

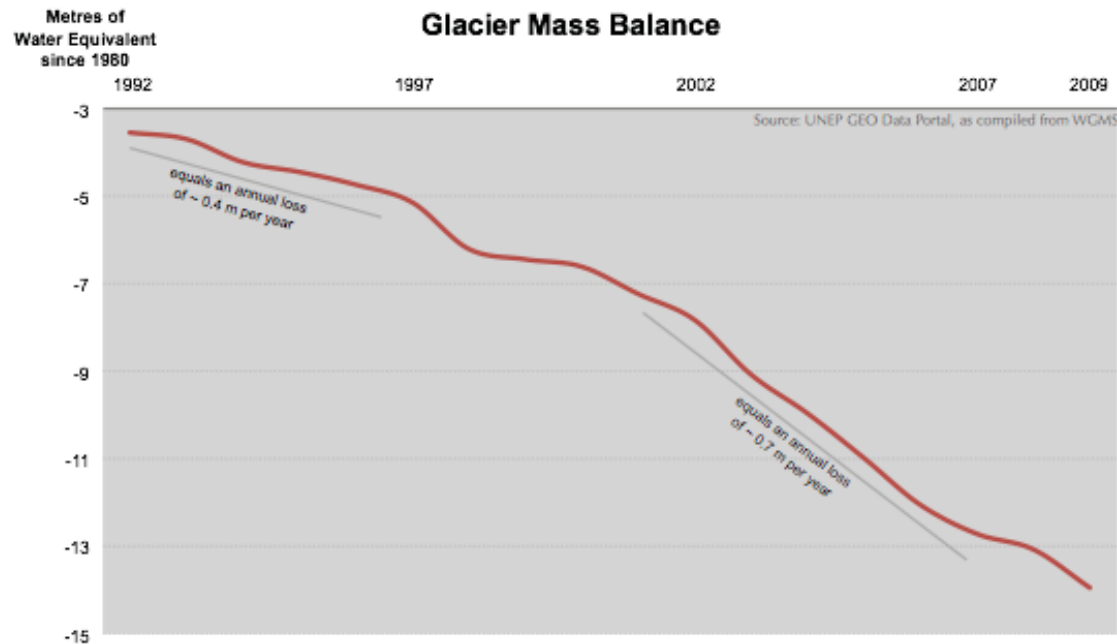


UNEP activities on climate change adaptation in Eastern Europe, the West Balkans, the South Caucasus and Central Asia

October 23, 2012, Eger, Hungary



Most mountain glaciers around the world are diminishing rapidly













Changes in glaciers are key indicators of climate change. Nearly all mountain glaciers around the world are retreating and getting thinner, as measured by their annual mass balance, with “severe impacts on the environment and human well-being, including vegetation patterns, economic livelihoods, natural hazards, and the water and energy supply” (WGMS 2010). Diminishing glacier and ice cap volumes not only influence current sea-level rise but also threaten the well-being of approximately one-sixth of the world’s population who depend on glacier ice and seasonal snow for their water resources during dry seasons (WGMS 2008).

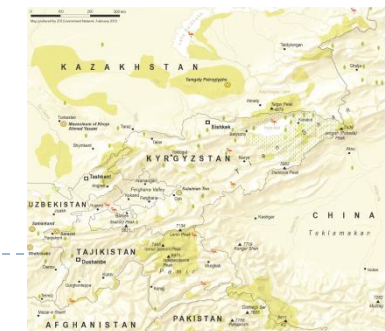
Moreover, as most glaciers are rapidly diminishing, the speed with which this happens has been increasing in recent decades as well. For 30 glaciers observed (Zemp and others 2009), the average annual melting rate has increased from around 0.4 metres per year in the early 1990s to 0.7 metres of water equivalent per year over the last decade, thus almost doubling from one decade to the next, with record losses in 2004 and 2006 (WGMS 2010). The ongoing trend of worldwide and rapid glacier shrinkage may lead to the deglaciation of large parts of many mountain ranges by the end of the 21st century (WGMS/UNEP 2008).

