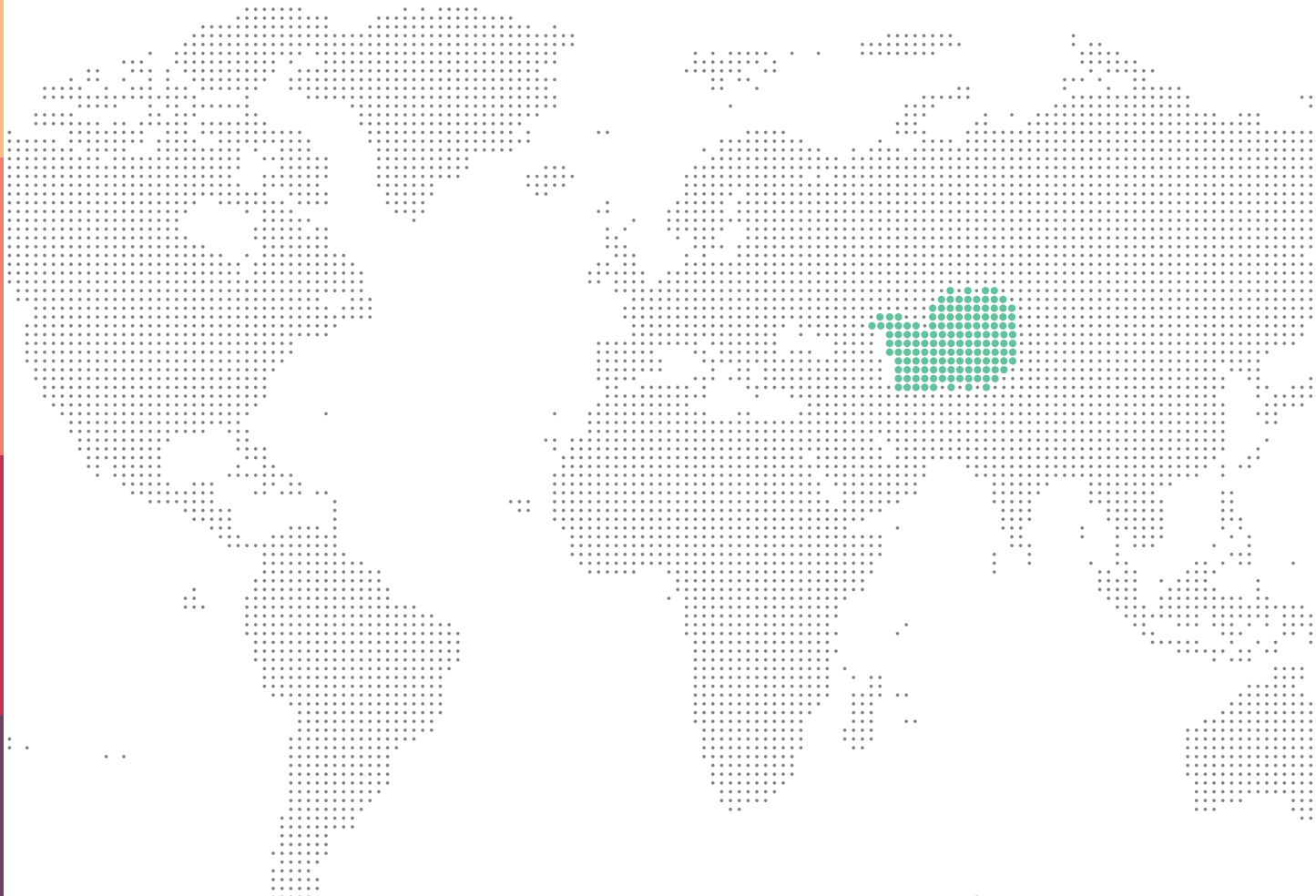
ENVSEC
Environment & Security

CLIMATE CHANGE AND SECURITY
CENTRAL ASIA



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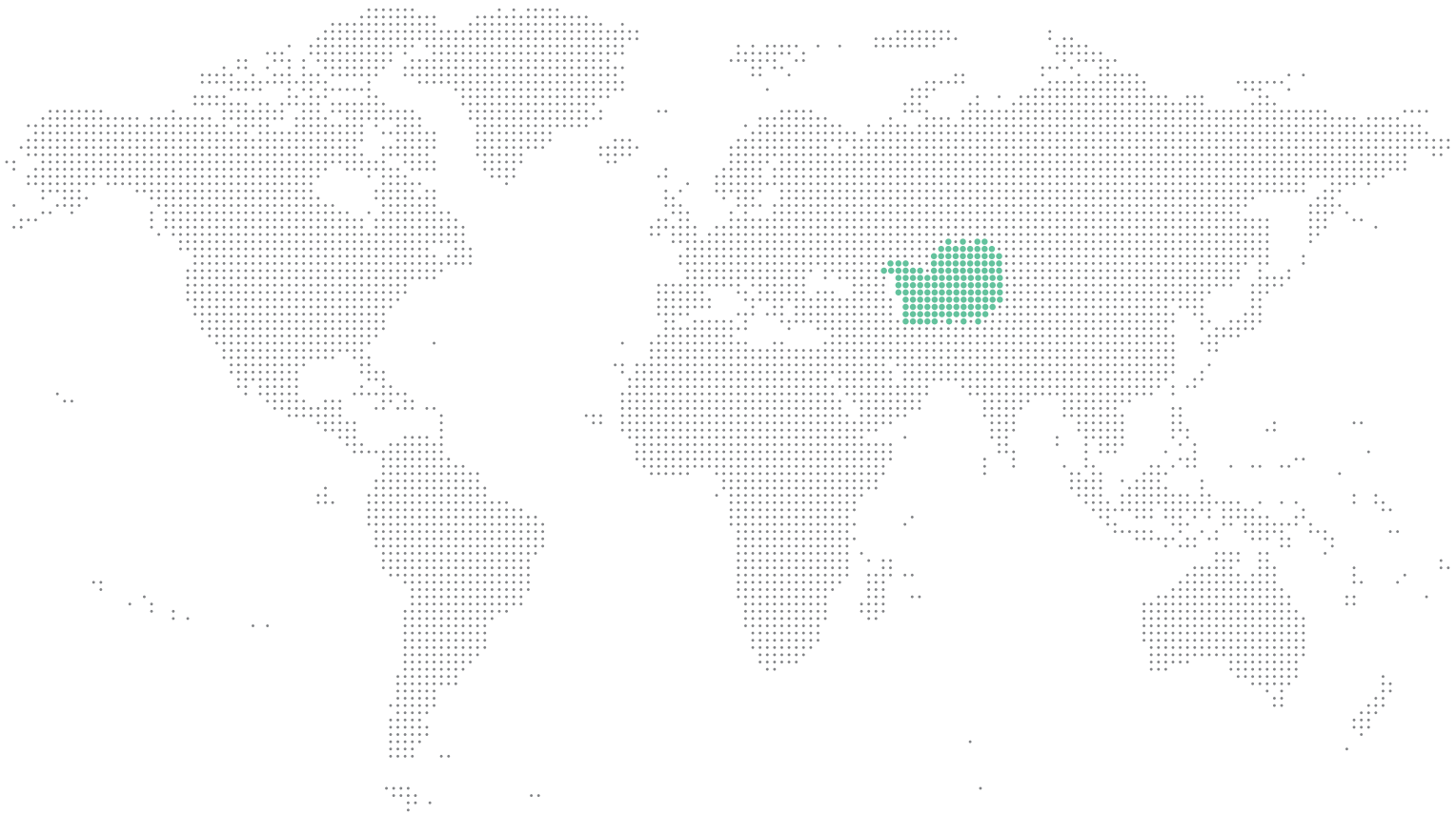
The Environment and Security (ENVSEC) Initiative – comprising the Organization for Security and Co-operation in Europe (OSCE), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the United Nations Economic Commission for Europe (UNECE) and the Regional Environmental Center for Central and Eastern Europe (REC) - was launched in 2003 at the Fifth Environment for Europe Ministerial Conference in Kiev, Ukraine to jointly strengthen national capacities, regional co-ordination mechanisms and international co-operation for environment and security risk reduction. Since then, the Initiative has developed into a unique multi-agency programme operating in four regions: Eastern Europe, South Eastern Europe, the South Caucasus and Central Asia. The ENVSEC Initiative provides holistic solutions to environmental challenges including to security challenges induced by climate change.



