



**NeWater**

**Integration of  
Poverty, Gender and Health goals, targets and indicators  
into the IWRM processes in the Orange and Amudarya river  
basins.**

**Deliverable of the NeWater project  
New Approaches to Adaptive Water Management under Uncertainty**

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## **Policy Summary**

Solving complex environmental problems requires harnessing diverse knowledge systems to adapt to ever changing situations. The concept of adaptive governance rests on polycentric principles and relies on a process of active learning by all stakeholders to continuously improve management strategies. Learning from those most affected by environmental changes, i.e., poor men and women living in marginal and disadvantaged areas is important for coping with uncertainties and building resilience. This book brings together the experiences of tackling severe water related vulnerabilities in countries that share the Amudarya river basin in Central Asia. In this river basin the problems of water and ecosystems are as much a result of active human intervention as of climate change. This makes it a particular case for learning for researchers, policy makers and practitioners elsewhere who are engaged in improving human well-being and striving to manage water in efficient, sustainable and equitable ways. The book highlights issues of environmental changes in Uzbekistan and pursues issues of resilience and sustainability from the perspectives of policies and practice.

## **Introduction**

WP 2.4 approached this deliverable in two stages. First, consultative forums were organised in the Amudarya and Orange River basins to share ideas with managers, practitioners and researchers on integrated and adaptive water management with a focus on livelihoods, poverty, gender and health issues. Second, an attempt is made to publish an edited book that will consolidate and disseminate learning in these vital areas by making it available to wider readers.

### **The Consultative Forums in Amudarya and Orange basins**

The first of these Consultative Forum took place in Tashkent, Uzbekistan which forms the lower part of the Amudarya basin. The title of the Forum was: *Adapting to Changes in the Amudarya River Basin: Can Adaptive Water Resources Management make a difference to Human Wellbeing?* It took place on 12-13 September 2008 and was conducted in partnership with the Tashkent Institute of Irrigation and Melioration.

The second Forum was organized in Roma, Lesotho titled: *Adapting to Changes in the Orange River Basin: Can Adaptive Water Resources Management make a difference?* It was conducted on 23-24 October 2008 in partnership with the National University of Lesotho.

The overall objectives of these consultative forums was to share experiences on water resources management practices amongst the countries of the Amudarya River basin, and to explore strategies for adapting to uncertainties of climate change to support enhancement of human wellbeing. The forums sought to bring together practitioners, policy-makers and researchers with interests in the social dimensions of integrated and



adaptive water resources management, particularly focusing on the institutions, participation and learning aspects for equitable and sustainable outcomes. The forum explored water resources management issues in relation to fresh water, wetlands, semi-arid, and mountain ecosystems of the two river basins and a number of themes were covered in the forums. These were:

- Livelihoods and poverty reduction
- Gender inclusive institutions and governance
- Health, water quality and water management
- Ecosystem services, open access resources
- Grazing practices and conservation trade-offs
- Social learning, social networks and knowledge systems for adaptation
- Building capacities to address vulnerabilities and uncertainties
- Equity and multi-stakeholder participation in catchment and river basin decision making
- Approaches, tools and models for managing adaptation
- Food and fuel security and reducing women's burden

Each forum was attended by about 40 participants. In the Amudarya case, it was decided to publish a selection of papers in an edited book in Stage 2 of this deliverable.

### **Editing a book primarily based on the consultative forum in the Amudarya basin**

Title of the Book:

***Managing Resilience to Environmental Changes in the Amudarya river basin in Uzbekistan: Institutions, participation and learning.*** Editors: N. Matin and M. Schlueter

#### **Preface of the Editors:**

This book is a follow up of the NeWater research project in the Amudarya river basin. During the four year engagement of NeWater (2005-2008) in this region a number of critical issues were taken up for in-depth research and analysis, particularly on institutional and social dimensions of adaptive water management. This produced a substantial body of reports and papers which may have wider relevance for researchers and policy makers across the world. The book presents a number of selected contributions from researchers in Uzbekistan. The aim is to contribute to the emerging body of research on climate change adaptation with particular focus on the design of institutions that are desirable for more equitable participation and can promote learning for environmental resilience and sustainability.

Recent environmental changes have resulted in growing recognition that solving increasingly complex problems requires institutions that are able to harness diverse knowledge systems. The concept of adaptive governance rests on polycentric principles and relies on a process of active learning by all stakeholders to continuously improve management strategies. Coping with uncertainties, improving resilience of communities and managing ecosystem sustainably require enabling institutions and stakeholder participation. Of particular importance is the experience of those most affected by environmental changes, i.e., poor men and women living in marginal and disadvantaged areas.

The book brings together the experiences of tackling the severe water related vulnerabilities in the countries that share the Amudarya river basin in Central Asia. In this river basin the problems of water and ecosystems are as much a result of active human intervention as of climate change. This makes it a particular learning case for



researchers, policy makers and practitioners elsewhere who are engaged in improving human well-being and striving to manage water in efficient, sustainable and equitable ways. The book highlights issues of environmental changes in Uzbekistan and pursues the issues of resilience and sustainability of institutions, both from the perspectives of policies and practices.

