



Economic Commission for Europe

Convention on the Protection and Use of Transboundary Watercourses and International Lakes

GUIDANCE ON WATER AND ADAPTATION TO CLIMATE CHANGE





FOREWORD



limate change will result in significant impacts on our water resources and some of the effects are already visible now. Nearly all the countries in the region of the United Nations Economic Commission for Europe (UNECE), and beyond, are expected to be negatively affected by impacts ranging from increased frequency and intensity of floods and droughts, worse water scarcity, intensified erosion and sedimentation, reductions in glaciers and snow cover, sea level rise, and damage to water quality and ecosystems. Moreover, climate change impacts on water resources will have cascading effects on human health and many parts of the economy and society, as various sectors directly depend on water such as agriculture, energy and hydropower, navigation, health, tourism – as does the environment.

Adaptation to climate change is therefore a moral, economic and social imperative: action is needed now and water management should be a central element in the adaptation strategy of any country. Inaction could put sustainable development at risk: during the first years of the 2000s alone, thousands of lives and billions of dollars were lost through water-related disasters worldwide. On the other hand, the potential rewards of early action are high, as improved prevention, disaster preparedness and other adaptation measures, as well as adaptation of lifestyles, can vastly reduce these figures.

A particular challenge for water resources management is connected to the fact that almost half of the world's total land surface is drained by international river basins. Additionally, numerous groundwater resources are also transboundary. These transboundary waters create hydrological, social and economic interdependencies between countries. As both water and climate change do not respect borders, it adds an international dimension to climate change adaptation. This can have obvious security implications: namely, a growing potential for conflict arising from competition over dwindling water resources and the risk of countries taking unilateral measures with possible negative effects on riparian countries. Thus, in addition to the uncertainty over climate change impacts, countries are faced with uncertainty about their neighbours' reactions. Transboundary cooperation is therefore necessary to prevent negative impacts of unilateral measures and to support the coordination of adaptation measures at the river-basin level. This makes transboundary water resources management one of the most important challenges today and in the years to come.

J. Kubir

Ján Kubiš

Executive Secretary, United Nations Economic Commission for Europe 1(4-4-

Tineke Huizinga-Heringa

Vice Minister of Transport, Public Works and Water Management of the Netherlands The 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes provides a sound framework for transboundary cooperation, also in the context of adaptation to climate change. Developed under the Convention and its Protocol on Water and Health, this Guidance aims to spur climate change adaptation that takes into account the transboundary dimension of water management. It is a novel and innovative advancement: the first document of its kind to focus on the transboundary setting and illustrate the steps needed to develop an adaptation strategy. Based on the concept of integrated water resources management, the Guidance provides advice to decision makers and water managers on how to assess impacts of climate change on water quantity and quality, how to perform risk assessment, including health risk assessment, how to gauge vulnerability, and how to design and implement appropriate adaptation strategies.

The Guidance is a collaborative achievement: more than 80 experts from national authorities, academia, non-governmental and international organizations contributed to its preparation. Building on the principles of the Convention and on the experience gained in its implementation, the Guidance places special emphasis on the specific problems and requirements of transboundary basins, with the objectives of preventing, controlling and reducing transboundary impacts of national adaptation measures and thereby preventing and resolving possible conflict. The Guidance also underlines the benefits of cooperation in adapting to climate change in transboundary basins: sharing the costs and benefits of adaptation measures, better managing uncertainty through the exchange of information, broadening the knowledge base, and enlarging the range of measures available for prevention, preparedness and recovery, thus allowing us to find better and more cost-effective solutions.

Only concerted and coordinated action will enable countries to deal with the uncertainties of climate change and to tackle its impacts effectively. We trust that this Guidance will help countries to jointly cope with climate change impacts in the UNECE region and around the world. As the first product of its kind in the region – and worldwide – it is hardly an endpoint for the work on adaptation to climate change in transboundary basins. Rather, it is an initial step towards the planning and implementation of sound, cooperative adaptation strategies and measures.

Signer fadual

Sigmar Gabriel

Federal Minister for the Environment, Nature Conservation and Nuclear Safety of Germany



Stefania Prestigiacomo

Minister for the Environment, Land and Sea of Italy



PREFACE





ydrometeorological records and climate projections provide abundant evidence that water resources are vulnerable and can be strongly affected by climate change, with wide-ranging consequences for human societies and ecosystems. Nevertheless, very few countries have developed adaptation strategies so far. The fact that many water bodies cross boundaries, especially in the UNECE region, means that risks and challenges are shared and that solutions therefore need to be coordinated. Transboundary cooperation in developing adaptation strategies is currently, however, almost non-existent.

