



Regional Consultation for the South Caucasus

Armenia and Georgia: Co-operation opportunities for
addressing the security implications of climate change

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Wallnerstrasse 6
A-1010 Vienna, Austria
Tel.: +43 1 514 360
pm@osce.org
<http://www.osce.org>

adelphi research gemeinnützige GmbH
Alt-Moabit 91
10559 Berlin, Germany
Tel.: +49 (030) 8900068-0
office@adelphi.de
www.adelphi.de

Project Management: Esra Buttanri, Danica Svilanović, David Ilioski (OSCE)

Authors: Lukas Rüttinger, Pia van Ackern, Adrian Foong (adelphi)

Contributors: Khatuna Gogaladze (Georgia's Environmental Outlook – GEO) and Armen Asryan

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List of Abbreviations

ADC	Austrian Development Cooperation
ANAU	Armenian National Agrarian University
ATP	Armenia Tree Project
BMU	Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
CENN	Caucasus Environmental Non-Governmental Organizations Network
CEPA	EU-Armenia Comprehensive and Enhanced Partnership Agreement
DRR	Disaster Risk Reduction
EaP	Eastern Partnership
EEA	European Environment Agency
ENVSEC	Environment and Security Initiative
EU	European Union
EUWI+	EU Water Initiative Plus for Eastern Partnership Countries
FAO	Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GEF	Global Environment Facility
GFMC	Global Fire Monitoring Center
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German development agency)
ICARE	International Center for Agribusiness Research and Education
IFAD	International Fund for Agricultural Development
IUCN	International Union for Conservation of Nature
IWRM	Integrated water resources management
LEDS	Low-Emission Development Strategies
NATO	North Atlantic Treaty Organization
NDC	Nationally Determined Contribution to the Paris Agreement
OECD	Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation in Europe
RCP	Representative Concentration Pathway
REC	Regional Environmental Centre (for the Caucasus)
SDA	Strategic Development Agency
SDC	Swiss Development Cooperation
SDG	Sustainable Development Goals

TACIS	EU Technical Assistance to the Commonwealth of Independent States
UN	United Nations
UNDA	United Nations Development Account
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature

Executive Summary




Climate change can impact security in a number of ways. While it does not directly cause conflict, it interacts with other pressures including population growth, unequal economic development and resource constraints to influence security landscapes. In other words, climate change acts as a risk multiplier.

Against this backdrop, the OSCE, in partnership with adelphi, has embarked since 2020 on a new extra-budgetary financed project “Strengthening responses to security risks from climate change in South-Eastern Europe, Eastern Europe, the South Caucasus and Central Asia” (Project Number: 1102151). This project builds on the results of an earlier OSCE project “Climate Change and Security in Eastern Europe, Central Asia and the South Caucasus”, which was led by the OSCE and implemented together with the Environment and Security (ENVSEC) Initiative partners and with support of the European Union Instrument for Stability and the Austrian Development Agency.

The new project’s overall aims are to (1) identify and map potential climate-security hotspots, (2) develop and implement climate change and security risk reduction measures, (3) raise awareness of the linkages between climate change and security, and (4) conduct a gender analysis of climate security in the OSCE region.

This report presents the results of the bilateral consultation process on climate change and security between Armenia and Georgia, involving stakeholders from governmental bodies, civil society organizations, and academia. The consultation process was part of the first phase of the project, which specifically aims to identify co-operation opportunities to address the security implications of climate change. The outlined opportunities will serve as a starting point for the project’s second phase, which will involve the development of co-operation measures.

The consultation process included the following parts:

LAUNCH EVENT	2 March 2021
	<ul style="list-style-type: none"> • 35 stakeholders (19 female, 16 male) • Discussion on shared hotspots, topics, and co-operation opportunities to address climate-related security risks
SURVEY	March-April 2021
	<ul style="list-style-type: none"> • Identification and prioritization of topics for co-operation opportunities and for the shared hotspot
CLOSING EVENT	31 May 2021
	<ul style="list-style-type: none"> • 31 stakeholders (15 female, 16 male) • Presentation of results of consultation process • Discussion of findings and next steps

Co-operation opportunities

During the consultation process, three topics emerged as top priorities for co-operation between Armenia and Georgia, along with a shared hotspot whose priority was reconfirmed:

1. Sustainable and climate-resilient forest management



Forests provide important ecosystem services in the region. Both countries suffer from forest loss and degradation, which can exacerbate livelihood insecurity, particularly for rural communities relying on forest goods.



To address these challenges, stakeholders emphasized the need to exchange information regarding each country's respective sustainable forest use practices. Stakeholders also proposed a number of other co-operation measures, including sustainable forest maintenance, reforestation, the development of nature-based tourism, joint programs between national forestry authorities, and others.

2. Disaster risk reduction (DRR)



Both countries are subject to extreme hydrometeorological events and forest fires, which can undermine human security. Armenia and Georgia have co-operated in DRR- and wildfire management-related activities in the past, and their hydrometeorological agencies have a long tradition of working together. As noted by stakeholders, these shared risks and history of co-operation provide favorable grounds to deepen co-operation on DRR.



Therefore, stakeholders suggested that future co-operation measures could involve jointly developing and expanding DRR-related infrastructure and services, including early warning systems, hydrometeorological observation networks, and modelling capacities. DRR-related measures could also involve fostering cross-border collaboration between local communities from Armenia and Georgia, developing joint action plans, and harmonizing policies.



3. Integrated water resources management (IWRM)



Armenia and Georgia share the Khrami-Debed River Basin, which is located in Northern Armenia and Southern Georgia. Stakeholders emphasized the need to increase information exchange regarding each country's water resource management reforms and related measures.



In addition, stakeholders frequently cited the need to develop, formalize, and implement a transboundary basin-level management plan and governance mechanism to oversee and co-ordinate IWRM measures. Such IWRM measures would include joint monitoring and control of water quality, joint research on water resources, and information and data exchange.

Northern Armenia and Southern Georgia



Identified as a shared climate change and security hotspot in the 2017 OSCE-led ENVSEC study, Northern Armenia and Southern Georgia was reaffirmed as a shared hotspot during the consultation process. Additionally, stakeholders placed climate change adaptation measures for the agricultural sector as a top priority for co-operation between both countries for this hotspot. This is because agriculture is an important sector in parts of the hotspot's rural economies.



At the same time, ensuring that agriculture, specifically pasture management, is sustainable is crucial to avoid potential overgrazing and deforestation issues. Joint measures could therefore include jointly developing climate-resilient agricultural practices, conducting climate-resilient agricultural research, exchange of experiences and best practices, and co-operating on transboundary pasture management and land restoration activities.

Outlook

Based on the consultation process' findings, the project's next phase will develop a pre-feasibility study and concepts for one or two measures for a selected topic or at the hotspot. The selection and development of the studies will be participatory in nature. The scope of stakeholders will be broadened to include additional experts and relevant national and local governmental stakeholders, civil society, academia, private sector, as well as regional and international stakeholders. This will not only leverage existing knowledge and expertise, but also strengthen ownership of the proposed measures as well as enhance synergies with other regional initiatives.