Climate change in (Eastern) Europe



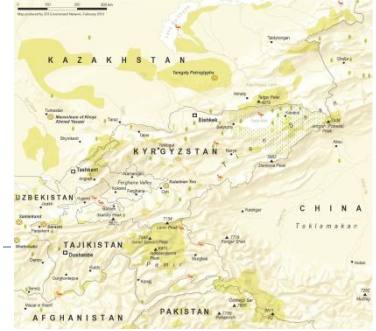
Climate change in Europe

-  More precipitation
-  Less precipitation
-  Sea-level rise concerns and affected major cities
-  Changes in ecosystems
-  Impact on mountain regions
-  Forest fires
-  Negative agricultural changes
-  Melting of glaciers
-  Present permafrost
-  Permafrost in 2050



Climate change in Eastern Europe: impacts, trends and projections

	Belarus	Ukraine	Moldova
Drier climate, desertification, droughts	Green with yellow circle	Yellow with red circle	Red
Extreme weather events and natural disasters	Yellow with red circle	Red	Red
Availability of water resources, drinking water quality	Yellow	Yellow with red circle	Yellow with red circle
Food security	Green with yellow circle	Yellow with red circle	Yellow with red circle
Reduced diversity of flora and fauna	Green with yellow circle	Yellow with red circle	Yellow
Waterlogging, salinization and deterioration of soil quality	Yellow with red circle	Red	Red
Social problems, impact on people's health	Yellow	Yellow with red circle	Yellow
Security	Yellow with red circle	Yellow with red circle	Yellow with red circle



Some examples of activities...

Reducing vulnerability to extreme floods and climate in the Dniester river basin (including Carpathian part of Dniester river basin):

- ▶ ENVSEC (UNECE, UNEP, OSCE, UNDP, REC) project
- ▶ The project aims to expand and further strengthen cooperative management in the Dniester River basin to address cross-border management of floods, taking into account both current climate variability and long-term impacts of climate change on flood risks.
- ▶ Partners: Plenipotentiaries of Ukraine and Moldova, Ministries of Environment, State Water Committees
- ▶ Duration: 3 years
- ▶ <http://www1.unece.org/ehlm/platform/display/ClimateChange/Dniester>

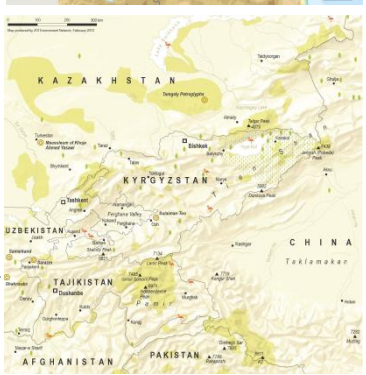


Recent accomplishments:

- ▶ Baseline studies for 2 countries (assessment of cc' impacts, collecting data and information, projections development)
 - ▶ Modeling and scenario building for 2 selected rivers (frequency and magnitude of extreme floods)
 - ▶ Vulnerability assessment (identified the vulnerable areas, economic activities, ecosystems and populations at risk)
 - ▶ Floods risk maps (maps with prioritization of measures and areas for actions, different flood risk maps)
 - ▶ Adaptation and risk reduction measures (including finance)
 - ▶ Improved monitoring and forecast for transboundary floods (4 new automated flow stations and data exchange systems)
 - ▶ Capacity building on flood alerts and flood communication
-



Climate change in West Balkans: key findings, trend and projections

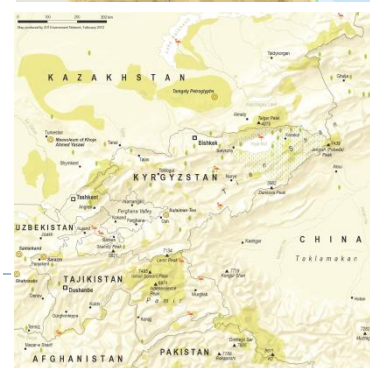


	ALBANIA ¹	BOSNIA AND HERZEGOVINA	CROATIA	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	MONTENEGRO	SERBIA
Air temperature change (last half century)	↑	↑ ²	↑	↑	↑	↑
Precipitation change (last half century)	↓	↔ ³	↓	↓	↔	↔
Extreme weather events and climate-related hazards (1990–2009)	↑	↑	↗	↑	↑	↑
Water resources availability in the future (forecast period until 2100)	↓	↓ ⁴	↓ ⁵	↓	↓	↓
Health infectious and vector-borne diseases ⁶	↑	↑	↑	↑	↑	↑
Greenhouse gas emissions (in CO ₂ eq) for period observed	↓	n.a. ⁷	↗	↓	↓	↓
Policy instruments, actions and awareness	↑	↗ ⁸	↑	↑	↑	↑
Climate observation and weather services (1990–2009)	↗	↗	↑	↗	↗	↑

Some examples of activities...

