



Organization for Security and
Co-operation in Europe



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Regional Assessment for South-Eastern Europe

Security implications of climate change

This publication is produced within the framework of the Organization for Security and Co-operation in Europe (OSCE)'s extra-budgetary funded project "Strengthening responses to security risks from climate change in South-Eastern Europe, Eastern Europe, the South Caucasus and Central Asia" (Project Number: 1102151).

Funded by: Andorra, Austria, Czech Republic, Germany, Italy, Liechtenstein, Luxembourg, Norway

SUGGESTED CITATION

Rüttinger, Lukas; van Ackern, Pia; Gordon, Noah; and Adrian Foong. *Regional Assessment for South-Eastern Europe. Security implications of climate change*. (Berlin: adelphi; Vienna: OSCE, 2021)

IMPRINT

Publishers:	The Organization for Security and Co-operation in Europe (OSCE) 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 Tel.: +49 (030) 8900068-0 office@adelphi.de www.adelphi.de
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Status:	April 2021	

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ACKNOWLEDGEMENTS

We wish to thank the Project Focal Points in South-Eastern Europe for their continuous support during this phase of the project:

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Ministry of Environmental Protection, Serbia

All Project Focal Points actively participated in the consultation process by contributing to discussions and providing feedback on different drafts of the report, as well as by providing support and suggestions for the planning and development of the project.

We would also like to thank all participants of the consultation process for their valuable contributions.

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LIST OF ACRONYMS

AMD	Acid mine drainage
BD TF	Biodiversity Task Force
COVID-19	Coronavirus disease 2019
CSBL	GIZ Project "Conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar"
DC	Danube Commission
Drin CORDA	Drin Coordinated Action Process
DYNA	GEF-financed WWF project "Danube River Basin Hydromorphology and River Restoration"
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ENVSEC	Environment and Security (ENVSEC) initiative, partnership between UNEP, UNDP, OSCE, and UNECE
EU	European Union
FASRB	Framework Agreement on the Sava River Basin
FFWS	Sava Flood Forecasting, Warning and Alarm System
FRMP	Sava Flood Risk Management Plan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEFF	EBRD project "Green Economy Financing Facility for the Western Balkans"
GFMC	Global Fire Monitoring Center
GGF	EIB and KfW Development Bank project "Green for Growth Fund Southeast Europe"
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German development agency)
GNI	Gross National Income
GWP-Med	Global Water Partnership Mediterranean
ICPDR	International Commission for the Protection of the Danube River
INDC	Intended Nationally Determined Contribution to the Paris Agreement
IOM	International Organization for Migration
ISRBC	International Sava River Basin Commission
IUCN	International Union for Conservation of Nature
KEK	Kosovo ¹ Energy Corporation

1 - All references to Kosovo, whether to the territory, institutions or population, should be understood in compliance with United Nations Security Council Resolution 1244.

KfW	Kreditanstalt für Wiederaufbau
MARRI	Migration, Asylum, Refugees Regional Initiative
MoU	Memorandum of understanding, an agreement between two (bilateral) or more (multilateral) parties
NDC	Nationally Determined Contribution to the Paris Agreement
NECP	National Energy and Climate Plan
NGO	Non-governmental organization
ORF-EE	GIZ Project "Open Regional Fund for South-East Europe – Energy Efficiency"
OSCE	Organization for Security and Co-operation in Europe
RBMP	Sava River Basin Management Plan
RCC	Regional Cooperation Council
RCP	Representative Concentration Pathway
REEP	EBRD's "Regional Energy Efficiency Programme"
RFMC	Regional Southeast Europe/Caucasus Wildland Fire Network and the Regional Fire Monitoring Center
RSD	Serbian Dinar
RWG Env	Regional Working Group on Environment of the RCC
SAP	Strategic Action Programme for the Drin River Basin
SDG	Sustainable Development Goals
SEDRA	GIZ project "Support to Economic Diversification of Rural Areas in Southeast Europe"
SEE	South-Eastern Europe
SNV	Netherlands Development Organization
SWG RRD	Regional Rural Development Standing Working Group in South Eastern Europe
UN	United Nations
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
WBIF	Western Balkans Investment Framework
WHO	World Health Organization
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 to influence security landscapes, including population growth, unequal economic development and resource constraints. In other words, climate change acts as a risk multiplier.

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

As part of this project, the present report outlines the results of an extensive consultation process in South-Eastern Europe.² The consultation process, in which representatives of governmental bodies, civil society organizations, academia, as well as regional and international organizations took part, served to identify possible climate-security hotspots, regional challenges and transboundary co-operation opportunities. The results will form the basis of the second phase of the project, which will involve the development and implementation of concrete co-operation initiatives and activities.

REGIONAL CONTEXT

Regional co-operation plays an important role in South-Eastern Europe, notably through bodies such as the Regional Cooperation Council and European Union (EU). The economies of the region are “upper-middle income” according to the World Bank, although budget deficits and the effects of the COVID-19 pandemic are significant challenges. Key economic sectors include agriculture, information technology, and tourism. On the social front, challenges include declining populations due to emigration and low fertility. While a disproportionately large number of unemployed youth in the region are women, there is encouraging progress regarding combating domestic violence and promoting gender mainstreaming. Addressing climate change is a priority for the polities of the region, as they have reiterated in the Sofia Declaration On the Green Agenda For the Western Balkans in November 2020.

Because of the extensive nature of its climate and landscape, many of the region’s natural resources are shared between its constituents: several protected areas and parks are transboundary, and there are six shared river or lake basins. Shared natural resources mean common environmental challenges – but also opportunities.

These opportunities must be seized because South-Eastern Europe has been identified as one of the planet’s “warming hot spots”. In a business-as-usual scenario, temperatures could rise by 4°C by 2100, with precipitation levels falling by 20-50% and the number of drought days increasing by 20% across the region.

2 - The project region includes Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia. The research was also conducted in Kosovo.

CLIMATE-RELATED SECURITY RISKS IN SOUTH-EASTERN EUROPE

Climate change will impact the region's environment, economies, and societies in complex ways, while also increasing the stress on political systems. The following seven risk clusters are of particular relevance in terms of regional security and stability:

- 1. Agriculture and tourism:** Agriculture and tourism are important for development and employment in many South-Eastern European economies. Both sectors are very climate-sensitive and are expected to be negatively affected by climate change, leading to a potential loss of livelihoods and jobs. Looking into the future, this could contribute to political discontent and pose challenges for political stability. In addition, negative climate change impacts could put pressure on vulnerable groups to migrate or to take up adverse livelihood strategies, including crime.
- 2. Energy:** Domestic coal and lignite, as well as hydropower, are responsible for most of the region's electricity production. These energy sources will increasingly be affected by climate change. Coal-based energy production might face increasing pressure as it is a leading emitter of CO₂, while less water availability poses risks for hydropower production, leading to interrupted electricity supply and higher prices. This could further exacerbate energy poverty, which is already a major challenge in parts of South-Eastern Europe. In addition, environmental damages and water shortages caused by hydropower plants, especially many smaller ones, have led to protests and blockades of construction sites and roads in the past.
- 3. Mining and mining waste:** Inadequately managed or abandoned mining sites and the severe pollution caused by them are an important challenge in South-Eastern Europe, occasionally having transboundary impacts. Increased extreme precipitation events in winter and spring, as well as more intense snow melt and resulting floods or landslides, could increase these risks, particularly the failure of tailing management facilities. Experts warn that transboundary pollution could worsen tensions in the region.
- 4. Emigration and mixed movements:** South-Eastern Europe is witnessing a large-scale emigration of its young and educated population to the EU, mainly driven by low employment prospects and economic opportunities in the region. The impacts of climate change could aggravate existing economic challenges and provide incentives for further migration. At the international scale, South-Eastern Europe is affected by mixed movements passing through the region on their way to the EU. Many refugees and migrants originate from fragile contexts that are themselves threatened by climate change. Fragility and conflict in these regions could be further worsened by climate change, which could subsequently increase human mobility.

5. Health: Climate change impacts will affect human health across the region. Heat waves are expected to decrease workers' productivity and increase heat- and air pollution-related mortality. A warmer and wetter climate is also favorable for mosquitos that transmit diseases. Furthermore, extreme floods can directly threaten people's lives and increase the risk of water- and vector-borne diseases, as well as other infectious diseases, such as typhoid and hepatitis.

6. Transboundary rivers: Transboundary co-operation on rivers is particularly important as the impacts of climate change affect all riparians. Even though transboundary water co-operation exists in the form of international agreements and regional basin management organizations, co-ordinated efforts need to be advanced to adapt to the impacts of climate change and avoid tensions.

7. Forests and illegal logging: Forests cover large parts of South-Eastern Europe and are important for economies, local livelihoods and biodiversity. Fires pose a major risk to these forests. Although regional fire management has made progress, experts find that co-operation on fire management with regional organizations and across domestic authorities is still limited. In addition to fires, forests will be affected by higher temperatures, changes in rainfall patterns, flooding and the duration and frequency of droughts. Illegal logging is another threat to the region's forests with security implications.

The analysis of the regional context and climate-related security risks served as a starting point for a multi-step consultation process to identify climate-security hotspots, regional challenges and transboundary co-operation opportunities to address climate-related security risks.

IDENTIFIED TRANSBOUNDARY HOTSPOTS AND REGIONAL CHALLENGES

Throughout the consultation process, stakeholders and the project team jointly identified a number of climate-related security hotspots and challenges in the region. Climate-security hotspots are transboundary areas or locations that face multiple converging challenges, which include the impacts of climate change as well as compounding environmental, social, economic, and political pressures such as pollution, illegal logging and unemployment. Regional challenges are similar to hotspots as they create transboundary issues. However, they are not bound to one specific geographic area or location, but are rather spread across the region.

Out of an initial list of 37 hotspots, stakeholders prioritized the following:

- 1. Shar/Šara Mountains and Korab Massif area:** This area of alpine mountain ranges, grasslands, and forests with endemic species stretches across Albania, North Macedonia, and Kosovo, and contains three protected areas. Some of the area's main risks include the presence of landmines from past conflicts, forest fires, uncontrolled land development, illegal logging, and habitat and biodiversity loss.
- 2. Drin/Drim River Basin:** The basin stretches across Albania, Montenegro, North Macedonia, Kosovo, and, to a smaller extent, Greece. It includes several important lakes and rivers that have been identified as sub-hotspots, most notably the Ohrid and Prespa Lake System, Skadar/Shkodra Lake, and the Buna/Bojana River Area. In addition, the basin contains a number of dams and reservoirs that are mainly used to produce hydroelectricity. Some of the basin's main risks include flooding, changes in water levels, hydropower disruption, erosion and sedimentation, forest damage, and water pollution.
- 3. Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines:** These mines are located in Bosnia and Herzegovina and Serbia, and are situated relatively close to each other. The main risks associated with these mines include land degradation and soil pollution, water pollution due to the discharge of untreated industrial waste into waterways, as well as health risks, as people living in the region have been found to have excessive levels of lead in their blood.
- 4. Drina Valley – Tara Mountain area:** This mountainous area extends across Bosnia and Herzegovina, Montenegro, and Serbia and is bound by the Drina Valley and Tara Mountain. Main risks in the area include deforestation, wildfires, biodiversity loss, and soil and groundwater pollution, with the nearby Tara National Park facing additional risks related to waste management and illegal construction. Because the area is heavily reliant on agriculture and tourism, its economy is particularly exposed to climate change impacts.
- 5. Lojane chromium, arsenic and antimony mine:** The mine is located in North Macedonia, near the Serbian border. Although the mine is no longer active, its unprotected tailings dump is a pollution hazard, posing risks that include water and soil pollution, with the latter affecting agricultural areas near Lojane.
- 6. Sava River Basin:** The basin extends across Bosnia and Herzegovina, Montenegro, Serbia, as well as Croatia and Slovenia. The basin also covers a small part of Albania. It is part of the Danube River Basin. The main risks identified at the larger Sava River Basin, which also includes the Drina and Lim River Basins as sub-hotspots, include flooding, hydropower disruption, navigational issues, water and groundwater pollution, illegal activities such as sand excavation, and the presence of landmines.
- 7. Sutjeska-Durmitor-Tara River Canyon area:** This mountainous border area that stretches across Bosnia and Herzegovina and Montenegro is ecologically important, being a habitat for a number of rare and threatened flora and fauna species. The main risks associated with the area include water pollution due to a lack of sewage treatment and a limited waste management system, as well as illegal logging and soil erosion.

In addition, stakeholders prioritized two regional challenges:

- 1. Air pollution:** Coal power plants across the region are considered to be the region's main air pollution hotspots, followed by air pollution associated with cities and urban areas. While many air pollutants contribute to climate change, the impacts of climate change could themselves exacerbate air pollution by increasing ground-level ozone and/or particulate matter pollution. In addition, air pollution is closely linked to health risks, livelihood insecurity, as well as energy security.
- 2. Mixed movements and emigration:** The region is affected by the mixed movement of refugees and migrants into the EU, due to its location along the so-called 'eastern route' that passes through Eastern and South-Eastern Europe. These movements can result in inter-group tensions and disagreements, which could be exacerbated by the impacts of climate change. At the same time, the region's low employment prospects and economic opportunities are driving large-scale emigration of its young and educated population to the EU. The impacts of climate change will likely aggravate the existing economic situation and provide incentives for further migration and internal displacement.

SEIZING CO-OPERATION OPPORTUNITIES

As a next step, participants identified different co-operation opportunities for the selected hotspots and regional challenges, and prioritized them according to their feasibility and potential to address climate-related security risks. A transboundary co-operation opportunity is any kind of transboundary activity that can be used to address climate and security risks in a transboundary hotspot or of a regional challenge. In particular, they include joint transboundary adaptation measures, such as the development of joint water management plans, transboundary conservation areas, and regional climate change adaptation strategies.

The following four co-operation opportunities and related hotspots or regional challenges resulted from the prioritization process:

- 1. Transforming regional energy systems to address air pollution**
- 2. Enhancing the existing joint management structures and co-operation to include additional climate-related issues in the Drin/Drim River Basin**
- 3. Fostering co-operation on nature protection in the Shar/Šara Mountains and Korab Massif area**
- 4. Fostering transboundary collaboration on various environmental and climate-related topics in the Drina Valley – Tara Mountain area**

Additional co-operation opportunities are:

- 1.** Reinforcing existing initiatives at the basin level in the Sava River Basin
- 2.** Working towards a transboundary protected area in the Sutjeska-Durmitor-Tara River Canyon area
- 3.** Co-operative measures focusing on refugees, migrants, and populations at risk of displacement who are mainly transiting the region, as well as measures that address the emigration of the region's residents to the EU
- 4.** Addressing pollution and rehabilitation of mines at the Lojane chromium, arsenic and antimony mine
- 5.** Improve transboundary co-operation on mining hazards at the Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines

All of the suggested co-operation opportunities aim to improve livelihoods, security, and resilience, while at the same time reinforcing co-operation, trust and good neighborly relations in the region.

As the next step towards addressing climate-related security risks in South-Eastern Europe, the project will develop concrete initiatives and activities based on the identified co-operation opportunities together with regional stakeholders. Co-operation initiatives and activities will build on past and current strategies, initiatives and co-operation projects in the region, while seeking to establish synergies. Increased and meaningful dialogue and partnerships among stakeholders at both the transboundary and domestic levels will be crucial to establish successful co-operation initiatives and activities. A balanced representation and involvement of local actors, especially of women, youth and marginalized communities, will be central in shaping the design of co-operation initiatives and activities.

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.

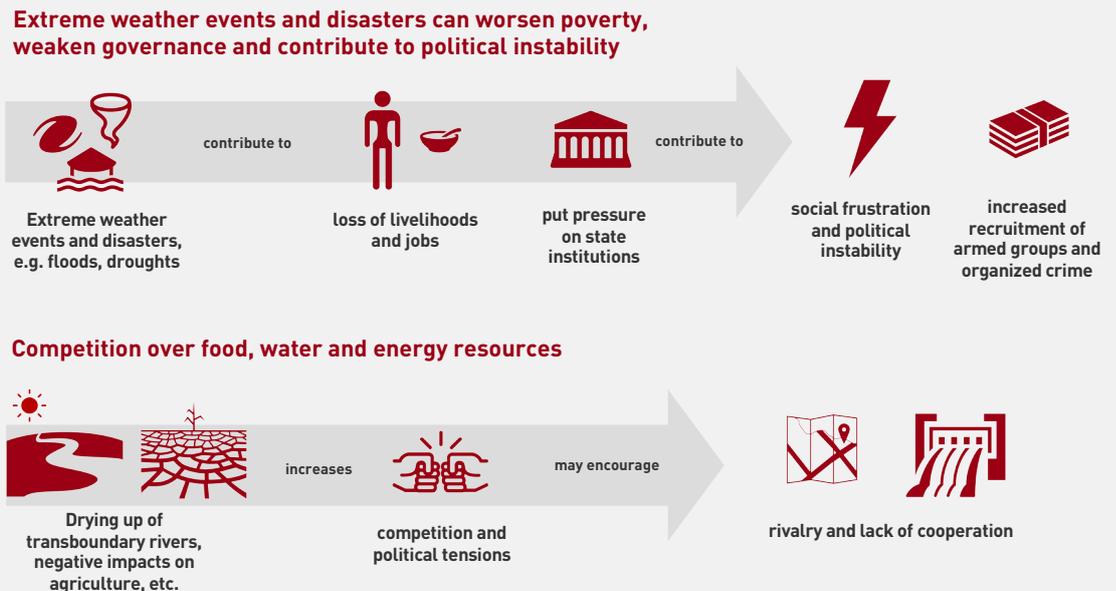
In other words, climate change acts as a risk multiplier. For example, it can change the access to or availability of natural resources, which can increase competition both within and across borders. At the same time, reduced efficiency of energy production, caused by both higher temperatures and lower 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**

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.

Figure 1:
Examples of climate-related security risks

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1.2 — PROJECT

Against this backdrop, OSCE, in partnership with adelphi, has embarked in 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”³ (Project Number: 1102151).

This 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 first phase of the project in South-Eastern Europe. The first phase of the project in South-Eastern Europe consisted of an extensive consultation process to identify possible climate-security hotspots and transboundary co-operation opportunities that can serve as a starting point for the second phase, which will involve the development and implementation of co-operation measures.

Due to the COVID-19 pandemic, a consultation workshop that was originally planned to be held in-person in Skopje, North Macedonia, in March 2020 was replaced by an online consultation process, consisting of a series of events and surveys (Figure 2). 83 stakeholders (53 female and 30 male), representing governmental bodies, civil society organizations, academia, as well as regional and international organizations from the region, were nominated and invited to take part in the process.

Chapter 2 presents the results of the desktop research that provided the starting point for the consultation process. It describes the state of regional co-operation, the economic and social context, the environmental and climate context, and a set of climate-related security risks.

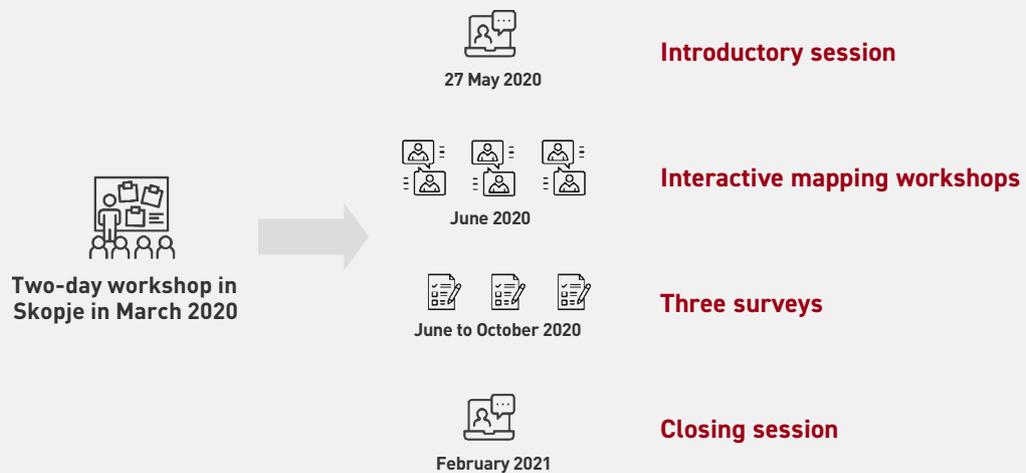
Chapter 3 briefly summarizes the consultation process and the methodology used for the identification and prioritization of hotspots and co-operation opportunities. Annex A contains a more detailed overview of the process and methodology. Furthermore, Chapter 3 outlines the top four hotspots and possible transboundary co-operation measures as prioritized by the participants of the consultation process. All other hotspots and co-operation opportunities are presented in Annex B.

Chapter 4 concludes the report by reviewing the results of the research and consultation processes and reiterating the motivation and possible impact of the project. It then looks ahead to the final stages of the consultation process and to stakeholders' related activities.

Regional experts played a key role in the writing of this report. The OSCE and adelphi contracted six local experts from South-Eastern Europe to assist in the process and the preparation of this report. The report was also reviewed by several OSCE Field Operations in the region.

Figure 2:
Overview of the online consultation process

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3 - 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 Commission and the Austrian Development Agency.