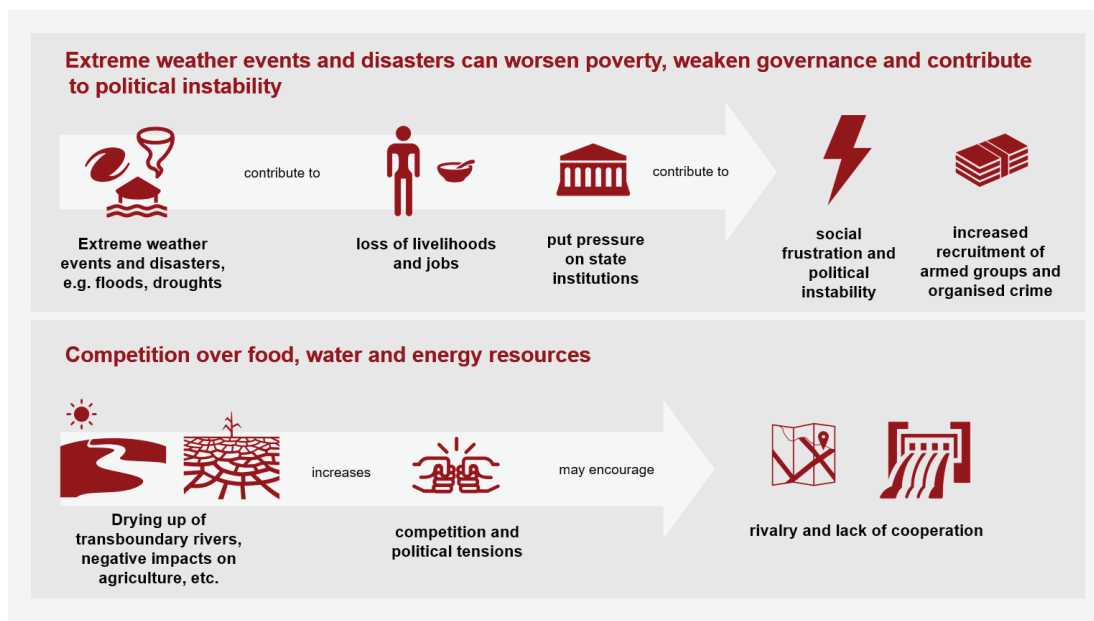
1 Introduction

1.1 Climate change as a security risk

Climate change can impact security in a number of ways. While it does not directly cause conflict, it interacts with other pressures including population growth, unequal economic development and resource constraints to influence security landscapes.

In other words, climate change acts as a risk multiplier. For example, it can change the access to or availability of natural resources, which can increase competition both within and across borders. At the same time, reduced efficiency of energy production, caused by both higher temperatures and lower precipitation, as well as threats to energy production and transmission infrastructure from extreme weather events, puts supply chains and energy security at risk. Increasing demand for water and an unreliable supply puts pressure on existing water governance arrangements and can complicate political relations, particularly in transboundary basins that lack co-operation frameworks.

Figure 1: Examples of climate-related security risks.



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Climate-induced extreme weather events and disasters, meanwhile, can aggravate political instability and put livelihoods at risk, which can be a push factor for people to migrate or turn to illegal sources of income. Finally, climate change can also affect food production and increase food price volatility. Rapidly rising food prices in turn can act as catalysts for social instability, violent protests and civil unrest.

1.2 Project

Against this backdrop, OSCE, in partnership with adelphi, has embarked since 2020 on a new extra-budgetary financed project “Strengthening responses to security risks from climate change in South-Eastern Europe, Eastern Europe, the South Caucasus, and Central Asia” (Project Number: 1102151). This project builds on the results of an earlier OSCE project “Climate Change and Security in Eastern Europe, Central Asia and the South Caucasus”, which was led by the OSCE, implemented together with the Environment and Security (ENVSEC) Initiative partners (UNEP, UNDP, UNECE and REC) and funded by the European Union Instrument for Stability and the Austrian Development Agency.

The new project aims to achieve the following:

1. To identify and map potential climate-security hotspots in the South-Eastern Europe region using a participatory methodology
2. To develop and implement climate change and security risk reduction measures and risk management strategies for selected transboundary hotspot areas in South-Eastern Europe, Eastern Europe, the South Caucasus, and Central Asia
3. To raise awareness on the linkages between climate change and security, especially by targeting policy makers, parliamentarians, civil society and the media
4. To conduct a gender analysis of climate security in the OSCE region

1.3 Report and process

This report presents the results of the bilateral consultation process on climate change and security between Armenia and Georgia. Building on earlier work in the context of the predecessor project, the first phase of the current project aims to identify co-operation opportunities to address the security implications of climate change. The outlined opportunities will serve as a starting point for the second phase, which will involve the development and implementation of co-operation measures.

The consultation process took place in a virtual format between March and June 2021 and involved stakeholders from governmental bodies, civil society organizations, and academia. It consisted of a launch event, a survey and a closing event, which concluded the first phase of the project’s work in Armenia and Georgia:

- **Launch event:** 35 stakeholders (19 female and 16 male) from Armenia and Georgia attended the launch event on 2 March 2021. The main focus of the discussions during the event was to identify opportunities for transboundary co-operation among the two countries to address the security implications of climate change. Specifically, the discussions aimed to revisit the shared hotspot (i.e. Northern Armenia and Southern Georgia) and co-operation topics that were identified in the 2017 OSCE-led ENVSEC study “Climate Change and Security in the South Caucasus”, and to identify new ones.

- **Survey:** After the launch event, an online survey was used to prioritize and explore in more detail each topic and hotspot. Participants were asked to specify, for each priority topic, transboundary activities or measures that could be used to address climate and security risks, why they prioritized certain topics, and what existing initiatives or new projects these measures could build on or have synergies with. These questions were also posed more specifically for the shared hotspot Northern Armenia and Southern Georgia. The survey was intended to elucidate experts' views on these topics in more depth and should not be seen as a representative sample. Priority rankings of each topic were assessed based on two factors: (1) the number of respondents who confirmed the topic as a priority, and (2) the distribution of respondents across both countries, such that a more balanced number of respondents from both countries would indicate that both countries collectively consider the topic as a priority.
- **Closing event:** 31 stakeholders (15 female and 16 male) attended the closing event of the first phase of the consultation process on 31 May 2021. The outcomes of the consultation process were presented during the event, along with a discussion of the findings and next steps. Input by stakeholders was taken into consideration during the preparation of the final version of the report.

Regional experts played a key role in the consultation process and the writing of this report. The OSCE and adelphi contracted local experts from Armenia and Georgia to assist in the process and the preparation of this report.

This report outlines the results of the consultation process and is composed of the following parts:

- **Chapter 2** provides a brief overview of the security implications of climate change in the South Caucasus, based on the 2017 OSCE-led ENVSEC study 'Climate Change and Security in the South Caucasus', along with updates from desktop research and stakeholder input during the consultation process.
- **Chapter 3** outlines the top three priority topics for co-operation as well as the priority shared hotspot and related topics for Armenia and Georgia. The selection of these topics, hotspot and co-operation opportunities are based on findings from the 2017 OSCE-led ENVSEC study and results of the consultation process, supplemented with additional input from project experts and desktop research.
- **Chapter 4** concludes the report by reviewing the results of the consultation process and reiterating the motivation and possible impact of the project. It then looks ahead to next steps of the project.
- The **Annex** provides more details about the consultation process and the methodology used.

2 Regional climate context

This chapter provides a brief overview of the potential security implications of climate change in Armenia and Georgia, based on the 2017 OSCE-led ENVSEC study 'Climate Change and Security in the South Caucasus' (ENVSEC, 2017), along with updates from desktop research and stakeholder input during the consultation process.¹

2.1 Climate trends and projections

The South Caucasus region is subject to extreme hydrometeorological events, which have been increasing in frequency and intensity, and are often associated with flooding, mudflows, landslides and soil erosion. The region is also prone to droughts and heatwaves, as well as extreme weather events such as hailstorms, frosts and strong winds.