CLIMATE CHANGE AND SECURITY IN CENTRAL ASIA

LINKAGES BETWEEN CLIMATE CHANGE AND SECURITY

Once only considered as an "environmental issue," climate change is increasingly being included as an inherent element of national and international security agendas. It is seen as a "threat multiplier," exacerbating existing threats to security and increasing environmental stress, adding to pressures that can push the responsive capacities of governments to their limits.

Climate change can impact security in a number of ways. Increasing competition over access to natural resources can lead to conflict situations if no effective dispute resolution mechanisms are in place. Increasing frequency of climate-induced extreme weather events and disasters can aggravate political instability and put livelihoods at risk, which in turn can push people to migrate on a large scale or to turn to illegal sources of income. Disruption of food production and increasing food prices can lead to social instability, violent protests and civil unrest. Impacts on energy production caused by higher temperatures and lower precipitation, as well as threats to energy production and transmission infrastructure from extreme weather events put supply chains and energy security at risk. Increasing demand for water and an unreliable supply increase pressure on existing water governance arrangements and can complicate political relations, in particular at transboundary basins already affected by tensions.

CO-OPERATION ON CLIMATE CHANGE ADAPTATION AS A CONTRIBUTOR TO STRENGTHENING SECURITY

Addressing the security risks induced by climate change is important and calls for continued and proactive risk management. Climate change co-operation and climate diplomacy are good entry points for contributing to preventing tensions and strengthening trust. They can also have significant benefits for broader relations between countries.

REGIONAL PARTICIPATORY ASSESSMENT OF CLIMATE CHANGE AND SECURITY RISKS

This brief offers insights on the security implications and most vulnerable geographic areas (climate change and security hot-spots). They were identified during a regional participatory assessment process on Climate Change and Security in Central Asia conducted by the ENVSEC Initiative in partnership with the European Union Instrument for Stability and the Austrian Development Agency from late 2013 to 2016. The participatory assessment was conducted in the framework of the ENVSEC project "Climate Change and Security in Eastern Europe, Central Asia and the Southern Caucasus" with the overall goal to identify and explain how climate change may exacerbate threats to security, and to propose effective measures in response. The project countries in Central Asia include the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan[1].

The assessment was conducted as a combination of desk research and analysis and through extensive multi-stakeholder consultations and considers the perception of about 190 national stakeholders (~ 80 women, ~ 110 men), who took part in national and regional consultations.

The climate change induced security implications that were identified together with stakeholders are also a result of analysis of political, socioeconomic and environmental conditions as well as governance issues as underlying factors.The assessment considers a broad range of perceived risks and context-specific security concerns including:

- Livelihood insecurity (urban and rural)
- Human and economic losses
- Additional pressure and competition over scarce natural resources
- Seasonal or persistent water shortages and possible energy and water insecurity
- Damage to infrastructure; industrial safety concerns, including stability of tailings
- Diminished ecosystem services
- Biodiversity losses and possible loss of fish stocks, pastures and genetic resources
- Increased social tensions and conflicts
- Changes in trade patterns and economic impacts
- Increased rates and wider geographic spread of diseases, and declines in human health
- Loss of sources of income and increased poverty or diminished well-being
- Decreased physical security and possible growth in crime
- Displacement and increased migration
- Land degradation and loss of arable land
- Implications for cultural and natural heritage

ASSESSMENT OF CLIMATE CHANGE AND SECURITY HOTSPOTS

Climate change and security hotspots are identifiable in geographic terms, and are characterized by ongoing tensions, environmental concerns or both. In each of these hotspots, climate change through one or more pathways is expected to undermine social or economic patterns, threaten infrastructure or livelihoods, or compromise security by exacerbating political or social tensions, conflicts or instability. Areas with weak institutions or lacking the effective mechanisms for transboundary environmental and security co-operation are especially vulnerable.

