

Using scenarios to improve understanding of environment and security issues



Cover design: EEA
Layout: EEA/Pia Schmidt

Legal notice

The contents of this publication do not necessarily reflect the official opinions of the European Commission or other institutions of the European Union. Neither the European Environment Agency nor any person or company acting on behalf of the Agency is responsible for the use that may be made of the information contained in this report.

The contents of this publication, the views, opinions, findings, interpretations and conclusions expressed herein are those of the authors and do not necessarily reflect the official position of the OSCE and/or its participating States. Although the OSCE has invested the utmost care in its preparation, the OSCE does not accept any liability for the accuracy and completeness of any information, instructions and advice provided, as well as for misprints.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of OSCE concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. No claims can be made against the OSCE with respect to potential consequences from the reliance on information or conclusions contained in this publication.

© EEA, Copenhagen, 2012

Reproduction is authorised, provided the source is acknowledged, save where otherwise stated.

Information about the European Union is available on the Internet. It can be accessed through the Europa server (www.europa.eu).

Luxembourg: Publications Office of the European Union, 2012

ISBN 978-92-9213-338-2

doi:10.2800/62653

Environmental production

This publication is printed according to high environmental standards.

Printed by Rosendahls-Schultz Grafisk

- Environmental Management Certificate: ISO 14001
- IQNet — The International Certification Network DS/EN ISO 14001:2004
- Quality Certificate: ISO 9001: 2000
- EMAS Registration. Licence no. DK — 000235
- Ecolabelling with the Nordic Swan, licence no. 541 176

Paper

Cocoon Offset 120 gsm

Cocoon Silk 250 gsm

Printed in Denmark



European Environment Agency
Kongens Nytorv 6
1050 Copenhagen K
Denmark
Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99
Web: eea.europa.eu
Enquiries: eea.europa.eu/enquiries

Contents

Acknowledgements	4
1 The need to address environment and security	5
Climate change presents a complex mixture of threats to security.....	5
2 The project on security implications of climate change	6
Scenario-building helps explore complex and uncertain impacts.....	6
3 Project overview	7
Phase 1: the scoping study and the global expert workshop	8
Phase 2: regional scenario workshops	9
Eastern Europe regional workshops: climate change and food security.....	10
Western Balkans regional workshop: climate change and water availability	11
Central Asia regional workshop: impacts on the water-energy-agriculture nexus	12
Next steps.....	13
4 Climate change brings complex risks, demanding careful management	14
References	15

Acknowledgements

This brochure has been prepared by Michael Asquith.

Contributions were made by:

Teresa Ribeiro (EEA),
Anita Pirc Velkavrh (EEA),
Raul Daussa (OSCE), and
Jock Martin (EEA).

Project has been possible thanks to all participants of the workshops and workshops facilitators who contributed unique knowledge base for further analyses.

The project 'Security Implications of Climate Change in the OSCE region' was supported with generous contributions from the German and Spanish Delegations to the OSCE as well as Finland through a contribution to the ENVSEC initiative (ENVSEC, 2012).

Some documents and presentations from workshops can be found at the following links:

<http://www.osce.org/eea/climatechange>

<http://scenarios.ew.eea.europa.eu/fol312147>.

1 The need to address environment and security

For many people, the term 'national security' suggests images of military and police efforts to preserve peace and stability. Environmental issues are seldom seen to play a major role in security but in fact the issues are inextricably linked.

Resource overexploitation and changes in climate affect quality of life, potentially undermining social and political stability and the sustainability of local ecosystem services. Combined with demographic pressures, decreasing socio-ecological resilience can add a new dimension to the environment and security debate, as conflicts over increasingly scarce resources intensify and add to migration pressures (EEA, 2010a).

'Few threats to peace and survival of the human community are greater than those posed by the prospects of cumulative and irreversible degradation of the biosphere on which human life depends. True security cannot be achieved by mounting build up of weapons (defence in a narrow sense), but only by providing basic conditions for solving non-military problems which threaten them.'

Brundtland Commission Report, 1987.

competition for supplies could result in conflict — particularly in regions that lack effective interstate mechanisms for resolving disputes.

'Poverty, environmental degradation and despair are destroyers of people, of societies, of nations. This unholy trinity can destabilise countries, even entire regions.'

US Secretary of State Colin Powell
July 2002

Meanwhile, physical infrastructure adapted to yesterday's environment is becoming obsolete as floods and other natural disasters alter in frequency and location. Territorial boundaries are altering as sea levels rise — and some islands, even whole nations, risk disappearing altogether. Existing legal norms and institutions tailored to past conditions are ill equipped to deal with these situations or the migration that will inevitably follow (EEA, 2012; EEA, 2013).