These climate trends are reflected in the latest National Communications of both Armenia and Georgia. Projections indicate that both countries will continue to experience a warming of air temperatures. In Armenia, average temperatures are estimated to increase by almost 5°C by 2071-2100,² with an especially pronounced warming in the agriculturally important Ararat, Tavush, and Syunik valleys (Ministry of Environment (Armenia), 2020). In Georgia, average annual temperatures are projected to rise by 2.1-3.7°C by the end of the century,³ along with an increase in the number of hot days and decrease in the number of frost days (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

Precipitation projections are more variable in both countries and should be viewed with caution due to significant levels of uncertainties associated with their estimations. While some estimates indicate that Armenia will see a decline in average annual precipitation by around 8.3% by the end of the century,⁴ the significance of this change in precipitation varies with other climate models (Ministry of Environment (Armenia), 2020). In Georgia, annual precipitation is also expected to decline: by 2041-2070, the projected average decrease in Eastern Georgia is 9%, while in Western Georgia, the decrease will range between 3.6 and 15.3%,⁵ although some areas such as in Zugdidi and Poti will see an increase in precipitation (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

Under these climate change scenarios, both Armenia and Georgia could see a shrinking of water resources, such as a reduction in annual river flow. Lake Sevan in Armenia, for example, will likely see a decrease in total river inflow by about 34% by 2100 compared to the period 1961-1990 (Ministry of Environment (Armenia), 2020). Likewise, the Rioni River in Georgia could see a drop in annual mean discharge by 3-5% by 2071-2100 compared to the period 1971-2000 (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

¹ This chapter is based on the 2017 report, unless referenced otherwise.

² Based on RCP8.5 scenario and baseline period of 1961-1990.

³ Based on RCP4.5 scenario and baseline period of 1971-2000.

⁴ Based on RCP8.5 scenario and baseline period of 1961-1990.

⁵ Based on RCP4.5 scenario and baseline period of 1971-2000.

Both countries could also face an increase in the frequency and intensity of natural hazards. In Armenia, droughts have not only increased in intensity, but also in distribution: drought assessment results show that the upper boundary of drought zones have expanded into mountainous areas, and are commencing at an earlier period (Ministry of Environment (Armenia), 2020). Similarly, drought and desertification may affect arid and semi-arid landscapes in Eastern Georgia, as well as sub-alpine and alpine zones in the mountainous regions, if temperatures continue to rise (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

2.2 Climate-related security risks

The climate trends and projections outlined in Section 2.1 will impact the region's economy, infrastructure and livelihoods. The 2017 OSCE-led ENVSEC study identified agriculture as one of the region's most sensitive economic sectors to climate change, posing risks for livelihoods and food security. In particular, droughts, heat waves, and other hydrometeorological hazards have been identified as some of the biggest threats to agriculture in Armenia (Ministry of Environment (Armenia), 2020). Georgia's livestock farming and viticulture are especially vulnerable to climate change impacts, either directly through heat stress, or indirectly through the spread of pathogens (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

Both countries share a number of important transboundary natural resources. The Kura-Ara(k)s River Basin is the main river basin and water source shared by all countries in the South Caucasus region (Asryan et al., 2019). In particular, Armenia and Georgia share the Khrami-Debed River, which is a tributary to the Kura River, and is an important transboundary river that offers opportunities for water-related co-operation between the two countries. Indeed, Armenia and Georgia have both indicated willingness to co-operate on a bilateral basis for the Khrami-Debed River Basin, particularly on technical aspects such as joint monitoring of transboundary water resources (Tonoyan, 2019).

In addition, the area between Northern Armenia and Southern Georgia is home to ecologically and socio-economically important forest and alpine ecosystems. These shared natural resources are threatened not only by climate change impacts (e.g. decreases in precipitation and increases in drought severity), but also by human activities (e.g. deforestation and overgrazing).

From a security-perspective, climate-related impacts could increase competition over natural resources and undermine socio-economic stability and livelihood security across the region. In addition, climate change impacts can have direct and indirect consequences to human health, and add to existing gender inequalities, for example by exacerbating livelihood insecurity of women who are disadvantaged in terms of adaptive capacities such as financial resources or education compared to men. The role that climate change has in driving migration is also an emerging concern in the South Caucasus, as disasters and natural hazards have driven large-scale movements of people in the past, mostly within the region. Georgia's Fourth National Communication to the UNFCCC, for example, has identified migration as an important sector to consider in terms of climate change mitigation and adaptation (Ministry of Environmental Protection and Agriculture (Georgia), 2021).

3 Co-operation opportunities

This chapter outlines the three priority topics for co-operation between Armenia and Georgia, along with the priority shared hotspot and related topics. The selection of these topics, hotspot and co-operation opportunities are based on findings from both the 2017 OSCE-led ENVSEC study as well as results of the consultation process which began in March 2021, supplemented with additional input from project experts and desktop research.

3.1 Sustainable and climate-resilient forest management

Forests are important for the South Caucasus due to the wide range of ecosystem services they provide, ranging from carbon storage and biodiversity conservation, to protective functions from natural hazards such as soil erosion, landslides, desertification, and salinity (FAO and UNECE, 2019). While each country's forest cover differs (Georgia: 38.5-44.8%; Armenia: 11.2%), a number of common issues threaten forests in both countries, most notably high fuelwood consumption, poor access to affordable alternative energy resources, and illegal logging. These have contributed to forest loss, degradation, and ecosystem alteration (World Bank, 2020). This in turn can exacerbate livelihood insecurity for rural communities relying on forest goods (ENVSEC, 2017).

As such, sustainable and climate-resilient forest management emerged as a top priority topic for both countries during the consultation process. It is also an important component for disaster risk reduction and wildfire management, both of which constitute another priority topic between the two countries (see Section 3.2).

Measures and activities

Throughout the consultation process, stakeholders described the introduction of sustainable forest maintenance, harvesting, biomass utilization, and reforestation measures as important steps to jointly address the topic of sustainable forest management. Other measures include the development of nature-based tourism (which would help create jobs while ensuring a balanced use of natural resources), as well as the development of forest certification, especially in Georgia.

A recent study by the FAO and UNECE highlighted the need to improve the information base for sustainable and climate-resilient forest management in the South Caucasus (FAO and UNECE, 2019). Both Armenia and Georgia lack up-to-date information on their respective forest resources, specifically regarding national forest inventories and forestry-related trade statistics and industrial data (World Bank, 2020). Therefore, another important measure would be to expand and update the information base, by regularly implementing comprehensive and accurate national forest inventories,⁶ surveying forest health and vitality, and monitoring the supply of wood, other forest goods and services, as well as livelihoods linked to the forest sector (FAO and UNECE, 2019).

⁶ Georgia is currently developing its national forest inventory.

Related to this, stakeholders of the consultation process also highlighted the need for both countries to exchange information on their respective sustainable forest use practices, which could include experiences on pest control in forests. In a similar vein, stakeholders suggested that forestry authorities of both countries could work together, with the help of international donors, to develop and implement joint programs that aim to conserve and restore forests in border areas. This could help develop relations between each country's national parks, thereby strengthening transboundary co-operation on sustainable forest management.