2 Regional context and climate-related security risks

This chapter summarizes the results of a review of the available research and literature on the state of regional co-operation, the economic and social context, as well as the environmental and climate context, and identifies a number of climate-related security risks. This overview served as starting point for the consultation process and provided the basis for the identification of hotspots and co-operation possibilities.

2.1 — REGIONAL CONTEXT

2.1.1 Regional co-operation

Regional co-operation plays an important role in South-Eastern Europe. One of the most important regional bodies is the Regional Cooperation Council (RCC). The RCC was founded in 2008 in order to “spark development in the region to the benefit of its people”.⁴ In this framework, RCC participants have jointly adopted the “*South East Europe 2020 Strategy*”. This provides a framework to support implementation of domestic development strategies in the region, including European Union (EU) accession-related goals, by enhancing domestic efforts through focused regional co-operation on specific issues that can benefit from a shared approach. Financial organizations like the European Bank for Reconstruction and Development (EBRD) — which is jointly owned by the project region and EU member states, among others — provide additional resources for the green transformation. The EBRD has invested more than 3 billion EUR in the “greening” of the region since 2006.⁵ This co-operation could be a model for the type of collaboration required to address shared challenges, especially in the field of climate-related security risks.

The EU is an important political actor in South-Eastern Europe. It has granted Albania, North Macedonia, Serbia, and Montenegro candidate status for EU accession, whereas Bosnia and Herzegovina and Kosovo are potential candidates.⁶ Candidates for membership to the EU are expected to align with and implement EU legislation, the *acquis communautaire*. At the EU-Western Balkans Summit on 8 May 2020, the parties signed the Zagreb Declaration

to reiterate their solidarity and the EU perspective for South-Eastern Europe. The Declaration specifically mentions climate change, stating that “a prominent role should be given to the association of the region to the EU’s climate-related ambitions.”⁷ Building on this, the leaders of South-Eastern Europe declared at the EU-Western Balkans summit on 10 November 2020 their agreement to fully endorse the EU Green Agenda for the region and implement climate action by signing the Sofia Declaration.

The EU is also South-Eastern Europe’s largest trading partner, and EU companies are the biggest foreign investors in the region.⁸ These economic ties strengthen political links between the region, as demonstrated by the EU Western Balkans Strategy of February 2018 and analogous domestic strategies that are developed in the region.

The European Green Deal is the EU’s flagship program to make Europe climate neutral by 2050. The Green Deal will have indirect political and economic effects on neighboring regions. The EU is also working on a Green Agenda for the Western Balkans, with the goal of integrating the region into a larger green transformation.⁹

In addition, there would be mutual benefits for further co-operation between the EU and the project region, as the energy systems of South-Eastern Europe are already partially integrated with those of the EU, and the region has significant hydropower capacity that could benefit both sides.¹⁰

4 - RCC 2020a.

5 - Rozanova 2020.

6 - European Commission 2020b.

7 - Zagreb Declaration 2020.

8 - European Commission 2018.

9 - European Commission 2019.

10 - Popov 2019.

2.1.2 Economic trends

The COVID-19 pandemic, which was declared a public health emergency of international concern by World Health Organization (WHO) in January 2020, has hammered economies all around the world. South-Eastern Europe is no exception: with demand down and regional supply chains disrupted, the World Bank now expects growth in the region to decline by between -3.8% and -1.1% in 2020, before rebounding to +4.5% in 2021, assuming that COVID-19 can be contained.¹¹ All of these projections must deal with unprecedented levels of uncertainty. It is, though, more illuminating to look at economic trends before the pandemic, which would help clarify how resilient the region is and how much fiscal firepower it has for the pandemic response.

The World Bank characterizes the economies of South-Eastern Europe as "upper-middle income", with a gross national income (GNI) per capita between 3,000 EUR and 11,000 EUR.¹² After rapid rises in gross domestic product (GDP) in the 2000s, economic growth slowed over the past decade:

GDP per capita grew at an average of 0.9% per year from 2009-2017.¹³ The economy in the region has picked up speed since 2017. As the World Bank points out, unemployment in the region fell to historic lows in the first half of 2019 as economies in South-Eastern Europe took advantage of their skilled work force and low labor costs compared to some of their central European neighbors."¹⁴

However, other economic trends, such as current account and budget deficits, could make battling the COVID-19 pandemic quite challenging. Tax revenue has not kept up with higher public spending on wages and social programs, while trade tensions and economic headwinds in the EU have exacerbated current account deficits.¹⁵ The lack of fiscal buffers makes it difficult for economies in the region to handle external shocks, some of which are climate-related: in the period 2017-2019, for example, droughts significantly reduced hydropower energy production in the project region, especially in Albania and Bosnia and Herzegovina.^{16,17,18}

2.1.3 Important economic sectors

For South-Eastern Europe as a whole, the electricity mix is dominated by coal-fired thermal power plants (46%) and hydropower (48%).¹⁹ There is considerable variation within the region: Albania gets nearly all of its electricity from hydropower, whereas Bosnia and Herzegovina is reliant on domestic coal, and North Macedonia imports a significant share of its electricity. Serbia generates most of its electricity from coal, with hydropower also playing an important role.²⁰ Three wind farms were commissioned in Serbia in the last few years, bringing the total electricity produced from wind energy to 848 GWh in 2019.²¹ Hydropower is the most important source of electricity in Montenegro, though in dry years it has to import electricity from abroad. It also added a large wind farm in 2018.²² Kosovo is also reliant on domestic coal.

The sources of electricity generation in the project region are as follows. Serbia: 68% coal, 26% hydropower, 2% wind, 4% other;²³ Bosnia and Herzegovina: 61% coal, 35% large hydropower, 3% small hydropower, 1% other;²⁴ Albania: 100% hydropower;²⁵ North Macedonia: 48% coal, 15% natural gas, 34% hydropower, 3% other;²⁶ Montenegro: 45% large hydropower, 43% coal, 3% small hydropower, 9% wind;²⁷ Kosovo 95% coal, 5% other.²⁸ **Figure 3**

The availability of hydropower is a regional strength, but also has its challenges. It often comes with significant environmental and social consequences, and competes with other uses of water supplies. These negative aspects of hydropower have been frequently criticized by local and international non-governmental organizations (NGOs), and they often lead to public resistance to the expansion of this low-carbon energy source: the construction of small hydropower plants has triggered widespread public outcry in recent years.²⁹ Besides hydropower, other forms of renewables such as wind or solar have made little headway in the region.³⁰

As for the other major fossil fuels, the region consumes about 3 billion cubic metres of natural gas per year.³¹ The Russian Federation is the main gas supplier to the region, especially to Bosnia and Herzegovina and North Macedonia, which have no domestic supplies. The region as a whole will probably benefit from major planned gas infrastructure projects, such as the EU-backed gas interconnector between Bulgaria and Serbia, and the Trans-Adriatic Pipeline, which will bring gas from Azerbaijan to Albania. The project region consumes about 61 million barrels of crude oil a year, most of it imported from the Russian Federation. Albania is a notable exception because it is a major producer and exporter of crude oil.³²

11 - World Bank 2020a.

12 - World Bank 2020b.

13 - The Economist Intelligence Unit 2018.

14 - Bennett 2019.

15 - World Bank 2019a.

16 - Musabelliu 2019.

17 - Euractiv 2018.

18 - Balkan Green Energy News 2017.

19 - CEE Bankwatch Network 2018.

20 - IEA 2020.

21 - CEE Bankwatch Network n.d.b.

22 - CEE Bankwatch Network n.d.a.

23 - CEE Bankwatch Network n.d.b.

24 - CEE Bankwatch Network n.d.c.

25 - CEE Bankwatch Network n.d.d.

26 - Republic of North Macedonia 2019.

27 - CEE Bankwatch Network n.d.a.

28 - Kosovo Energy Regulatory Office 2020.

29 - CEE Bankwatch Network n.d.a.

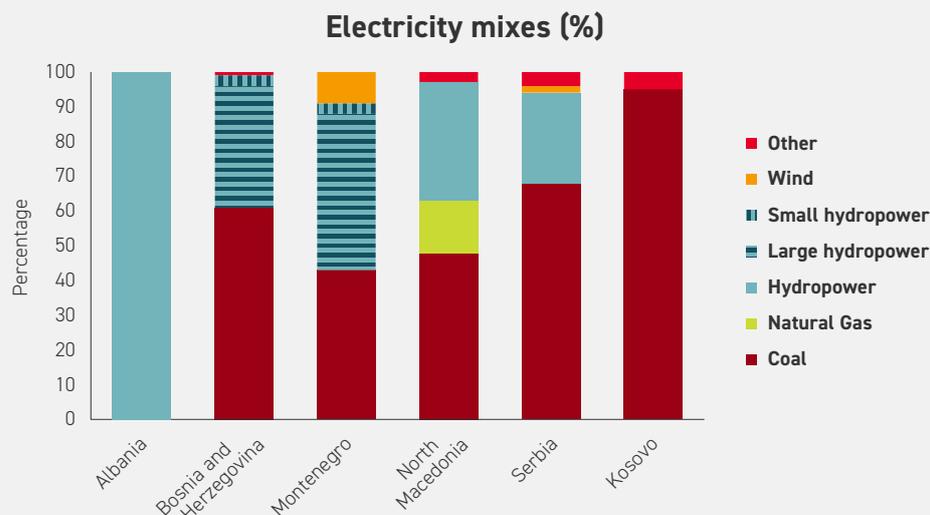
30 - CEE Bankwatch Network 2019.

31 - Lachert and Kamiński 2019.

32 - Lachert and Kamiński 2019.

Figure 3:
Sources of electricity
generation in South-Eastern
Europe

© adelphi; based on data by CEE Bankwatch Network (n.d.), the Government of the Republic of North Macedonia (2020) and Kosovo Energy Regulatory Office (2020).



Strategically located along trade routes from both East to West and South to North, South-Eastern Europe is a promising area for infrastructure investments. Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia have Memorandums of Understanding (MoUs) with China on the Belt and Road initiative, a Chinese program to connect Asia with Africa and Europe via land and sea.³³ Serbia is the largest recipient of Chinese funds in the region, mainly for energy and transport projects.

New investment in infrastructure would help South-Eastern Europe improve regional integration and stimulate economic growth. The 2019 World Economic Forum Competitiveness Report highlighted "persistent weaknesses" in basic infrastructure such as railways and ports.³⁴ The economies of the region are working to remedy these weaknesses, especially by partnering with international institutions such as the EBRD. The World Bank foresees infrastructure investment increasing across the region in coming years.³⁵

Agriculture is an important part of the economy in South-Eastern Europe, especially in rural areas. It is also very important as a source of employment: in Serbia, for example, the agricultural sector contributes around 6% to GDP, but employs 18.7% of the working population.³⁶ Small, family-sized farms make up a majority of the sector in the region.³⁷ Agriculture in the region has suffered increasing economic losses due to natural hazards over the last decade, notably during a drought in 2012 and floods in 2014.³⁸

In Serbia, for instance, services make up about half of the economy in GDP terms, with information technology and tourism being two of the fastest growing sectors.³⁹ As for goods production and trade in South-Eastern Europe, machinery and automobiles are two of the most important sectors, though each economy has its own specialties. In Albania, for example, leather footwear is the biggest export category.

Tourism — particularly in coastal areas such as the Adriatic Sea adjacent to Montenegro and Albania — has a significant positive effect on economic growth in the project region.⁴⁰ Indeed, it is one of the largest potential drivers of economic growth in the region.⁴¹ 11.4% of the employed people in the region work in travel and tourism, thus travel restrictions related to the COVID-19 pandemic took a major toll on the industry in 2020.⁴² The RCC found that a large share of international tourists are cultural tourists, and that "walking tourism", which includes summer activities in the mountains, is popular across the region.⁴³

South-Eastern Europe has a long history of mining, and was, until the early 1990s, a major producer of copper, lead and zinc in Europe. Albania was additionally an important producer of chromate. Beginning in the 1990s, the mining industry declined and the pollution associated with it decreased. However, the region has many abandoned mining sites that were not adequately closed, and they present serious risks to the environment (e.g. lacking control of acid mine drainage (AMD) or non-monitored tailing dumps).⁴⁴

33 - Kosovo does not have a separate MoU with China on the Belt and Road Initiative.

34 - Broom 2019.

35 - World Bank 2019a.

36 - Nordea 2019.

37 - Bedrač et al. 2019.

38 - AGMEMOD Consortium 2015.

39 - Nordea 2019.

40 - Selimi et al. 2017.

41 - The Balkan Forum 2017.

42 - RCC 2020d.

43 - RCC n.d.

44 - Stuhlberger 2009.

2.1.4 Social dynamics

The population of the project region is 17.9 million.⁴⁵ The region's life expectancy is relatively high, above 73.1 years for men and above 77.9 years for women. Children (in this case those under 15 years of age) constitute 14.4% of the population of Serbia and 18.1% of Montenegro, with the others in between.⁴⁶ This is close to the EU average of 15%. Montenegro also has the highest fertility rate on average with 1.78 births per woman, while Bosnia and Herzegovina has the lowest, on average 1.3 births per woman. For comparison, the EU fertility rate in 2018 was 1.55 births per woman.⁴⁷

These fertility rates are below the replacement level of 2.1 births per woman, which is one of the reasons behind South-Eastern Europe's shrinking population. The high rates of emigration are another important factor.⁴⁸ In 2010, the latest year for which such data is available, a significant share of the population in the project region was living abroad: the emigration rate — i.e. the total migrant population from a given source country divided by the sum of the migrant and resident population in the same source country — was 18% for Albania, 20% for Bosnia and Herzegovina, 12% for North Macedonia, and 10% for Serbia.⁴⁹

Projections estimate that the population of South-Eastern Europe will shrink over the period 1989-2050: for instance, a 24% decline is foreseen in Serbia and a 30% decline is expected in Bosnia and Herzegovina.⁵⁰ This trend represents a major challenge. A related economic and social issue is the slowdown in urbanization in recent years. South-Eastern Europe experienced rapid urbanization from 1960-1990, but since then urbanization has stalled, and in 2017 the urban share of the population was just 51%, which is 20% lower than the European average.⁵¹ More urbanized economies benefit from agglomeration effects, although rapid urbanization also has environmental consequences.

Youth populations face a challenging job market, with limited jobs available. The United Nations (UN) warns that "high levels of youth unemployment, low labor force participation rates (especially among women, ethnic minorities, and vulnerable groups), and extensive informal sector employment are common to labor markets" in the region, which poses a risk of social exclusion.⁵² In Serbia, for instance, the youth unemployment rate (for those aged 15-24) was 32.2% in 2019.⁵³ A disproportionately large number of unemployed youth in the region are women.⁵⁴

Poverty is another challenge for the region. The average poverty rate — as defined by relevant domestic indicators and data — in the project region is 19.7%.⁵⁵ This is a similar poverty rate to those of nearby economies (Romania: 23.5%; Bulgaria: 22%; Croatia: 19.4%), and it indicates the existence of social and economic problems that could be made harder to address in the face of negative climate impacts. A related measure is the distribution of income: "income inequality is high" in South-Eastern Europe, and "tax and transfer systems do little to reduce inequality in the region", according to a report from the Friedrich Ebert Stiftung.⁵⁶

Gender inequality remains an issue in the region, as in many others. The Friedrich Ebert Stiftung found that women are "chronically underrepresented" in public life, and identified factors contributing to gender inequality, such as feminized poverty and the tendency of unpaid care work to fall on women, wide gender pay and pension gaps, and uncertain processes on ending the harassment of women.⁵⁷ The Department for International Development of the United Kingdom believes that the persistence of traditional gender roles in the region is holding back gender equality.⁵⁸

However, there are positive developments in this area. The Istanbul Convention on preventing and combating violence against women and domestic violence has been ratified by Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia. Examples of efforts to promote gender equality abound, from Albania's National Strategy and Action Plan for Gender Equality 2016-2020, which promotes gender mainstreaming, to Serbia's Law on Prevention of Domestic Violence, which introduces emergency measures for dangerous domestic violence situations.⁵⁹

45 - This figure is based on the most current World Bank data; however, because censuses are conducted at different times, it is possible that the population figures refer to different years (World Bank 2020f).

46 - Eurostat 2019a.

47 - Eurostat 2019b.

48 - Eurostat 2019a.

49 - Brückner et al. 2013.

50 - Judah 2019.

51 - Eurostat 2016.

52 - UNDP 2020a.

53 - World Bank 2020c.

54 - ILO 2019a.

55 - World Bank 2020d.

56 - Jusić 2018.

57 - Friedrich Ebert Stiftung 2018.

58 - Haider 2017.

59 - Civil Society Forum of the Western Balkans Summit Series 2018.

2.1.5 Climate change strategies

Addressing climate change is a priority for the polities of the region. Leaders from South-Eastern Europe reiterated their commitment to this cause in the Sofia Declaration On the Green Agenda for the Western Balkans of 10 November 2020, highlighting their determination to implement actions on five pillars: climate, energy, and mobility; circular economy; depollution; sustainable agriculture and food production; and biodiversity.⁶⁰

Within the UN framework, Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia have submitted their Intended Nationally Determined Contributions (INDCs),⁶¹ which set out how they intend to meet their commitments under the Paris Agreement, to which they are parties.⁶² The submission of the INDCs is an encouraging demonstration of the region's willingness and commitment to do its part to mitigate climate change and support the most important global climate accord. Nevertheless, the region's contribution to global efforts to limit temperature rise to below 2°C is still limited in proportional terms.

Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia have also prioritized climate change in their efforts towards implementing the 2030 Agenda for Sustainable Development⁶³ and the Sustainable Development Goals (SDGs), including SDG13 on Climate Action, as also reflected in their Voluntary National Reviews submitted to the High-Level Political Forum on Sustainable Development.⁶⁴ Given the close linkages between climate change and disasters, climate action also constitutes an important pillar of the region's efforts to implement the 'Sendai Framework for Disaster Risk Reduction 2015-2030'.⁶⁵

Domestic legislation and policy documents play an important role in transforming international commitments into policy on the ground. This is also true for climate change mitigation and adaptation. In this area, progress in South-Eastern Europe is mixed. Many of the economies in the project region are in the process of preparing legislation and/or policies and strategies to help them meet their climate goals.

In its National Strategy on Climate Change for 2019-2030, adopted in July 2019, Albania further outlines goals for 2050. Albania is also preparing its Fourth National Communication and its first biennial update report under the UN Framework Convention on Climate Change (UNFCCC).⁶⁶ In November 2020, Parliamentary Commissions discussed the new draft Law on Climate Change, which is due to be approved at the end of 2020.

In Bosnia and Herzegovina, the National Climate Change Adaptation Strategy of 2013 and the low emission development strategy covering 2013-2025 are under revision. Furthermore, Bosnia and Herzegovina is working on a National Adaptation Plan, which will set the resource and time frames for the implementation of climate change-related policies and strategies.⁶⁷

Montenegro adopted a Law on the Protection against the Negative Impacts of Climate Change in 2019, which will ensure the harmonization of Montenegro's climate legislations with those of the EU *acquis* – one of the prerequisites for EU accession.⁶⁸ In February 2020, Montenegro introduced a cap and trade scheme for major CO₂ emitters, the funds of which will be used for environmental protection measures and support for renewables and innovation. It is the first cap and trade scheme that has been implemented in the region,⁶⁹ although more needs to be done to align this scheme with the EU *acquis* on emissions trading.⁷⁰

North Macedonia is preparing a comprehensive strategy on climate action consistent with the EU 2030 framework. Additionally, with regards to the implementation of the Paris Agreement, the Fourth National Communication as well as the Third Biannual Report on climate change are being finalized. However, North Macedonia is still in the early stages of aligning its legal framework on climate change with those of the EU *acquis*.⁷¹

In Serbia, the Climate Change Strategy and Action Plan was prepared in 2018, and it is currently pending approval by the government. Serbia is also making progress in improving its greenhouse gas (GHG) emissions inventories and updating its Nationally Determined Contribution (NDC) to the Paris Agreement. While Serbia has made "some level of preparation" in the areas of environment and climate change, its implementation is still at a "very early stage", as more needs to be done to strengthen its administrative and technical capacities to implement, monitor and report on climate *acquis*.⁷²

The project region is also part of the Energy Community, and as such, it has committed to apply EU energy rules and principles. This includes drawing up National Energy and Climate Plans (NECPs), which would help support long-term energy and climate change targets, as well as transpose the EU Energy *acquis* into respective legislations.⁷³ Both Bosnia and Herzegovina and North Macedonia are relatively advanced in developing their NECPs – in fact, North Macedonia is already aligned with the energy efficiency *acquis*, having adopted an Energy Efficiency Law in early 2020.⁷⁴

While the aforementioned EU and UN climate targets are primarily related to climate change mitigation, climate change adaptation is also a vital element of central and local climate strategies, as it brings immediate benefits and limits the negative effects of climate impacts.

60 - RCC 2020c.

61 - INDCs became first Nationally Determined Contributions (NDCs) when countries ratified the Paris Agreement.

62 - UNFCCC n.d.

63 - UN 2020.

64 - Sustainable Development Goals Knowledge Platform 2020.

65 - UNDRR 2020b.

66 - European Commission 2020d.

67 - European Commission 2020a.

68 - Spasić 2019.

69 - CAN Europe 2020.

70 - European Commission 2020e.

71 - European Commission 2020f.

72 - European Commission 2020g.