1 The Government of the Republic of Uzbekistan does not associate with the preparation of the regional assessment, including the information, positions and conclusions highlighted in the regional assessment, with national policy, processes and priorities.

The identified hotspots reflect the judgement of the authors of the assessment and the stakeholders as well as the outcomes of the national and regional consultations conducted in 2014 and 2016. Following aspects have been considered:

- Existing or prospective vulnerability to climate change
- Existing instability or security risks
- Analytical conclusions regarding the connections between climate change and security
- Other existing political, socioeconomic and environmental factors

The main findings of the assessment for Central Asia are presented below and offer insights on the identified security implications and most vulnerable geographic areas (climate change and security hotspots) and necessary measures for Central Asia to address the identified security implications.

REGIONAL OUTLOOK ON CLIMATE CHANGE AND SECURITY FOR CENTRAL ASIA: MAIN TRENDS

In Central Asia, climate change will put additional stress on water resources, the agriculture and energy sector and will likely have consequences for individual countries as well as the region as a whole.

Water is a key natural resource in the region and water security is a priority, especially in cases of transboundary water resources. Over the medium term (2030-2050), population growth and economic development are likely to increase demand for water and land resources in Central Asia. Climate and water projections show a sufficient supply for the next 10-15 years, but between 2030 and 2050 the region is expected to pass the peak of water availability in many medium and small rivers across the interior and southern areas.

In the long term, the rate of climate change and the severity of its consequences, coupled with population dynamics and socioeconomic status, will be among the main factors that determine peace and prosperity.

The mountains are particularly vulnerable to climate change where melting glaciers and permafrost disrupt water regimes and threaten ecosystems, where natural disasters are more prevalent and more damaging, and where poverty is higher. In dry and low-water years, competition for pastures and local water resources increases, and water diversions that disadvantage others may lead to tensions. The situation in the mountains as well as in densely populated areas and the southern borders of Central Asia, warrant ongoing attention.

In densely populated areas many people may be at risk of food insecurity and the effects of heatwaves, especially in places with competition for natural resources.