Recent initiatives and projects

There are numerous government and civil society initiatives and co-operation projects that address sustainable forest management in both countries, at the national, bilateral, and regional levels. These can provide important entry points for future collaboration:⁷

Initiatives and projects in Armenia:

- First Draft of the National Forest Programme of Armenia, prepared by the Ministry of Environment of Armenia with support from the FAO (2020). The Programme aims to increase Armenia's national forest cover to over 20.1% by 2050, while also improving the condition of existing forests through the establishment of an enabling policy framework (FAO, 2020).
- Armenia Tree Project (ATP). Established in 1994, this non-profit organization focuses its activities on tree propagation, forestation, and community-level planting, economic empowerment, education and awareness-raising (Armenia Tree Project, n.d.). An important event hosted by ATP is the Forest Summit, inaugurated in 2019 with the aim to facilitate open and transparent discussion of policy decisions regarding Armenia's forests, as well as to catalyze improvements in forest conservation and restoration internationally (Armenia Tree Project, 2019).
- GCF project "Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation" (2018-ongoing). This project focuses on the forest-energy nexus, by targeting adaptation and mitigation measures at the community level in the Armenian provinces of Lori and Syunik. Specifically, the project aims to "increase the role of communities governing and managing natural resources through forest concessions and improved fuelwood management, timber production and non-timber forest products" (GCF, 2020b).
- UNDP project "Mainstreaming Sustainable Land and Forest Management in Mountain Landscapes of North-Eastern Armenia" (2016-2019). The project's objective was to "ensure sustainable land and forest management to secure continued flow of multiple ecosystem services", targeting the regions of Lori and Tavush (UNDP, n.d.a).
- UNDP/EU Clima East pilot project "Sustainable management of pastures and forest in Armenia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities" (2013-2017). The project's main objective was "to demonstrate a natural resource management model in mountainous pastures and forests of Armenia which increases ecosystems' capacity to sequester carbon under pending climate warning risks, while at the same time retain biodiversity and economic values" (Mansour, 2017).
- WWF project "Forest landscape restoration in Northern Armenia" (2012-2015). Implemented in the Lori province of Northern Armenia, the main goals of the project included

⁷ This overview includes projects and initiatives highlighted by stakeholders and project experts during the consultation process, as well as projects that were implemented and/or funded by the OSCE and ENVSEC.

“restoration of forests and natural habitat of critically endangered plant and animal species as well as income generation for the local population” (WWF, 2012).

Initiatives and projects in Georgia:

- Georgia has signed an Association Agreement with the EU, which includes provisions to ensure sustainable management of forests and trade in forest products, and to combat illegal logging and related trade (EU, 2020).
- GIZ/GCF project “Enabling Implementation of Forest Sector Reform in Georgia to Reduce GHG Emissions from Forest Degradation” (2020-ongoing). The project aims to help Georgia reduce greenhouse gas emissions by “enhancing carbon sequestration through the introduction of sustainable forest management in three Georgian regions” (GCF, 2020a).
- ADC/CENN project “Promoting Sustainable Forest Management for Climate Resilient Rural Development in Georgia” (2018-ongoing). The project aims to reduce rural poverty and help Georgia deliver its commitments under the SDGs, NDC, and EU Association Agreement with regard to sustainable green growth. Particularly, the project’s main outcome is to “create an enabling environment and effective interagency coordination for improved forest and watershed management, sustainable rural energy solutions, and diversification of rural income opportunities” (ADC, n.d.d).

Initiatives and projects at bilateral/regional level:

- GEF/UNEP project “Upscaling of Global Forest Watch in Caucasus Region” (2018-ongoing). The project aims to “empower decision-makers in government and civil society with technology and information to help reduce deforestation, facilitate commitments to restoration and conserve forest biodiversity by developing innovative user-friendly tools that easily share information (and) provide on-the-fly analyses” (GEF, n.d.). Specifically, it focuses on addressing barriers that prevent the availability of up-to-date information, developing an interactive forest and land-use web-based portal to share information, and enabling legal and political conditions for forest restoration across sectors.
- IUCN/BMU-supported “Bonn Challenge” (2011-ongoing). The Bonn Challenge is a global initiative to restore degraded and deforested land, with the aim of restoring 350 million hectares by 2030 globally (IUCN, 2020). For the region of Europe, the Caucasus, and Central Asia specifically, the ECCA30 is a regional initiative to accelerate the implementation of the Bonn Challenge, as well as achievement of targets related to the Paris Agreement and Land Degradation Neutrality (InfoFLR, 2018). Both Armenia and Georgia have committed to the Bonn Challenge (FAO, 2018b).
- “Emerald Network”, launched in 1989 by the Council of Europe under the Bern Convention on the Conservation of European Wildlife and Natural Habitats. The aim of this ecological network is to ensure “the long term survival of the species and habitats of the Bern Convention requiring specific protection measures”. Georgia has officially adopted Emerald Network sites on its territory, whereas Armenia has officially nominated candidate Emerald Network sites (Council of Europe, 2021).
- GIZ project “Management of natural resources and safeguarding of ecosystem services for sustainable rural development in the South Caucasus (ECOserve)” (2018-2021). The project’s main objective is to improve “the preconditions for the sustainable and biodiversity-friendly use of natural resources in the prevailing land-use systems”, using a context-specific approach and focusing on land-use, natural resource use efficiency, and rural livelihoods (GIZ, n.d.)

- FAO/UNDA project “Accountability Systems for Sustainable Forest Management for the Caucasus and Central Asia” (2016-2019). The project’s aim was to strengthen the national capacity of partner countries (i.e. Armenia, Georgia, Kazakhstan, Kyrgyzstan, and Uzbekistan) in developing “national criteria and indicators (C&I) and reporting, or accountability systems, for sustainable forest management”, and to enable countries to “actively participate in international processes related to forests” (FAO, 2018a).

The following projects do not specifically address sustainable forest management, but as these projects support broader climate action and low-emission development strategies, they could influence each country’s overall strategies in addressing the topic:

- EU/UNDP project “EU4Climate” (2018-ongoing). The project aims to support six EU Eastern Partner countries in implementing the Paris Agreement and improving climate policies and legislations. These include, for example, supporting partner countries’ Nationally Determined Contributions (NDCs), low-emission development strategies (LEDS), and alignment with the EU acquis (EU4Climate, n.d.).
- BMU/GIZ project “Developing Capacities for Alignment with the EU Climate Targets in the Eastern Partnership Countries (EaP CLIMATE)” (2016-ongoing). The project “provides advisory services and addresses specific needs that arise from the requirements related to the implementation of selected EU directives with synergies to climate change” (Ministry of Environmental Protection and Agriculture (Georgia), n.d.).

3.2 Disaster risk reduction

The South Caucasus region is subject to extreme hydrometeorological events, which have been increasing in frequency and intensity, and are often associated with flooding, mudflows, landslides and soil erosion (ENVSEC, 2017). Coupled with insufficient capacities for risk management, the region remains highly exposed and vulnerable to these disaster risks (Asryan et al., 2019).

In addition, forest fires constitute another risk: in Armenia, unprecedented large-scale forest fires in 2015 and 2017 coincided with years of extreme hot summers, and have been attributed to both human and climate change factors (Ministry of Environment (Armenia), 2020). Similarly, in Georgia, large-scale fires in the Borjomi Gorge in 2017 coincided with a very hot summer and drying of vegetation cover in the same year (Ministry of Environmental Protection and Agriculture (Georgia), 2021). Climate-related disasters can therefore undermine human security in both countries.

Both countries have co-operated in the past on disaster risk reduction (DRR)- and wildfire management-related activities. For example, most recently during the 2017 fires in the Borjomi Gorge in Georgia, Armenia supplied firefighting equipment to Georgia to help the country combat the fires (Agenda, 2017). Furthermore, stakeholders of the consultation process pointed out the long tradition of exchange and co-operation between each country’s hydrometeorological agencies within the frameworks of regional projects, which has established good working relations between the countries.

Against this backdrop, DRR emerged as a priority topic for co-operation between Armenia and Georgia, particularly with regards to forest fires and wildfires. As noted by stakeholders, the shared concerns and past collaborations between both countries regarding DRR and fires provide favorable grounds to deepen co-operation on the topic.