Climate change presents a complex mixture of threats to security

Human progress during past centuries has been founded on developing infrastructure, systems and institutions matched to historic environmental conditions. When climate change turns these environmental constants into variables, the result can be instability at multiple levels: legal, infrastructural, economic and social.

In some places, water is becoming scarcer, with important impacts on agriculture, energy and economic systems. Elsewhere, receding ice is making previously inaccessible land, hydrocarbons and minerals available. Shifting access to resources is sure to alter relations between states, and

2 The project on security implications of climate change

Responding to the risks and challenges ahead, many governments and international organisations have begun to assess the security implications of climate change (WBGU, 1998 and 2007). In June 2009 United Nations General Assembly resolution A/63/281 called on all UN bodies to address the security implications of climate change within their respective mandates. At the same time, the European Union reiterated the need to step up climate diplomacy to address climate change on all political levels and to reduce the emerging systemic risks.

The core business of the Organization for Security Cooperation in Europe (OSCE) is conflict prevention and early warning. For that reason, the organisation's Maastricht Strategy of 2003 called on the Office of the OSCE Co-ordinator of Economic and Environmental Activities to contribute to early-warning and conflict-prevention activities by monitoring economic and environmental challenges and threats to security and stability in the OSCE region, in collaboration with relevant international organisations.

The project 'Security implications of climate change in the OSCE region', due to run until 2013, aims to raise awareness, provide early warning and recommend measures for ensuring security and promoting cooperation among OSCE-participating States.

Scenario-building helps explore complex and uncertain impacts

Without resolute action, many societies will lack the capacity to adapt to climate change in coming decades. This could result in instability and violence, jeopardising national and international security (WBGU, 2007).

Analysing the security risks resulting from climate change is essential for effective policymaking but it clearly poses significant challenges. Current climate models lack the precision to assess national or regional impacts of climate change. While general trends may be identifiable, impacts may vary hugely between regions and from year to year. Identifying

'We tend not to plan well for the future and lags prevent us from reaching our goals unless we act early. We have path-dependency. For future success in almost any area, we have to incorporate future effects into our current policymaking.'

EU Environment Commissioner Janez Potočnik (EC, 2009)

the security implications of climate change therefore requires a case-by-case approach at the regional level.

For these reasons, the OSCE and its joint implementation partner, the European Environment Agency (EEA), have adopted a participatory scenario-building approach to project implementation, with the aim of improving understanding of the issues and providing a basis for discussing strategies to avoid the main risks identified.

Scenarios illustrate what regions might look like in the future, illustrating how changes might occur and the possible repercussions. Scenarios do not attempt to predict the future but rather help to uncover what is not known, expected or monitored. They thereby provide advanced warning, helping decision-makers plan for climate security risks, prevent crises, and develop and check strategies.

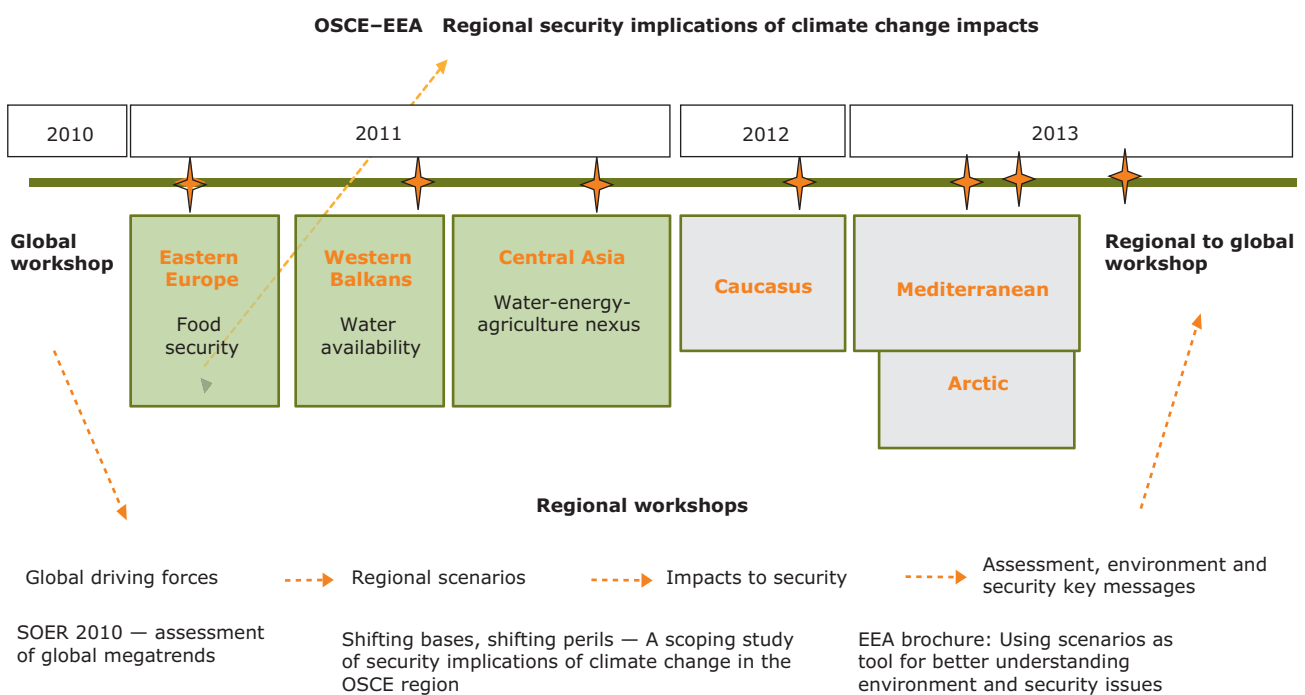
For the EEA, the project responds to the need — identified in recent EEA reports (EEA, 2010a and 2010b) — to understand and manage systemic issues and future risks at all scales of governance. It will contribute to the EEA's European knowledge base for forward-looking information and services (FLIS), which support the inclusion of long-term perspectives and preparedness in decision-making. And it will also help build national capacity to use future information and scenario-building methods in participating countries. This will strengthen the EEA's Eionet network of experts in the areas of scenarios, projections, environment and security (EEA, 2011).