73 - Spasić 2020d.

74 - Energy Community Secretariat 2020.

For the purposes of this report, transboundary adaptation strategies — particularly around the shared transboundary climate security hotspots analyzed later in Chapter 3 of this report — are especially important. The project region is already co-operating on climate change adaptation in various constellations. Bosnia and Herzegovina and Serbia are among the parties to the Framework Agreement on the Sava River Basin, which integrates water resources management and supports co-operation on flood protection and other issues. Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia are members of the 'Drought Management Centre for Southeastern Europe', which aims to improve drought preparedness and reduce vulnerability. The most comprehensive example of

joint plans and activities is perhaps the 2008 South-East European Climate Change Framework Action Plan for Adaptation,⁷⁵ whose purpose is to enhance understanding of climate risks in the region and build resilience.

The United Nations Environment Programme (UNEP) argues that the region needs to devote more attention and resources to climate change adaptation in mountainous areas, as existing domestic policies in South-Eastern Europe mostly fail to address mountain issues specifically.⁷⁶ The following sections of the report address such climate risks and hotspots where more co-operation around climate change adaptation would be beneficial, not only in the mountains but in all climate hotspots.

2.1.6 Current climate and environmental situation

South-Eastern Europe is climatically diverse: in the southern and coastal regions, the climate is subtropical Mediterranean characterized by hot summers and mild winters, while in the northern and lowland areas, temperate continental climates prevail.⁷⁷ The region is also known for its unique and rich biodiversity, owing to its range of habitats, which include coastal lagoons, wetlands, mountains, karstic terrains, and Mediterranean forests.⁷⁸

Because of the extensive nature of its climate and landscape, many of the region's natural resources are shared between its constituents: several protected areas and parks are transboundary,⁷⁹ and there are six shared river or lake basins.⁸⁰ The Sava River Basin, for example, is a major drainage basin in the region and the second largest tributary to the Danube River by catchment area, and is shared by Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, and to a smaller extent, Albania.⁸¹ Many of these shared water resources are used for hydropower generation, which plays an important role in South-Eastern Europe's electricity supply (see Figure 3 and section 2.1.3).⁸²

Shared natural resources means common environmental challenges. Domestic waste, industrial waste, and waste from illegal dumps and landfills often end up in transboundary rivers, creating problems for the region.⁸³ Air pollution in urban and industrial areas is negatively affecting human health and the environment, while land use is also changing: despite the slowdown in urbanization trends in recent years, people are still moving from rural or agricultural areas to cities and coasts, putting pressure on natural coastal habitats.⁸⁴

Indeed, the impacts of climate change are already being felt across South-Eastern Europe. While precipitation level patterns vary throughout the region, average temperatures have increased by 1.2°C over the past two decades, with an especially pronounced effect during the summer.⁸⁵ Heat waves, droughts, flood risks, and wildfires have also been on the rise in recent years.⁸⁶ These have had disastrous consequences in the past decade, such as the extreme drought in 2012 that severely impacted Bosnia and Herzegovina's agriculture,⁸⁷ and the May 2014 floods that devastated parts of Bosnia and Herzegovina, Serbia, and Croatia.⁸⁸

Wildfires are especially common in the lowlands and hilly regions of South-Eastern Europe, and are the result of a combination of heat waves, human action, and poor forest management.⁸⁹ In Serbia, for instance, droughts are making forest fires more likely.⁹⁰ Montenegro had to battle extremely fierce wildfires in July 2017 due to extremely high temperatures and dry conditions.^{91,92} In Kosovo, forest fires in 2011 and 2012 were related to droughts and high temperatures.⁹³ Additionally, fires can be transboundary in nature and highly destructive: the September 2012 forest fires that spread from Albania to Mavrovo National Park in North Macedonia burned more than one hundred hectares of land.⁹⁴

75 - RCC 2008.

76 - Alifthan et al. 2015.

77 - Vuković and Vujadinović Mandić 2018.

78 - EEA 2019.

79 - Nagy 2012.

80 - Dinaric Arc and Balkans Environment Outlook (DABEO) 2010.

81 - Plavšić et al. 2014.

82 - WBIF 2019.

83 - Nagy 2012.

84 - EEA 2019.

85 - Vuković and Vujadinović Mandić 2018.

86 - Vuković and Vujadinović Mandić 2018.

87 - Zurovec et al. 2015.

88 - Plavšić et al. 2014.

89 - UNDP 2016.

90 - Zivanovic 2017.

91 - OSCE 2017.

92 - NASA Applied Sciences Program 2017.

93 - USAID 2017.

94 - UNDP 2016.

2.1.7 Climate projections and vulnerabilities

South-Eastern Europe has been identified as one of the planet's "warming hot spots", with more frequent heat waves anticipated if temperatures rise by 4°C by 2100.⁹⁵ Indeed, this is the trajectory that the region would follow under a 'business-as-usual' scenario, along with a fall in precipitation levels by 20-50% across the region and an increase in the number of drought days by 20%.^{96,97,98}

This decrease in precipitation is anticipated to occur mostly in summer. On the other hand, extreme precipitation events, coupled with more intense snowmelt, are projected to occur most frequently in winter and spring, which will trigger more flood events, landslides and other related impacts.^{99,100} Areas along the Danube, Sava and Tisza Rivers in northern Serbia and Bosnia and Herzegovina, for example, may face an increase of up to 20% in the frequency of 100-year flood events.¹⁰¹ The coastal areas of South-Eastern Europe will also see significant impacts, most notably from sea-level rise. In Albania's Drini-Mati River Delta, sea levels are projected to rise by 0.52 m in a 4°C world by the end of the century, compared to the baseline period of 1986-2005.¹⁰² Projections also show that subtropical climates will shift towards the north, leaving coastal and southern areas very hot and dry during summer.¹⁰³

The rich biodiversity and ecosystems that characterize South-Eastern Europe are under threat, as climate change is expected to cause a decline in suitable climate conditions, a slower natural migration of species, and the degradation of many natural habitats.¹⁰⁴ For example, the percentage of land in South-Eastern Europe with conditions suitable for its characteristic beech forests is projected to decline from 34.7% in 1985-2005 to 25% by the end of the century under a "business-as-usual" scenario.¹⁰⁵ The anticipated increase in frequency and spreading of wildfires as a result of temperature and precipitation changes may also exacerbate forest degradation in the region.^{106,107}

While the impacts of these climatic changes would be felt across the region, certain segments of the population will be harder hit. Rural populations, which make up around 45% of the population in South-Eastern Europe, are particularly vulnerable due to their dependence on natural resources for livelihoods.¹⁰⁸ At the same time, populations along coastal areas disproportionately face the threats of sea-level rise and the need to move, while urban populations may become more severely affected by floods and landslides as urban expansion and informal settlements spread into hazard-prone areas on floodplains and steep hillsides.¹⁰⁹

Gender differences can also be determining factors of climate vulnerability. This is the case across the globe: for instance, female environmental defenders are more likely to suffer violence; drought can shift migration patterns, causing families to split and increasing the burden on women as the head of households; and women's inferior control over economic assets make it harder for them to cope with climate risks.¹¹⁰

In South-Eastern Europe specifically, the persistence of traditional gender roles, as well as structural constraints that hinder women's full participation in the labor market, exacerbate the climate security risks discussed in the next section. Regardless of the climate security impact that is at play, it is usually women who bear the brunt of the damage. Efforts to promote gender mainstreaming, such as the Global Support Programme for National Communications and Biennial Update Reports pilot program for South-Eastern Europe and Lebanon, seek to address these inequities.¹¹¹

Figure 4:
Climate-related projections
in South-Eastern Europe

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	<2°C RCP2.6 – RCP4.5	>4°C RCP8.5
 Precipitation change	Uncertain	↓ 20-30%
 Annual water discharge	↓ 15%	↓ >45%
 Sea-level rise Drini-Mati River Delta, Albania	↑ 0.32 m (0.21-0.54 m)	↑ 0.52 m (0.37-0.9 m)
 Beech forests* Area with suitable climate conditions	25.0%	11.5%

Projections are based on temperature rise at the end of the century (2081-2100) with respect to the baseline period (1986-2005), and are taken from World Bank Group 2014: Turn Down The Heat: Confronting the New Climate Normal. (*) projections taken from Vukovic and Mandić 2018: Study on climate change in the Western Balkans region.

95 - World Bank 2014.
96 - Vuković and Vujadinović Mandić 2018.
97 - World Bank 2014.
98 - Djurdjevic et al. 2019.
99 - Djurdjevic et al. 2019.
100 - World Bank 2014.
101 - World Bank 2014.
102 - World Bank 2014.
103 - Vuković and Vujadinović Mandić 2018.

104 - Vuković and Vujadinović Mandić 2018.
105 - Vuković and Vujadinović Mandić 2018.
106 - Vuković and Vujadinović Mandić 2018.
107 - UNDP 2016.
108 - World Bank 2014.
109 - World Bank 2014.
110 - UNDP 2020b.
111 - Global Support Programme 2020.

2.2 — CLIMATE-RELATED SECURITY RISKS

These climate change impacts will affect the region's environment, economies, and societies in complex ways, and increase the stress on political systems. The following risk clusters are of particular relevance in terms of regional security and stability.

2.2.1 Agriculture and tourism

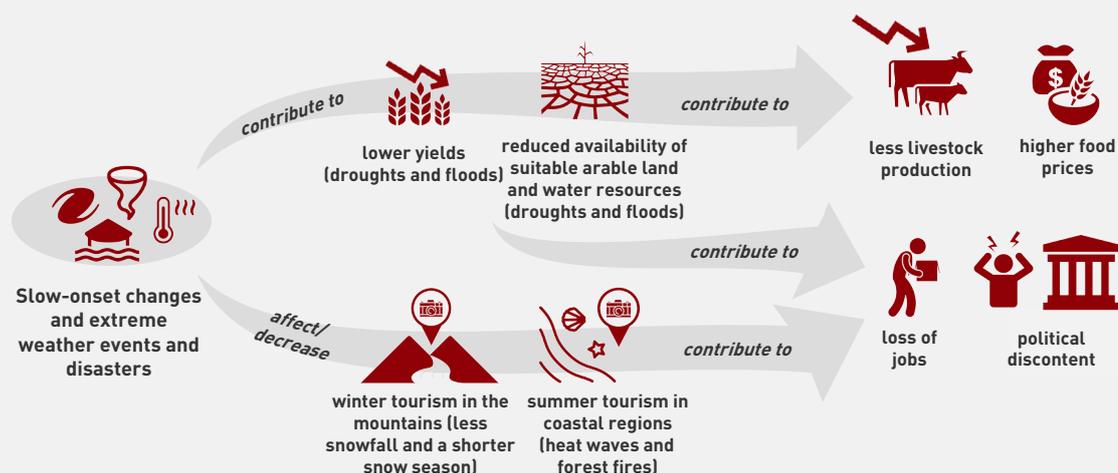
Agriculture is a particularly climate-sensitive sector, but it is important for development and employment in many South-Eastern European economies, especially in rural areas.¹¹² Since much of the region's agriculture is rain-fed, the agricultural sector – and the livelihoods of the rural communities that depend on it – is especially exposed to the impacts of climate change. This is particularly the case for droughts and flooding events, which would not only reduce yields but also reduce the availability of suitable arable land and water resources.¹¹³ For example, the drought and subsequent water supply shortage of 2012 resulted in a loss in agricultural production of approximately 900 million EUR in Bosnia and Herzegovina, primarily affecting maize. Because maize was the main raw material for animal feed, the drought resulted in a decline in livestock production, and an overall increase in food prices.¹¹⁴ In North Macedonia, where almost 90% of agricultural area is rain-fed, the anticipated rise in temperatures could cause crop yields to fall by 50% by 2050.¹¹⁵

Tourism is also highly vulnerable to climate change, and a major source of employment in the region.¹¹⁶ Less snowfall and a shorter snow season might negatively impact winter tourism in the mountains (e.g. in Bosnia and Herzegovina), while expected water shortages, heat waves and an increased number of wildfires might affect summer tourism in coastal regions (e.g. in Montenegro and Bosnia and Herzegovina).^{117,118} Despite these climate-related challenges, the sector is expected to become an increasingly important driver of economic growth in the region.¹¹⁹ Nonetheless, climate change could affect ecotourism, which the RCC has cited as an important type of cultural tourism in the region.¹²⁰

Looking into the future, the negative impacts that climate change will have on these two key sectors, as well as the potential loss of livelihoods and jobs, could contribute to political discontent. These impacts could also put pressure on vulnerable groups to move or to take up adverse livelihood strategies, including crime.

Figure 5:
Agriculture and
tourism-related
climate-security
risks

© adelphi



112 - Čustović et al. 2012.

113 - World Bank 2014.

114 - Zurovec et al. 2015.

115 - World Bank 2014.

116 - Vuković and Vujadinović Mandić 2018.

117 - Dworak 2018.

118 - Alfthan et al. 2015.

119 - Alfthan et al. 2015.

120 - RCC n.d.

2.2.2 Energy

Domestic coal and lignite as well as hydropower are responsible for most of the electricity production in the region.¹²¹ These sources could be increasingly affected by climate change impacts, leading to interrupted electricity supply and higher prices. This constitutes an important risk as such developments could exacerbate energy poverty, which is a major challenge in parts of South-Eastern Europe. According to an E3G report, up to 40% of the region’s population may be unable to keep homes adequately warm or cold due to insufficient insulation, a heavy reliance on individual coal and wood burning, and the inability to pay electricity bills.¹²²

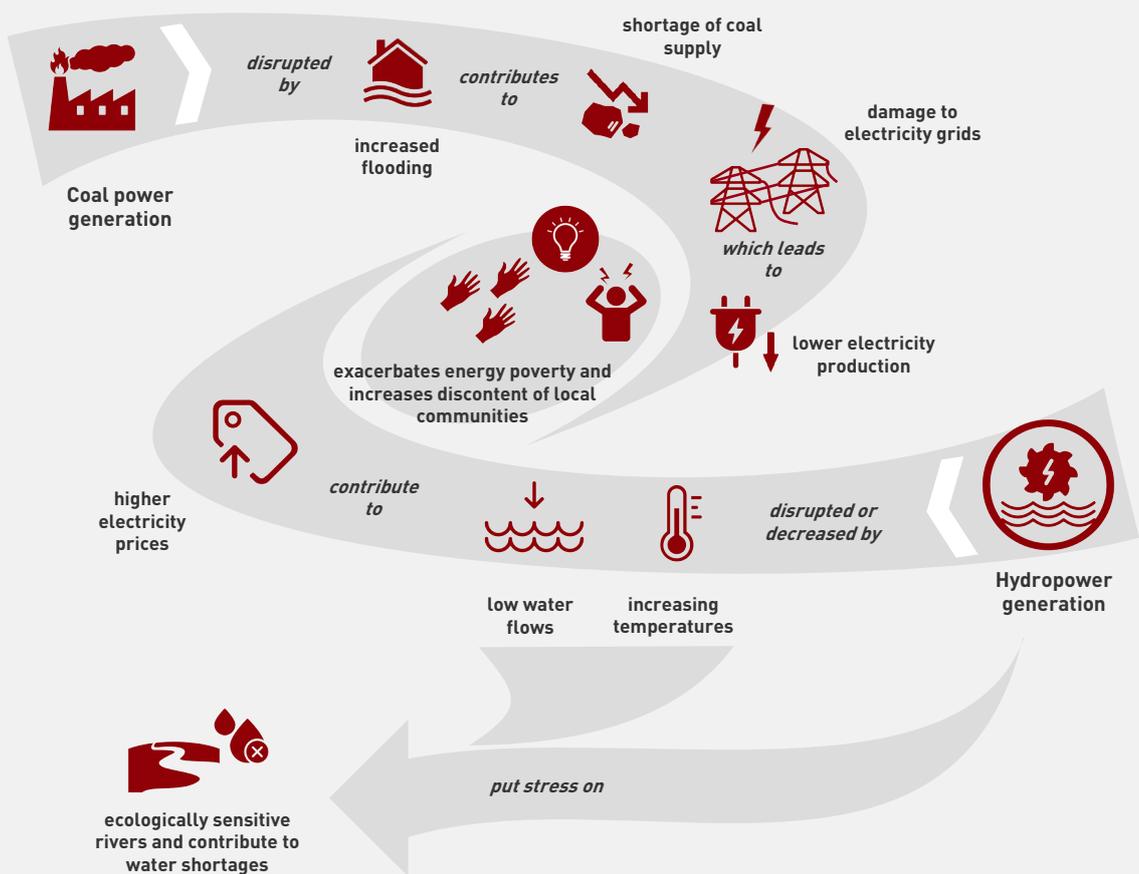
Coal power generation and electricity infrastructure in general could be disrupted by increased flooding and other disasters.^{123,124} For example, operations at two open-pit coalmines in Serbia, which account for approximately two-thirds of domestic coal production, had to be suspended due to serious floods in 2014. As Serbia’s coal-fired power

plants mostly rely on domestic coal, the flooding of mines caused a shortage of coal supply and a cut in electricity production.¹²⁵ The 2014 floods also damaged electricity grids in Serbia and Bosnia and Herzegovina, leaving over 130,000 people temporarily without electricity.¹²⁶ At the same time, warming temperatures are expected to push up electricity prices as cooling demand for thermal power plants is projected to rise by 49% in a 4°C world.¹²⁷

Hydropower is put at risk by climate-induced changes in water availability and discharge patterns.¹²⁸ Albania, for example, depends almost entirely on hydropower for electricity production, and the country may see a drop in output from large hydropower plants by 15% at the end of the century if temperatures warm by 4°C.¹²⁹ Compounding these risks is the fact that much of the region’s hydropower infrastructure is aging and in need of maintenance to adapt to the projected increases in seasonal water variability.¹³⁰

Figure 6:
Energy-related climate-security risks

© adelphi



121 - IRENA 2019.
 122 - Esser et al. 2018.
 123 - Ministry of Environmental Protection (Serbia) et al. 2014.
 124 - Alifthan et al. 2015.
 125 - Ministry of Environmental Protection (Serbia) et al. 2014.

126 - ACAPS 2014.
 127 - World Bank 2014.
 128 - WBIF 2019.
 129 - World Bank 2014.
 130 - WBIF 2019.

In addition, hydropower plants, especially many smaller ones, have damaged ecologically sensitive rivers and have caused water shortages in South-Eastern Europe, where environmental legislation is often incomplete and environmental impact assessments are not always of the desired quality. These negative impacts have led to protests and blockades of construction sites and roads in the past.^{131,132,133} Climate change impacts could put additional stress on already damaged river ecosystems and decrease water availability, affecting local communities.

In order to mitigate the negative climate change impacts on electricity production, there is a need to diversify energy sources and to exploit the region’s non-hydro renewable energy sources. A shift away from coal would also decrease GHG emissions and contribute to improved

air quality and health in the region.^{134,135,136} Furthermore, in light of the planned EU Carbon Border Adjustment Mechanism, which would tax imports of carbon-intensive goods into the EU from countries with less ambitious climate policies, this shift would be beneficial.¹³⁷ Oil and gas, which are almost entirely imported from outside the region, would not be suitable alternatives for several reasons. Firstly, the infrastructure for power generation from oil and gas is not readily available as oil and gas are currently not used for power generation in the region. Secondly, a heavier reliance on oil and gas would make the project region more dependent on external suppliers. Lastly, both oil and gas are very carbon-intensive and therefore not climate-friendly and sustainable options.¹³⁸

2.2.3 Mining and mining waste

Inadequately managed or abandoned mining sites have led to severe pollution in South-Eastern Europe, including transboundary impacts in the past.¹³⁹ Increased extreme precipitation events in winter and spring, as well as more intense snow melt and resulting floods or landslides, could affect the region’s operating or abandoned mines.^{140,141} In particular, the failure of tailings management facilities, such as ponds and dams, would have far-reaching impacts, with large amounts of tailings and contaminants being released into watercourses. Experts warn that transboundary pollution could increase tensions within the region.¹⁴²

Such tensions have indeed manifested themselves several times in the past. Often it is an extreme weather event that causes mining waste to be released into the environment:

in Serbia, a flood during the early summer of 2001 in the vicinity of the lead and zinc Veliki Majdan mine caused significant damage to a dam, resulting in a release of heavy metal tailings that swept into the Drina River, raising health and environmental concerns for multiple riparians.¹⁴³ In Montenegro, tailing dam walls of the lead and zinc Brskovo mine failed after heavy rainfall struck the northern region of the country in the autumn of 1992, resulting in cross-border pollution on the Tara River and tensions with Bosnia and Herzegovina.^{144,145} Together with the projections for more flooding and extreme precipitation events in winter and spring in the coming years, climate change may compound these risks of transboundary pollution and potential tensions in the future.¹⁴⁶

Figure 7:
Mining-related climate-security risks

© adelphi



131 - CEE Bankwatch Network 2019.
132 - Bacchi 2018.
133 - Sherriff 2019.
134 - Daul et al. 2019.
135 - Alfthan et al. 2015.
136 - Esser et al. 2018.
137 - Todorović 2020a.
138 - IRENA 2019.

139 - Stuhlberger 2009.
140 - Alfthan et al. 2015.
141 - ENVSEC 2012.
142 - Alfthan et al. 2015.
143 - Ekapija 2005.
144 - Stuhlberger 2009.
145 - Nagy 2012.
146 - Alfthan et al. 2015.