Recognizing the urgency of the issue, at its fourth session in November 2006 in Bonn, Germany, the Meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) decided to develop the present Guidance on Water and Adaptation to Climate Change. Work on the Guidance was carried out under the Convention's Task Force on Water and Climate, jointly led by the Netherlands and Germany, in cooperation with the Task Force on Extreme Weather Events under the Protocol on Water and Health, led by Italy. The Guidance has a special focus on transboundary issues and health aspects and includes numerous case studies. It is intended to guide Parties and non-Parties to the Convention and to the Protocol on Water and Health in the implementation of the Convention's and Protocol's provisions in the context of climate change.

The Guidance is based on experience and good practices in the UNECE region. Its preparation relied on a broad consultative process, involving national authorities, academia, NGOs and international organizations. A drafting group with multidisciplinary competences and an extensive expert review were decisive in its development. Its drafting was also informed by a survey conducted in countries with economies in transition, which explored adaptation needs and measures already undertaken, and by the findings of the international workshop on "Water and Adaptation to Climate Change: Joining Efforts to Adapt" (Amsterdam, 1–2 July 2008), organized by the Governments of the Netherlands, Germany and Italy in cooperation with UNECE and the World Health Organization Regional Office for Europe. The Amsterdam workshop allowed for sharing experiences related to the benefits of and mechanisms for transboundary cooperation in adaptation activities, as well as institutional, policy, legal, scientific and financial aspects of adaptation in water management and water depending sectors, including cross-cutting issues such as education. The Guidance benefited from and inspired the work done at the level of the European Union that started under the German presidency in 2007 and culminated with the publication of the White Paper "Adapting to climate change: Towards a European framework for action" in April



2009 and the preparation of the guidance document "River basin management in a changing climate" developed under the Common Implementation Strategy of the EU Water Framework Directive.

However, existing experience with climate change adaptation in the transboundary context is still very limited. As climate change adaptation is a new and uncertain process, practice is needed to advance our knowledge. This Guidance should be seen as a first step in a long-term process. By adopting it, the Parties to the Water Convention commit to its implementation at all levels. An important next step will be the practical actions that will be based on the Guidance. The lessons learned, good practices and experience that will come from implementing the Guidance and promoting climate change adaptation in transboundary basins will help extend our knowledge base and improve our ability to cope with current and future climate change. Exchanging such experience with climate change adaptation is crucial to enhancing the adaptive capacity of countries both within the UNECE region and beyond. The Convention will continue to be an important platform for sharing experience at the pan-European level and for building cooperation on one of the key issues facing the region.

ACKNOWLEDGEMENTS



This publication would not have been possible without the generous contributions of many governments, individuals and international organizations. The UNECE Water Convention secretariat expresses its gratitude to the members of bodies under the Convention and the Protocol on Water and Health, as well as the expert reviewers and all those who provided case studies, contributions and comments.

The secretariat particularly thanks the members of the editorial group who drafted and edited the text of the Guidance:

Jos Timmerman, RWS Centre for Water Management, the Netherlands

Meike Gierk, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany

Luciana Sinisi, Superior Institute for Environmental Protection and Research (ISPRA), Italy

Mikhail Kalinin, Central Research Institute for Complex Use of Water Resources, Belarus

Natalya Agaltseva, Research Hydrometeorological Institute, Uzhydromet, Uzbekistan

Edgar Pirumyan, Ministry of Nature Protection, Agency of Water Resources Management, Armenia

Giacomo Teruggi, World Meteorological Organization

Henk Van Schaik, Cooperative Programme on Water and Climate, the Netherlands

Sonja Koeppel, UNECE Water Convention secretariat

Francesca Bernardini, UNECE Water Convention secretariat

Laura Altinger, UNECE

The secretariat also wishes to heart fully praise the efforts of the drafting group that was responsible for preparing and reviewing the Guidance. The drafting group, in addition to the members of the editorial group, was also composed of:

Joost J. Buntsma, Ministry of Transport, Public Works and Water Management, the Netherlands (chair)

Roger Aertgeerts, World Health Organization Regional Office for Europe

Marloes Bakker, Cooperative Programme on Water and Climate, the Netherlands

Ella Behlyarova, UNECE Water Convention secretariat

Zsuzsanna Buzas, Ministry of Environment and Water, Hungary

Benedetta Dell'Anno, Ministry for the Environment, Land and Sea, Italy

Tanja Dubrovin, Finnish Environment Institute, Finland

Zsuzsanna Engi, West-Transdanubian Environmental and Water Authority, Hungary

Christian Göldi, on behalf of Swiss Federal Office for the Environment $\,$

José Luis Martin Bordes, United Nations Educational, Scientific and Cultural Organization

Inmaculada Paniagua, Ministry of the Environment, and Rural and Marine Affairs, Spain

 $A vinash \, Tyagi, World \, Meteorological \, Organization$

Case studies, comments and other contributions were provided by:

预览已结束,完整报告链接和:

https://www.yunbaogao.cn/report/index/report?re