

# ADAPTING TO CLIMATE CHANGE IN TRANSBOUNDARY WATER MANAGEMENT

## Introduction

Observational evidence from all continents and most oceans shows that many natural systems are being affected by anthropogenic climate changes. One of those affected systems is the hydrological cycle which encompasses water availability and water quality as well as water services (IPCC, 2007). Adaptation to climate change is, consequently, of urgent importance. The impacts will certainly vary considerably from region to region and even from basin to basin. This poses serious challenges for water resources management.



A particular challenge for water resources management is connected to the fact that many river basins and groundwater systems are transboundary; i.e. the basin is shared by two or more countries.

Recent studies identify a total of 279 international river basins (Bakker, 2006), covering almost half of the world's total land surface (Wolf et al., 1999).

Similarly, there are also internationally shared groundwater resources hidden beneath the ground surface around the world. Two UNECE surveys of Europe have indicated that there are some 200 transboundary aquifers in the UNECE region alone (Almássy and Buzás, 1999) and an overview of internationally shared aquifers in Northern Africa shows that these aquifers underlie a substantial part of the land surface (Puri et al., 2001). A study done by UNESCO has identified 273 shared aquifers worldwide<sup>1</sup>. The amount of water resources, both surface and subsurface, shared by two or more countries is consequently substantial. This makes transboundary water resources management one of the most important water issues today.

Freshwater supplies are limited. Increasing water scarcity and depletion of natural resources, partly as a consequence of climate change, leads to a potential increase in water conflicts between countries that share transboundary waters (Yoffe et al., 2004). This water scarcity is, however, caused not only by natural processes but also by inadequate and inefficient water management and competition between water uses (Wester and Warner, 2002). But water scarcity is not the only problem confronting neighbours who share transboundary waters. A recent study on floods in a transboundary context concluded that although only 10 percent of all river

floods are transboundary, these floods represent a considerable amount of the total number of casualties, displaced/affected individuals and financial damages worldwide (Bakker, 2006). The situation is compounded by the inherent difficulties in managing floods that cross borders. From the above it follows that where water resources management is complex, water management in a transboundary situation is even more complicated, in particular when this management has to account for the consequences of climate change.

Given the abundance of water resources that are shared between countries, transboundary water management is an essential element to consider in sustainable water resources management and adaptation to climate change worldwide.

This paper addresses adaptation to climate change in transboundary water resources management. It discusses the theoretical background of transboundary water management and describes the UNECE Guidance on Water and Climate Adaptation as an important tool to guide countries in putting water adaptation to climate change into practice. The Guidance is currently under development within the framework of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).

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