2.2.4 Emigration and mixed movements

South-Eastern Europe is currently witnessing a large-scale emigration of its young and educated population to the EU, due to low employment prospects and economic opportunities in the region. According to the RCC, the combined working age population of Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia, and Kosovo declined by 400,000 from 2015 to 2020.¹⁴⁷ This form of emigration can damage regional economies. The Westminster Foundation for Democracy argues that the average working age person who leaves Albania, Montenegro, or North Macedonia takes over 14,000 EUR in GDP with them.¹⁴⁸

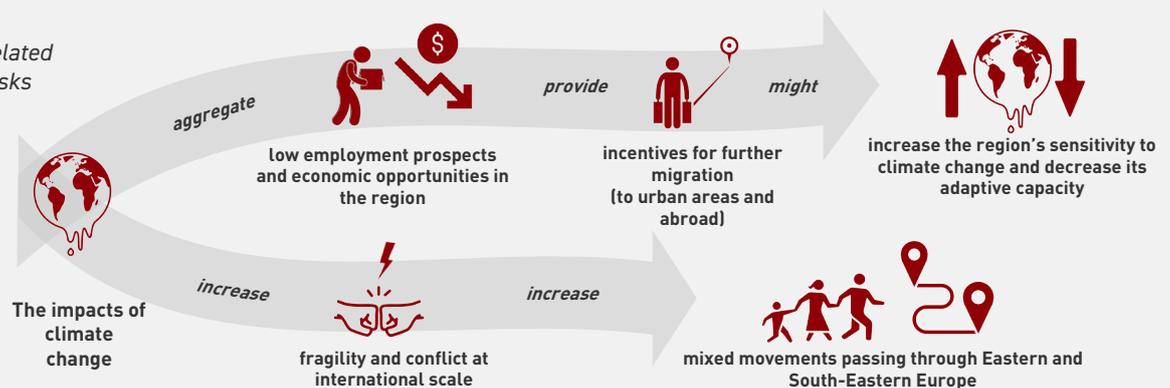
The impacts of climate change will likely aggravate the existing economic situation and provide incentives for further migration (see first risk cluster).¹⁴⁹ Emigration, coupled with the region's already heat-sensitive aging population, is expected to further increase the region's sensitivity to climate change and decrease its adaptive capacity.¹⁵⁰

At the international scale, South-Eastern Europe is also affected by mixed movements into the EU, due to its location along the so-called 'eastern route' that passes through Eastern and South-Eastern Europe.¹⁵¹ The number of illegal border crossings along this route through South-Eastern Europe rose from around 3,000 in 2009 to more than 760,000 in 2015.¹⁵² Numbers declined thereafter to 130,000 in 2016, 12,000 in 2017, and about 6,000 in 2018.¹⁵³

It is notable that many of the regions from which these refugees and migrants originate from are also fragile contexts threatened by climate change (e.g. the Middle East, North Africa and South Asia). Thus, climate change impacts in these regions could further increase fragility and conflict, and subsequently increase human mobility.^{154,155}

Figure 8:
Human mobility-related
climate-security risks

© adelphi



2.2.5 Health

Climate change impacts will affect human health across the region. Although milder winters might be beneficial for the region's population, in general climate change is expected to have negative health impacts. More frequent and intense heat waves could decrease the productivity of workers¹⁵⁶ and increase heat-related mortality due to, for example, heat stress or aggravated cardiovascular and respiratory diseases.¹⁵⁷ In addition, elevated levels of air pollution adversely affect respiratory systems,¹⁵⁸ which is particularly problematic during the COVID-19 pandemic. Heat waves also contribute to elevated levels of particulate matter and ground-ozone concentration, which can increase air pollution-related mortality.^{159,160}

Heat waves are more pronounced in urban areas. Those who are especially vulnerable include elderly people, younger adults, children, people with poor health conditions, urban poor, people working outdoors, and people involved in heavy labor indoors close to industrial heat sources.¹⁶¹

In addition, a warmer and wetter climate is favorable for mosquitos that transmit diseases.¹⁶² Over the past two decades, the region has become more suitable for the Asian tiger mosquito, which is one of the potential vectors of both dengue and Chikungunya.¹⁶³ The mosquito population is now already spread throughout the region.¹⁶⁴

147 - RCC 2020b.

148 - Westminster Foundation for Democracy 2019.

149 - World Bank 2014.

150 - World Bank 2014.

151 - Andreychuk 2018.

152 - Andreychuk 2018.

153 - Frontex 2020.

154 - Brown 2019a.

155 - Brown 2019b.

156 - ILO 2019b.

157 - World Bank 2014.

158 - World Bank 2019b.

159 - Hong et al. 2019.

160 - Climate Central 2019.

161 - McGregor et al. 2015.

162 - World Bank 2014.

163 - World Bank 2014.

164 - World Bank 2014.

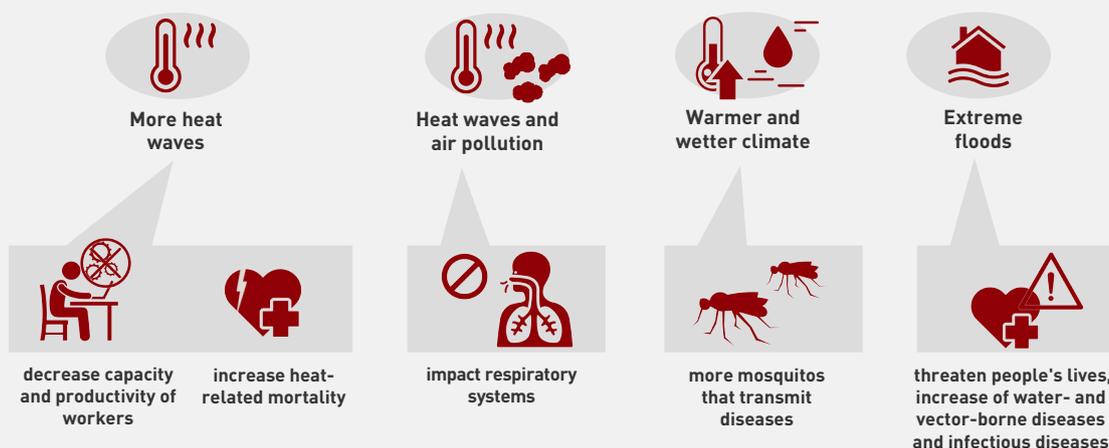
Furthermore, extreme floods can directly threaten people's lives and also increase the risk of water- and vector-borne diseases, as well as other infectious diseases, such as typhoid and hepatitis.^{165,166} Severe floods in 2014, for example, directly caused over 50 deaths in the region. The floods also dislodged landmines to unknown locations and swept away signs indicating landmine fields, although these were fortunately not responsible for deaths. However,

the floods did pose a major health risk in the region, with local health authorities warning of possible outbreaks of infectious diseases.¹⁶⁷

The COVID-19 pandemic is also demonstrating that health crises can hamper climate change mitigation and adaptation efforts. The economic damage resulting from the pandemic is distracting attention and resources from climate initiatives, and is moving the issue of climate change down the agenda.

Figure 9:
Health-related climate-security risks

© adelphi



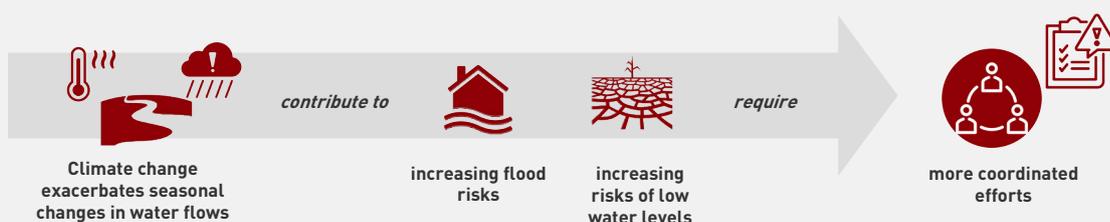
2.2.6 Transboundary rivers

The project region shares numerous transboundary bodies of water: there are six shared river or lake basins.¹⁶⁸ The most significant of these are the Danube River Basin, the Sava River Basin, and the Drin/Drim River Basin. Transboundary co-operation on river basin issues has already taken place in regional basin management organizations set up for that purpose. In 2002, the Framework Agreement on the Sava River Basin was the first development-oriented multilateral agreement signed in the region.¹⁶⁹ The Danube River Protection Convention that is governed by the International Commission for the Protection of the Danube River (ICPDR) is the major legal instrument for co-operation and transboundary water management in the Danube River Basin.¹⁷⁰ In 2008 the Albanian Ministry of Environment, Forestry and Water Administration, the United Nations Economic Commission for Europe (UNECE) and the Global Water Partnership Mediterranean (GWP-Med) launched the Drin Dialogue Process.

Such co-operation is particularly important because the impacts of climate change affect all riparians. For example, the Sava River is expected to experience an increase in runoff in winter and a significant decrease in water flows in spring and summer as a result of climate change. While it is clear that floods might increase along the Sava River as a result, there is high uncertainty on whether low flows will negatively affect navigation.¹⁷¹ Although transboundary water co-operation exists in the form of the aforementioned international agreements – and elsewhere, such as around the Dinaric Karst Aquifer System¹⁷² – co-ordinated efforts need to be advanced to adapt to the impacts of climate change. For example, co-operation on the operation of hydropower dams in the Drina basin is limited, thereby increasing the vulnerability of power plants in the lower part of the basin to higher and lower water flows. Co-operation on flood protection and early warning systems is also limited between the Drina riparians.¹⁷³

Figure 10:
Transboundary rivers and climate-security risks

© adelphi



165 - Alifthan et al. 2015.

166 - ACAPS 2014.

167 - ACAPS 2014.

168 - UNEP/GRID-Arendal 2007.

169 - EEA 2010.

170 - ICPDR 2020.

171 - Dworak 2018.

172 - UNESCO 2016.

173 - Martin-Hurtado et al. 2017.

2.2.7 Forests and illegal logging

Forests cover large parts of South-Eastern Europe and are important for economies (e.g. wood industry) and local livelihoods (e.g. fuelwoods for cooking and heating and as additional income). In addition, forests provide important ecosystem services and are a reservoir of biodiversity.¹⁷⁴ Fires pose a major risk to these forests: in 2012, forest fires in Montenegro affected 7% of the country's surface and caused damages estimated at around 4,288,000 EUR.¹⁷⁵ A total of 2,465 forest fires hit North Macedonia between 2004 and 2013, leading to a loss of around 51 million EUR in terms of burned timber volume and suppression costs.¹⁷⁶ Estimations show that fires in the forests of Serbia in the period 2000-2009 caused a total damage of almost 29 million EUR (34 billion RSD).¹⁷⁷ The frequency and intensity of wildfires is projected to increase due to climate change.

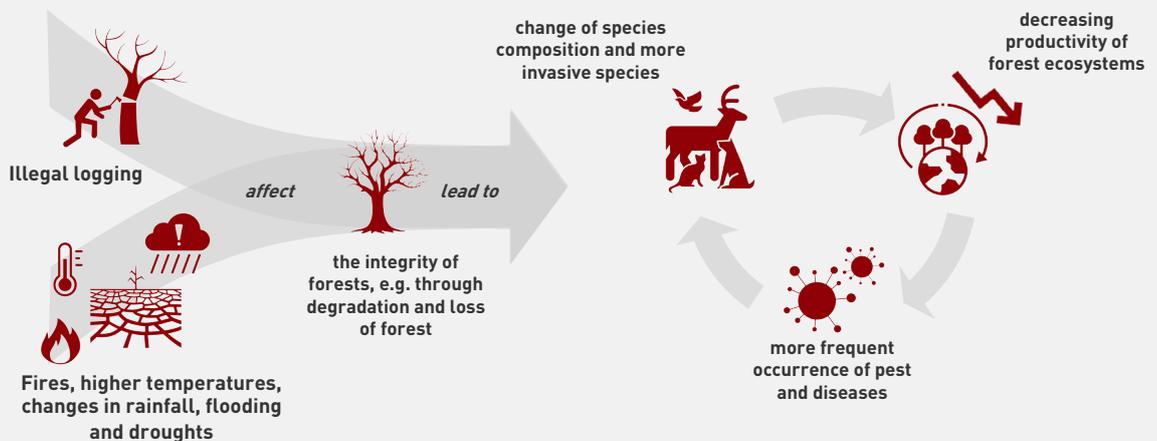
Regional co-ordination on fire management has made progress, for example in sharing information, knowledge and best practices. The Regional Southeast Europe/Caucasus Wildland Fire Network and the Regional Fire Monitoring Center (RFMC) were established in Skopje, North Macedonia, in 2010. The Council of Europe (through its Major Hazards Agreement) and the OSCE are supporting the work of the RFMC. However, regional experts find that co-operation on fire management with regional organizations and across domestic authorities is still limited.¹⁷⁸

In addition to fires, tree growth will be affected by higher temperatures, changes in rainfall, flooding and the duration and frequency of droughts.¹⁷⁹ These impacts lead to more frequent occurrences of pests and diseases, introduction of invasive species, changes in species compositions, and decrease in the productivity of forest ecosystems.¹⁸⁰

Illegal logging is a further threat to the region's forests.¹⁸¹ In areas with inconsistent law enforcement and unclear property rights, residents may cut down trees to use as firewood or to sell illegally. In Albania in 2011, the 'Balkan Insight' reported that illegal loggers felled an area of forest larger than the country's capital, Tirana.¹⁸² More recently, Albania has faced problems with illegal logging in Shebenik-Jabllanice National Park, close to Rrajca Oak forest, a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. Albania has taken strong action to prevent such crimes, implementing a ten-year moratorium on logging and timber exports in 2016, but enforcement remains difficult, especially in controlling the activities of the local population. Consequently, forest cover in Albania declined from 1,052,237 hectares in 2016 to 1,051,859 hectares in 2018.¹⁸³

Figure 11:
Forest-related
climate-security
risks

© adelphi



174 - Alfthan et al. 2015.

175 - Dworak 2018.

176 - Nemeth 2015.

177 - Ministry of Environmental Protection (Serbia) 2017.

178 - Nikolov 2020.

179 - Alfthan et al. 2015.

180 - Dworak 2018.

181 - Markus-Johansson et al. 2010.

182 - Mysliu et al. 2014.

183 - Taylor 2019.

3 Transboundary hotspots and co-operation opportunities

The analysis of the regional context and the climate-related security risks served as a starting point to identify specific geographical climate-security hotspots. These hotspots are transboundary in nature and face multiple converging challenges that include the impacts of climate change and compounding environmental, social, economic, and political pressures such as pollution, illegal logging and unemployment.

A set of 37 preliminary hotspots, identified through desk research and input by six local experts, was thematically clustered: three river basin hotspots, five air pollution hotspots, three degradation and soil pollution hotspots, three marine hotspots, two agricultural hotspots, six biodiversity hotspots, ten crime-related hotspots and five migration hotspots (see [Chapter 5.1, Annex A](#) for more details). These hotspots provided the basis for the consultation with stakeholders from the region.

The stakeholders of the consultation process were nominated by and/or identified in consultation with the respective Delegations of the participating States to the OSCE and with the support of the OSCE Field Operations in the project region. Participants included representatives of governmental bodies, civil society organizations, academia and regional and international organizations. 83 stakeholders (53 female and 30 male) from Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia and Kosovo were invited to take part in the consultation process.

Following an introductory session that launched the consultation process, 51 stakeholders (35 female and 16 male) convened during three interactive online mapping workshops that took place on 8, 9 and 10 June 2020. The stakeholders identified ten geographical climate-security hotspots for the project region. In addition, two regional challenges that create transboundary issues were identified: air pollution and mixed movements and emigration. Regional challenges are similar to hotspots as they create transboundary issues. However, they are

not bound to one specific geographic area or location, but are rather spread across the region. For a full list of the ten hotspots and those that were not included in the prioritization, see [Chapter 5.4, Annex A](#).

In a next step, the stakeholders took part in the first online survey to prioritize the identified hotspots. Survey recipients were asked to assess each identified hotspot according to the criteria of likelihood, severity and co-operation potential. Stakeholders also rated the feasibility of a joint/transboundary adaptation project that would address the risks at a specific hotspot, and indicated two hotspots that, in their opinion, would benefit most from support for joint/transboundary co-operative action. The assessment of the input by stakeholders followed a multistep approach. To ensure equal representation of each stakeholder group, regardless of the number of respondents per group, the results were averaged per group before calculating the score per hotspot and criterion (see [Chapter 5.5.1, Annex A](#) for details.)

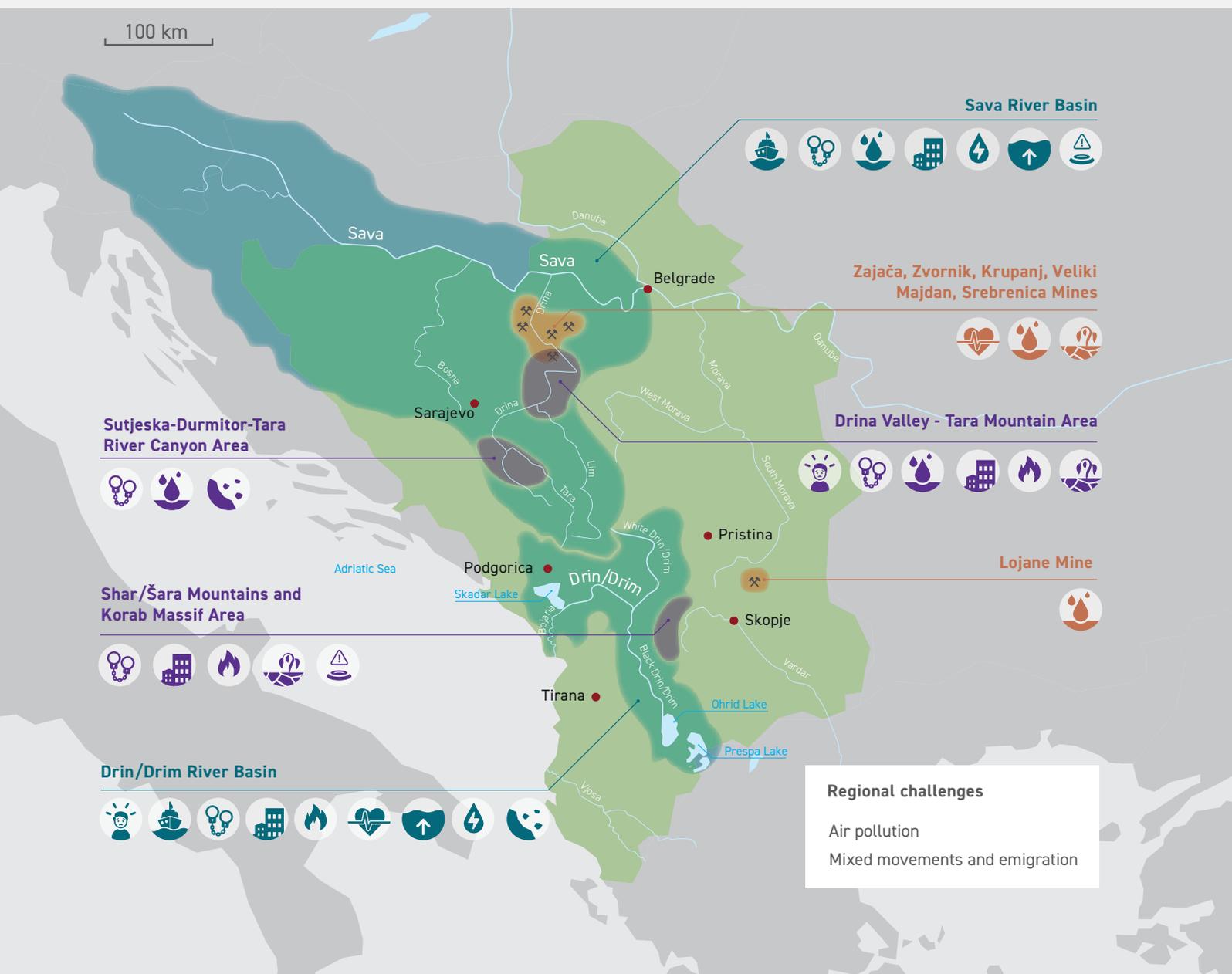
The following seven priority hotspots resulted from the prioritization process (see also [Figure 12](#) and [Figure 13](#)):

1. **Shar/Šara Mountains and Korab Massif area**
2. **Drin/Drim River Basin**
3. **Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines**
4. **Drina Valley – Tara Mountain area**
5. **Lojane chromium, arsenic and antimony mine**
6. **Sava River Basin**
7. **Sutjeska – Durmitor – Tara River Canyon area**

In addition, the two regional challenges **air pollution** and **mixed movements and emigration** were kept for the next phase of the consultation process.

Figure 12:
Climate-security hotspots identified during the prioritization process

© Map produced by INFOTEXT; the areas of the hotspots are approximate.