Part 1 of the book discusses concepts and frameworks for analyzing diverse contexts of water related vulnerabilities and coping in the Amudarya basin. Though wetland ecosystems in Uzbekistan have for centuries provided a multitude of ecosystem services, in recent years the situation has changed dramatically. Following a number of policy and technical measures, i.e., extensive irrigation networks that allowed withdrawal of large amount of water in the central basin zones, particularly for crop irrigation, most of the wetland ecosystems in the lower basin now often receive irregular and insufficient freshwater. This strongly affects the chemical regime and biotic communities of the deltaic lakes, which depend on freshwater inflows. A number of key a-biotic and biotic indicators are identified by *Khasankhanova et al* for assessing the ecosystem vulnerability for 13 deltaic lake systems. The findings show that for enhancing the productivity of biotic resources in the delta a stable river flow in spring and the first half of the summer is especially important. The paper highlights the need for technical measures to facilitate environmental flows and recommend institutional changes to ensure water allocation for sustaining the wetlands. *Schlüter et al* stress the need to integrate water management strategies that account for the needs of multiple water users. This requires a fresh look into the costs and benefits of environmental flows in terms of providing ecosystem services and adaptation options in the face of uncertainties. An assessment of the importance and value of non-irrigation water uses for human wellbeing and the adaptive capacity of the river basin to changes in water availability can serve as a first step in developing water management plans that reconcile the conflict between off-stream and in-stream water uses.

An important aspect of vulnerability assessment is capturing of the differential impacts of environmental trends on men and women of different social groups. *Matin et al* link trends in ecosystem services to the changing gender roles in lower Amudarya basin among the fishing households. Based on a gender analysis the paper shows that adaptive water management that aims to achieve an equitable and efficient poverty reduction would need to address gender inequalities as a priority. Setting out a process of active learning by all stakeholders, a cornerstone of adaptive management, must ensure that voices of disadvantaged men and women living in poverty are heard and their interests reflected in the activities of river basin organizations at various scales. The importance of considering the health impacts of water management in achieving enhancement of human well-being is discussed in *Fayzieva and Matin*. This paper emphasizes once again the need to consider all water users and all water uses in an integrated and adaptive approach.

Part 2 focuses on water management institutions and assesses their roles in providing opportunities and constraints for individuals in achieving resilient and sustainable livelihoods. Institutions are broadly defined as values, norms and rules that prescribe interactions among individuals as well as between individuals and ecosystems. *Umarzakov and Abdurakhimov* discusses the evolution of the water management systems in the historical contexts of the Central Asian region. Recently a number of reforms have taken place in the structure of these institutions. *Ibraimov* traces these reforms that created water user associations (WUAs) with the aim of efficient and equitable water management at the farm levels. The processes of developing the WUAs are dominated by operational issues that must be tackled for them to perform to their full potential. To reach this potential, suggest *Tolepova et al*, WUAs need to ensure appropriate watering patterns and irrigation technologies based on farmer participation.



*Salokhiddinov and Khalmirzaeva* investigate the social and organizational factors impacting on the efficiency of WUAs. The effective functioning of WUAs is an important factor impacting water resources management efficiency, and this in turn depends on the active participation of WUA members in decision-making processes. *Salokhiddinov and Khalmirzaeva* present indicators to assess the level of participation and awareness of WUA members and relate these indicators to better functioning of the WUAs and consequent yield increases.

Recently introduced restructuring of the land and water management systems in Uzbekistan is addressed by *Matin et al* in terms of its capacity to manage resilience. Issues like recognizing the diversity of water uses; equitable water allocation across the scales among upstream and downstream users, and, between various uses; extending the scope of WUAs to include livelihood concerns of all water users, such as, small farmers, homestead producers and fishermen; and, the ability to foresee and recognize adverse impacts resulting from management practices upon ecosystems and livelihoods were identified as key determinants of resilience in this context.

*Hirsh and Tilyavova* addresses the issues of trans-boundary water management in the Amudarya basin. They emphasise the need for achieving water use efficiency at the country levels. Transboundary organizations need to strictly define the amount of environmental flows on the river and in the delta, and prescribe actions for maintenance and control.

Part 3 highlights social learning for creating space for all stakeholders in water management policies and activities. This is an important first step in the attempt to ensure equitable representation of poor men and women and other disenfranchised groups in water governance. The paper by *Matin et al* documents the experience of community based dialogues on visions of farmers and fishers for resilient and sustainable water management under environmental uncertainties. The local indicators identified by the participants confirmed the relevance of local ecological knowledge and thus the need for social learning. Local knowledge of the farmers and fishers also echoed theoretical understandings on resilience indicators. *Van Scheltinga et al* highlight the importance of capacity development of water managers in dealing with the complex problems of global environmental challenges. Capacity development as they note is required in terms of systems thinking in being able to operate in and to link different hierarchical levels, ability to deal with uncertainties, and, developing attitude towards learning. The final paper addresses the issue of how to integrate livelihoods, gender and health issues for a grounded river basin approach. Here *Matin* focuses on policy prescriptions at the basin, national and local scales and shows the interlinked character of interventions for a holistic approach.

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