3 Project overview

The project on security implications of climate change in the OSCE region consists of three phases: first, a scoping study and global expert workshop designed to provide the basis for

the regional work; second, a series of regional workshops to explore climate change impact scenarios; and finally a global workshop and summary report on key findings.

Figure 1 Project phases



Phase 1: the scoping study and the global expert workshop

In December 2010 an expert workshop on global megatrends analysis and regional security implications of climate changes was held in Copenhagen. Organised by the EEA, the event was based on the findings of the EEA's SOER 2010 global megatrends assessment (EEA 2010b) and involved participants of relevant international organisations and national experts ⁽¹⁾. It improved understanding of the links between global megatrends and environment, food, fuel and water

security, as well as enhancing cooperation and networking among the main institutions addressing climate security issues.

The scoping study, *Shifting bases, shifting perils – A scoping study of security implications of climate change in the OSCE region* (Adelphi Research, 2010) was prepared by Adelphi Research with oversight from OSCE and EEA. It helped to identify priority issues for six regions – the Arctic, the Caucasus, Central Asia, Eastern Europe, South-Eastern Europe and the southern Mediterranean – as set out in Table 1.

Table 1 Security implications of climate change impacts on OSCE regions

Region	Security dimension	Economic and environmental dimension	Politico-military dimension	Human dimension
Arctic		<ol style="list-style-type: none"> 1. Livelihood challenges 2. Environmental degradation 3. Resource claims 4. Transportation routes 	<ol style="list-style-type: none"> 1. Territorial claims 2. Militarisation of the Arctic 	<ol style="list-style-type: none"> 1. Impacts on indigenous communities
Southern Mediterranean		<ol style="list-style-type: none"> 1. Decreasing water and food security 2. Displacement of large populations 3. Economic stagnation or decline 	<ol style="list-style-type: none"> 1. Militarisation of water disputes 2. Weakening of authorities, civil unrest 3. Intensifying extremism 	<ol style="list-style-type: none"> 1. Violation of human rights 2. Impacts on civil liberties and rights
South-Eastern and Eastern Europe		<ol style="list-style-type: none"> 1. Economic deterioration 2. Energy insecurity 3. Food insecurity 4. Population movements 	<ol style="list-style-type: none"> 1. Ethno-political tensions 	<ol style="list-style-type: none"> 1. Social tensions 2. Authoritarian governance
South Caucasus and Central Asia		<ol style="list-style-type: none"> 1. Decrease in food and water availability 2. Disasters and health impacts 3. Migration 	<ol style="list-style-type: none"> 1. Escalating tensions over water 2. Increase in extremism 3. Disputes over the Caspian Sea 	<ol style="list-style-type: none"> 1. Impacts on human rights and minorities

⁽¹⁾ The organisations and experts involved were the North Atlantic Treaty Organization, the Environment and Security (ENVSEC) Initiative, the United Nations Environment Programme, the International Institute for Strategic Studies, the International Institute for Sustainable Development and the Institute for Environmental Security (London).