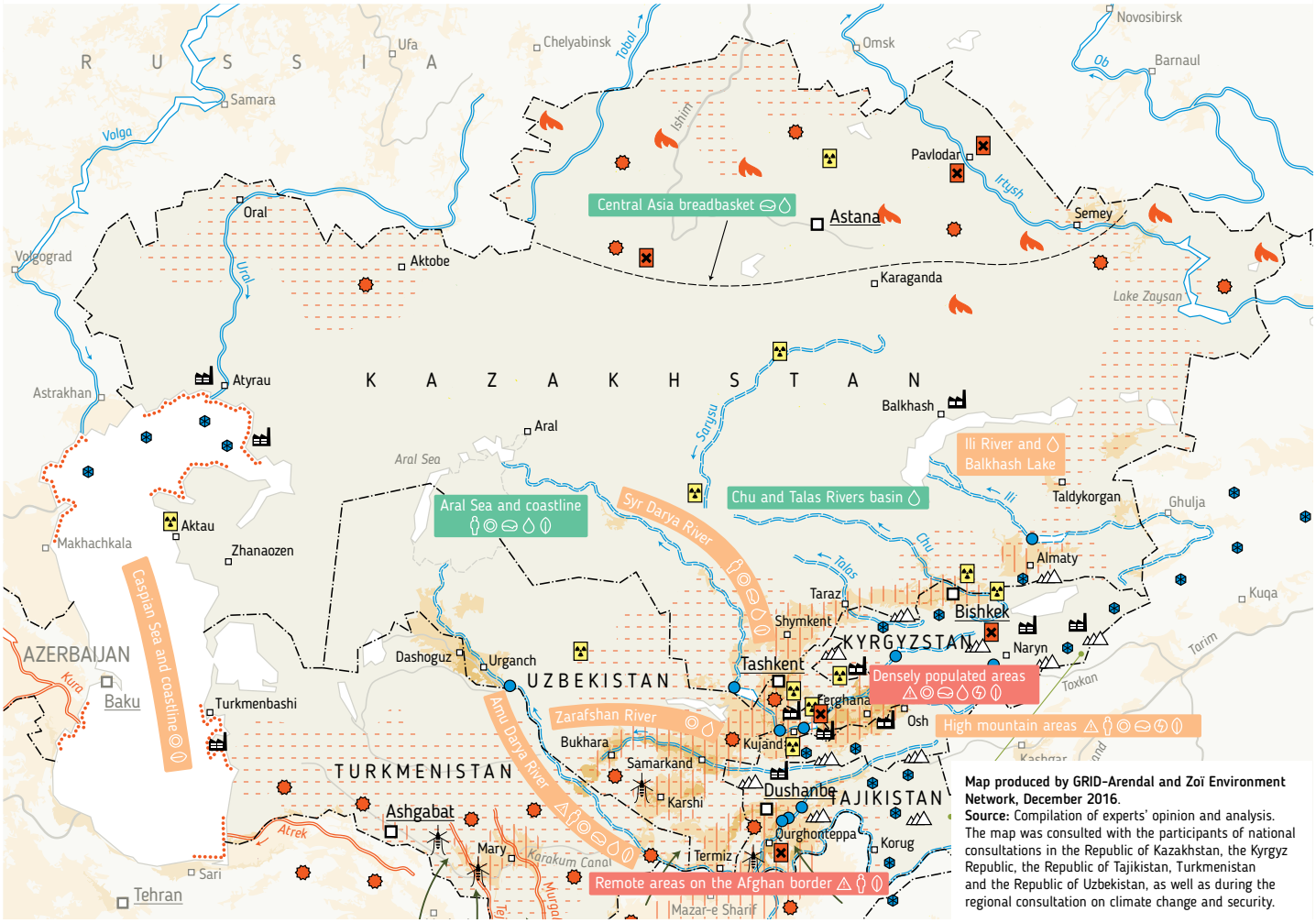
Large-scale labour migration, in particular of male and working-age youth, increases the stress on most vulnerable groups including women, children and elderly who stay behind. They are exposed to crop failures, extreme weather and natural disasters, which tend to increase due to climate change and they have less capacity to respond to such climate change impacts.

All countries of the region have developed national strategies and actions plans on climate change and for transition to low-carbon economies, and have launched projects on mitigation and adaptation. With regard to climate change mitigation, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan submitted their Intended Nationally Determined Contributions to the United Nations Framework Convention on Climate Change in 2015, and through this process elevated climate change discussions to the highest policy levels.

Beyond these efforts to address climate change and its impacts, so far climate change has not been included in any of the national security strategies of the countries of the region.

CLIMATE CHANGE AND SECURITY HOTSPOTS IN CENTRAL ASIA

The climate change and security hotspots were identified during the participatory assessment process for Central Asia which included relevant stakeholders from government agencies and non-governmental organizations, academia as well as experts. All of the climate change and security hotspots that were identified in Central Asia are regional/transboundary hotspots. Regional hotspots have regional security implications, and may extend across ecosystems in more than one country.



Map produced by GRID-Arendal and Zoï Environment Network, December 2016.
Source: Compilation of experts' opinion and analysis. The map was consulted with the participants of national consultations in the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan, as well as during the regional consultation on climate change and security.

Climate change and security hotspots in Central Asia

Republic of Kazakhstan, Kyrgyz Republic, Republic of Tajikistan, Turkmenistan and Republic of Uzbekistan

0 200 km

Areas with climate change and security risks by 2030

- High
- Medium
- Low
- ABC Regional/transboundary hotspots
- Social insecurity
- Human health insecurity
- Economic and livelihood insecurity, damage to infrastructure
- Food insecurity
- Water insecurity, water resources scarcity
- Energy insecurity
- Land degradation, biodiversity, cultural and natural heritage

- Densely populated and industrialized regions near mountains: environmental stress, water and energy insecurity
- Desertification
- High mountain areas at risk: energy insecurity, major ecosystem changes, natural disasters, infrastructure damages
- Caspian Sea: risk of flooding due to sea level fluctuation
- Fire-prone area
- Severe drought impacts
- Locust invasions and spread of dangerous infections; potential risk of cross-border spread of invasive species and new diseases
- Hazardous waste sites and industries potentially affected by natural disasters and climate change