Measures and activities

Given the history of co-operation in fire management between Armenia and Georgia, future co-operation measures on DRR could involve jointly developing and expanding DRR-related infrastructure and services. Stakeholders of the consultation process thereby suggested the following measures to jointly address fire management and DRR more broadly:

- Establishment of joint early warning systems
- Expansion of hydrometeorological observation networks and modelling capacities to provide reliable information on climate-induced hazards
- Organization of joint trainings and seminars on DRR practices
- Exchange of hydrometeorological data and early warning systems analysis, particularly in cases where disasters are anticipated to affect border areas
- Fostering cross-border collaboration between local communities
- Development of joint action plans and harmonization of policies

Recent initiatives and projects

In addition to past collaborative efforts between Armenia and Georgia in the area of fire management described previously, there are several projects and initiatives at the national and bilateral/regional levels that address fire management as well as DRR more broadly, particularly on enhancing early warning systems and wildfire management:⁸

Initiatives and projects in Armenia:

- UNDP project “Addressing climate change impact through enhanced capacity for wildfires management in Armenia” (2017-ongoing). The project aims to support Armenia’s efforts in revising and updating its policy and legislation documents regarding forest and wildfire management, and in developing the country’s community-based wildfire-fighting capacities. It also aims to support alternative entrepreneurship-based activities for wildfire risk prevention and mitigation, and promote technological solutions to climate change mitigation and adaptation related to agriculture and forestry (UNDP, n.d.b).

Initiatives and projects in Georgia:

- Georgia has signed an Association Agreement with the EU, which includes provisions for EU-Georgia co-operation on DRR and in “improving the prevention of, preparation for and response to natural and man-made disasters” (EU, 2020).
- Ministry of Environmental Protection and Agriculture of Georgia/GCF/UNDP/SDC project “Scaling-up Multi-Hazard Early Warning System and the Use of Climate Information in Georgia” (2018-ongoing). The project aims to “reduce exposure of Georgia’s communities, livelihoods and infrastructure to climate-induced natural hazards”, by focusing on a nationwide scaling-up of several projects and initiatives related to multi-hazard early warning systems and risk-informed local action (UNDP, n.d.c).

⁸ This overview includes projects and initiatives highlighted by stakeholders and project experts during the consultation process, as well as projects that were implemented and/or funded by the OSCE and ENVSEC.

Initiatives and projects at bilateral/regional level:

- EU project “PPRD East – Prevention, Preparedness and Response to Natural and Man-made Disasters in the Eastern Partnership Countries” (Phase 1: 2010-2014; Phase 2: 2014-2019; Phase 3: 2020-ongoing). The project aims to “strengthen disaster risk reduction and crises management in the Eastern Partnership countries and to promote regional cooperation with the EU Civil Protection Mechanism” (EU Neighbours, n.d.a; PPRD East 3, 2020).
- OSCE/GFMC project “Enhancing National Capacities on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus” (2009-2017). The project aims to “assist the South Caucasus countries in enhancing their fire management capacities”, and has undergone three phases which focused on: (1) national and regional trainings, (2) wildfire risk assessments and analysis of legal and institutional framework for wildfire management at country level, and (3) support for development and implementation of national fire management policies (GFMC, 2017).

Furthermore, several projects related to sustainable forest management have elements of DRR (see Section 3.1). However, it should be noted that these projects have largely been implemented at the national level, with several stakeholders during the consultation process pointing out that there have not been sufficient initiatives to address DRR specifically at the bilateral scale.

3.3 Integrated water resources management

Both countries share the Khrami-Debed River Basin, which is located in Northern Armenia and Southern Georgia. This shared resource presents common challenges, but also opportunities for both countries to work together to ensure sustainable water use and management, which could be achieved by jointly implementing the principles of integrated water resources management (IWRM).

In addressing this topic, stakeholders pointed out the need to consider Georgia’s ongoing engagement with the EU. Georgia is currently undertaking systemic reforms of its management of water resources in order to align its policies with the EU acquis. These reforms, which include the introduction of river basin management plans, are part of Georgia’s commitments under its EU Association Agreement⁹ (EU, 2020). Hence, stakeholders outlined the need to increase information-exchange regarding water resource management reforms and measures that are currently taking place in both countries as an important first step in jointly addressing IWRM.

In addition, water is and will continue to be a pressing issue for both Armenia and Georgia, particularly as climate change projections indicate a further warming of temperatures and decrease in precipitation and stream flow in both countries (see Section 2.1). Furthermore, there are several past and ongoing initiatives and projects addressing transboundary water management between both countries (see below). Therefore, IWRM remains a priority topic for future co-operation.

⁹ For Armenia, the EU has signed the EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA), which contains provisions regarding environment and water management (EaP, 2021).

Measures and activities

An important step in addressing IWRM that was frequently cited during the consultation process is the development, formalization, and implementation of a transboundary basin-level management plan and a governance mechanism, such as a council, which would oversee and co-ordinate measures in line with the principles of IWRM. Such measures would include:

- Joint monitoring and control of water quality, which could include waste management, pollution control, as well as monitoring of water-related infectious diseases
- Joint research and studies on water resources, which could include hydrogeological and geochemical/isotope studies of transboundary aquifers
- Regular exchange of data, information and experiences relevant to water resources and use

Recent initiatives and projects

There have been a number of transboundary projects addressing various aspects of water management and water-related hazards between the two countries in the past (Tonoyan, 2019). One notable project that is helping the countries in the South Caucasus region with regards to IWRM is the EU-funded project “**EU Water Initiative Plus for Eastern Partnership Countries**” (EUWI+). The project aims to support partner countries in improving the management of water resources, particularly transboundary rivers, to enable them to bring their national policies in line with EU acquis, specifically the EU Water Framework Directive (International Office for Water, n.d.a).

Under the EUWI+, several river basin management plans at the national level have been or are currently being developed in both countries (International Office for Water, n.d.b; International Office for Water, n.d.c; EU et al., 2016). Stakeholders of the consultation process, however, pointed out that there is a need to go beyond the national level and to develop transboundary river basin management plans. Stakeholders consider the **Khrami-Debed River Basin**¹⁰ as a priority river basin to benefit from such a transboundary management plan, the negotiations of which are currently underway between both countries (UNECE, 2019). As this river basin is located in Northern Armenia and Southern Georgia, which is also a shared climate change and security hotspot (see Section 3.4), a transboundary plan for the river basin could also be factored into any potential co-operation opportunities for this shared hotspot.

¹⁰ In Georgia, a draft river basin management plan for Khrami-Debed River Basin is being developed as part of the country's commitments to align its legislations with the EU acquis, including the EU Water Framework Directive. The plan outlines, among other things, risk factors and environmental objectives specifically for the river basin (EUWI+, 2020).

A step in this direction is the ongoing work between both countries on establishing joint water quality monitoring measures for the Khrami-Debed River Basin, with support from the UNECE. The aim of these measures is to assess pollution and long-term impacts triggered by anthropogenic activities. In a recent National Policy Dialogue Meeting held in June 2021, it was announced that monitoring points have already been identified and agreed upon, and that results of the joint monitoring work will be published annually and made available to all interested stakeholders.

Furthermore, under the EU-funded “**Shared Environmental Information System (SEIS) II East**” project, Armenia¹¹ and Georgia¹² have developed their respective information and knowledge platforms on water data and water resources management. These platforms were developed based on new information technologies and methodologies used in EEA member countries, including flexible content management systems, and are intended to support knowledge-based policymaking in both countries (ENI SEIS II, 2016a; ENI SEIS II, 2016b).

