

Sustainable Mountain Development in Central, Eastern and South Eastern Europe

From Rio 1992 to Rio 2012 and beyond

2012

FROM RIO 1992 TO 2012 AND BEYOND:

**20 YEARS OF SUSTAINABLE MOUNTAIN DEVELOPMENT
IN CENTRAL, EASTERN AND SOUTH-EASTERN EUROPE**



EXECUTIVE SUMMARY

WHY MOUNTAINS MATTER FOR CENTRAL, EASTERN AND SOUTH-EASTERN EUROPE

The mountains of Central, Eastern and South Eastern Europe have played a key social, economic and environmental role in the development of the nations and peoples that have resided there since time immemorial. Being both natural barriers and safe havens not only for people, but also for flora and fauna, the mountains have been instrumental in shaping the Europe of today. Europe harbours large transboundary mountain groups that are located in dynamic geopolitical regions: the Balkan and Dinaric Arc, the Carpathians and the Caucasus. These mountain regions have global significance as they provide goods and ecosystems services essential for sustainable development, in particular to the lowlands and the communities living in these areas. Nonetheless, mountains are highly vulnerable to global change. Given the tight highland-lowland linkage, these changes may have serious impacts far beyond the mountain boundaries.

THE MOUNTAINS OF CENTRAL, EASTERN AND SOUTH- EASTERN EUROPE AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Europe's mountainous macro-regions are partly developing dynamically while also experiencing political and economic marginalization, and in some cases still territorial disputes and conflict resulting from the past. They are a living environment inhabited by millions of people, but are subject to a variety of heavy pressures ranging from migration and unemployment, land use change, habitat conversion and fragmentation, deforestation, the impacts of climate change, to industrialization and mining pressure, pollution, and exploitation of natural resources, environmental degradation, energy needs and water scarcity.

An important asset of Europe's mountain region is their uniquely diverse natural and cultural heritage which provides a cultural and ecological link within Europe. They are rich in landscape, bio- and agro-diversity, and are centres of the world's biodiversity. Their significance as crossroads and transit regions cannot be overlooked in today's global economy. Forest resources in countries with economies in transition play a significant role for national income. The diverse functions of forests (recreation, tourism, water, wood and non-wood products, etc.) are creating sustainable benefits. Europe's mountain regions are usually heavily dependent on agriculture, but offer unique opportunities for production of organic and high-quality products. The picturesque mountain regions of Europe offer potential for developing environment-friendly sustainable tourism as a source of livelihood for local people. In Europe's mountains, architecture, rural arts and crafts, as well as indigenous knowledge have been best preserved. Europe's mountains create potential for sustainable supply of renewable energy.



Figure 1. Map of the Mountains in Central, Eastern and South Eastern Europe
(source: EURAC 2012)

Both the challenges and opportunities for substantial improvement in all aspects of transboundary and national sustainable mountain development are enormous, with success stories leading to increased regional collaboration and stability. As the European and global experience show, the challenges of sustainable mountain development cannot be effectively solved without intergovernmental cooperation. As an example, in the Carpathian region, international cooperation within the Framework Convention on the Protection and Sustainable Development of the Carpathians provides a solid base for measures to balance environmental protection and sustainable regional development, and to improve the living conditions of the local population.

POLICY ACTION – THE MOUNTAINS OF CENTRAL, EASTERN AND SOUTH-EASTERN EUROPE AND THE FUTURE WE WANT

- The need to create global, regional, national and local mechanisms that justly support mountain communities in providing essential resources and services for human well-being has to be recognized.
- It is imperative to support green and low-carbon economic activities in mountain regions through capacity building and development of suitable technologies, as well as innovative means of financing for sustainable development and conservation of mountain regions.
- The pivotal role of regional centres of competence in research and development to achieve solutions which take into account the specificities of mountain areas has to be stressed. The creation or strengthening of regional centres is also needed to enhance inter-regional cooperation and partnership between the mountain macroregions of Europe as well as other mountain regions of the world.
- Integrated ecosystem based management approaches have to be adopted taking into account highland/lowland linkages, transboundary cooperation and resource efficiency. Innovative institutional arrangements for regional and transboundary cooperation aiming at a multi-sectoral approach are urgently required to trigger governance models and decision support systems, as well as the actual mainstreaming of mountains into overall national development

and conservation processes. The Carpathian Convention – the only mountain convention adopted since 1992 – is a regional governance mechanism and a best-practice example of an institutional framework for promoting sustainable development and green economy in mountain regions.

- New opportunities for public-private partnerships and investments in mountain ecosystem goods and services have to be defined, especially in the fields of conservation, renewable energy, sustainable forest management, sustainable tourism, responsible industrial development and climate-smart agriculture, including promotion of natural products. Actions in support of sustainable mountain development are a key to achieving the Millennium Development Goals.

Continued effort will be required in sustainable management and protection of mountain ecosystems as well as in dealing with poverty, food security and nutrition, social exclusion and environmental degradation in these areas. States are invited to strengthen cooperative action with effective involvement and sharing of experience of all relevant stakeholders by establishing new or strengthening existing regional agreements and/or arrangements and centers of competence for sustainable mountain development.