Areas

- Project region
- River basin hotspots
- Mountain area hotspots
- Mining area hotspots

Climate-related security implications

- Impacts on navigation
- Health impacts
- Water/soil pollution
- Environmental crime
- Erosion
- Livelihood insecurity
- Presence of landmines
- Wildfires
- Expansion of urban areas/ tourism infrastructure
- Hydropower losses
- Land degradation/ biodiversity loss
- River floods

The next step of the consultation process focused on the identification of co-operation opportunities in the prioritized hotspots, using a second survey. A transboundary co-operation opportunity is any kind of transboundary activity that can be used to address climate and security risks in a transboundary hotspot or of a regional challenge. In particular, they include joint transboundary adaptation measures, such as the development of joint water management plans, transboundary conservation areas, and regional climate change adaptation strategies. In this stage, stakeholders could share ideas for transboundary co-operation opportunities that help to address climate-related security risks. Details on each co-operation opportunity can be found in Annex B .

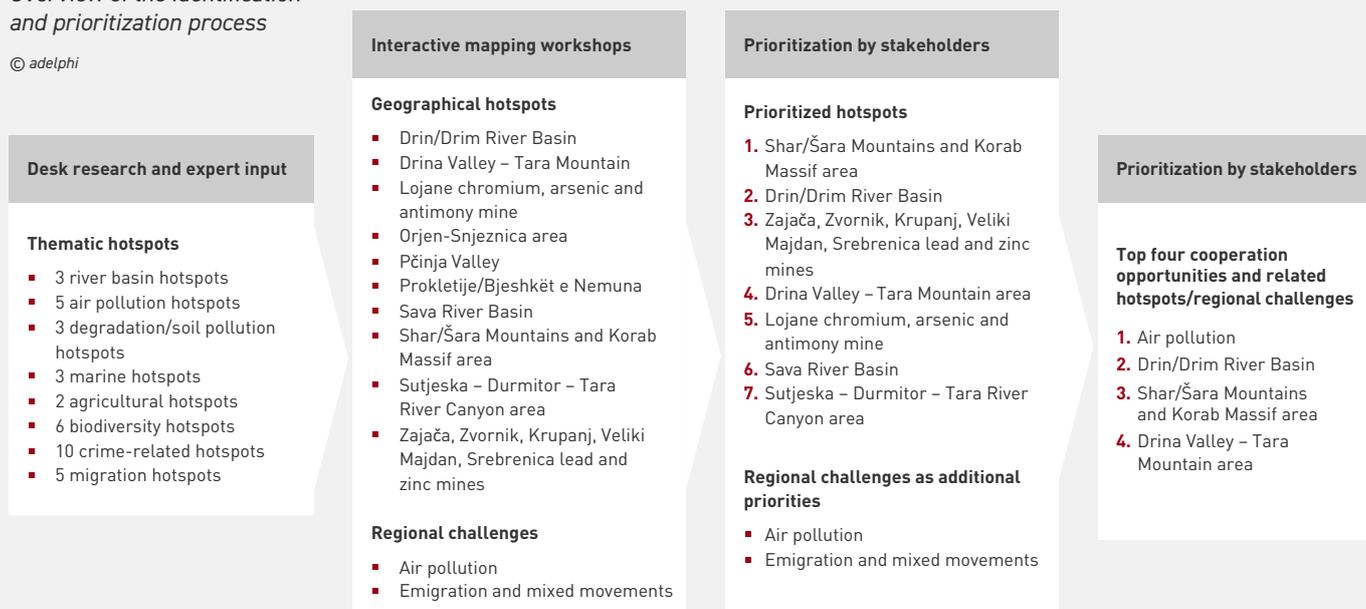
In a third survey, stakeholders prioritized the co-operation opportunities that they found were the most feasible and have the greatest potential to address climate-related security risks. Each stakeholder could prioritize up to three co-operation opportunities. The results were filtered and only those that were chosen by at least two different stakeholder groups were considered for the ranking and weighted to ensure equal representation of each group (for a detailed description please refer to Annex A). The following were the top four co-operation opportunities and related hotspots or regional challenges that resulted from the prioritization process:

1. Air pollution
2. Drin/Drim River Basin
3. Shar/Šara Mountains and Korab Massif area
4. Drina Valley – Tara Mountain area

A detailed assessment of all four prioritized co-operation opportunities and related hotspots follows in the next sections (all other co-operation opportunities and related hotspots can be found in Annex B). For each priority, the related hotspot or regional challenge and main risks or issues are described, and the suggested opportunities for co-operation are listed. This is followed by an overview of strategies, initiatives and projects to establish synergies and to build upon.

Figure 13:
Overview of the identification and prioritization process

© adelphi



3.1 — AIR POLLUTION AS REGIONAL CHALLENGE

Air pollution is a challenge shared across the region, with significant transboundary impacts and co-operation potential. Coal power plants, industries, residential heating, transport, agriculture and uncontrolled waste burning are the main sources of particulate matter and other air emissions in the region.¹⁸⁴ Coal power plants are of particular concern: a 2016 study concludes that the region's coal power plants (16 plants) emit more sulfur dioxide than all EU coal power plants (250 plants) combined, in addition to high levels of particulate matter and nitrogen oxide emissions.¹⁸⁵

The mapping workshops confirmed that coal power plants across the region are considered the main air pollution hotspots. A second type of air pollution hotspot that was identified were cities and urban areas.

Coal power plant air pollution hotspots include:¹⁸⁶

- **Gacko** in Bosnia and Herzegovina, near the border with Montenegro.
- **Kosovo A and B** near Obiliq/Obilić. Coal ash from these plants is kept in the toxic, highly basic Blue Lake, where it risks contaminating the Sitnica River.
- **Kolubara A and Nikola Tesla A** in Serbia.
- **Ugljevik and Tuzla** in Bosnia and Herzegovina, near the border with Serbia. However, a new flue gas desulfurization system will reduce pollution at Ugljevik, and authorities have also decided to support a project to desulfurize the flue gas coming from Tuzla.
- **REK Bitola** in North Macedonia, near the border with Albania (and Greece).
- **Pljevlja II** lignite power plant in Montenegro, close to the borders with Serbia and Bosnia and Herzegovina.

Air pollution and climate change are closely linked. On the one hand, many of the pollutants that are responsible for air pollution contribute to climate change.¹⁸⁷ On the other hand, climate change impacts exacerbate air pollution (by increasing ground-level ozone and/or particulate matter pollution) and its health consequences. Studies have found that increasingly frequent extreme events such as atmospheric stagnation and heat waves contribute to elevated levels of particulate matter and ground-ozone concentrations, which are projected to result in higher levels of air pollution-related mortality.^{188,189} Water-stressed vegetation during droughts reduces ozone removal and further exacerbates ozone air pollution.¹⁹⁰ In addition, forest fires become more likely due to climate change. Particulate matter originating from fires reduces air quality significantly and is also expected to elevate levels of ground-level ozone.^{191,192}

All of these issues are impacting human security, particularly the health of population groups across the region. The current COVID-19 pandemic underlines the importance of the issue: research suggests that poor air quality can lead to a higher risk of contracting the virus and of serious illness and mortality.¹⁹³ In addition, poor air quality can harm agriculture, forestry and ecosystems and thus increase livelihood insecurity. Air pollution has already triggered protests in the past, for example in Tuzla, Pljevlja, Bitola, Skopje, Tetovo, and Pristina.

The issue of air pollution is also closely connected to regional energy security. Addressing the region's high energy intensity and over-dependence on fossil fuels has the potential to not only reduce air pollution, but also to increase energy security.

184 - JRC 2020.

185 - HEAL et al. 2019.

186 - HEAL et al. 2019.

187 - Campbell-Lendrum and Prüss-Ustün 2019.

188 - Hong et al. 2019.

189 - Climate Central 2019.

190 - Lin et al. 2020.

191 - Kollanus et al. 2017.

192 - Brey and Fischer 2016.

193 - Cole et al. 2020.

3.1.1 Suggested co-operation opportunity: Transforming regional energy systems

Co-operation opportunities concerning the transboundary challenge of air pollution were prioritized by a large share of stakeholders across the whole project region. Although air pollution is deemed by stakeholders to be "by far the most important problem to tackle", the legal frameworks at the sub-regional level on monitoring and enforcement leave room for improvement. Also, in light of the aspired EU accession, full alignment with EU environment *acquis*, including the reduction of air pollutants and GHGs, is required. Transboundary co-operation is seen as essential to improve the situation.

There are various sub-regional and local initiatives that address the issue. Many of these measures, especially in the fields of renewable energy and transport, target climate change mitigation and air quality improvement simultaneously. Based on these local initiatives, a regional network to share experiences or develop a common strategy could be established. An additional opportunity could be to foster regional collaboration between agencies responsible for air pollution control and monitoring.

In addition, large regional technical assistance and investment grants offer the opportunity to enhance co-operation, particularly in the energy sector. The following topics can be part of a larger program or can constitute their own individual projects.

Addressing the challenges of coal power plants

- Improve coal power plants as a starting point, for example by reducing sulfur dioxide emissions and improving other pollution control measures, as well as enforcing the EU Large Combustion Plants Directive, in accordance with the 2017 Best Available Techniques Reference Document for large combustion plants.
- Develop a regional strategy to phase out coal-based power plants in line with EU legislation.

Transforming energy systems towards renewables

- Develop a regional plan to make the energy sectors in South-Eastern Europe carbon neutral, while also addressing the social and economic effects of such a transition.
- Increase the share of energy from renewable sources at a regional level; especially solar and wind, which have large potentials in South-Eastern Europe.

Improving industrial production

- Promote technological transformation and cleaner production at a regional level.

Addressing urban pollution

- Transform urban mobility
 - Strengthen urban transportation management and develop integrated mobility plans at the city level, including fleet renewal, promotion of cleaner transport (electric cars, charging networks that use renewables, etc.), and promotion of healthy mobility schemes (walking, cycling, etc.).
 - Improve fuel quality and the environmental management of motor vehicles; promote new energy vehicles.
 - Awareness-raising campaigns to assign car-free days.
 - Re-qualification of pedestrian areas in cities.
 - Improve the bicycle infrastructure on roads (e.g. increase the number of bicycle paths), and promote bike-sharing.
 - Improve public transport and make it more accessible.
- Increase energy efficiency of heating and households
 - Central heating versus wood- and coal-based heating.
 - Share models for fuel-switching (from coal to renewables or natural gas) and for increasing energy efficiency in households.

Improving regional fire management

- Enhance regional co-ordination in fire management.
- Establish a regional wildfire early warning system.

3.1.2 Strategies and projects to build on

Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia are parties to the Paris Agreement. They have also ratified the Convention on Long-range Transboundary Air Pollution,¹⁹⁴ the Executive Body of which the UNECE provides the secretariat for. This “first international legally binding instrument to deal with problems of air pollution on a broad regional basis”, together with its eight protocols,¹⁹⁵ could serve as an overall framework for co-operation on this matter in the region.

In addition, the region is a member of the Energy Community. Part of the Energy Community’s mission is to “improve the environmental situation in relation with energy supply in the region and foster the use of renewable energy and energy efficiency”,¹⁹⁶ therefore also addressing air pollution.

Several large regional technical assistance and investment grants focus on improving energy efficiency and renewable energy, including:

- EBRD’s “Regional Energy Efficiency Programme” (REEP) (2013-tbc): The program seeks to address barriers to energy efficiency in South-Eastern Europe through, amongst others, policy dialogue, technical assistance and investment incentives, financing mid-size private sector sustainable energy projects, and direct public sector finance. The program was designed in co-operation with the Energy Community Secretariat and joined by KfW Development Bank.¹⁹⁷
- EBRD project “Green Economy Financing Facility (GEFF) for the Western Balkans” (2017-2020): The Facility “provides finance for green economy investments in residential sector, as well as to businesses who supply energy efficiency and renewable energy products and services to households” in the region. It is implemented under the umbrella of the REEP Plus program, in partnership with the Energy Community Secretariat.¹⁹⁸
- European Investment Bank (EIB) and KfW Development Bank project “Green for Growth Fund Southeast Europe (GGF)” (2009-2025): The GGF is a specialized fund to advance energy efficiency and renewable energies. Activities include capacity-building and training for GGF partners, validation and monitoring of energy-saving and CO₂ emission reduction, and increasing awareness on energy efficiency and renewable energy solutions.¹⁹⁹
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Project “Open Regional Fund for South-East Europe – Energy Efficiency” (ORF-EE) (2006-2020): The Fund’s goal “is to support energy and climate relevant political and civil society actors, through networks in South-Eastern Europe, in implementing required EU regulations. Regional networks supported by the ORF-EE share their experiences on implementation of energy efficiency and climate protection measures

independently, and are empowered to address issues of common interest. [...] Efforts, among others, include support in developing Sustainable Urban Mobility Plans, Roadmaps, implementation of urban transportation Smart-Models (e.g. bike and car sharing)”. The lead executing agency is the RCC.²⁰⁰

As an additional international actor, UNDP has developed a guidance note for the region on air pollution, and supports air pollution legislation development in the region.

On regional fire management, there have been several activities by the RFMC, the Global Fire Monitoring Center (GFMC), and the OSCE. More recent events include a workshop on ‘Landscape Fire Management’, organized by the RFMC and GFMC on behalf of the Office of the Co-ordinator of OSCE Economic and Environmental Activities in December 2019, and a regional workshop on ‘Climate Change and Landscape Fire Management in the Western Balkan’, organized by the RFMC in collaboration with the embassy of Switzerland in Skopje and the GFMC. Both workshops provided an opportunity to intensify regional co-operation on fire management.^{201,202}

At the domestic level, several projects and initiatives seek to tackle air pollution, taking different starting points, for example, by addressing urban mobility and reducing pollution from coal power plants:

- Following a multi-stakeholder approach, the Municipality of Tirana has started a process to develop a Sustainable Urban Mobility Plan through a stakeholder meeting in October 2019 to define a joint vision.²⁰³
- In June 2020, the City of Tuzla announced the creation of a fund to co-finance several measures to reduce air pollution in residential and commercial buildings.²⁰⁴
- Aiming to reduce air pollution, in March 2020, Serbia issued a decree on subsidizing the purchases of new all-electric vehicles and hybrids.²⁰⁵
- In January 2020, local authorities in Skopje and Tetovo started implementing measures to address situations of extreme air pollution, including temporarily increasing parking prices, making public transport free and recommending exemptions of particularly vulnerable people from work.²⁰⁶
- In March 2019, the City of Skopje launched a Green City Action Plan (the development of which was funded by EBRD through its Green Cities program), where air pollution is one of its top priorities.²⁰⁷
- In July 2020, authorities in Sarajevo have started preparing a strategy to restrict the use of coal and other solid fuels for the period 2021-2031 in order to tackle air pollution.²⁰⁸
- In January 2020, the Kosovo Energy Corporation (KEK) started implementing a project to reduce air pollution from the Kosovo B power plant, for example, through the replacement of filters.²⁰⁹

194 - UNECE 2011.

195 - UNECE 2011.

196 - Energy Community 2020a.

197 - Energy Community 2020b.

198 - Energy Community 2020c.

199 - Energy Community 2020d.

200 - GIZ 2020a.

201 - GFMC 2020.

202 - Nikoloc 2020.

203 - Balkan Green Energy News 2019.

204 - Spasić 2020a.

205 - Todorović 2020b.

206 - Todorović 2020c.

207 - EBRD 2020.

208 - Spasić 2020b.

209 - Spasić 2020c.

3.2 — DRIN/DRIM RIVER BASIN

The Drin/Drim River Basin stretches across Albania, Montenegro, North Macedonia, Kosovo, and, to a smaller extent, Greece.²¹⁰ There are a number of important lakes that are part of the Drin/Drim River Basin, in particular the Ohrid and Prespa Lake System and Skadar/Shkodra Lake. On the side of North Macedonia, there are two large reservoirs (Globochica and Spilje). In Albania, another four dams and three reservoirs (Fierze, Komani and Vau i Dejes) have been constructed, all mainly for the purpose of hydroelectric power generation, which provides a large share of electricity in Albania.

Within the basin, the Ohrid and Prespa Lake System as well as Skadar/Shkodra Lake and Buna/Bojana protected area were identified as sub-hotspots.

Main risks along the Drin/Drim River include:

- Floods: these threaten livelihoods, agricultural fields, and other infrastructure. There are high-risk areas all along the valley of the Black Drin/Drim, the part of the Drin/Drim River that flows out of Lake Ohrid in North Macedonia.
- Hydropower losses: both flooding and drought can curb hydropower production and damage energy infrastructure.
- Erosion and sedimentation: soil erosion can result in pesticides and other chemicals being washed into rivers, and can also lead to mudslides and floods. It is already resulting in significant sediment loads being transported into the lake of the hydropower stations of the Drin/Drim, which could reduce their storage capacities.
- Damage to forests: this limits the benefits that forests provide for the ecosystem and climate, such as timber and carbon storage. Forests in the basin are suffering from illegal logging, poor forest management and uncontrolled grazing.
- Pollution: waste from agriculture and industry, especially heavy metals, is the main polluter of water in the basin.²¹¹ Solid waste and marine litter are another significant source of pollution.²¹²

Ohrid and Prespa Lakes

Located between North Macedonia and Albania, Ohrid Lake is the largest lake in terms of water volume in the project region and home to a unique aquatic ecosystem, which includes 200 endemic species. It has UNESCO World Heritage status. On the other hand, Prespa Lake is located between North Macedonia, Albania and Greece, and is connected to Ohrid Lake through underground karst cavities. Prespa Lake is important for water birds such as the Dalmatian pelican, and the lake is listed as a Ramsar site. Together, both lakes are sometimes referred to as the Ohrid Prespa Lake System. The lake system is surrounded by a unique and endemic forest community, where mammals

represent the second most important group of species whose protection is crucial. UNESCO declared both water bodies²¹³ and the surrounding land as a Transboundary Biosphere Reserve in 2014.²¹⁴

Main risks include:

- Flooding in the Struga area around Lake Ohrid in North Macedonia.²¹⁵
- Decreasing lake levels.
- Urbanization, illegal construction, habitat fragmentation (especially of wetlands) and loss of biodiversity.
- Deforestation (illegal logging).
- Increased risk of forest fires.
- Inadequate treatment of wastewater and pollution from nearby settlements, hotels and restaurants, especially during the tourist season, which is affecting water quality.²¹⁶

Skadar/Shkodra Lake

Skadar/Shkodra Lake is the largest lake in the project region and located in Montenegro and Albania. It is an ecologically valuable area, designated as a natural park (Montenegro) and nature reserve as well as a Ramsar site (Albania).

Main risks include:²¹⁷

- Changes in water level and associated risks for navigation.
- Flood risks around the lake (potential flood risk on Golubovci and Tuzi and potential flood risks in the north of Skadar/Shkodra Lake).
- Illegal fishing and dumping of waste into the lake and nearby streams (including illegal discharge of aluminium waste).
- Sanitation (health) problems associated with pollution from the drainage basin.
- Lack of harmonized management and different protection status in Albania and Montenegro.
- Over-development that damages the environment.

Buna/Bojana River area

The Buna/Bojana River originates from Skadar/Shkodra Lake and flows along the Buna River-Velipoja protected landscape (at the border between Albania and Montenegro) towards the Adriatic Sea.

Main risks include:²¹⁸

- Flooding around the river.
- Natural habitat loss.

210 - Adaptation Fund 2019.

211 - Dreshaj et al. 2012.

212 - Adaptation Fund n.d.

213 - Small Prespa is connected by a channel to Lake Prespa basin and mainly located in Greece.

214 - Adaptation Fund n.d.

215 - UNESCO 2019.

216 - Iseni 2018.

217 - Based on input from project experts based in South-Eastern Europe – please see “contributors” in the imprint for the list of experts.

218 - Based on input from project experts based in South-Eastern Europe – please see “contributors” in the imprint for the list of experts.

3.2.1 Suggested co-operation opportunity: Enhancing the existing joint management structures and co-operation to include additional climate-related issues

Co-operation in the Drin/Drim River Basin on climate change and security can build upon a relatively well-developed co-operation framework and support existing structures, particularly the Strategic Action Programme (SAP) for the Drin/Drim River Basin, which was endorsed in 2020. There are also a number of topics as well as past and ongoing co-operation projects that can provide entry points for additional activities. Stakeholders prioritized this co-operation opportunity, because the basin is a key economic, energy and environmental pillar for the riparians, and it is facing various risks including climate change-related issues, which could impact health, water, energy, and livelihood security.

Possible aims:

- Support the existing management and co-operation structures, which include, for example, activities of the Drin Coordinated Action Process (Drin CORDA) and the implementation of the SAP.
- Establishment of joint teams with representatives of experts, government authorities and civil society organizations to jointly work to develop specific topics.

Topics for co-operation:

- Improve monitoring and exchange of scientific data/knowledge-sharing.
- Assess climate change impacts and vulnerability, and start adaptation planning.
- Implementation of inter-sectoral (nexus) considerations for the Drin/Drim Basin according to its recently developed SAP.
- Analysis of ecosystem services at basin level.
- Climate-resilient basin-wide flood risk management.
- Ecosystem-based (nature-based) solutions to flood risks and other climate-induced risks.
- Multi-hazard forecasting and early warning, including on wildfires.
- Sustainably managed tourism.
- Reforestation and soil erosion management.
- Improve municipal waste management and reduce pollution.
- Sustainably managed hydropower.