Other projects and governmental initiatives that are relevant for consideration with regards to potential IWRM co-operation include:¹³

Initiatives and projects in Armenia:

- EU project “EU4Sevan” (2020-ongoing). The project’s objectives are to (1) “improve the wastewater treatment by public and private stakeholders through nature-based solutions”, (2) “support ecosystem-friendly and water-protecting land-use and cultivation, water monitoring and management capacities”, and (3) “raise awareness about the significance of the protection of Lake Sevan among the basin communities, the private sector, and other stakeholders” (EU Neighbours, 2021).
- USAID project “Advanced Science & Partnerships for Integrated Resource Development (ASPIRED)”. The project aims to “support sustainable water resource management and sustainable practices of water users in the Ararat Valley through the use of science, technology, innovation and partnership initiatives.” It focuses on four areas: water resource data, technology, water regulation and enforcement, and co-ordination across stakeholders (ME&A Inc., n.d.).

Initiatives and projects in Georgia:

- Georgia has signed an Association Agreement with the EU, which includes reforms to the country’s water legislation as well as plans to adopt river basin management principles at national level (EU, 2020).

Initiatives and projects at bilateral/regional level:

- OECD-supported “GREEN Action Task Force”. Established in 1993, the Task Force aims to “guide improvement of environmental policies in transition economies of Eastern Europe, Caucasus, and Central Asia (EECCA) by promoting the integration of environmental considerations into the processes of economic, social and political reform.” Part of its focus is on water, specifically on water resources management (OECD, n.d.).

¹¹ Armenia’s Water Information System (EcoPortal) has been handed over and is ready to be deployed on the server of the Hydrometeorology and Monitoring Center of the Ministry of the Environment of Armenia after a testing phase (ENI SEIS II, 2016a).

¹² Georgia’s Water Information System is available at: <http://wis.mepa.gov.ge/>.

¹³ This overview includes projects and initiatives highlighted by stakeholders and project experts during the consultation process, as well as projects that were implemented and/or funded by the OSCE and ENVSEC.

- EU/UNDP project “EU4Climate” (2018-ongoing). The project aims to support six EU Eastern Partner countries in implementing the Paris Agreement and improving climate policies and legislations (EU4Climate, n.d.). Although this project does not specifically address IWRM, it could influence both countries’ overall strategies in addressing the topic.
- EU project “Environmental Protection of International River Basins (EPIRB)” (2012-2016). The project aimed to “improve water quality and its management in the trans-boundary river basins” of the EU Eastern Partnership countries. Among its focus areas, the project supported countries in developing river basin management plans for selected river basins according to the requirements of the EU Water Framework Directive (Leonte, 2015).
- EU project “Transboundary River Management for the Kura River Basin Phase III” (2012-2013). Building on the results of the previous phase of the project “Transboundary River Management for the Kura River Basin Phase II” (2008-2011), the project’s objective is to “improve the water quality in the Kura River basin through transboundary cooperation and implementation of the integrated water resources management approach.” The project has helped the countries of the region build capacity to implement the requirements of the EU Water Framework Directive (EPTISA, n.d.; EU Neighbours, n.d.b; Pichugin, 2012).
- Two phases of the GEF/UNDP project “Reducing Transboundary Degradation in the Kura-Aras Basin” (2011-2020). The project focused on the preparation of transboundary diagnostic analysis to identify issues in the Kura-Ara(k)s River Basin, namely (1) variation and reduction of hydrological flow, (2) deterioration of water quality, (3) ecosystem degradation in the river basin, and (4) increased flooding and bank erosion (IW:LEARN, n.d.). The first phase of the project was implemented in all countries of the region.
- USAID project “South Caucasus Water Program” (2005-2008). Building on the previous USAID project “Water Management in South Caucasus” (2000-2004), the overall aim of this project was to “increase regional cooperation in the management of shared water resources that is effective and sustainable.” Two of its specific objectives were to “strengthen the institutional framework and capacity for transboundary basin management”, and to “promote regional, international discussion and cooperation in the region on the issues surrounding regional water management” (Jincharadze, n.d.).
- NATO/OSCE project “Science for Peace” (2002-2008). This project supported transboundary co-operation on river water quality and quantity monitoring and data sharing in the region (NATO, n.d.).
- BMU project “Transboundary Cooperation for Hazard Prevention in the Kura River Basin” (2003-2006). The main objectives of the project included, among others, supporting the preparation of warning and alarm systems in the countries of the region, and implementing international central warning centers for transboundary communication (Chikovani, 2005).
- EU project “Joint River Management Programme” (2002-2003). Funded by the EU through TACIS, the main aim of the project was to “test the application of the UNECE Guidelines on Monitoring and Assessment of Transboundary Rivers in four basins, of which the Kura was one, to suggest improvements to the Guidelines, to get agreement between the countries on the monitoring and assessment strategy as base for future cooperation in water management” (Warren, 2003).

3.4 Northern Armenia and Southern Georgia

Identified in the 2017 OSCE-led ENVSEC study as a shared climate change and security hotspot, Northern Armenia and Southern Georgia remains an important shared hotspot for co-operation opportunities between the two countries. The hotspot hosts several transboundary river and forest ecosystems, as well as a number of important cross-border infrastructure networks (ENVSEC, 2017).

For this hotspot, the topic of **climate change adaptation measures for the agricultural sector** emerged as a top priority for co-operation between Armenia and Georgia during the consultation process. This topic is a top priority because agriculture is an important sector to rural economies in parts of this hotspot. For example, in Lori province in Northern Armenia, approximately 43% of the working population are involved in agricultural activities (Ministry of Territorial Administration and Infrastructure (Armenia), 2017). Likewise, the economy in the Khrami River Basin in Southern Georgia is largely driven by agriculture, particularly agricultural production, food processing, cattle breeding, and milk production.

At the same time, ensuring that agriculture, specifically pasture management, is sustainable is crucial to avoid potential overgrazing and deforestation issues. This is important considering that forests are a priority co-operation topic for both countries (see Section 3.1), and that the hotspot has unique forest ecosystems: Armenian beech forests, for example, are only found in Northern Armenia (Ministry of Environment (Armenia), 2020).

Measures and activities

Co-operation between Armenia and Georgia to address climate change adaptation in agriculture in this transboundary hotspot could include the following measures and activities:

- Develop climate-resilient agricultural practices in the hotspot, which may entail developing drip irrigation systems, water storage infrastructure, and greenhouses equipped with renewable energy
- Conduct climate-resilient agricultural research, including for the development of new agricultural technologies and infrastructure in the hotspot
- Exchange experiences and best practices for climate-resilient agriculture
- Co-operate on pasture management and land restoration activities

Recent initiatives and projects

There are several national level projects in Armenia that address agriculture and livestock development, some of which specifically focus on rural communities in Northern Armenia:

- ADC/UNDP project “EU-Green Agriculture Initiative in Armenia” (2019-ongoing). The overall aim of the project is to “contribute to the realization of shared and balanced inclusive growth in the Northern regions of Armenia through boosting green agriculture and enhancing local value added” (ADC, n.d.a).

- ADC/ICARE project “Fruit Production Sector Development Project in Armenia (FRUITENIA)” (2019-ongoing). The intended impact of the project is to increase “competitiveness of the fruit production sector among the beneficiary farmers.” It also aims to “modernize the agronomy curricula, through introducing new courses and modernizing the contents of the existing ones at ANAU to include concepts of environmentally friendly, sustainable and climate smart modern fruit production approaches” (ADC, n.d.b).
- ADC/SDA project “Livestock Development in Armenia: South-North” (2017-2021). The project aims to contribute to the inclusive and sustainable development of livestock-dependent rural communities. This project is being implemented in several communities in Northern Armenia, specifically in the provinces of Shirak, Lori, and Tavush (ADC, n.d.c).

