Policy Brief
Integrated Project in the 6th EU framework programme
NeWater
New Approaches to Adaptive Water Management under Uncertainty

No.7 | March 2008 | www.newater.info

KEY MESSAGES OF THE CAIWA CONFERENCE 2007

The first international conference CAIWA on adaptive and integrative water management took place in Basel, Switzerland, from 12 to 15 November 2007. This scientific conference attracted scientists from various disciplines to exchange and discuss the problem of how to cope with complexity and uncertainty in water management under changing conditions. The 3rd day of the conference was solely devoted to the 'Policy to Science Day', which brought together scientists with policy-makers and practitioners active at local to international level in water management in its widest definition. The aim was to analyse progress, to explore new research directions and eventually highlight policy implications of scientific findings on adaptive and integrated water resources management in the light of climate change.

The policy day was composed of plenary sessions at the beginning and the end. In between these plenary sessions, seven panel discussions took place on following topics:

- The Rhine river basin;
- The river Guadiana basin;
- IWRM & EU int. cooperation: the example of the Orange river basin;
- Water quality and ecological status;
- Water scarcity and drought;
- Flooding;
- Governance and institutional aspects.

To achieve comparable results, the following questions provided general guidance throughout the panel discussions:

1. What is the most dangerous practice with regard to the topic or river basin in question in the light of climate change? At which level does it take place (global, national, regional)?
2. What priority action should be taken to increase adaptiveness (global, national, regional)?
3. Is there any duplication in research activities? And where is the greatest need for better cooperation between research and policy-making?

In the following, the "*CAIWA Key Messages for Policy Makers and Practitioners*" represent the major findings of the conference. The second section provides the "*CAIWA Key Messages for Researchers*". To make reading easier, all key messages are categorised according to their field of application or summarising issue. Additional background information and context resulting from discussions held at the conference is provided in the third and fourth sections, respectively. Here, priority action to increase the adaptiveness of the water sector to the impacts of climate change will be summarised, and the problems of implementing an integrated water resource management will be highlighted.

The wording chosen at the CAIWA conference was edited carefully to prevent the loss of its original character and meaning. This document was repeatedly distributed among conference participants to gain feedback and to avoid the incorrect reproduction of statements given at the conference (cf. contributors at the end of the document).

It may appear that aspects raised, information given and messages cited are not new. Nonetheless, it was decided that having all of the findings of a major conference in one document brings more attention to it and increases the probability that the findings will be implemented. Observance and integration of the following messages and action into the daily work routine is not necessarily based on new formalities, but is also a matter of individual commitment.

CAIWA Key Messages for Policy-Makers and Practitioners

Collaboration and Knowledge

- Policy-makers, practitioners and researchers must increase their cooperation efforts to deal with the challenges of climate change effectively;
- Differences in understanding present opportunities to increase knowledge by means of collaboration and negotiation. This is also the case for differences in comprehension of good water management and good responses to climate change (economic, cultural, rights, etc.);
- Taking uninformed action is equally bad as taking no action at all. The means to arrive at knowledge-based decision-making should be further exploited. Nonetheless, knowledge gaps should not be used as an excuse for delaying action!

Participation and Communication

- Involving society in the debate on finding solutions to climate change and its impacts is a key factor;
- Mechanisms are needed to link technical discourse with political dialogue better at multiple administrative levels, between multiple sectors and at different time scales. Participatory instruments can be of assistance in this matter;
- Active stakeholders and public involvement is a means to utilise more adaptive management styles.

Dealing with Uncertainty

- Policy-making must combine long-term planning with short-term responsiveness to monitoring and evaluation results to reduce uncertainties;
- Probability-based (defensive) risk management styles should be replaced by integrated management. This includes anticipated impacts that are as yet without statistical evidence;
- A certain amount of uncertainty will always persist. Here, a new attitude towards uncertainty should be promoted: "Learning to live with uncertainty and being comfortable with it".

Research Issues

- Support should be given to research that helps us understand more about organisational cultures, and what will enable them to effectively deal with the connectedness required to achieve sustainability and climate change adaptation;
- Research duplication should be avoided by better coordination between respective countries;
- New means of channelling donor money into developing countries need to be identified. Responsibility for the effective coordination of research funds should be increasingly moved towards the respective countries.

Implementation Issues

- Well-designed policies and laws are frequently in place but get blocked at the implementation stage. Implementation needs to be approached as a reflected continuation of the political process. This requires more resources and political will;
- Water problems cannot be solved by the water sector alone. It is a precondition in water management to understand that water is more than a commodity;
- Foster a clear coupling of water policies with environmental and sector policies, at national and European level (e.g. agriculture, tourism, energy, etc.);
- Climate change and adaptation are issues for mainstreaming through all sectors, just like gender and participation;
- Demonstration projects should be supported, with the aim of increasing the adaptiveness of the water management system in an integrated manner (considering the socio-ecological environment, the technical infrastructure and the management style itself). Organisational adaptability is required;
- Existing administrative structures should be analysed with regard to their adaptive capacities and measures taken to the increase adaptiveness of the system.