3.2.2 Strategies and projects to build upon

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) has been ratified by Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia.²¹⁹ The Convention is a "unique legally binding instrument promoting the sustainable management of shared water resources, the implementation of the Sustainable Development Goals, the prevention of conflicts, and the promotion of peace and regional integration"²²⁰ and therefore offers a framework for co-operation in South-Eastern Europe. In addition, the EU Water Framework Directive, to be implemented in the pre-accession process, follows an integrated river basin management approach, taking the river basin (the natural, geographical and hydrological units) as basis for river management, instead of administrative or political boundaries.²²¹

In the Drin/Drim River Basin, transboundary co-operation is relatively well-developed, and a number of transboundary co-operation projects exist, although these are mostly at the sub-basin level. All major lakes of the Drin/Drim River Basin have co-operation agreements for their protection and sustainable development:

- Ohrid Lake: agreement between Albania and North Macedonia; signed in 2004 and ratified in 2005; established the Lake Ohrid Watershed Committee and Bilateral Secretariat.^{222,223}
- A draft Lake Ohrid Transboundary Management Plan²²⁴ has been developed in the context of the Global Environment Facility (GEF) Drin Project (see below).
- Skadar/Shkodra Lake: agreement between Albania and Montenegro; signed in 2008; established the Skadar/Shkodra Lake Commission.²²⁵
- Prespa Park Area: agreement between Albania, the EU, Greece, and North Macedonia; signed in 2010 and ratified in 2019;²²⁶ established the Prespa Park Management Committee.²²⁷

A particular milestone towards the enhancement of co-operation at the extended basin level was the endorsement of the SAP for the sustainable management of the extended Drin/Drim Basin in April 2020. The SAP sets out policy and technical actions to address four transboundary issues (water pollution, biodiversity degradation, water and sediment flow disturbances).²²⁸

219 - United Nations Treaty Collection 2020.

220 - UNECE 2020a.

221 - European Commission 2020c.

222 - Drin CORDA n.d.a.

223 - IW:LEARN n.d.

224 - Drin CORDA 2020a.

225 - GWP-Med n.d.

226 - PONT 2019

227 - UNESCO 2011.

228 - UNECE 2020b.

A number of ongoing and completed projects support transboundary co-operation on water management, climate change adaptation, biodiversity, and cultural heritage:

- GEF Project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the extended Drin River Basin" (Drin Project) (2016-2020): The project has the objective to "promote joint management of the shared water resources of the transboundary Drin River Basin, including co-ordination mechanisms among the various sub-basin joint commissions and committees". It supports co-operation activities at the extended basin level. The project is implemented by UNDP, and executed by GWP-Med in partnership with UNECE.^{229,230} Linked to this project, a thematic report on resource nexus was published in the autumn of 2020, which presented the findings of the key interlinkages and trade-offs among the sectors of water, land, energy and environment (Phase I of the water-food-energy-ecosystems nexus assessment of the Drin Basin). The report was supported by the Austrian Development Agency and in close co-operation with GWP-Med.²³¹
 - GIZ Project "Adaptation to Climate Change through Transboundary Flood Risk Management in the Western Balkans" (2012-2021): The project builds on previous achievements (e.g. establishment of a Flood Forecasting Service, development of Flood Risk Management Plans, and climate change vulnerability assessments), and is currently focusing on flood hazard and risk mapping, early warning and institution development.²³²
 - UNDP Project "Integrated climate-resilient transboundary flood risk management in the Drin River Basin in the Western Balkans" (2019-2024): The project has the objective to assist Albania, Montenegro, and North Macedonia in the implementation of an integrated climate-resilient river basin flood risk management approach, and to foster resilience of vulnerable communities in the basin to climate-induced floods.²³³
 - GIZ Project "Conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar (CSBL)" (2012-2020): The project has been assisting Albania, Montenegro, and North Macedonia in taking a transboundary approach to natural resources management. The project helped to better protect the area's biodiversity and contributed to the sustainable development of its economy.²³⁴
 - UNESCO/International Union for Conservation of Nature (IUCN) Project "Towards strengthened governance of the shared transboundary natural and cultural heritage of the Lake Ohrid region" (completed): The project "focus[ed] on the protection of culture as well as nature, recognizing their multiple values, addressing the main threats and harnessing opportunities through a sustainable development approach. It aim[ed] to profile this transboundary area by assessing its values and opportunities for sustainable development, and to improve capacities for the effective management of natural and cultural heritage."²³⁵
 - The Regional Rural Development Standing Working Group in South Eastern Europe (SWG RRD) follows a regional-local approach in transboundary areas (called Area-Based Development) and has established regional co-operation structures and networks in several regions, including the Prespa area.²³⁶
- Also relevant in the Drin/Drim River Basin are several activities by the RFMC, the GFMC, and the OSCE on regional fire management. More recent events include a workshop on 'Landscape Fire Management', organized by the RFMC and GFMC on behalf of the Office of the Co-ordinator of OSCE Economic and Environmental Activities in December 2019, and a regional workshop on 'Climate Change and Landscape Fire Management in the Western Balkan', organized by the RFMC in collaboration with the embassy of Switzerland in Skopje and the GFMC. Both workshops provided an opportunity to intensify regional co-operation on fire management.^{237,238}

229 - Drin CORDA n.d.b.

230 - Drin CORDA n.d.c.

231 - Drin CORDA 2020b.

232 - GIZ 2020b.

233 - Adaptation Fund 2019.

234 - GIZ 2020c.

235 - IUCN n.d.a.

236 - SWG RRD n.d.

237 - GFMC 2020.

238 - Nikolov 2020.

3.3 — SHAR/ŠARA MOUNTAINS AND KORAB MASSIF AREA

This area stretches across Albania, North Macedonia and Kosovo, including two mountain ranges of alpine landscape, vast mountain grasslands, and forests with endemic and rare flora and fauna species. Three protected areas are located in this area: Korab-Koritnik in Albania, Mavrovo in North Macedonia, and Sharri Mountains in Kosovo.²³⁹ In North Macedonia, various governmental and non-governmental initiatives are seeking to make Shar Planina mountain range a nature park; which could then become part of a larger regional protected area.²⁴⁰ The inaccessibility of the region and the possible presence of landmines from past conflicts can create difficulties for co-operative action.²⁴¹

Main risks include:

- Presence of landmines from past conflicts.
- Fragmentation or loss of habitats.
- Forest fires.
- Uncontrolled land development.
- Illegal logging, e.g. in the Tetovo region in North Macedonia.
- Biodiversity loss.

3.3.1 Suggested co-operation opportunity: Fostering co-operation around nature protection

There is an opportunity to foster co-operation and nature protection around the Shar/Šara Mountains and Korab Massif area. The stakeholders of the consultation process prioritized this co-operation opportunity as it would address important issues such as illegal logging and landmines, and improve the protection of biodiversity while fostering climate change adaptation. In addition, it has economic potential, in particular through the development of sustainable tourism.

Enhanced co-operation can be achieved through a broader initiative that supports the existing co-operation framework and works towards the creation of a joint protected area, with a particular focus on climate change and deforestation. The 2013 Joint Vision by Albania, North Macedonia, and Kosovo, together with existing co-operation between local authorities, can serve as starting points.

Possible aims:

- Move towards the creation of a joint protected area.
- Support the existing co-operation frameworks.
 - Harmonization of co-operation in relation to biodiversity and climate change strategies at sub-regional level.
 - Creation of a joint committee or commission to ensure efficient co-ordination across different legal frameworks and institutions.
- Establish joint monitoring mechanisms and data-sharing.
- Establish joint multi-stakeholder teams, which also include civil society organizations, to jointly work on the specific topics.

Topics for co-operation:

- Sustainable development of the region.
- Biodiversity protection, e.g. habitat protection of large carnivores, and tackling illegal hunting and fishing.
- Climate change adaptation.
- Addressing deforestation, illegal logging, and wildfire management.
- Hydropower development and management.
- Natural resource management.
- Waste management.
- Sustainably managed tourism.
- Preservation of cultural heritage.
- Security and safety issues, particularly the clean-up of landmines.

239 - GIZ 2017.

240 - Pandurska-Dramikjanin 2020.

241 - UNEP Vienna 2010a.

3.3.2 Strategies and projects to build upon

In 2017, under the Regional Working Group on Environment (RWG Env) of the RCC, the Biodiversity Task Force (BD TF) was established "to contribute to the implementation of Multilateral Environmental Agreements and facilitate the transposition of EU nature conservation *acquis* envisaged in the South East Europe 2020 Strategy".²⁴² The BD TF could serve as a regional co-operation platform to foster joint efforts in the Shar/Šara Mountains and Korab Massif area. The Big Win for Dinaric Arc regional agreements of 2008 and 2013 could offer further references for co-operation.²⁴³

Important reference points for co-operation projects in the area is the Joint Vision for the Shar Korab-Koritnik area,²⁴⁴ initiated and signed by local authorities and civil society organizations in 2013, which was confirmed by a Joint Statement by Albania, North Macedonia, and Kosovo in March 2017.²⁴⁵

Some projects in the area have a regional focus:

→ GIZ is strengthening sub-regional co-operation for the conservation and joint use of natural resources in the Shar/Šar Planina/Korab-Koritnik region (Albania, North Macedonia, and Kosovo) as part of its Open Regional Fund for South-Eastern Europe for the Implementation of Biodiversity Agreements, and supports the implementation of the Joint Vision.²⁴⁶

- Activities by EuroNatur and partners (e.g. lobbying for a sub-regional conservation park, round tables with local stakeholders, school projects, and establishment of local action groups).²⁴⁷
- The SWG RRD follows a regional-local approach in transboundary areas (called Area-Based Development) and has established regional co-operation structures and networks in several regions, including the Sharra area.²⁴⁸
- Also relevant for the Shar/Šara Mountains and Korab Massif area are several activities by the RFMC, the GFMC, and the OSCE on regional fire management. More recent events include a workshop on 'Landscape Fire Management', organized by the RFMC and GFMC on behalf of the Office of the Co-ordinator of OSCE Economic and Environmental Activities in December 2019, and a regional workshop on 'Climate Change and Landscape Fire Management in the Western Balkan', organized by the RFMC in collaboration with the embassy of Switzerland in Skopje and the GFMC. Both workshops provided an opportunity to intensify regional co-operation on fire management.^{249, 250}

242 - IUCN n.d.b.
 243 - Vasiljević et al. 2018.
 244 - EuroNatur 2013.
 245 - INCA 2017.
 246 - GIZ 2019a.

247 - EuroNatur 2020.
 248 - SWG RRD n.d.
 249 - GFMC 2020.
 250 - Nikolov 2020.

3.4 — DRINA VALLEY - TARA MOUNTAIN AREA

This mountainous area near Tara National Park extends across Bosnia and Herzegovina, Montenegro, and Serbia and is bound by the Drina Valley and Tara Mountain. Because the population of the area is far from the economic centers of their respective countries, it relies heavily on agriculture and tourism (rather than industry) for income and is thus economically exposed to climate impacts on these sectors.²⁵¹

Main risks in the Drina Valley – Tara Mountain area include:

- Deforestation, including illegal logging.
- Uncontrolled development of industry and tourism.
- Soil and groundwater pollution from uncontrolled use of pesticides.
- Wildfires, e.g. at Tara Mountain.²⁵²
- Biodiversity loss.
- Decrease in tourism.

3.4.1 Suggested co-operation opportunity: Fostering transboundary collaboration

Transboundary co-operation could be fostered around various environmental and climate-related topics, particularly on climate change mitigation and adaptation, waste management, biodiversity conservation, forest management, and sustainable tourism. Domestic strategies and policies, as well as regional projects focusing on rural development, tourism, and the water-food-energy-ecosystem nexus, could serve as starting points.

Stakeholders emphasized their concern that more floods are to be expected in the Drina River Basin, which would damage ecosystems and cause torrential runoffs. Some argued that a transboundary approach to these issues would be ideal. Others highlighted that transboundary co-operation could promote sustainable tourism and thus create jobs, stopping the depopulation of an area rich in natural beauty.

Possible aims and topics:

- Improve climate change impact and vulnerability assessments, and develop adaptation and mitigation actions.
- Develop joint waste management and prevention plans and projects, for example, by reducing solid waste and increasing investments in water treatment facilities, as part of an integral water management system.

Tara National Park in Serbia is exposed to additional risks:

- Floating solid waste and illegal construction at Perućac Lake (both on the coastline and the lake itself).
- Illegal waste dumping.
- Risks associated with the lack of wastewater treatment.

- Biodiversity:
 - Work towards the designation of a transboundary protected area, for example, a biosphere reserve.
 - Develop joint action plans.
 - Improve joint monitoring and information-sharing.
- Forests:
 - Develop co-operation arrangements (for example, in the form of MoUs) between municipalities and forestry authorities.
 - Improve wildfire monitoring.
 - Forest protection and reforestation.
- Tourism:
 - Link biodiversity protection and tourism, for example, through eco-tourism.
 - Develop new tourism packages, products and promotional materials.
- Build on inter-sectoral co-operation and application of the water-food-energy-ecosystem nexus approach in the Drina River Basin (see also [Sava River Basin](#), as the Drina River is a tributary of the Sava).

251 - Santini et al. 2012.

252 - Lukić et al. 2017.

3.4.2 Strategies and projects to build upon

Co-operative activities could be based on domestic strategies and policies, such as central and local spatial development plans, biodiversity protection action plans, central and local tourism development plans and strategies, as well as climate change strategies and plans, where relevant.

Several regional projects focus on rural development and tourism:

- The SWG RRD follows a regional-local approach in transboundary areas (called Area-Based Development) and has established regional co-operation structures and networks in several regions, including the Drina-Tara area.²⁵³
- GIZ project "Support to Economic Diversification of Rural Areas in Southeast Europe (SEDRA)" (2018-2021): The project is jointly implemented by the SWG RRD and GIZ and focuses on developing rural tourism and agri-food value chain in the Drina-Tara area, among others.^{254, 255}
- In the context of the broader Dinaric Arc Initiative, the Drina-Tara region was part of the project "Environment for People in the Dinaric Arc" (2009-2012) that was "designed to increase regional transboundary co-operation in the management and conservation of cultural landscapes and biodiversity for the benefit of rural communities". The project was implemented jointly by the IUCN, the World Wide Fund For Nature (WWF) and the Netherlands Development Organization (SNV). One of its outputs was a regional manual for sustainable tourism management.²⁵⁶

A completed GEF-financed World Bank project (2013-2016) focused on improving mechanisms and capacity of Bosnia and Herzegovina, Montenegro, and Serbia to plan and manage the transboundary Drina River Basin, including the mainstreaming of climate change adaptation into domestic planning, and strengthening climate change resilience. The project was implemented by relevant ministries of the respective countries.²⁵⁷

Specific regional projects that were recently launched include the World Bank's "Sava and Drina Rivers Corridors Integrated Development Program" (2020-2030), which was announced in August 2020: "The program will use an integrated approach to finance flood protection, environmental management, and port modernization activities to improve connectivity along the Sava and Drina Rivers Corridors. The project will also help strengthen transboundary water co-operation and enhance regional economic growth in countries where vulnerabilities have been exacerbated by COVID-19."²⁵⁸

Also relevant in the Drina Valley – Tara Mountain area are several activities by the RFMC, the GFMC, and the OSCE on regional fire management. More recent events include a workshop on 'Landscape Fire Management', organized by the RFMC and GFMC on behalf of the Office of the Co-ordinator of OSCE Economic and Environmental Activities in December 2019, and a regional workshop on 'Climate Change and Landscape Fire Management in the Western Balkan', organized by the RFMC in collaboration with the embassy of Switzerland in Skopje and the GFMC. Both workshops provided an opportunity to intensify regional co-operation on fire management.^{259, 260}

253 - SWG RRD n.d.

254 - GIZ 2019b.

255 - GIZ 2019c.

256 - IUCN 2013.

257 - GEF n.d.a.

258 - World Bank 2020e.

259 - GFMC 2020.

260 - Nikolov 2020.

4 Conclusions

Climate change is increasingly impacting South-Eastern Europe. These impacts can exacerbate pre-existing security risks. In the project region, climate-related security risks manifest themselves particularly in specific geographic hotspots. The research and consultation process conducted as part of this project identified a large number of potential transboundary hotspots that are of concern. These include shared river basins (Drin/Drim River Basin and Sava River Basin), shared mountain ecosystems (Shar/Šara Mountains and Korab Massif area, Drina Valley - Tara Mountain area and Sutjeska-Durmitor-Tara River Canyon area) and mining areas (the Lojane chromium, arsenic and antimony mine and the Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines). In addition, two climate-related security challenges were identified that are transboundary in nature but not geographically bound: Mixed movements and emigration, and air pollution. These two challenges were identified by a large number of stakeholders as security challenges that are likely exacerbated by climate change, are transboundary in nature, and affect the whole region, particularly from a human security perspective.

However, at the same time, joint co-operation opportunities exist that can be used to address the identified climate-related security risks and build a more sustainable and resilient region. Stakeholders identified a broad range of co-operation opportunities for each of the hotspots and risks. These include fostering transboundary co-operation around nature protection or mining hazards, improving existing joint management structures, as well as developing action plans for transboundary water management.

In general, all of these activities aim to improve livelihoods, enhance security, and increase the region's resilience, while at the same time reinforce co-operation, trust and good neighborly relations in the region. In addition to activities that have adaptation benefits, co-operation opportunities around air pollution could also have important climate change mitigation benefits.

As the next step towards addressing climate-related security risks in South-Eastern Europe, the project will develop concrete initiatives and activities around the identified co-operation opportunities together with the stakeholder groups that were part of the consultation process.

5 Annex A: Consultation process and methodology

Due to the COVID-19 pandemic, adelphi and the OSCE decided to replace the in-person workshop in Skopje scheduled for March 23-24 2020 in Skopje, North Macedonia with an online consultation process, consisting of various events and surveys. The following sections outline the steps of the project and underlying methodology.

5.1 — DESK RESEARCH

The following transboundary hotspots were identified based on desk research and input from local and regional experts. The resulting 37 hotspots were a preliminary selection and therefore did not represent an exhaustive list. Rather, they served as a starting point for the consultation with stakeholders from the region and were revised based on the consultation's results.

5.1.1 Rivers

Transboundary river hotspots are shared river basins that are affected by climate change. Such river basins include:

- Drin/Drim River Basin
 - Ohrid Lake (Albania and North Macedonia): inadequate treatment of wastewater and pollution from nearby settlements, hotels and restaurants – especially during the tourist season, is affecting water quality.²⁶¹ There is evidence that this pollution is negatively impacting biodiversity as well.²⁶²
- Danube River Basin
- Sava River Basin

5.1.2 Pollution hotspots

Coal power plant air pollution hotspots include:²⁶³

- Gacko in Bosnia and Herzegovina, near the border with Montenegro.
- Kosovo A and B near Obiliq/Obilić.
- Kolubara A and Nikola Tesla A in Serbia.
- Ugljevik and Tuzla in Bosnia and Herzegovina, near the border with Serbia.
- REK Bitola in North Macedonia, near the border with Albania (and Greece).

Degradation and soil pollution hotspots include:^{264, 265}

- Pljevlja and Suplja in Montenegro, close to the border with Serbia and Bosnia and Herzegovina.
- Zajaka, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines in Serbia and Bosnia and Herzegovina.
- Lojane chromium, arsenic and antimony mine in North Macedonia, close to the border with Serbia.

261 - Iseni 2018.

262 - UNESCO 2019.

263 - HEAL et al. 2019.

264 - Stritih 2018.

265 - UNEP/GRID-Arendal 2007.

5.1.3 Marine pollution hotspots

- Concessions for offshore drilling for oil and gas have been granted or are in the process of being granted in Albania and Montenegro, while Montenegro is exploring the potential for oil and gas production in its waters.²⁶⁶
- Boka Bay (Montenegro): the wastewater discharged from vacation cruises poses a threat to the marine environment.
- Drini, Shkumbini and Vjosa Rivers (Albania): waste deposited on the river shores, which is then transported to marine ecosystems.

5.1.4 Agricultural hotspots

- Podgorica municipality and surrounding Zeta Valley (Montenegro).
- Divjaka area (West Plain of Albania).

5.1.5 Biodiversity hotspots

- Tara Planina-Drina (Bosnia and Herzegovina and Serbia) mountainous area near Tara National Park.
- Sutjeska-Durmitor Tara River Valley (Bosnia and Herzegovina and Montenegro): mountain border areas affected by wildfires, biodiversity loss and decrease in tourism (IUCN Category V, IUCN Category II).
- Orjen-Snjeznica (Bosnia and Herzegovina and Montenegro): cross-border mountain area affected by wildfires, biodiversity loss, and decrease in tourism (IUCN Category V).
- Prokletije (Montenegro and Albania): mountain border area affected by wildfires, biodiversity loss and decrease in tourism (IUCN Category II).
- Skadar Lake and River Bojana (Montenegro and Albania): ecologically valuable area affected by multiple threats and pressures, including floods and climate change that affect water level and navigation, as well as increase in environmental and sanitation (health) problems associated with pollution from the drainage basin (IUCN Category II).
- Ohrid-Prespa Transboundary Biosphere Reserve (Albania and North Macedonia): combination of waterbodies and surrounding mountains affected by degradation of wetland habitats, decreasing lake levels, loss of biodiversity and habitat fragmentation, deforestation (illegal logging), increased risk of forest fires, reduced forest productivity, and snow melting (UNESCO Biosphere Reserve).