Adaptation to the impacts of Climate Change for Reducing Security Risks in South Eastern Europe:

- ▶ Analysis of priorities and hotspots
- ▶ Support for regional cooperation and dialog on climate change scenarios and strategies
- ▶ Awareness-raising activities
- ▶ Draft of regional adaptation strategies for mountain areas in South Eastern Europe, evolve the dialog with the Alpine, Caucasus, Central Asian and Carpathian regions

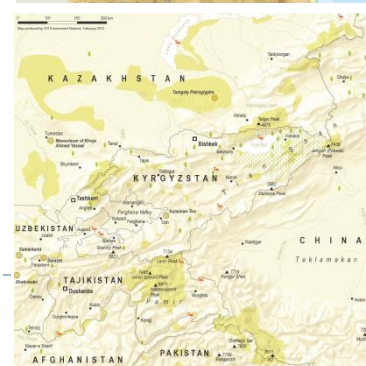


Some examples of activities...

Transforming Risks into Cooperation in South Eastern Europe:

Priority areas:

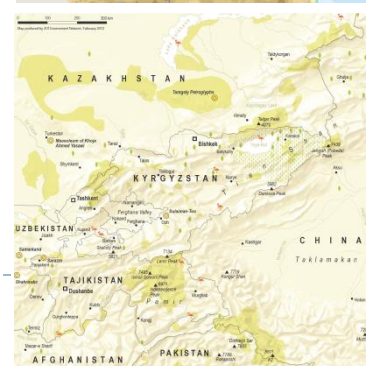
- ▶ Management and reduction of trans-boundary risks from hazardous activities
- ▶ Management of shared natural resources
- ▶ Strengthening regional cooperation on environmental governance through participatory and informed decision making and implementation process
- ▶ Adaptation to the impacts of climate change for reducing security risks in South Eastern Europe



Other examples of regional initiatives...

- ▶ The South-East European Climate Change Framework Action Plan for Adaptation
- ▶ The EU Stabilization and Association process
- ▶ The Alpine and Carpathian Conventions

“Any new scheme designated to coordinate adaptation in the West Balkans would do well to consider the array of organizations, programmes, initiatives and agreements currently contributing



Climate change in the South Caucasus: key findings, trends and projections

INDICATORS	Armenia	Azerbaijan	Georgia
Air temperature (last half century)	↑	↑	↑
Precipitation and snow (last half century)	↓	↓	↑
Desertification	↑	↑	↑
Extreme weather events and climate-related hazards (1990–2009)	↑	↑	↑
Melting ice (last half century)		↑	↑
Water resources availability in the future (2050–2100)	↓	↓	↓
Health Infectious and vector-borne diseases	↑	↑	↑
Greenhouse gas emissions 1990–2005	↓	↓	↓
Greenhouse gas emissions 2000–2005	↑	↑	↑
Policy instruments, actions and awareness	↑	↑	↑
Climate observation and weather services (1990–2009)	↓	↓	↓

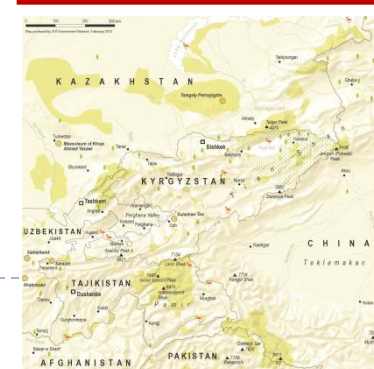


↑ increase, enhancement ↓ decrease, reduction ↑ increase in some areas

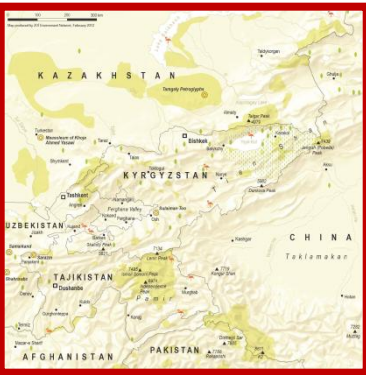
Sources: Second National Communications of Armenia, 2010; Azerbaijan, 2010; Georgia, 2009.