Phase 2: regional scenario workshops

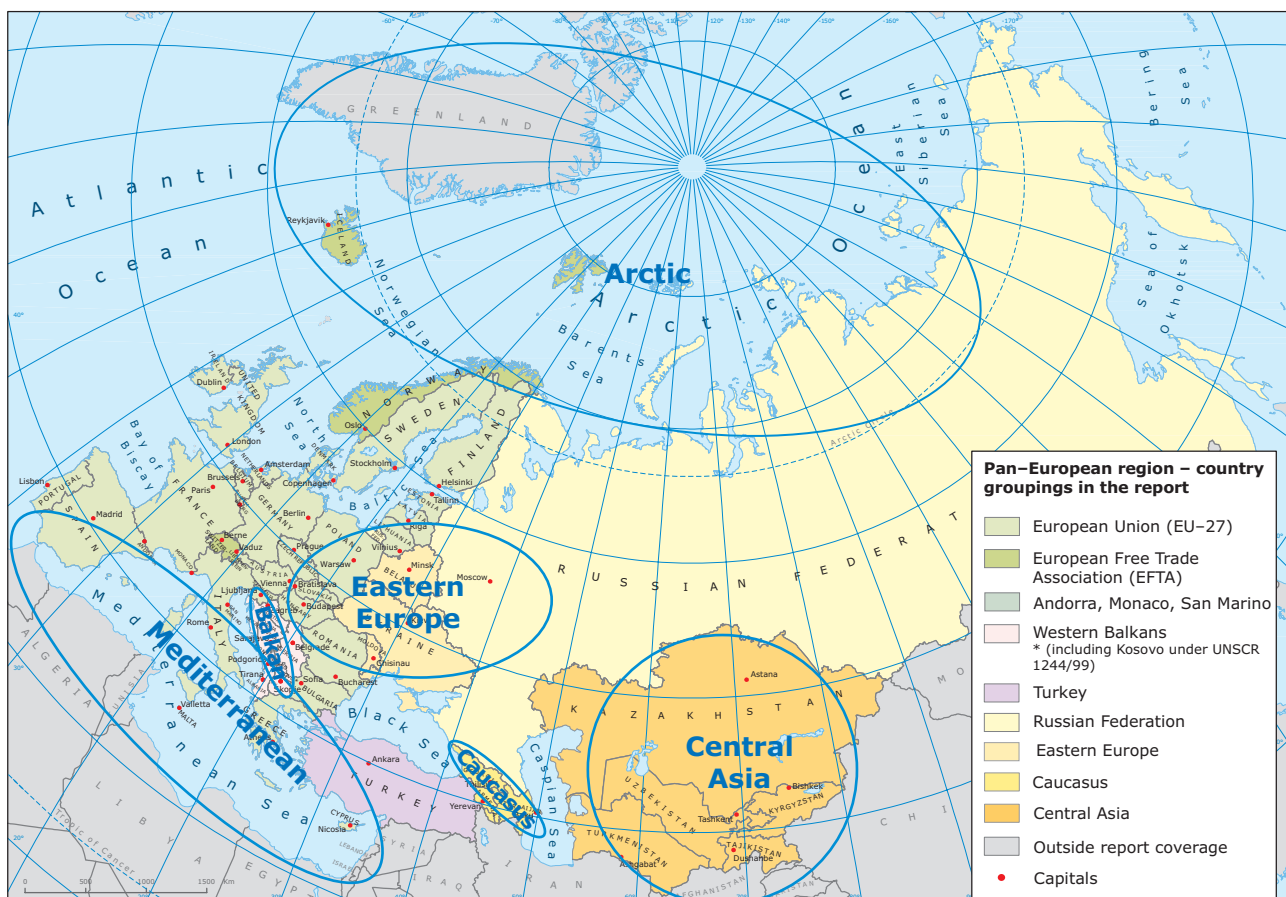
The scoping study provided the basis for the subsequent development of scenarios on the most relevant topics in each region.

Regional participatory scenario workshops were organised to build the knowledge base on links between climate change and security. Based on the scoping study findings, one key issue was explored in depth in each region, with a focus on:

- analysing driving forces, possible scenarios, governance and disaster preparedness;
- developing pathways to desired futures characterised by low security risks and low environmental impacts;
- determining how the OSCE can contribute to realising desired outcomes.

The EEA played a central role in this phase of the project: designing the workshops, training participants and facilitators on the scenario

Map 1 Future process to integrate long-term perspectives in decision-making



Source: EEA.