Although not targeting agriculture specifically, the following project was implemented in Northern Armenia, which may have indirect implications for future co-operation projects on climate-resilient agriculture in the transboundary hotspot in general:

- WWF project “Forest landscape restoration in Northern Armenia” (2012-2015). Implemented in the Lori province of Northern Armenia, the main goals of the project included “restoration of forests and natural habitat of critically endangered plant and animal species as well as income generation for the local population” (WWF, 2012).

Likewise, in Georgia, several national level projects that address agriculture and livestock development include:

- Adaptation Fund/IFAD project “Dairy Modernization and Market Access: Adaptation Component (DiMMAdapt)”. The project’s overall objective is to “enhance the resilience to climate change of vulnerable dairy producers”, through two components: (1) climate-proofing pastoral ecosystem services (water management, pasture regeneration, and DRR), and (2) supporting the climate resilience of market vulnerable smallholders. Among the three regions covered by the project is the Samtskhe-Javakheti region, located in south-west Georgia (Adaptation Fund, 2019).
- EU-supported “European Neighbourhood Programme for Agriculture and Rural Development (ENPARD)” (2013-ongoing). The programme’s objective is three-fold: (1) to build capacity and support government institutions in the reform of the agriculture and rural development sector, (2) to improve employment and living conditions of rural populations by strengthening farmers’ co-operation skills and access to resources, and (3) to promote diversified social and economic opportunities in rural areas, particularly for women and youth, with due respect for the environment and cultural heritage. The programme encompasses projects across Georgia, including the southern regions of Samtskhe-Javakheti and Kvemo Kartli (EU, n.d.).

4 Conclusions

Climate change impacts across the South Caucasus are increasing. These impacts are affecting shared natural resources, thereby exacerbating risks for human security, livelihoods, and economic development. As these risks are shared across the region, they also provide entry points for co-operation.

The consultation process between Armenia and Georgia has shown that there is great potential for transboundary co-operation to address climate-related security risks in the region. In each of the identified priority areas (sustainable and climate-resilient forest management, DRR, and IWRM) and for the transboundary hotspot (Northern Armenia and Southern Georgia), a number of initiatives and projects already exist. However, many of these activities are currently focused on the national level, and there is space to complement and expand these to the bilateral level.

For Armenia and Georgia, this could start with the exchange of data, information, experiences, and best practices relevant to each priority area. This could, for example, include exchanging information on their respective sustainable forest use practices, and co-operating on sustainable forest maintenance, harvesting, biomass utilization, and reforestation measures. Regarding DRR, both countries could jointly develop and expand DRR-related infrastructure and services. On the topic of IWRM, both countries could expand from national level basin management plans towards developing and implementing transboundary ones. And for the hotspot of Northern Armenia and Southern Georgia, both countries could specifically focus on jointly enhancing climate change adaptation in the agricultural sector.

Based on these findings, the project's next phase will develop a pre-feasibility study and concepts for one or two measures for a selected topic or at the hotspot, all of which will be participatory in nature. The scope of stakeholders will also be broadened to include other experts and relevant national and local governmental stakeholders, civil society, academia, private sector, as well as regional and international stakeholders. This will not only leverage existing knowledge and expertise, but also strengthen ownership of the proposed measures and enhance synergies with other regional initiatives.

5 Annex: Consultation process and methodology

5.1 First selection of topics and hotspots

This section provides an overview of the shared topics and hotspots that served as the basis for the consultation process. The shared hotspots and topics are derived from the 2017 OSCE-led ENVSEC study (ENVSEC, 2017), and were discussed and consolidated during the launch event on 2 March 2021 (see Section 5.2).

Shared topics

- **Sustainable and climate-resilient urban development.** Relevant for:
 - the capital cities Yerevan and Tbilisi (particularly with regards to risks linked to heatwaves, landslides, and sustainable transport)
- **Integrated river basin management, including hydropower management.** Relevant for:
 - the shared hotspot (Northern Armenia and Southern Georgia),
 - Lake Sevan and South-eastern Armenia, and
 - the Mtskheta-Mtianeti region (e.g. with its Aragvi River and hydropower) in Georgia
- **Resilient mountain ecosystems.** Relevant for:
 - Yerevan, Ararat Valley, and Lake Sevan in Armenia, and
 - most other hotspots in Georgia (i.e. the regions of North-West Georgia, Mtskheta-Mtianeti, and Kakheti)
- **Sustainable and climate-resilient agriculture.** Relevant for:
 - Yerevan and Ararat Valley in Armenia,
 - Southern and South-eastern Armenia, and
 - the Kakheti Region and Adjara and the Black Sea Coast in Georgia
- **Sustainable and climate-resilient tourism.** Relevant for:
 - South-eastern Armenia, and
 - most hotspots in Georgia, particularly North-west Georgia, Mtskheta-Mtianeti Region, and Adjara and Black Sea Coast
- **Responsible and climate-resilient industry.** Relevant for:
 - Yerevan, Ararat Valley, and Southern Armenia, and
 - Adjara and Black Sea Coast in Georgia

- **Climate-resilient infrastructure** (for energy and transport). Relevant for:
 - the shared hotspot (Northern Armenia and Southern Georgia),
 - Yerevan, Ararat Valley, and South-eastern Armenia, and
 - the Mtskheta-Mtianeti Region and Adjara and Black Sea Coast in Georgia
- **Sustainable and climate-resilient forests**. Relevant for:
 - the shared hotspot (Northern Armenia and Southern Georgia),
 - Southern Armenia, and
 - Tbilisi, Georgia (particularly with regards to urbanization and building development in adjacent forests and on hillsides)
- **Disaster risk reduction**. Relevant for:
 - the shared hotspot (Northern Armenia and Southern Georgia), and
 - all hotspots where natural hazards such as floods and mudslides are concerned (e.g. Adjara and Black Sea Coast in Georgia)

Shared hotspot

Northern Armenia and Southern Georgia: This strategic shared hotspot hosts several transboundary river and forest ecosystems, as well as a number of important cross-border infrastructure networks. Deforestation and variations in temperatures and precipitation threaten the hotspot's forest ecosystems, while the presence of several industrial and mining sites pose a risk for transboundary river pollution. Topics for co-operation at this hotspot include:

- Disaster risk prevention and preparedness measures
- Increased safety of industrial facilities
- Adaptation in the agricultural sector
- Joint ecosystem restoration (e.g. forests)

5.2 Results of the launch event

The following section summarizes the results of the discussions during the launch event. These results were later explored in more detail in the survey (see Section 5.3).

Shared topics highlighted during the discussion

Two **shared topics** emerged as priorities for co-operation opportunities during the discussions:

- The first was **integrated water resources management**. Because of the importance of hydropower for the region's energy, this could involve joint initiatives on hydropower, including the development of joint plans and strategies that consider climate change impacts, which are currently insufficient or lacking. Integrated water resources management could also involve joint irrigation management, which would be important for the agricultural sector and thus for economic development, given the importance of agriculture for the region's economy, particularly in rural areas. Joint research on transboundary hydrology, specifically on aquifers and water flows, was also mentioned as a co-operation opportunity in this regard.
- The second topic was **sustainable and climate-resilient forest management**, particularly regarding the issues of forest fires, illegal logging, and the protection of biodiversity and ecosystems. The topic of forest fires was raised numerous times during the discussions, thus highlighting the importance of this issue as an area of concern among participants. Biodiversity-related issues were also widely seen as potential starting points for co-operation measures, due to their importance in providing ecosystem services for agriculture, and consequently for economic development, especially in rural areas.

