



Water and climate change



Key messages

Europe needs to adapt to climate change in water management without delay.

Although climate change can also have positive consequences for some countries, such as a prolonged growing season, **overall nearly all UNECE countries are expected to be negatively affected**. The impacts will vary greatly from region to region. **Water availability is predicted to increase generally in the north**, whereas **southern areas**, which already suffer most from water stress, are likely to be at risk of further reductions in water availability, with **increasing frequency and intensity of drought**.

Uncertainty should never be a reason for inaction. Action and research on adaptation should be pursued simultaneously. Legislation as well as interventions chosen should be flexible enough to deliver maximum benefits under a range of conditions instead of being designed for what are thought to be the “most likely” future conditions. Win-win, no-regret and low-regret measures should have priority. Current sources of vulnerability need to be reduced, for example by increasing resilience and the capacity for adaptation. **Ecosystems provide a wide range of services**, including **climate and flood regulation**, so **increasing their resilience is vital**.

Transboundary cooperation is both necessary and beneficial in adapting to climate change.

It can broaden our knowledge base, enlarge the range of measures available for prevention, preparedness and recovery, and thus help to find better and more cost-effective solutions.

Background

Extreme weather events and potential climate change impacts are increasingly affecting the UNECE region.

Water is the medium through which most of the climate change impacts occur: increased variability in precipitation, increased frequency and longer duration of floods, and droughts, and especially more frequent and devastating flash flood events; accelerating glacier melting and retreat; and increases in water temperature.

Large areas of the region are affected by water scarcity and droughts.

These are not an exclusive characteristic of arid areas; in recent years, large-scale water scarcity and drought events have affected even traditionally water-rich regions. For instance, the 2003 drought affected an area extending from Portugal to Romania and Bulgaria. Water scarcity and droughts affect large populations and have consequences for many sectors, particularly agriculture.

Central Asia is especially vulnerable to climate change due to glacier melting, and existing environmental problems such as the Aral Sea crisis might be exacerbated by climate change. Temperatures in Central Asia increased by 1-2 C° since the beginning of the 20th century and in the last fifty years the waters stored in the glaciers of Central Asia are estimated to have shrunk by 25%. Projections indicate that they could shrink by another 25% percent over the next 20 years. The latest estimations indicated that crop production might decrease by 30% in Central Asia by 2050, unless efficient adaptation measures are implemented without delay in the water and agricultural sectors.



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7th MINISTERIAL CONFERENCE
ASTANA, KAZAKHSTAN 21-23 SEPTEMBER 2011

Together with storms, flooding is the most important natural hazard in Europe in terms of economic losses.

In the period **1998–2009**, the European Environment Agency (EEA) region alone experienced **213 flood events**, with over **1,120 fatalities** and **€52 billion in losses**. The increase in economic losses due to flooding is, among other issues, the result of increased population and wealth in the affected areas.

The increase in climate variability and vulnerability is often accompanied by an increase in socio-economic vulnerability to extreme events, indicated, for example, by a decrease in wealth, educational level or health. There are many reasons for this, including lack of sound local and regional land use plans, which may lead to construction in flood-prone areas; poor hazard and risk management policies; and inadequate infrastructure, especially in the eastern part of the region.

The way forward

Climate change adaptation, but also effective water management in itself, requires reliable hydrological and meteorological data which are often missing. Therefore, it is important to **strengthen the knowledge base and the availability of climate-related information** for decision-making, including through the integration of hydrological and meteorological networks.

Transboundary cooperation is necessary throughout the entire process of developing and implementing an adaptation strategy. More than half of all water bodies in the UNECE region cross boundaries. Transboundary cooperation in developing adaptation strategies is not only necessary to ensure that unilateral measures do not cause significant damage to riparian countries. It is also essential to make sure they offer benefits to all riparian Parties, for example by sharing the costs and benefits of adaptation measures or by reducing uncertainty through the exchange of information. The **UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)** offers **a sound framework for cooperation at the transboundary level on adaptation.** Its programme of pilot projects supports countries in developing jointly climate change impact assessments and adaptation strategies.

Some first results of the pilot projects programme:

- Ukraine and the Republic of Moldova are now jointly assessing and modelling the impacts of climate change, especially floods, in the Dniester Basin;
- After a long absence of multilateral cooperation on the Neman River Basin, experts from Lithuania, Belarus and the Russian Federation have started to cooperate again and to discuss joint river basin management under climate change conditions. They realized that all countries had prepared climate change impact assessments for their parts of the basin, but using different methods and models which led to diverging results. Based on this, a proposal for a joint assessment has been prepared.

Prevention and response capacity to climate variability and to long-term impacts of climate change need to be improved, with a focus on preventing damages due to extreme events. As a first step, risk maps and vulnerability assessments should be developed, since they help to identify priorities for action. Based on the vulnerability assessments, flood and drought management plans should be elaborated. **Different plans for coping with extreme events should be integrated.**

Development of resilience, vulnerability assessments and adaptation strategies is slowly starting, at least in parts of the region. For example, adaptation strategies have been developed or are under way in Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Kyrgyzstan, Latvia, Norway, Portugal, Romania, Spain, Ukraine, the United Kingdom of Great Britain and Northern Ireland and the United States of America. However, few in Eastern Europe, the Caucasus and Central Asia have started this important process.

Any adaptation policy needs to consider climate change as one of many pressures on water resources, including population growth, migration, globalization, changing consumption patterns, and agricultural and industrial developments. **Intersectoral cooperation and coordination** between institutions is therefore crucial for ensuring coherence and synergies between different adaptation measures.