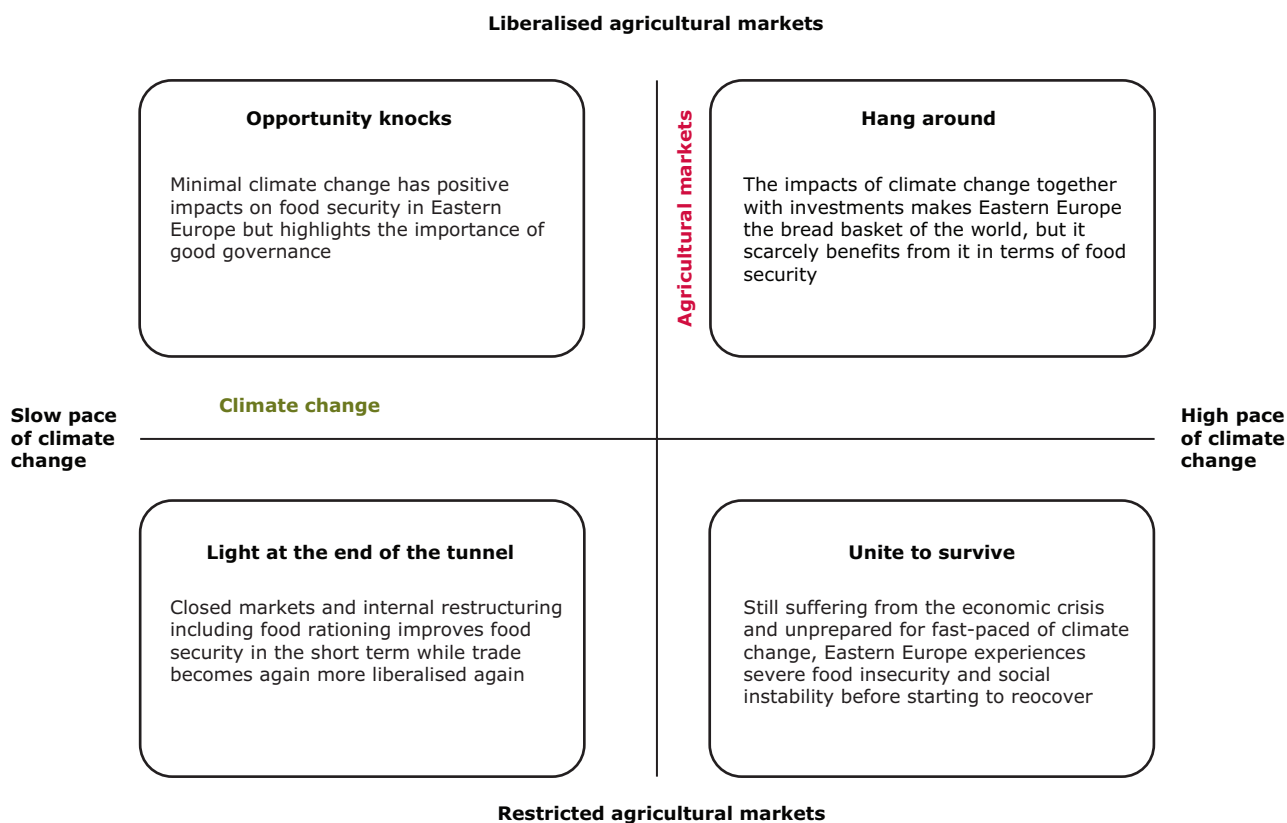
methodology and demonstrating its benefits, as well as framing issues and facilitating.

Workshops typically comprised research, government and NGO participants from the OSCE region, neighbouring regions and international institutions. With assistance from the facilitators, the participants identified the main uncertainties influencing the issue under study, and used them to explore four alternative scenarios. Having elaborated these possible futures, the participants were able to make recommendations for local and regional policies and actions to minimise security threats and exploit opportunities for economic, social and environmental gains.

Eastern Europe regional workshops: climate change and food security

The first regional workshop, held in Lviv, Ukraine, on 14–16 February 2011 was attended by Belarus, Moldova and Ukraine from the eastern Europe region, as well as participants from the EU, Croatia, Poland and Russia, the OSCE and the EEA. Based on the scoping study findings, it explored the key question of whether climate change impacts would undermine food security in the next 50 years in eastern Europe. The scenarios developed reflected the two main uncertainties identified by participants: liberalisation of agricultural markets and the pace of climate change (Figure 3). A second workshop, held in Kiev on 25–26 May 2011, further analysed the findings from a policy perspective and developed recommendations.