5.1.6 Crime-related hotspots

The following areas are considered to be exposed to environmental crime:²⁶⁷

- Skadar Lake (Montenegro): illegal fishing, and illegal dumping of waste into lake and nearby streams.
- Bar-Boljari Highway (Montenegro): illegal disposal of construction waste.
- City outskirts (North Macedonia), especially in the Lipkovo and Tetovo regions and Dejkovec near Skopje: illegal logging for personal use and large-scale organized theft.
- Vjosa River and Adriatic Coast at Vjosa Delta (Albania): illegal dumping of urban waste, illegal import of hazardous waste.
- Ballsh area (Albania): illegal discharge of untreated water from oil refineries.
- Porto Romano (near Durres in Albania): oil spills from storage facilities, causing water and soil pollution.
- Mali i Tomorrit (near Berat in Albania): illegal exploitation of natural resources such as stones; poisoning and hunting of wildlife.
- Zenica, Tuzla, Breza (Bosnia and Herzegovina): illegal mining near legal mines.
- Raška, Zaječar, Ljubovija, Krupanj (Serbia): illegal waste dumping.
- Vlora and Durres (Albania): transboundary shipments of hazardous waste.

5.1.7 Mixed movements hotspots

The following locations are important hotspots of mixed movements:^{268, 269, 270, 271}

- Bihac and Velika Kladuša (in North West Bosnia and Herzegovina near the Croatian border) is home to thousands of migrants and refugees who live in temporary reception centers, in abandoned buildings or out in the open.
- Presevo (southern Serbia near border with North Macedonia): site of large refugee camp.
- Idomeni/Gevgelija: major crossing point for migrants going from Greece to North Macedonia.
- Sid: main crossing point for transit from Serbia to Croatia.
- Sombor: main crossing point for transit from Serbia to Hungary.

266 - Stritih 2018.

267 - Based on expert input.

268 - Reuters 2020.

269 - Greider 2017.

270 - The Global Initiative Against Transnational Organized Crime 2019.

271 - European Parliament 2016.

5.2 — STAKEHOLDER SELECTION

The stakeholders of the consultation process were nominated by and/or identified in consultation with the respective Delegations of the participating States to the OSCE, and with the support of the OSCE Field Operations in the project region. Participants included representatives of govern-

mental bodies, civil society organizations, academia, and regional and international organizations. 83 stakeholders (53 female and 30 male) from Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia and Kosovo were invited to take part in the consultation process.

5.3 — INTRODUCTORY SESSION

At the introductory session on 27 May 2020, 67 stakeholders (43 female and 24 male) were welcomed by Ambassador Vuk Žugić, Co-ordinator of OSCE Economic and Environmental Activities, and H.E. Naser Nuredini, Minister of Environment and Physical Planning, Republic of North Macedonia. adelphi and the OSCE then introduced the project and the adapted consultation process. adelphi presented preliminary insights

from the desk study, which was followed by a discussion. Five Project Focal Points from the region reflected on the project's relevance for the region, as well as the expectations from this consultation process and the overall project. Representatives from other OSCE participating States as well as the project donors and regional and international organizations also contributed to the discussion.

5.4 — MAPPING WORKSHOPS

In three interactive online mapping workshops, which took place over three days (8-10 June 2020), 51 stakeholders (35 female and 16 male) from the region gave feedback on the desk study and project in general, and identified climate security hotspots that might be suitable for transboundary co-operation. As a result of the mapping workshop, ten geographic hotspots were identified by the regional stakeholders:

- Drin/Drim River Basin
- Drina Valley – Tara Mountain area
- Lojane chromium, arsenic and antimony mine
- Orjen-Snjeznica area
- Pčinja Valley
- Prokletije/Bjeshkët e Nemuna
- Sava River Basin
- Shar/Šara Mountains and Korab Massif area
- Sutjeska-Durmitor-Tara River Canyon area
- Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines

In addition, two regional challenges were identified that create transboundary issues but are not geographic hotspots:

- Air pollution
- Mixed movements and emigration

Table 1 presents the hotspots that were included in the draft desk review or suggested by some stakeholders during consultations. However, they are not included as hotspots in the prioritization survey list for various reasons.

see Comments in Table 1

Table 1:
Hotspots that were not
included for prioritization

Hotspot	Comment
Danube River Basin	Was not identified as a key hotspot during the mapping workshops.
Prokoško Lake	Not transboundary
Gazivoda Lake	This man-made lake provides drinking water for much of Kosovo, and is also used for cooling power plants A and B which were referred to in the section on air pollution.
Crime hotspots: <ul style="list-style-type: none"> • Zeta Valley • Vlova and Durres • Vjosa River and Adriatic Coast at Vjosa Delta • Ballsh area • Porto Romano • Mali i Tomorrit • Stara Mountain • Bar-Boljari Highway • Raška, Zaječar, Krupanj • City outskirts • Polog region of North Macedonia 	Most of the hotspots were not transboundary. Where relevant, transboundary crime hotspots were integrated into the selected hotspots above.
Lezha mines	Not transboundary
Divajaka mines	Not transboundary
Mines in Pljevlja and Suplja area	Minor transboundary environmental impact relative to the other mining complexes that were included.

5.5 — SURVEYS

A series of surveys helped to gather further input from experts and stakeholders from South-Eastern Europe to prioritize climate security risks in the region and to identify the relevant transboundary co-operation opportunities that could address them.

5.5.1 First survey: Prioritization of transboundary hotspots

The first survey, which was sent to stakeholders on 30 June 2020, aimed to prioritize the transboundary hotspots identified in the desk study and during the mapping workshops. The survey was sent to all stakeholders who registered for the mapping workshops. Survey recipients were asked to assess each hotspot according to the criteria *likelihood* and *severity*, which are the underlying components of risk. The assessment of *likelihood* (how likely is it that environmental, social and political risks of a hotspot increase in the future?) and *severity* (how severe is the impact of these risks in terms of livelihoods?) followed a five-point rating scale, with the categories "very low", "low", "medium", "high", and "very high". Participants also had the option to opt for the category "no answer".

In addition to *likelihood* and *severity*, participants also assessed the *co-operation potential* at a hotspot. Stakeholders rated the feasibility of a joint/transboundary adaptation project that addresses the risks at a specific hotspot. The assessment of *co-operation potential* followed the same five-point rating scale. At the end of the survey, stakeholders indicated two hotspots that, in their opinion, would benefit most from support for joint/transboundary co-operative action.

The survey had 34 respondents (23 female and 11 male) from across the whole project region. [see Table 2](#)

Table 2:
Respondents of the first survey

Stakeholder group	No. of respondents
Albania	6
Bosnia and Herzegovina	9
Montenegro	5
North Macedonia	8
Serbia	4
Kosovo	2
Total	34

The project team followed a multistep approach to assess the responses per hotspot and criterion. First, the rating scale was converted to numbers to allow the quantification of results, ranging from 0 ("very low") to 5 ("very high"). Second, the project team calculated the mean for each hotspot and criterion per respective stakeholder group to ensure equal representation for each group, regardless of the number of respondents per group. Third, the values per

stakeholder group were averaged to obtain final values for all three criteria per hotspot. Fourth, the risk score was calculated by multiplying likelihood and severity averages per hotspot. Fifth, the project team ranked the hotspots (by number of mentions) that stakeholders indicated would benefit most from support for joint/transboundary co-operative action.

Results of the prioritization

Table 3 provides an overview of the results. According to the ranking of risk scores, the five priority hotspots are:

1. **Shar/Šara Mountains and Korab Massif area**
2. **Drin/Drim River Basin**
3. **Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines**
4. **Drina Valley - Tara Mountain area**
5. **Lojane chromium, arsenic and antimony mine**

Each stakeholder group is directly affected by at least two of the five priority hotspots.

Three of the priority hotspots stand out, 1) Shar/Šara Mountains and Korab Massif area, 2) Drin/Drim River Basin, and 3) Drina Valley - Tara Mountain area, because they were among the top five hotspots that would benefit most from support for joint/transboundary co-operative action. For details see Table 4.

Table 3:
Prioritization of hotspots (ranked by risk score)

Hotspot	Geographic area						Risk score (likelihood* severity)	Co-operation potential
	Albania	Bosnia and Herzegovina	Montenegro	North Macedonia	Serbia	Kosovo		
Shar/Šara Mountains and Korab Massif area	x			x		x	15.76	3.80
Drin/Drim River Basin	x		x	x		x	14.80	4.06
Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines		x			x		14.45	3.86
Drina Valley - Tara Mountain area		x	x		x		14.12	3.81
Lojane chromium, arsenic and antimony mine				x	x		14.04	4.01
Prokletije/Bjeshkët e Nemuna	x		x		x	x	13.84	3.85
Sutjeska-Durmitor-Tara River Canyon area		x	x				13.22	3.90
Sava River Basin	x	x	x		x		12.63	3.85
Pčinja Valley				x	x		11.30	3.55
Orjen-Snjeznica area		x	x				10.83	3.77

Two additional hotspots were not among the top five hotspots based on their risk scores, but they were among the top five hotspots benefitting most from joint/transboundary co-operative action. They are included as additional priority hotspots for the next step because many stakeholders indicated that they would particularly benefit from co-operative action:

- **Sava River Basin**
- **Sutjeska-Durmitor-Tara River Canyon area**

Table 4:
Hotspots that would benefit most from support for joint/transboundary co-operative action
(ranked by number of mentions, all stakeholders counted as individuals)

Hotspot		Stakeholder group / Geographic area						Total no. of respondents
		Albania	Bosnia and Herzegovina	Montenegro	North Macedonia	Serbia	Kosovo	
Drin/Drim River Basin	No. of respondents	6	0	1	7	1	2	17
	Geographic area	x		x	x		x	
Sava River Basin	No. of respondents	0	8	1	1	1	1	12
	Geographic area	x	x	x		x		
Shar/Šara Mountains and Korab Massif area	No. of respondents	3	0	0	5	1	1	10
	Geographic area	x			x		x	
Sutjeska-Durmitor-Tara River Canyon area	No. of respondents	0	4	4	0	0	0	8
	Geographic area		x	x				
Drina Valley - Tara Mountain area	No. of respondents	0	6	1	0	1	0	8
	Geographic area		x	x		x		
Prokletije/Bjeshkët e Nemuna	No. of respondents	3	0	3	0	0	0	6
	Geographic area	x		x		x	x	
Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines	No. of respondents	0	0	0	0	4	0	4
	Geographic area		x			x		
Lojane chromium, arsenic and antimony mine	No. of respondents	0	0	0	2	0	0	2
	Geographic area				x	x		
Pčinja Valley	No. of respondents	0	0	0	1	0	0	1
	Geographic area				x	x		
Orjen-Snjeznica area	No. of respondents	0	0	0	0	0	0	0
	Geographic area		x	x				

5.5.2 Second survey: Identification of co-operation opportunities

In the second survey, which was sent on 21 July 2020, 33 participants (23 female and 10 male) proposed transboundary co-operation opportunities at the prioritized hotspots. [see Table 5](#) In this stage, stakeholders could share ideas for transboundary co-operation opportunities that help to address climate-related security risks. They had the chance to add co-operation opportunities for each of the prioritized transboundary hotspots. adelphi drafted a document that contextualizes and describes the suggested co-operation opportunities. [see overview in Table 6](#)

This served as the basis for the final step of the process, which is the prioritization of joint/transboundary co-operation opportunities through a third survey. Transboundary co-operation opportunities include, amongst others, fostering transboundary co-operation around nature protection in the Shar/Šara Mountains and Korab Massif area, further developing the existing joint management structures and co-operation to include additional climate-related issues in the Drin/Drim River Basin. A detailed description of suggested co-operation opportunities can be found in [Annex B](#).

Table 5:
Respondents of the second survey

Stakeholder group	No. of respondents
Albania	6
Bosnia and Herzegovina	8
Montenegro	5
North Macedonia	9
Serbia	3
Kosovo	2
Total	33

Table 6:
Number of suggested transboundary co-operation opportunities per hotspot in the second survey

Hotspot	No. of answers
Shar/Šara Mountains and Korab Massif area	17
Drin/Drim River Basin	19
Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines	7
Drina Valley - Tara Mountain area	14
Lojane chromium, arsenic and antimony mine	4
Sava River Basin	11
Sutjeska-Durmitor-Tara River Canyon area	10
Air pollution	17
Mixed movements and emigration	6

5.5.3 Third survey: Prioritization of co-operation opportunities

The third step of the consultation process focused on prioritization of co-operation opportunities in the prioritized hotspots. This was also conducted using a survey, which was sent out on 24 September 2020. 36 stakeholders (24 female and 12 male) prioritized the co-operation opportunities. [see Table 7](#)

Table 7:
Respondents of the third survey

Stakeholder group	No. of respondents
Albania	6
Bosnia and Herzegovina	10
Montenegro	5
North Macedonia	9
Serbia	4
Kosovo	2
Total	36

Each participant of the consultation process could prioritize up to three co-operation opportunities. The results were assessed using the following steps:

Step 1: Filtering

As the project is focused on transboundary/joint co-operation opportunities, only those which were chosen by at least two different stakeholder groups were considered for the ranking. This applied to eight out of nine co-operation opportunities. [see Column 2 of Table 8](#)

Step 2: Weighting and ranking

The responses for each of the eight co-operation opportunities were weighted by stakeholder group to ensure equal representation for each group, regardless of the number of respondents per group. The co-operation opportunities were ranked according to the results of the weighted answers.

The following four regional challenges/hotspots proved to be priorities for co-operation opportunities: Air pollution, Drin/Drim River Basin, Shar/Šara Mountains and Korab Massif area, and Drina Valley - Tara Mountain area.

[see Column 3 of Table 8](#)

Step 3: Comparison with the total number of answers

The ranking by weighted responses was compared to the ranking by total number of responses. Both rankings overlapped, except for two hotspots. [see Column 4 of Table 8](#) Co-operation opportunities at Sava River Basin received two answers less than the Sutjeska-Durmitor-Tara River Canyon area, but Sava River Basin was ranked fifth due to the weighted results.

[Column 5 of Table 8](#) shows the overall results of the ranking.

Table 8:
Results of the prioritization of co-operation opportunities (top four in bold)

Co-operation opportunities at hotspot	Prioritized by at least two stakeholder groups (number of stakeholder groups)	Weighted answers	Total no. of answers	Overall rank
Air pollution	Yes <i>(by 6 stakeholder groups)</i>	3.5	21	1
Drin/Drim River Basin	Yes <i>(by 5 stakeholder groups)</i>	2.4	14	2
Shar/Šara Mountains and Korab Massif area	Yes <i>(by 3 stakeholder groups)</i>	1.8	13	3
Drina Valley - Tara Mountain area	Yes <i>(by 3 stakeholder groups)</i>	1.4	8	4
Sava River Basin	Yes <i>(by 2 stakeholder groups)</i>	0.9	6	5
Sutjeska-Durmitor-Tara River Canyon area	Yes <i>(by 2 stakeholder groups)</i>	0.8	8	6
Mixed movements and emigration	Yes <i>(by 3 stakeholder groups)</i>	0.6	3	7
Lojane chromium, arsenic and antimony mine	Yes <i>(by 2 stakeholder groups)</i>	0.4	3	8
Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines	No <i>(by 1 stakeholder group)</i>	1	4	-

5.6 — CLOSING SESSION

The closing session was held on 23 February 2021, and attended by a total of 113 participants (56 female and 57 male) representing project's stakeholders in South-Eastern Europe, delegations of OSCE participating States, the OSCE executive structures, including field operations, and relevant international partners of the OSCE. The event began with opening remarks by H.E. Helga Maria Schmid, Secretary-General of the OSCE, and H.E. Naser Nuredini, Minister of Environment and Physical Planning of the Republic of North Macedonia, followed by Alexander Carius, Managing Director of adelphi, and Ambassador Tobias Lorentzson, Chairperson of the OSCE Preparatory Committee and Deputy Permanent Representative of Sweden to the OSCE. The opening session was moderated by Ambassador Vuk Žugić, Co-ordinator of OSCE Economic and Environmental Activities.

The OSCE and adelphi then presented the project as well as the main results of the consultation process, drawing attention to the transboundary geographic hotspots and regional challenges that were identified during the process, and the next phase of the project, which will involve the development and implementation of co-operation measures. This was followed by interventions by the State Secretary of the Ministry of Sustainable Development and Tourism of Montenegro and five Project Focal Points from the region, all of whom expressed support to develop concrete measures for further co-operation in the next phase of the project. Representatives from project donors and regional and international organizations as well as representatives from OSCE Field Operations also provided input during the discussions, emphasizing their support for further collaboration and acknowledging the project's high level of ownership in the region.

6 Annex B: Additional identified and prioritized co-operation opportunities and related hotspots

In the last step of the consultation process, stakeholders prioritized the co-operation opportunities that they found most feasible and have the greatest potential to address climate-related security risks. Each stakeholder could prioritize up to three co-operation opportunities. The results were filtered and only those that were chosen by at least two different stakeholder groups were considered for the ranking. These selected co-operation opportunities were then weighted to ensure equal representation of each group (for a detailed description see Annex A, Chapter 5.5.3). The following list shows the ranking of all co-operation opportunities and related hotspots or regional challenges that resulted from the prioritization process:

- 1. Air pollution**
- 2. Drin/Drim River Basin**
- 3. Shar/Šara Mountains and Korab Massif area**
- 4. Drina Valley - Tara Mountain area**
5. Sava River Basin
6. Sutjeska-Durmitor-Tara River Canyon area
7. Mixed movements and emigration
8. Lojane chromium, arsenic and antimony mine
9. Zajača, Zvornik, Krupanj, Veliki Majdan, Srebrenica lead and zinc mines

The top four co-operation opportunities and related hotspots or regional challenges (air pollution, Drin/Drim River Basin, Shar/Šara Mountains and Korab Massif area, and Drina Valley - Tara Mountain area) were already described in Chapter 3. Details of the remaining prioritized co-operation opportunities and related hotspots or regional challenges can be found in the next sections.

6.1 — SAVA RIVER BASIN

The Sava River Basin, which is part of the Danube River Basin, extends across Bosnia and Herzegovina, Montenegro, and Serbia, as well as Croatia and Slovenia. The basin also covers a small part of Albania. People in the basin rely on its water for hydropower, agriculture and potable water.²⁷² An important pillar of transboundary co-operation in the area is the International Sava River Basin Commission (ISRBC), which works to establish an international regime of navigation on the Sava River and its tributaries, promote sustainable water management, and take measures to prevent or limit hazards such as floods.²⁷³

Moreover, the Sava River Basin is a biodiversity hotspot, hosting various breeding bird species as well as endangered fish species.²⁷⁴ The basin's aging water control infrastructure and housing are inadequate for coping with storms, floods and heat waves, thus increasing the basin's vulnerability to climate change impacts.

The Drina and Lim River Basins, which are part of the larger Sava River Basin, were identified as sub-hotspots.

Main risks at the larger Sava River Basin include:

- Floods: insufficient flood protection and urbanization are increasing the vulnerability of cities and towns along the Sava (e.g. Belgrade).
- Hydropower losses: a decrease in river runoff and higher evaporation due to increasing temperatures will most likely affect power generation.²⁷⁵
- Navigation: navigation is important for trade and economic activity. In the future, waterway transport in the Sava Basin could become more difficult. However, there could also be beneficial impacts of reduced ice formation in winter.
- Pollution: the ISRBC has highlighted organic pollution, nutrient pollution, and hazardous substances pollution as significant water management issues. Industrial effluents are the primary cause of organic and hazardous substance pollution.
- Groundwater problems: groundwater is an important source of water for the area's population and industry, but there are signs of pollution, mostly due to agricultural activities and leakages from settlements and waste disposal sites.
- Illegal activities: illegal excavation of sand and other riverbed material.
- Landmines: presence of landmines along the river's right bank within Bosnia and Herzegovina.

Drina River Basin

The Drina River is the largest tributary of the Sava River and is a sub-basin of the Sava River Basin. Its drainage basin extends into Montenegro,²⁷⁶ Bosnia and Herzegovina, Serbia and (just barely) Albania. It forms a large part of the boundary between Bosnia and Herzegovina and Serbia. It receives several tributaries, amongst others the Lim River, which is a major tributary of the Drina River, whose catchment extends to Albania.

Main risks include:

- Flooding: seasonal floods cause damage and endanger human lives.
- Land changes: the main flow of the Drina is changing, which affects the properties of citizens on both sides of the border. For example, during the COVID-19 crisis, when all borders were closed, authorities of Bosnia and Herzegovina and Serbia had to find a way to enable their respective citizens to cultivate during the spring seasons. There is major potential for co-operation.
- Waste: floating waste due to existing landfills at the Drina River banks.
- Pollution: Environmental problems associated with mining are another challenge. One example is a tailings dam accident at the Veliki Majdan lead and zinc mine in the vicinity of Ljubovija in 2001, when a flood damaged the dam and carried flotation waste into the water.²⁷⁷

Lim River Basin

The Lim flows through Montenegro, Serbia, and Bosnia and Herzegovina, and it is a tributary of the Drina River and also a sub-basin of the Drina River Basin.

Main risk includes:

- Pollution: the Lim and its tributaries are affected by severe pollution, necessitating cross border co-operation and joint action.

272 - World Bank Group 2015.

273 - ISRBC 2008.