Further Opportunities and Potentials

- The holistic concept of *environmental flows* may be used as a management and communication tool: holistic approaches are required to protect the water needs of humans and nature;
- The direct link between water management and energy must be further highlighted;
- In developing countries, biomass production is a potential method of dealing with climate change from the energy perspective, but it competes with food production for water.
- Reducing corruption stimulates proper water management and IWRM. Transparency of water management still needs to be improved.

Figure 1: Dialogue matters: discussions during the conference helped predefine ideas and messages for policy-makers

CAIWA Key Messages for Researchers

Requested Information and Knowledge

- Research should support the understanding of organisational cultures;
- Research is needed on what will enable practitioners to effectively deal with the connectedness required for sustainability and climate change adaptation;
- Simulating behavioural change as a prerequisite for enhancing knowledge on adaptability should be increasingly applied;
- Research should become engaged in demonstration projects on integrative and adaptive management, providing evidence on how to involve stakeholders and the public as a means of dealing with uncertainty.

Collaborative research and Communication

- Increase the communication capacity of the research community - it needs to become more specific (solution/action/policy-oriented?) and less abstract to policy-makers;
- Applied research should include policy-makers and practitioners into its research design;
- Science should take better notice of which data and information is really relevant to policy makers and practitioners;
- Cooperation with private sector research should be increased; public research should tap into their results.

Supporting Policy and Implementation

- Science may take a major role in monitoring the progress in implementing IWRM.

Problems of Implementation for Policy Makers and Practitioners

It is widely accepted that integrated approaches in water management are formally implemented but practically still difficult - meaning that implementation lags behind. One of the often cited problems concerns the mismatch between governance systems. Organisational and institutional structures are fragmented and decision-making processes are sector-based, with too little inter-sectoral exchange. One example here is the flood problem.
To a certain extent, communication problems between different administrative levels are the result of organisational mismatch. Additionally, communication is hindered by different communication styles of people working at policy level and of other people being concerned with implementation at regional to local level. Different education levels, especially in developing countries, further exacerbate the problem. For example, there is a lack of adequate information on flood risks or, more generally, on the possible impacts of climate change to those at risk and the responsible authorities. Here, the adequate style of and means for communication at local and regional levels are crucial. Besides requiring the correct means of communication, knowledge of what is relevant information is also required.
Besides communication problems between administrative levels, it should be ensured that implementation capacity is given at lower levels. For example, in developing countries, implementation capacity is highly concentrated in urban areas. The local administrative level responsible for rural areas is generally understaffed, and existing staff often do not have the necessary level of education and expertise. In most countries, a contradiction still exists in water authorities between the historically established command and control approach and the desired participatory approach of (adaptive) water management. A command and control ethos always tries to master uncertainty - which is not possible. As already cited in the *'Key Messages for Policy-Makers*' it is rather a "Learning to live with uncertainty and being comfortable with it" attitude that needs to be established in addition to activities that help us better understand systems and their inherent uncertainties. This amount of complexity and uncertainty calls for a change to our normative position: from knowledge transfer to connection, which also requires the switch of mental models.

- Scientists consider policy-making to be too operational and regret the lack of time for further analysis and reflection;
- Lack of regional climate models makes it difficult to explain the impacts of climate change and adequate reaction to it to local people and officials;
- We are still looking for strategies to help resolve the flood security paradox;
- There is still too little attention paid towards the required transformation process;
- The roles of stakeholders are rarely adequately defined;
- Plans for IWRM implementation are often not really owned by all countries/states/regions involved;
- A long-term perspective for planning decisions should be envisaged without contradicting shorter time horizons for policy-making; item Policy-makers are not attentive enough to "windows of opportunity": awareness may lack in part, but also the slow internal organisational reaction may cause hindrance;
- The costs of adaptation in the water sector are not yet clear;
- Maintenance is often not guaranteed after the termination of projects. This does not necessarily concern physical infrastructure but the dissemination of

knowledge and the establishment of learning networks!

- The plan of measures required by the WFD offers the opportunity to obtain more frequently updated ('cyclic plan') and therefore more adaptive information. But time and effort spent on planning put implementation and operation at stake!
- Non-structural responses are under-utilised, as the focus is on probability management and engineered defences. Integrated, long-term flood risk management includes management of consequences, the impact of extreme events and the effects of climate change. Professionals should be encouraged to seek and apply less conventional approaches supported by a more conducive institutional and regulatory framework;
- Encroachment into natural river channels and flood risk areas must decrease. Local regulation needs national policy support. Often, the financial implications of diverting or reversing encroachment into flood plains cannot be shouldered by the local authorities;
- When infrastructure is planned to alleviate vulnerability to flooding, poorer groups are frequently ignored, as the cost-benefits accruing to their alleviation do not reach the pre-defined thresholds necessary to trigger investments.