- Storage of pesticides or fertilizers; contamination by pesticides in the event of flooding
- Storage of radioactive waste
- Reduction of ice cover
- Hydropower plant

Predicted change in annual river flow

- Projected increase of river flow by mid-century
- Projected increase of river flow till 2030 - 2050 followed by overall decrease and seasonal-change
- Projected decrease of river flow by 2030 - 2050
- no change/no information

5 50

Population density (inhabitants per km²)

1 DENSELY POPULATED AREAS
(HIGH SECURITY RISK BY 2030) INCL. THE FERGHANA VALLEY

Areas like the Ferghana valley as well as large irrigated oases, mainly along the Amu Darya and Syr Darya Rivers, as well as piedmont metropolitan areas are characterized by high population density and relatively scarce water and land resources shared across borders. Partly affected by tensions and instability already in the past, the security risks could increase if security of livelihoods, water, energy and food decreases due to climate change.

KEY RECOMMENDATIONS

- Establish a participatory approach and dialogue for sharing vital natural resources (water, arable land and pastures), especially during extreme and adverse weather events
- Promote good neighbourly relations and introduce early warnings/preventive measures to reduce tensions over limited natural resources
- Introduce measures and a regime to mitigate impacts of high temperatures, drought and other extreme weather events with regard to human health and labour conditions, with a focus on vulnerable groups
- Improve accessibility to clean water and sanitation in combination with preventive measures to reduce epidemics and dangerous infections
- Improve the efficiency of resource use (water, arable land and pastures) with modern technology approaches in conjunction with traditional methods
- Introduce agriculture and water reforms to boost resilience and to address long-term climate change impacts
- Introduce climate change resilient and reliable crops, develop insurance schemes in rural areas to support vulnerable groups in case of extreme weather events
- Increase the share of locally available energy sources through energy diversification to enhance energy security and increase the share of renewable sources
- Rehabilitate tailings and waste sites and fortify other infrastructure that threatens downstream populated areas with potentially hazardous material
- Implement action plans and programmes to forecast natural disasters and to minimize their impacts, especially for critical infrastructure
- Conduct public awareness campaigns to ensure growing awareness on potential security implications induced by climate change

2 REMOTE AREAS ON THE AFGHAN BORDER
(HIGH SECURITY RISK BY 2030)

Central Asia's southern remote areas, notably the Tajik-Afghan and the Turkmen-Afghan border areas have been identified as climate change and security hotspots in light of extreme weather events intensified by climate change and their exposure to spill-over of instability.

KEY RECOMMENDATIONS

- Promote scientific, business and educational ties with neighbouring countries, including on environmental, energy, food security and climate change threats within the framework of multilateral and bilateral arrangements and the Economic Cooperation Organization
- Exchange information and experience and implement pilot projects with neighbouring countries on assessment of climate change impacts and risk reduction regarding livelihoods, preservation of agricultural biodiversity and monitoring of and responses to malaria, pests and dust storms
- Conduct afforestation and reforestation on the southern borders of Central Asia to improve microclimates, combat erosion, protect infrastructure and reduce dust storms
- Develop and implement warning and response mechanisms to deal with natural disasters and extreme weather events, and develop co-operation in monitoring activities

3 HIGH MOUNTAIN AREAS
(MEDIUM SECURITY RISK BY 2030) INCL. THE FERGHANA VALLEY

Mountain communities have increased vulnerability due to high poverty and isolation, frequent natural disasters, visible climate change effects and sporadic discontent and unrest in some mountainous regions.

KEY RECOMMENDATIONS

- Provide remote sensing in hard-to-reach areas
- Diversify income and food sources
- Diversify power generation and channels of energy imports and exports in order to reduce the risk of energy crises in extreme weather events (scarce water, cold waves and low water flow in large and small rivers
- devastating flash flooding and floods)
- Incorporate climate change content into planning and maintenance of critical infrastructure (impact of melting permafrost and avalanches or landslides on communication routes, hazardous waste storage sites and mines)

4 CENTRAL ASIA BREADBASKET
(LOW SECURITY RISK BY 2030)

The grain-producing area in northern Kazakhstan has been identified as a regional climate change hotspot, although security implications in the national context are low thanks to stable economic policies. Soaring grain prices or crop deficits may however undermine food security in the region.