Figure 3 Climate change and food security: scenarios for eastern Europe



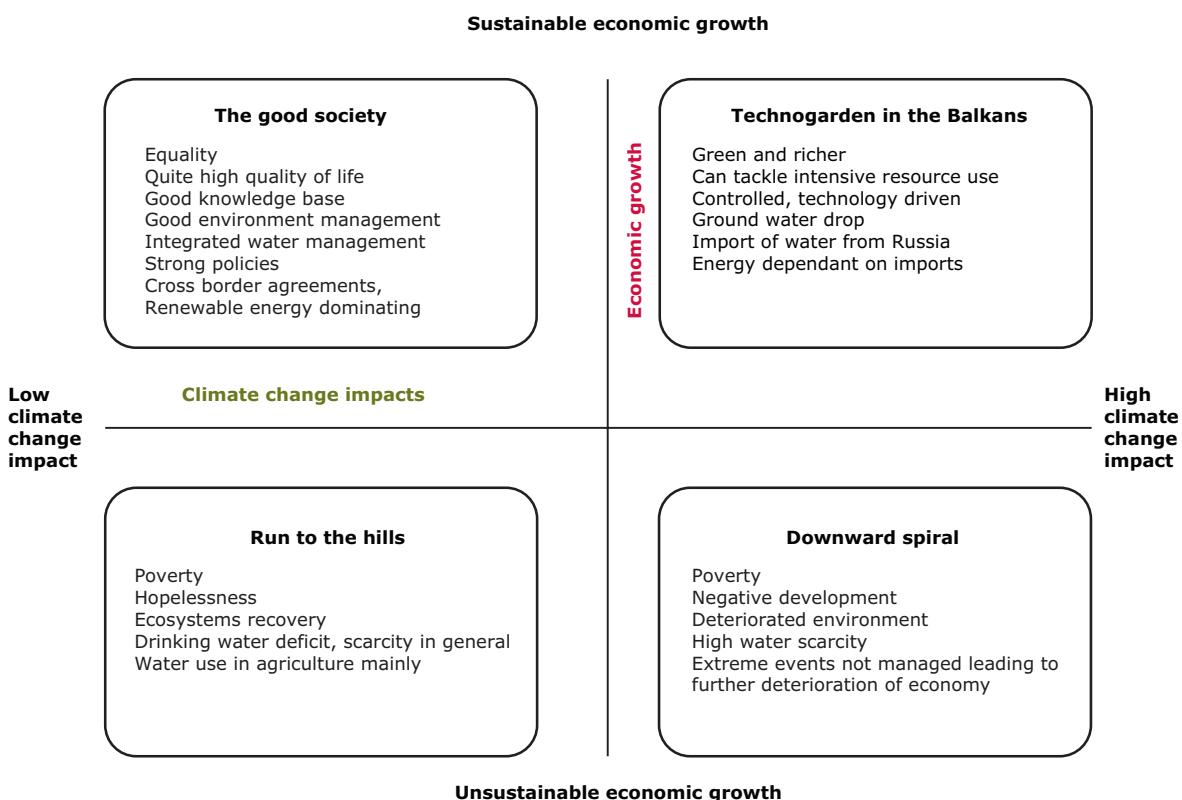
Further to these two workshops, a follow-up study summarising EU experience in adapting to climate change and its application to Ukraine was prepared with the support of the ENVSEC initiative (OSCE, 2011a).

The scenario-based analysis found that a combination of climate change and market forces will imperil security in the region, significantly affecting food affordability. This is particularly problematic as eastern European citizens already use a large proportion of household income on food. On the other hand, there are opportunities to improve food security if market liberalisation and climate change adaptation are well managed. The workshops identified 25 regional recommendations and additional national proposals to help the region address the food security risks arising from climate change (OSCE, 2011a).

Western Balkans regional workshop: climate change and water availability

The western Balkans regional workshop, held in Belgrade, Serbia on 24–26 October 2011 was attended by Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Kosovo (under UN resolution 1244/99), Montenegro and Serbia, as well as representatives of Hungary, Slovenia, the EU, the EEA, the OSCE and other international organisations. Together they analysed ways to manage the water security implications of climate change in the western Balkans. Scenarios were developed reflecting the key uncertainties regarding the extent of climate change impacts and the sustainability of economic growth (Figure 4).