Required Actions (to increase adaptiveness of RBM)

At the beginning, acceptance by all parties of a multi-perspective dialogue in policy-making and practice is crucial. Reducing the 'implementation gap' by integrating the main stakeholders at the planning stages and during the implementation of plans is a key element. This gap concerns differing spatial areas, from the river catchment scale to the local planning and community level.
The dissemination of research results to not only stakeholders but also the public and society as such is nowadays stipulated by almost all research funding organisations. Still, a lot needs to be done to ensure that results are understood and received by the desired target groups. Concerning the dissemination of results to the public, it is awareness raising that needs to be followed up as the first step.
Improving the dissemination of research and development to both policy makers and practitioners leaves the question open as to how more formal structures may help to ensure feedback from these levels is integrated into research and development programs. Eventually, incentives for cooperation are needed on both sides (science and policy/practitioners). Poor dissemination is related to different communication styles and patterns. Besides ensuring that more people speak both 'languages - science and policy - projects need to involve and budget for communication experts who translate research results into policy and practice. Better means for supporting continuous exchange between scientists, policy makers and practitioners need to be identified and established.

Training and capacity-building seem to play an important role in supporting the desired transformation process from a more conventional sector-based water management to adaptive and integrated water management. Here, it should not be forgotten that capacity building is urgently needed, especially in developing countries. Demonstration projects on adaptive water management can become part of such training: local action in particular should be supported (policy & demonstration). These projects enable higher risks to be taken, by looking for less conventional solutions once the projects are being initiated and carried out. Additionally, exchange between countries at the sub-regional level should be encouraged as a useful tool for disseminating good practice in IWRM.
Some of the following actions to specifically tackle the 'flood problem' have already been mentioned in the preceding chapter on implementation. Nevertheless, to ensure the completeness of actions reducing the 'flood problem', they are listed again here:

- Long-term planning is required, involving all parties with flood risk and spatial planning responsibilities, including the financial sector.
- Communicating with, engagement of and capacity-building in all sectors associated with flood risk management, including public authorities, developers, architects and builders;
- Changing flood risks requires a clearer definition of roles among stakeholders in respect of the different forms of flooding and the continuum from forecasting, through control measures to flood control and recovery;
- Support innovative approaches, recognising and accepting the risks involved. This will require support at national, regional and local levels through policy actions and demonstration projects;
- More attention must be paid to non-structural measures to improve resilience. Support for this approach will depend on the understanding of the context at both institutional and community levels;
- Building the capacity to initiate social transformation that moves from unsustainable and undesired trajectories to one where the capacity for sustainable flood management is strengthened. This requires preparing the system for change, seizing a window of opportunity and linking organisations and institutions across scales;
- Development of a theoretical framework for flood risk management process design and for the management and assessment thereof.

The following aspects were mentioned especially for action concerning *European River Basin Management Plans* in accordance with the WFD:

- Check that the plan is sufficiently flexible;

- Allow for and promote experimentation and evaluation: promote learning cycles;
- Evaluate decisions by the costs of reversing them;
- Develop an enabling framework for autonomous adaptation.

The need for adaptation of the water sector to climate change is no longer questioned. The science to policy day of the CAIWA conference successfully brought together the scientific, policy-making and practitioners' community and identified the steps needed to guarantee efficient and effective exchange between research, policy and implementation on the key themes for the adaptation of the water sector to climate change. Further dissemination of these results is highly desired.

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Acknlowledgment

Many thanks go to the contributors of this conference outcome, including:
Joaquín Andreu, Ana Barreira, Eugenio Barrios, Friedrich Barth, Dick van der Bergh, Peter Borrows, Torkil Jønch Clausen, Daniel Conell, Simon Cook, Katharine Cross, Chris Dickens, Janós Fehér, Georg Förster, Carl Folke, Jochen Fröbrich, Geoffrey Gooch, Dirk Günther, Africa de la Hera, Sebastiaan van Herk, Peter Huggenberger, Helen Ingram, Nicola Isendahl, Alice Jaraiseh, Fons Jaspers, Britta Kastens, Jörg Lange, Wim van Leussen, Marlene Liebeskind, Juan M. López-Pila, Fulco Ludwig, Rodrigo Maia, Maria Manez, Sabine Möllenkamp, Jörn Möltgen, Susana Neto, Panos Palabanis, Erik Pasche, Daniel Petry, Rodrigo Proença de Oliveira, Harro Riedstra, José Ángel Rodríguez Cabellos, Andrew Ross, Roland E. Schulze, Mark Smith, Henk van Schaik, Erik van Slobbe, Roy Thomson, Stephan Tressl, Consuelo Varela-Ortega, Hong Yang, Oran Young, Chris Zevenbergen.

Imprint

Publisher: NeWater Project Consortium
Editing and layout: Seecon Deutschland GmbH

This NeWater policy brief is part of a series of documents that are designed to help water managers and researchers in implementing and analysing adaptive water management under uncertainty.

This policy brief is an output of the EU FP6 Integrated Project NeWater (CONTRACT NO: 511179). The views expressed herein are the authors' own and do not necessarily reflect those of either the editorial team nor of the European Commission. Neither are the editorial team and the European Commission responsible for any data and information appearing herein or any loss, damage or injury to persons or property resulting from any use of information contained in this policy brief. The legally responsible editor is: Jörn Möltgen (USF).

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