KEY RECOMMENDATIONS

- Facilitate farming practices that use zero soil tilling and test crop types resilient to extreme events

5 THE AMU DARYA RIVER BASIN
(MEDIUM SECURITY RISK BY 2030)

The Amu Darya Basin is highly dependent on irrigation and hydropower with already existing disagreements on water usage, and is characterized by environmental degradation, in particular in the delta area. Reinforced by climate change, this might have severe impacts for water, food, livelihood and human security with strong cross-border implications.

KEY RECOMMENDATIONS

- Identify and improve water use practices for the reduction of damage to vulnerable areas from climate change
- Engage all countries of the basin (including Afghanistan) in monitoring, forecasting, assessment and current and long-term water planning and use
- Strengthen the role of and support the International Fund for Saving the Aral Sea with regards to its activities in water management of the Amu Darya River

6 THE SYR DARYA RIVER BASIN
(MEDIUM SECURITY RISK BY 2030)

The Syr Darya River is highly regulated for irrigation and hydropower purposes. The basin also faces risks from toxic and radioactive waste. The current water allocation regime might come under threat from changing water availability due to climate change which might increase water, food, and socioeconomic insecurity.

KEY RECOMMENDATIONS

- Strengthen capacities at local level on adaptation to climate change and security risks including through experience replication
- Develop a common understanding of climate change impacts and search for mutually acceptable solutions to the water-food-energy nexus dilemmas
- Continue to improve early warning bulletins for the Syr Darya River
- Improve transboundary co-ordination mechanisms and ensure that obligations are met
- Strengthen the role of and support to the International Fund for Saving the Aral Sea with regards to its activities in water management of the Syr Darya River

7 THE ZARAFSHAN RIVER BASIN
(MEDIUM SECURITY RISK BY 2030)

The Zarafshan River, shared by Tajikistan and Uzbekistan, suffers risk of upstream pollution from growing industrial activities and mining and downstream pollution from agriculture, and faces increased water insecurity due to climate change impacts which could affect interstate relations.

KEY RECOMMENDATIONS

- Facilitate development of a common understanding of climate change impacts and search for shared approaches
- Develop a system for forecasting seasonal and long-term flows
- Enhance sharing of information related to climate change and natural disasters
- Increase water use efficiency in combination with traditional methods

8 THE ILI RIVER AND BALKHASH LAKE
(MEDIUM SECURITY RISK BY 2030)

Lake Balkhash in southeastern Kazakhstan is the largest lake in Central Asia and fed mainly by the Ili River, which originates in China. The fragile ecological balance of the lake is at risk by human, economic and climate change impacts, which affect the population in the basin and pose a challenge for transboundary water management.

KEY RECOMMENDATIONS

- Incorporate climate change into planning and use of water resources and economic development
- Support transboundary dialogue and co-operation on management of water resources and climate change adaptation

9 THE CHU AND TALAS RIVER BASINS
(LOW SECURITY RISK BY 2030)

The Chu and Talas River Basins, shared by Kazakhstan and Kyrgyzstan, are an important economic area for agriculture, hydropower and mining sectors with a growing population. While climate change might decrease the availability of water, the good co-operation mechanisms that are already in place between the two countries minimize the security risks.

KEY RECOMMENDATIONS

- Continue discussions on climate change impacts in the transboundary context and enhance co-operation on adaptation
- Evaluate investment costs for eco-friendly services and adaptation measures

10 THE CASPIAN SEA AND COASTLINE
(MEDIUM SECURITY RISK BY 2030)

Being rich in oil and gas resources, the Caspian Sea is economically important and at the same time vulnerable to climate change and water level fluctuations. Climate change might affect economic and livelihood security, and the unclear marine borders might make joint responses more difficult.