Figure 4 Climate change and water availability: scenarios for the western Balkans

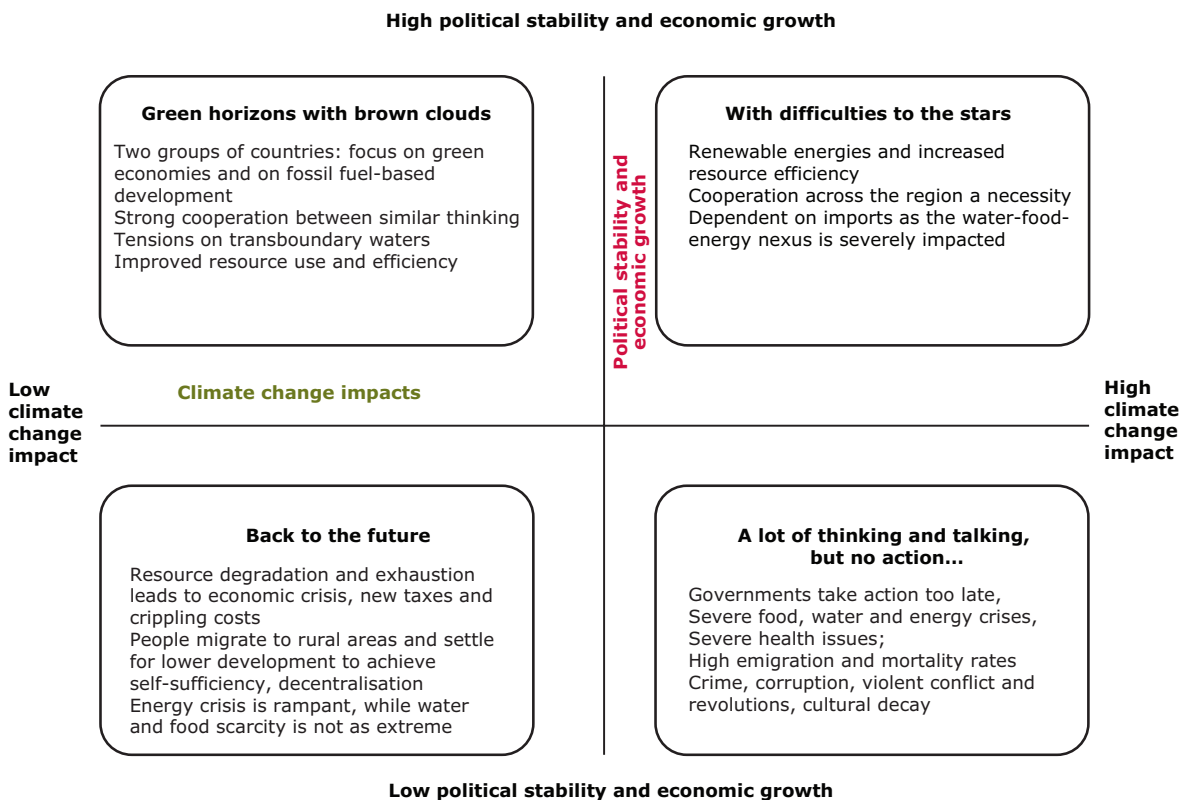


The workshop identified risks of spatially and temporally uneven water supply as a result of changing climate patterns and extreme events, and water management decisions such as planned cuts in water storage and increasing use of hydropower. Climate change impacts also risk causing shortages of good quality drinking water, particularly in coastal and urban regions, and threaten the agricultural, industrial and transport sectors. There is also a need for policymakers to tackle the indirect water-related risks resulting from climate change, such as poverty, health and conflict arising from competition for scarce water resources. A follow-up study by the EEA will further analyse regional security implications concerning water use and management options in the region.

Central Asia regional workshop: climate change impacts on the water-energy-agriculture nexus

The central Asia workshop, held in Dushanbe, Tajikistan, on 14–16 November 2011 was attended by representatives of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, as well as local and international NGOs, the OSCE, and the EEA. They explored the impacts of climate change on the water-energy-agriculture nexus in central Asia until 2050, developing four scenarios and strategies for dealing with risks based on varying assumptions about political stability and economic growth, and climate change impacts (Figure 5).

Figure 5 Climate change and the water-energy-agriculture nexus: scenarios for central Asia



Since Central Asia is warming faster than the global average, the workshop found that, in all four scenarios, actions needed to commence in the coming decade to prevent resource exhaustion and manage growing regional and global demands for water, food and energy. The participants identified several related areas for action. First, there was a need for early adaptation to climate change and a transition to a green economy with a focus on increased resource efficiency. Achieving these goals was seen to require investment in education, information dissemination, research and further supporting civil society development. All of this must be embedded in a framework of strengthened regional integration and improved good governance (OSCE, 2011b).

Next steps: finalising phase 2 and phase 3

Phase 2 will be completed during 2012 and 2013, with one workshop taking place in the Caucasus, and two expert meetings to discuss the Mediterranean and the Arctic regions.