274 - Schwarz 2016.

275 - World Bank Group 2015.

276 - The confluence of the Rivers Tara and Piva, flowing from Montenegro, on the border of Bosnia and Herzegovina forms the Drina River.

277 - Stuhlberger 2009.

6.1.1 Suggested co-operation opportunity: Reinforcing existing initiatives on Basin level

Co-operation in the Sava River Basin can build on well-developed legal and institutional framework and structures, particularly the ISRBC and the ICPDR. There are also several regional projects that could serve as a basis for additional co-operation activities. Future co-operation opportunities could aim at further reinforcing and supporting the implementation of existing strategies and initiatives at the basin level, especially those that contribute to climate change adaptation.

Possible aims and topics for co-operation:

- Strengthening co-operation based on the existing basin management structures that have been established through the ICPDR, ISRBC and others.
- Enhancement of the climate change adaptation strategy based on the Outline of the Climate Change Adaptation Strategy and priority measures for the Sava River Basin.
- Supporting the short- and mid-term objectives of the ISRBC:²⁷⁸
 - Preparing the second Sava River Basin Management Plan (RBMP), including further integration of the economic, social, and environmental aspects.
- Continuation of activities related to (1) updating flood risk management planning, and (2) implementing measures that are part of the first Sava Flood Risk Management Plan (FRMP).
- Securing sustainable functioning of the Sava Flood Forecasting, Warning and Alarm System (FFWS) and its further development.
- Strengthening efforts to rehabilitate and develop navigation on the Sava River and its navigable tributaries, in order to contribute to the economic and social development of the region (special emphasis on solving the complete demining of the Sava River banks).
- Securing the functioning and maintenance of the Sava GIS and Sava HIS and further upgrades, taking into account their importance for data and information exchange among the co-operating countries, as well as for planning in the basin.
- Continuation of activities related to regional co-operation in developing sustainable tourism.

6.1.2 Strategies and projects to build upon

Important regional institutions for the Sava River Basin:

- The 2002 Framework Agreement on the Sava River Basin (FASRB) has led to the establishment of the ISRBC, which has the following objectives: establishment of an international regime of navigation on the Sava River, establishment of sustainable water management, and undertaking of measures to prevent or limit hazards. The ISRBC is the legal and institutional framework for co-operation at the basin level and implements various projects. Notable results of co-operation in the context of the ISRBC were the preparation of the first RBMP and FRMP, and the setup of the FFWS.²⁷⁹ Concerning climate change adaptation, the Outline of the Climate Change Adaptation Strategy and priority measures (2018) is an important step “towards the full strategy and an action plan for the climate change adaptation in the Sava river basin”.²⁸⁰ Additional important projects included: ‘Building the link between flood risk management planning and climate change assessment in the Sava River Basin’ (2013), and the ‘Water and Climate Adaptation Plan for the Sava River Basin’ (2015).²⁸¹ A recent achievement was the adoption of the MoU on co-operation concerning regular functioning and maintenance of the Sava FFWS in July 2020.²⁸²
- As the Sava River Basin is the second largest sub-basin of the Danube, co-operation on the level of the Danube River Basin, for example, through the ICPDR and the Danube Commission (DC), is also relevant to the Sava River Basin.²⁸³

278 - The short and mid-term objectives of the ISRBC are extracted from the ISRBC's Sava Newsflash 2020.

279 - Sava Newsflash 2020.

280 - Sava Commission 2018.

281 - Sava Newsflash 2020.

282 - Sava Commission 2020.

283 - UNECE 2016.

Major regional projects include:

- The above-mentioned World Bank project “Sava and Drina Rivers Corridors Integrated Development Program” (2020-2030), which was announced in August 2020: “The program will use an integrated approach to finance flood protection, environmental management, and port modernization activities to improve connectivity along the Sava and Drina Rivers Corridors. The project will also help strengthen transboundary water co-operation and enhance regional economic growth in countries where vulnerabilities have been exacerbated by COVID-19.”²⁸⁴ The ISRBC expects that the project will support many of its priority activities.
- GEF-financed WWF project “Danube River Basin Hydromorphology and River Restoration (DYNA)” (2017-2021): The project aims to strengthen integrated and harmonized approaches for river restoration and aquatic biodiversity conservation in the Danube River Basin (Bosnia and Herzegovina, Moldova, Montenegro, Serbia, and Ukraine). As the Sava River Basin is the largest Danube tributary by discharge, it is one of the main targets of the project. Executing partners are ICPDE, ISRBC, WWF Danube-Carpathian Programme, and government agencies.²⁸⁵
- UNECE project “Assessment of the water-food-energy-ecosystem nexus: dialogue in Sava Basin, Western Balkan” (completed): The project had the objective to “foster transboundary cooperation by identifying intersectoral synergies and determining measures that could alleviate tensions related to the multiple needs of riparian countries for shared resources”.²⁸⁶
- UNECE project “Assessment of the water-food-energy-ecosystem nexus and benefits of transboundary co-operation in the Drina River Basin” (completed): As the Drina Basin is a sub-basin of the Sava, the assessment was built on the findings of the nexus assessment of the Sava Basin, and looked at key issues specific to the Drina Basin. The project was carried out in co-operation with the ISRBC, as part of the project “Greening economic development in Western Balkans through applying a nexus approach and identification of benefits of transboundary cooperation”, funded by the Italian Ministry for the Environment, Land and Sea.²⁸⁷

- Funded by the Western Balkans Investment Framework (WBIF) and administered by the World Bank: “Improvement of Joint Actions in Flood Management in the Sava River Basin” (completed): Amongst others, the Sava FFWS was developed in the context of this project.²⁸⁸

At the domestic level, the following project is relevant, as some of the project’s tools have been replicated already at the Sava Basin level:

- UNDP project “Scaling Up Climate Resilient Flood Risk Management in Bosnia Herzegovina” (GEF-funded): In particular, the project in Bosnia and Herzegovina on flood risk management in the Vrbas River Basin (a sub-basin of Sava) is very relevant in this context. The project has generated methods, tools and good practices on flood modelling, forecasting, early warning and risk reduction. Some of these tools have already been replicated at the Sava Basin level.

Additional regional projects on rural development and tourism include:

- The SWG RRD follows a regional-local approach in transboundary areas (called Area-Based Development) and has established regional co-operation structures and networks in several regions, including in the Drina-Sava area.²⁸⁹
- GIZ project “Support to Economic Diversification of Rural Areas in Southeast Europe (SEDRA)” (2018-2021): The project is jointly implemented by the SWG RRD and GIZ and focuses on developing rural tourism and agri-food value chains in the Drina-Sava area, among others.^{290,291}

284 - World Bank 2020e.

285 - GEF n.d.b.

286 - UNECE 2017a.

287 - UNECE 2017b.

288 - UNESCO 2017.

289 - SWG RRD n.d.

290 - GIZ 2019b.

291 - GIZ 2019c.

6.2 — SUTJESKA-DURMITOR-TARA RIVER CANYON AREA

This mountainous border area stretches across Bosnia and Herzegovina and Montenegro. Sutjeska National Park in Bosnia and Herzegovina is listed under IUCN Category II. Durmitor National Park in Montenegro is also IUCN Category II and on the UNESCO World Heritage List. The Tara River Canyon is the deepest gorge in Europe and habitat for a number of rare and threatened flora and fauna species.²⁹²

Main risks include:

- Water pollution stemming from lack of sewage treatment and limited collection and treatment of urban solid waste.
- Illegal logging.
- Soil erosion.

6.2.1 Suggested co-operation opportunity: Working towards a transboundary protected area

Transboundary co-operation between the protected sites in the area exists, but is limited.²⁹³ Co-operation could therefore focus on enhancing transboundary conservation or moving beyond the protected areas and address, for example, water supply and sewage systems.

Possible aims:

- Establish a transboundary protected area, for example, a Biosphere Reserve.
- Establish a long-term transboundary co-operation mechanism serving the local stakeholders, for example, through establishing co-operation protocols for the two existing National Parks.

- Addressing illegal logging (could be part of the efforts for establishing a transboundary protected area, or it could be on its own), including developing a joint strategy and implementation plan to address illegal logging, improvements in monitoring, and reforestation.

- Restoration, expansion and modernization of existing water supply and sewage networks.

- Identification and implementation of soil erosion measures.

6.2.2 Strategies and projects to build on

There are some initiatives and projects that have worked towards the establishment of a transboundary protected area and to enhance sustainable tourism practices, which could serve as the basis for new initiatives and provide lessons learned:

- The area was identified as one of three "priority areas in focus" of the Environment and Security (ENVSEC) initiative in South-Eastern Europe, and a feasibility study was published and followed up with several events.²⁹⁴

- In the context of the broader Dinaric Arc Initiative, the Durmitor Sutjeska region was part of the project "Environment for People in the Dinaric Arc" (2009-2012) that was "designed to increase regional transboundary cooperation in the management and conservation of cultural landscapes and biodiversity for the benefit of rural communities". The project was implemented jointly by IUCN, WWF and SNV. One of its outputs was a regional manual for sustainable tourism management.²⁹⁵

292 - UNEP Vienna 2010b.

293 - World Heritage Centre 2018.

294 - UNEP Vienna 2010b.

295 - IUCN 2013.

6.3 — MIXED MOVEMENTS AND EMIGRATION AS REGIONAL CHALLENGE

At the international level, South-Eastern Europe is affected by the mixed movement of refugees and migrants into the EU, due to its location along the so-called 'eastern route' that passes through Eastern and South-Eastern Europe. The presence of refugees and migrants can increase inter-group tensions: for example, the World Bank states that "migrants who do not have networks or social capital in their new location can be socially isolated or discriminated against, resulting in tensions or conflict."²⁹⁶ Negative climate change impacts can exacerbate these tensions by harming the economy. Moreover, irregular migration can lead to disagreements within the region, hindering climate co-operation.

South-Eastern Europe is also currently witnessing a large-scale emigration of its young and educated population to the EU, due to low employment prospects and economic opportunities in the region. This emigration can damage regional economies. The Westminster Foundation for Democracy argues that the average working-age person leaving Albania, Montenegro, or North Macedonia takes more than 14,000 EUR in GDP with them.²⁹⁷

The impacts of climate change will likely aggravate the existing economic situation and provide incentives for further migration and internal displacement, for example, as people leave areas threatened by floods.²⁹⁸ This emigration, coupled with the region's already heat-sensitive aging population, is expected to further increase the region's sensitivity to climate change and decrease its adaptive capacity, thus making future disasters more dangerous.²⁹⁹

Migration through South-Eastern Europe to the EU peaked in 2015 and 2016. At first, migrants tended to go through Serbia and Croatia to Hungary or Slovenia, but after Hungary and Slovenia erected border defences, migrants turned to a new route, through Bosnia and Herzegovina to Croatia and on to Slovenia. Although illegal crossings declined everywhere except in Bosnia and Herzegovina from 2017, new groups of refugees and migrants would likely follow similar paths, and thus the hotspots would be similar too.

The following locations are important migration hotspots. However, this challenge will not be part of the hotspot prioritization as none of these geographic hotspots intersected with the other hotspots identified above. Nevertheless, migration is a relevant regional challenge, and there might be opportunities at later stages of the project to include it:^{300,301,302,303}

- **Bihać and Velika Kladuša** (in North West Bosnia and Herzegovina near the Croatian border) is home to thousands of migrants and refugees who live in temporary reception centers, in abandoned buildings, or out in the open.
- **Presevo** (southern Serbia near border with North Macedonia): site of a large refugee camp.
- **Idomeni/Gevgelija**: major crossing point for migrants going from Greece to North Macedonia.
- **Sid**: main crossing point for transit from Serbia to Croatia.
- **Sombor**: main crossing point for transit from Serbia to Hungary.

6.3.1 Possible aims and topics for co-operation

As South-Eastern Europe is characterized by different movement patterns, the aims and topics for co-operation could address several issues. The suggested co-operation opportunities focus, on the one hand, on refugees, migrants, and populations at risk of displacement who are mainly transiting the region. On the other hand, these co-operation opportunities look at the emigration of the region's residents to the EU. Existing projects can serve as starting points to enhance regional co-operation, while also taking into account climate change considerations.

Possible aims and topics include:

- Gain detailed understanding of climate change impacts on migration and displacement patterns in the region, both on populations at risk of displacement, international refugees, and migrants that might come to or transit through South-Eastern Europe, as well as on the region's residents who emigrate to the EU.
- Foster the exchange of experiences within the region on the different aspects of climate change and migration and displacement.

²⁹⁶ - World Bank 2014.

²⁹⁷ - Westminster Foundation for Democracy 2019.

²⁹⁸ - World Bank 2014.

²⁹⁹ - World Bank 2014.

³⁰⁰ - Reuters 2020.

³⁰¹ - Greider 2017

³⁰² - The Global Initiative Against Transnational Organized Crime 2019.

³⁰³ - European Parliament 2016.

- Raise public awareness on the impacts of climate change on different aspects of migration and displacement in the region, and the risk of further displacement and associated protection aspects; working with local communities that host refugees and migrants, as well as with communities whose residents are seeking to emigrate or have emigrated.
- Strengthen activities focusing predominantly on refugees and migrants hosted in the region:
 - Develop a strategy and action plan for human mobility in the region, which take into consideration the associated safety, social, protection, development, and environmental risks, as well as mitigation measures.
 - Improve co-operation between immigration authorities and international organizations such as the International Organization for Migration (IOM) and United Nations High Commissioner for Refugees (UNHCR) in general, and on climate change-related issues in particular.
 - Raise awareness on climate change impacts on migration, displacement and related protection issues among border police in a co-operative format.

6.3.2 Strategies and projects to build upon

There are various projects that focus on assisting refugees, migrants and populations at risk of displacement that might transit the region, as well as on residents of the region that want to migrate to the EU.

Regional projects include:

- EU, IOM and UNHCR regional project "Addressing COVID-19 Challenges within the Migrant and Refugee Response in the Western Balkans" (launched in August 2020). The project seeks to "help ensure that the rights of migrants, asylum-seekers and refugees are protected and that asylum and migration management systems remain operational. It will contribute to mitigating the risk of transmission of COVID-19."³⁰⁴
- IOM project "Countering smuggling of migrants along the Western Balkan coastal route" (2018-2020): The project "aims to enhance the regional cooperation between the beneficiary countries – Albania, Bosnia and Herzegovina and Montenegro – and strengthen their institutional capacities, to identify the migrants' smugglers, effectively investigate the cases of smuggling of migrants, to apprehend and prosecute the perpetrators, and to protect migrants' rights along the WB coastal route."³⁰⁵
- GIZ regional project "Prevention and combating of human trafficking in the Western Balkan" (2019-2022): The project aims to make refugees, migrants and other vulnerable groups more resistant to the risks of human trafficking, for example, by means of education and training as well as through professional advisory services in the area of mental health. The lead executing agency is the 'Migration, Asylum, Refugees Regional Initiative' (MARRI).³⁰⁶
- GIZ regional project "Countering Serious Crime in the Western Balkans" (2020-2023): The project aims to strengthen transboundary co-operation to fight serious and organized crime in the region, by supporting sub-regional authorities together with public prosecutors from EU member states, police officers from the Italian Ministry of the Interior, and lawyers from EU countries. Amongst others, the project focuses on combatting illegal migrant smuggling. Lead executing agency is the RCC.^{307,308}

At the sub-regional level, UNHCR is also present and provides support in various areas, focusing on approaches that create solutions for third country refugees and migrants in the region, rather than transit situations. Main activities in the region include: ensuring the most urgent humanitarian and protection needs are provided, strengthening asylum procedures, supporting the resilience of refugees and local communities, promoting refugee inclusion, engaging in disaster risk reduction strategies, strategically engaging in the Regional Housing Programme (in partnership with the OSCE), and addressing and preventing statelessness.³⁰⁹

IOM is also active at the sub-regional level, and is involved in a wide range of activities, mainly targeting residents of the region. Activities include: researching on labor migration of healthcare and other professionals, supporting socially marginalized youth in the region to avoid radicalization, addressing gaps in care, support and justice systems for survivors of conflict-related sexual violence, mitigating the adverse effects of internal migration of youth, and supporting border management.^{310,311} In addition, IOM is dedicated to manage environmental and climate change-related migration and has, for example, provided psychosocial support for flood-displaced persons in Bosnia and Herzegovina.³¹²

304 - IOM Mission in Serbia 2020.

305 - IOM Bosnia and Herzegovina n.d.a.

306 - GIZ n.d.a.

307 - GIZ 2019d.

308 - GIZ n.d.b.

309 - UNHCR n.d.

310 - IOM Bosnia and Herzegovina n.d.b.

311 - IOM Mission in Serbia n.d.

312 - IOM South-Eastern Europe, Eastern Europe and Central Asia n.d.

6.4 — LOJANE CHROMIUM, ARSENIC AND ANTIMONY MINE

The Lojane chromium, arsenic and antimony mine is located in North Macedonia, near the border with Serbia. It was active from 1923 to 1979. An unprotected tailings dump at the remnants of the smelter buildings is a pollution hazard. The area has been described as "grossly contaminated" with arsenic and antimony. Lojane has the largest tailings dump in the area.³¹³

Main risks include:

- Water pollution.
- Soil pollution, which has also affected agricultural areas near Lojane.³¹⁴

6.4.1 Suggested co-operation opportunity: Addressing pollution and rehabilitation of mines

Transboundary co-operation to address pollution and the rehabilitation of mines could focus on knowledge-sharing and developing a common understanding of the environmental issues linked to mining in the area. This could then serve as the basis for the creation of a joint action plan. Past activities in the context of the ENVSEC initiative could build the basis for new projects.

Possible aims:

- Share experiences on rehabilitation.
- Create a common understanding of the state of pollution in the area.
- Develop an action plan for addressing the main risks as well as clean-up of the site.

6.4.2 Strategies and projects to build upon

Past activities at the Lojane mine include the remediation of toxic waste dumps close to a primary school to eliminate wind erosion and reduce local and downstream surface and groundwater pollution, as part of the regional UNEP project "Strengthening Capacities in the Western Balkans Countries/Territories to Address Environmental Problems through Remediation of High Priority Hot Spots" (2007-2010). The project also included a component to enhance regional co-operation. The project can serve as an

example for future activities, with studies and other technical documentation providing an additional foundation.³¹⁵

Moreover, a past ENVSEC project, led by UNEP, worked on identifying and reducing transboundary environmental risks from hazardous mining operations in South-Eastern Europe.³¹⁶ These experiences could also be used to inform new co-operative activities.

313 - Alderton et al. 2014.

314 - Alderton et al. 2014.

315 - Western Balkans Environment Programme 2010.

316 - Stuhlberger 2009.

6.5 — ZAJAČA, ZVORNIK, KRUPANJ, VELIKI MAJDAN, SREBRENICA LEAD AND ZINC MINES

These mines are located in Bosnia and Herzegovina and Serbia, and are situated relatively close to each other. People living in the region have suffered health problems due to pollution from mines and smelters. In the summer of 2011, a study found elevated concentrations of lead in the blood of people who live near the Zajača mine and smelter.³¹⁷ In general, water pollution is a major issue near the mines at Zajača, Krupanj and Veliki Majdan, where untreated industrial waste is discharged into waterways. UNEP warns about possible failures of engineered structures that contain mine tailings.³¹⁸

Main risks include:

- Land degradation and soil pollution, mainly associated with past or still-active mining and industrial sites situated in border regions.^{319, 320}
- Water pollution.
- Health risks mainly due to excessive levels of lead in human blood.³²¹

6.5.1 Suggested co-operation opportunity: Improve transboundary co-operation around mining hazards

There is an opportunity to foster transboundary co-operation in this area to address the environmental issues of past and current mining operations that both countries face. Central or local efforts could offer starting points for transboundary activities.

Possible aims:

- Map and analyze hazards, including the environmental state of the different mines in the area.
- Develop a strategic framework for pollution-reduction and a circular economy action plan.
- Develop joint measures to reduce soil and water pollution.

6.5.2 Strategies and projects to build upon

Current strategies and projects are at the domestic level, and could serve as starting points for transboundary co-operation.

These strategies and projects include:

- The newly established Cadastre of Mining Waste in Serbia.³²²
- Strategy for local development and catalog of investment possibilities of Krupanj.

- Strategy on Waste Management of Republic of Srpska 2017-2026, and the Waste Management Plan of Republic of Srpska for period 2019-2029.

In addition, a past ENVSEC³²³-supported initiative, led by UNEP, worked on identifying and reducing transboundary environmental risks from hazardous mining operations in South-Eastern Europe.³²⁴ As was the case for the Lojane mine, these efforts could form a basis for new co-operative activities.

317 - Environmental Justice Atlas 2016.

318 - Stuhlberger 2009.

319 - Stritih 2018.

320 - UNEP/GRID-Arendal 2007; also based on expert input.

321 - Environmental Justice Atlas 2016.

322 - Balkan Green Energy News 2020.

323 - Environment and Security (ENVSEC) initiative is a partnership between UNEP, UNDP, OSCE, and UNECE. Until 2020 it included REC as well. "Its primary objective is to tackle environment and security risks through promoting environmental co-operation among and within the countries of 4 regions, namely Eastern Europe, South-Eastern Europe, the South Caucasus and Central Asia." For more information, see OSCE n.d.

324 - Stuhlberger 2009.

7

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