Related to the above two points, participants also underlined the following as priorities:

- **Sustainable agriculture and rural development**: This is an important topic in general, given that agriculture is one of the most climate-sensitive economic sectors in the region, particularly regarding the issues of land degradation and water availability for irrigation. Rural livelihoods are particularly vulnerable to climate change impacts due to their high dependence on agriculture and limited access to utilities and services, such as potable water and sanitation. In addition, participants highlighted that sustainable agriculture, in combination with sustainable and rational use of water resources, is important to ensure food security across the region.
- **Resilient mountain ecosystems**: During the discussions, participants highlighted this topic several times and made a strong connection between this topic and forest management, due to the fact that much of the region's forests are located in mountainous areas. Furthermore, mountain ecosystems are especially vulnerable to climate change impacts, and this vulnerability could have severe consequences for other dependent sectors, such as agriculture and freshwater availability.

Additional topics that were also discussed include **renewable energy** (specifically solar energy as well as joint research and exploration opportunities for geothermal energy), **disaster risk reduction** (particularly with regards to forest fires and wildfires), and to a lesser extent, **health-related issues**.

Shared hotspots highlighted during the discussion

Participants confirmed the relevance and growing importance of the **Northern Armenia and Southern Georgia** region as a shared hotspot, and described this hotspot as a promising entry point for co-operation.

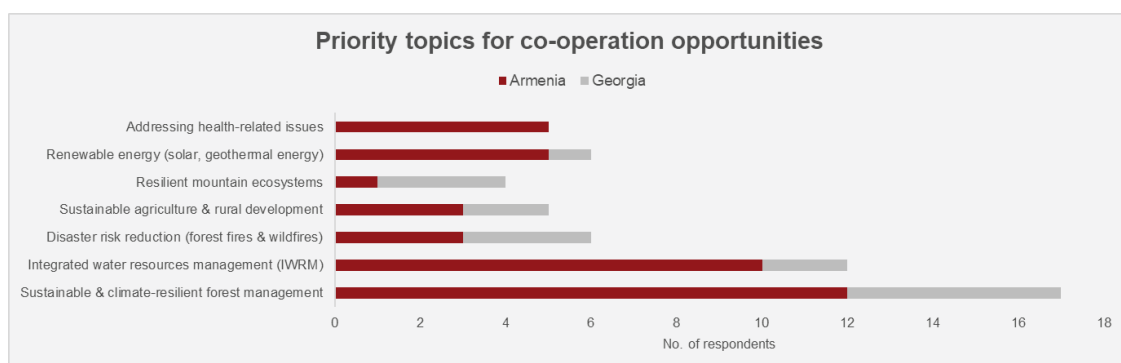
As such, participants outlined a number of co-operation opportunities. These include joint ecosystem restoration and management (particularly with regards to sustainable forest management, and the management of invasive species, which were highlighted as a threat to the region's ecosystem and biodiversity, both of which are consequently important for agriculture), the conceptualization of and research on transboundary geoparks (which could serve as a good starting point for collaborative environmental protection frameworks), and joint efforts in addressing public health threats stemming from vector-borne diseases (such as those caused by invasive, climate-dependent mosquitos).

These suggestions could build on the recommendations set out in the 2017 OSCE-led ENVSEC study, which include the implementation of disaster risk prevention and preparedness measures (specifically for forest fires) and climate change adaptation measures for the agricultural sector. Due to the presence of industrial sites in the region's natural hazard-prone areas, other recommendations include measures for enhanced safety of industrial facilities.

5.3 Survey results

This section provides an overview of the survey results. Figure 2 shows the number of respondents who confirmed and reassessed the priority of topics that resulted from the discussions during the launch event. For more details of the top priority topics and co-operation opportunities (i.e. sustainable and climate-resilient forest management, DRR, and IWRM) that resulted from the survey, see Section 3.

Figure 2: Survey results on priority topics for co-operation opportunities between Armenia and Georgia.¹⁴

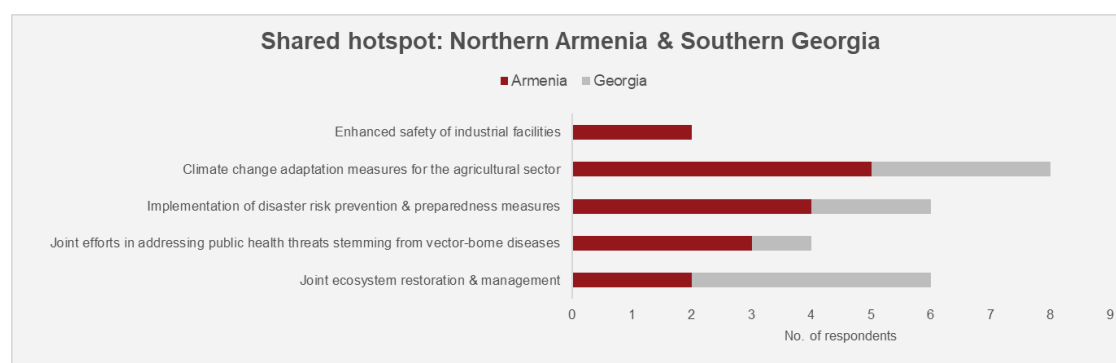


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¹⁴ The numbers shown in the figure represent those who completed the survey. It should be noted that these numbers exclude stakeholders who did not participate in the survey but confirmed that they have issued joint responses and/or referred to their respective colleagues' responses.

Figure 3 shows the number of respondents who confirmed the priority of the topics for the shared hotspot Northern Armenia and Southern Georgia that resulted from the discussions during the launch event. For more details of the top priority topic (i.e. climate change adaptation measures for the agricultural sector), see Section 3.4.

Figure 3: Survey results on priority topics for co-operation opportunities in the shared hotspot Northern Armenia and Southern Georgia.¹⁵



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¹⁵ The numbers shown in the figure represent those who completed the survey. It should be noted that these numbers exclude stakeholders who did not participate in the survey but confirmed that they have issued joint responses and/or referred to their respective colleagues' responses.

5.4 Closing event

The closing event was held on 31 May 2021, and attended by a total of 31 participants (15 female and 16 male), representing the project's stakeholders in Armenia and Georgia, as well as Delegations of the OSCE Participating States. The event began with opening remarks from Ambassador Vuk Žugić, Co-ordinator of OSCE Economic and Environmental Activities, and Ms. Nino Tkhilava, Head of the Environment and Climate Change Department of the Ministry of Environmental Protection and Agriculture of Georgia, delivered on behalf of Ms. Nino Tandilashvili, Deputy Minister of Environmental Protection and Agriculture of Georgia.

The OSCE and adelphi then presented the project as well as the main results of the consultation process, drawing attention to the topics for co-operation opportunities that were identified during the process. The project's next phase, which will involve the development and implementation of co-operation measures, was also discussed.

This was followed by a tour de table, with interventions from participants, including from the Ministry of Environment of Armenia, National Academy of Sciences of Armenia, and the Ministry of Environmental Protection and Agriculture of Georgia, as well as from the report's contributors, all of whom expressed strong interest and support for deepening bilateral co-operations on the identified topics. They also reiterated the importance of enhancing information-exchange among the two countries, a subject that was frequently emphasized throughout the consultation process. The interventions also highlighted the need to better connect different sectors and levels of stakeholders, which essentially boils down to the multidisciplinary nature and different temporal and spatial scales that such co-operations would entail. Nonetheless, participants also underscored the importance of prioritizing specific issues to ensure that the entire process complements and adds on to the existing initiatives.

Overall, participants agreed that such joint initiatives will contribute to each countries' individual efforts in meeting their respective climate action targets. Such initiatives will also further advance co-operation and good neighbourly relations between the two countries.

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