KEY RECOMMENDATIONS

- Extend practices of climate risks assessments for vulnerable infrastructure and onshore and offshore oil and gas production sites
- Improve water supplies for local populations and minimize oil sector impacts on the environment and on income sources (fisheries, pastures and the others)

11 THE ARAL SEA AND COASTLINE
(LOW TO MEDIUM SECURITY RISK BY 2030)

The tragedy of the Aral Sea is likely to continue due to higher temperatures and due to low run-off reaching the sea, even though the situation in the northern part has improved. Anthropogenic pressure on water resources remains the major risk factor. Climate change will intensify water and environmental insecurity of the affected population.

KEY RECOMMENDATIONS

- Introduce additional, and support current, practices and ongoing efforts to cut back on environmental migration, and maintain adequate living conditions
- Develop and implement comprehensive public awareness campaigns on climate security, adaptation measures and personal responsibility in the field of risk reduction

LOOKING AHEAD - HOW TO STRENGTHEN THE RESILIENCE TO CLIMATE CHANGE AND SECURITY RISKS

Growing awareness about the security implications of climate change among policy-makers and the public could support the governments of the Central Asian countries to take swift actions from the local to the regional level to tackle the impacts of climate change and the implications for security.

Some of the proposed areas of intervention, including those matching the priorities of the Environment and Security Initiative, call for strengthened regional co-operation as well as more consistent and targeted international support.

Key areas of engagement may include:

- Incorporate climate change and security considerations into policies and measures to strengthen security, in particular in the identified climate change and security hotspot areas
- Facilitate cross-border co-ordination and exchange of information in the preparation of climate change projections as well as impact and vulnerability assessments, and search for common approaches to adaptation and response measures
- Develop and implement comprehensive public awareness campaigns on climate change and security, adaptation measures and public as well as individual contributions

Technical interventions can support the improvement in water and land management by reducing stress on the socioeconomic and natural systems. The importance of transboundary water ecosystems suggests that basin-wide co-operation mechanisms, including water basin commissions, could help to better address existing water management challenges at transboundary and national levels which would also address climate change and security challenges related to water.

High mountains and densely populated areas are highly vulnerable in terms of climate change and security, in particular as climate effects can be as severe as geopolitical and socioeconomic forces undermining stability. Raising living standards, reducing isolation of regions and enclaves, introducing advanced water technology and agriculture practices can enhance the resilience in these hotspots and prevent instabilities. In case of future extreme weather events that may lead to casualties and damage to critical infrastructure, forecasts, early warning systems and regular monitoring, alongside engineering solutions and proper planning, can help significantly to reduce or avoid these disasters.

CONTINUED ENGAGEMENT OF ENVSEC IN ADDRESSING CLIMATE CHANGE AND SECURITY RISKS

The ENVSEC partner organizations with their specialized and complementary mandates and expertise in environment, development, economics and security can jointly assist countries to adapt to the effects of climate change within a broader context of environment, security, and sustainable development. ENVSEC's continued engagement will also support countries in implementation of their commitments under the Paris Agreement as well as the 2030 Agenda for Sustainable Development, in particular Goal 13. The ENVSEC Initiative partners are committed to mobilize political interest and financial resources to continue their support to the countries of the region in addressing climate change and security risks in the following areas:

- **Key area 1**: Technical assistance to enhance the knowledge base on climate change impacts and their interrelation with security e.g. through conducting in depth climate change and security risk assessments which take into account changing socioeconomic, political and environmental circumstances.
- **Key area 2**: Support to regional dialogue and co-operation e.g. through facilitating cross-border co-ordination and exchange of information on climate change impacts, and joint risk reduction measures
- **Key area 3**: Strengthening relevant policies, institutions and capacities at national and regional levels to address climate change risks e.g. through developing regional/transboundary adaptation strategies, providing training and by sharing of experience and lessons learned on climate change and security risk reduction activities
- **Key area 4**: Facilitating communication and raising awareness on security impacts of climate change and potential adaptation measures: ENVSEC partners together with Aarhus Centres will continue to organize public information and awareness raising campaigns, media trainings and sharing of experience and lessons learned on climate change and security while promoting stakeholder engagement to participate in mitigation and adaptation activities as well as in the decision-making process.