World Water Week with a focus on agriculture and the implications of greater water scarcity, including that

induced by climate change. These concepts could be applied as adaptation tools.

Recommendations:

13. Integrated decision-making is critical. Water professionals and institutions need to redouble their efforts to engage other sectors more effectively to “get water out of water.”
14. The sanitation sector is urged to consider the issue of climate change adaptation in its agenda.

The 2008 World Water Week discussions advanced consideration of climate change adaptation and sustenance of water resources and ecosystems in four key ways, by:

1. Framing the threat of climate change more precisely within the broader set of challenges for better water management;
2. Agreeing that adaptation should start now despite the current level of uncertainties, and identifying a suite of practical adaptation measures that can be applied immediately;
3. Promoting a better balance and linkages between water-related climate adaptation and mitigation measures;
4. Identifying key knowledge gaps to be filled over time.

This year's World Water Week debate primes upcoming events, including the 5th World Water Forum and UN FCCC CoP 15, to further advance humanity's efforts to better manage climate change and water. Parties to the UN FCCC CoP 15 should note this message from the water sector: climate change is unequivocally impacting on water resources and ecosystems, and the water sector is ready to contribute to climate change mitigation and lead in key adaptation measures. Governments need to take more care to ensure the climate response measures that they adopt do not further impact on water systems. The water sector needs government support to accelerate climate change adaptation, including better integrated national sectoral plans and more flexible provision of resources for implementation.