Some examples of actions...

- ▶ Cooperation for the protection and sustainable development of mountain regions in the South Caucasus:
- ▶ Support and enhance the transboundary and sub-regional cooperation in the mountain eco-region of the Caucasus in the field of protection, maintenance and sustainable development
- ▶ Assessment of strengths and weaknesses, opportunities and threats
- ▶ Conduction of stakeholder consultations, setting out priority issues for cooperation



Climate change in Central Asia: key findings, trends and projections



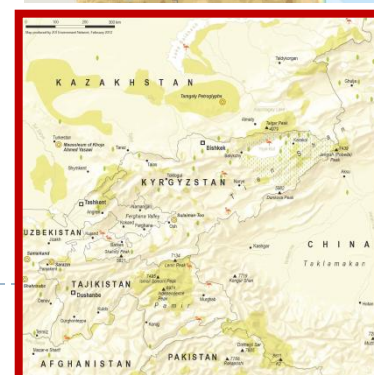
INDICATORS	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Air temperature ¹⁾	↑	↑	↑	↑	↑
Precipitation and snow ¹⁾	↑	↑ ↓	↑ ↓	↑ ↓	↑ ↓
Climate aridisation and desertification	↑	↑	↑	↑	↑
Extreme weather events and climate-related hazards ²⁾	↑	↑	↑	↑	↑
Melting ice and permafrost ¹⁾	↑	↑	↑	↑	↑
Water resources availability in the future ³⁾	↑ ↓	↓	↓	↓	↓
Health ⁴⁾	↑	↑	↑	↑	↑
1) Greenhouse gas emissions 1990-2005	↓	↓	↓	↑	↑
2) Greenhouse gas emissions 2000-2005	↑	↑	↑	↑	↓
Policy instruments, actions and awareness	↑	↑	↑	↑	↑
Climate observation and weather services ²⁾	↓	↓	↓	↓	↓

↑ increase, enhancement
 ↓ decrease, reduction
 ↑ ↓ mixed trends
¹⁾ 1950-2005 ²⁾ 1990-2009 ³⁾ 2050-2100 ⁴⁾ infectious and vector-born diseases, heat stress

Sources: Second National Communications of Kazakhstan, 2009; Kyrgyzstan, 2009; Tajikistan, 2008; Uzbekistan, 2008; Technical Needs Assessment and the Initial Communication of Turkmenistan

Some examples of activities...

- ▶ In-depth assessment of environment and security linkages and impact in the Amu Darya River basin
- ▶ A comprehensive study on glacial melting in Central Asia
- ▶ In-depth assessment of environment and security hot spots in the Fergana-Ash-Khudjand triangle and adjacent areas
- ▶ In-depth assessment of environment and security linkages and impact in the Eastern Caspian region of Kazakhstan and Turkmenistan



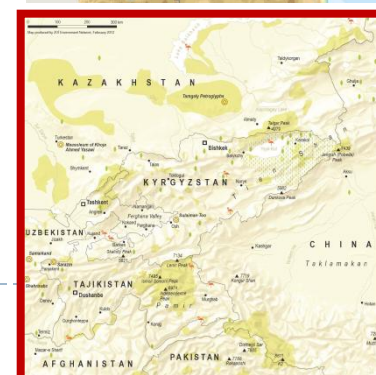
Climate change in Alps: key findings, trends and projections

Air temperature	↑ up to 2 °C
Precipitation	No significant trends
Glaciers	↓ 30-40%, surface area
Snow cover	↓ steadily since 1960's
Natural hazards	↑ second half of 20 th century



Some examples of activities...

- 4 EU Alpine Space co-funded projects in the European Territorial Cooperation 2007-2014
- 2 running projects funded in the third call!
- All projects are approved under Priority 3: Environment and risk Prevention



More information...

- ▶ on initiatives and adaptation measures to climate change in the regions could be found in the publications that are available at the UNEP' webpage :

www.unep.at

- ▶ and on:

www.envsec.org

www.zoinet.org