The third and final phase of the project will be implemented in 2013, and will consist of a global workshop to draw together the findings on the different themes across the OSCE region, and the production of a report summarising the project outcomes.

4 Climate change brings complex risks, demanding careful management

So far, the regional workshops have demonstrated the value of scenario-building approaches in engaging stakeholders — facilitating shared learning and boosting preparedness for uncertain futures. As anticipated, they have also highlighted the complexity and diversity of climate change impacts and a greater need for explaining further the links between environment and security, and management responses.

In addition to direct security risks arising from, for example, more extreme weather events, and changing spatial and temporal distributions of precipitation, climate change is likely to affect access to critical resources such as food and energy. It may increase poverty and jeopardise the achievement of the Millennium Development Goals by harming basic living conditions. Competition to secure supplies will cause knock-on effects across multiple sectors and across national borders posing threats to possible emerging conflicts. Meanwhile, climate change also interacts with a variety of other global trends, for example population growth, ageing societies and an expanding middle class; economic growth and rebalancing of global power; urbanisation, technological change and shifting

trade flows. These interactions and synergies generate major adaptation challenges for countries.

Environmental change and its impacts can also be expected to have more direct effects on global, regional and national security activities, with increasing extreme weather events affecting supply routes, troop movement, procurement choices and engagement options.

These changes create significant risks but they clearly do not have to mean a spiral into chaos. In the area of water management, for example, 'predictions of future wars over access to water have thus far failed to come true. On the contrary, various forms of cross-border water cooperation are contributing to stability and peace in regions of latent conflict (Adelphi Research, 2007).

Preserving human security and maximising social well-being requires that decision-makers anticipate the risks ahead and put in place the institutions and tools to ensure sustainable and equitable management of the natural environment. Scenario-building has an important role to play in that process.

References

Adelphi Research, 2007, *Environment, conflict and cooperation* (http://www.ecc-exhibition.org/en/downloads/Environment_Conflict_and_Cooperation_web-03_2007.pdf).

EC, 2009, 'Janez Potočnik European Commissioner for Environment Europe: Looking ahead on climate change, Green Alliance Conference, London, 15 September 2010' (<http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH%2F10%2F450>) accessed 7 December 2010.

EEA, 2007, *The pan-European environment: glimpses into an uncertain future*, EEA Report No 4/2007, European Environment Agency (http://www.eea.europa.eu/publications/eea_report_2007).

EEA, 2010a, *The European environment — state and outlook 2010: Synthesis*, EEA State of the environment report No 1/ 2010, European Environment Agency (<http://www.eea.europa.eu/soer/synthesis/synthesis>).

EEA, 2010b, *The European environment — state and outlook 2010: Global megatrends assessments*, European Environment Agency (<http://www.eea.europa.eu/soer/europe-and-the-world/megatrends>).

EEA, 2011, *Knowledge-base for forward-looking information and services (FLIS)*, Brochure, European Environment Agency (<http://www.eea.europa.eu/publications/knowledge-base-for-forward-looking>).

EEA, 2012, *Climate change impacts and vulnerability in Europe 2012, An indicator-based report*, EEA Report No 12/2012 (<http://www.eea.europa.eu/publications/climate-impacts-and-vulnerability-2012/>), European Environment Agency.

EEA, 2013, 'Adaptation in Europe', EEA Report (forthcoming), European Environment Agency.

ENVSEC, 2012, Environment and Security Initiative, http://envsec.org/index.php?option=com_content&view=article&id=74&Itemid=92&lang=en.

OSCE, 2011a, *Climate change and food security in Eastern Europe — Report from scenario workshop* (<http://www.osce.org/eea/82224>).

OSCE, 2011b, *Climate Change and the Water-Energy-Agriculture Nexus in Central Asia, Report from scenario workshop* (<http://www.osce.org/eea/88202>).

OSCE/Adelphi Research, 2010, *Shifting bases, shifting perils — A scoping study of security implications of climate change in the OSCE region*, Adelphi Research (<http://www.osce.org/eea/78356>).

WBGU, 1998, *World in transition: strategies for managing global environmental risks*, German Advisory Council on Global Change (WBGU) (<http://www.wbgu.de/en/flagship-reports/fr-1998-global-risks>).

WBGU, 2007, *Climate change as a security risk*, German Advisory Council on Global Change (WBGU) (<http://www.wbgu.de/en/flagship-reports>).

European Environment Agency
Kongens Nytorv 6
1050 Copenhagen K
Denmark

Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99

Web: eea.europa.eu
Enquiries: eea.europa.eu/enquiries