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PART 1. SETTING THE STAGE

A. INTRODUCTION

1. The mountains of Europe have played a key social, economic and environmental role in the development of the nations of peoples that have resided there since time immemorial. Being both natural barriers and safe havens not only for people, but also for flora and fauna, the mountains have been instrumental in shaping the Europe of today. This report strives to provide a synthesis of the mountains of Central, Eastern and South-Eastern Europe, including an overview of their origin and structure, and the work that has been undertaken in them by governments, non-governmental organizations, various agencies, research institutions, civil society, etc. over the past 20 years towards sustainable mountain development (SMD). This synthesis is being undertaken in light of Chapter 13 of Agenda 21, the Programme for Further Implementation of Agenda 21 (PFIA21) and the Johannesburg Plan of Implementation (JPOI). Curiously, in spite of having a key chapter of Agenda 21 being written and agreed upon exclusively for mountain systems, they remain by and large neglected at best, and further deteriorated at worst.
2. The management of the mountains in Europe have been canonized since the late 19th century in national legislation (preceded by centuries of various laws and rules about land use and conservation by earlier kingdoms), followed more recently by the development of regional cooperation structures in the 1970s and regional legal instruments for the Alps and Carpathians since the 1990s. This move towards regulating the sustainable use of mountains has ultimately led to a wide range of socio-cultural, economic and environmental policies and legal instruments for various sectors and levels of governance, some of which will be discussed in this report particularly for the Balkans, Carpathians and Caucasus. Added to this, a comprehensive regional agreement has also been put in place for the Carpathians, with regional agreements also developed in the Caucasus and Balkans particularly for trade and geopolitical security.
3. The mountains of the Balkans and Dinaric Arc, Carpathians and Caucasus are also located in dynamic geopolitical regions of the Euro-Asian divide, let alone facing heavy pressure from territorial disputes, development, environmental degradation, the impacts of climate change and water scarcity, energy needs, mining pressure, and so on. As a result, the opportunities for substantial improvement in all aspects of transboundary and national SMD are enormous, potentially leading to increased regional collaboration and stability; however, much depends on the political will of the states involved.

SUSTAINABLE MOUNTAIN DEVELOPMENT AND INTERNATIONAL GOVERNANCE

4. Sustainable mountain development as a concept is rather difficult to define specifically and as noted by Price and Kim (1999), “Given the very different characteristics of the world’s diverse mountain

regions, even on one continent, it is probably best not to propose a precise definition of sustainable mountain development, but to recognize that it is a regionally-specific process of sustainable development that concerns both mountain regions and populations living downstream or otherwise dependent on these regions in various ways.” This statement is by no means insignificant and by extension would imply that the development of mountain systems in Europe is largely unique to Europe, in spite of the common thematic sectors with other continents/regions, such as forestry, tourism, water, infrastructure, energy and so on. This assessment aims to shed some light on these typically European SMD peculiarities since the Rio Earth Summit in 1992, with an eye to looking forward to Rio+20 and beyond, focusing on enhancing the best practices and learning from the challenges and failures.

5. The insights and final recommendations have been independently elaborated drawing on strategic documents and various inputs by stakeholders.

A BRIEF OVERVIEW OF THE DEVELOPMENT OF AGENDA 21

6. The United Nations Conference on Environment and Development (UNCED) in 1992 (commonly referred to as the Earth Summit) in Rio de Janeiro (Brazil) set the benchmark for what was to become a commonly agreed understanding of the vital need for sustainable mountain development through the development of Agenda 21. Specific to mountains was the drafting of Chapter 13 “Managing Fragile Ecosystems: Sustainable Mountain Development”.

7. In 1997, the UN General Assembly (GA) held a special session (called Earth Summit+5 or Rio+5) to review and appraise the previous five years of the implementation of Agenda 21, noting that progress had been hindered through the increasingly divisive roles being played by globalization, income disparities, and continued environmental degradation. The UN GA Resolution S-19/2 noted a renewed commitment for further action to overcome these deficiencies in the implementation process.

8. This was then followed by the World Summit for Sustainable Development (WSSD; Earth Summit 2002) in 2002 in Johannesburg (South Africa), in which the UN member states once again reaffirmed their full commitment to Agenda 21, together with the Millennium Development Goals (MDG).

9. On 4–6 June 2012, the UN Conference on Sustainable Development (UNCSD; Earth Summit 2012 / Rio+20)¹ will take place in Rio de Janeiro (Brazil). The three objectives of the Conference are: (a) Securing renewed political commitment to sustainable development; (b) assessing the progress and implementation gaps in meeting already agreed commitments; and (c) addressing new and emerging challenges. The Conference will also focus on two key themes, namely (a) the green economy in the context of poverty eradication and sustainable development, and (b) the development of an institutional framework for sustainable development.

OTHER NOTABLE GLOBAL SMD-RELATED MILESTONES

10. The draft World Charter for Mountain Populations resulted from the World Mountain Forum in June 2000 (endorsed by the 800 participants from 70 mountain countries)². The draft Charter focused on three key conditions that need to be met in order satisfy the requirements mountain populations:

- (a) Mountain peoples must find a place in society while retaining their identity.
- (b) Mountain peoples must face economic competition while changing the conditions of trade to their advantage.
- (c) Mountain peoples need to retain control of their environment and the development of their natural resources, managing them for their own needs as well as on behalf of the national and world community.

1 <http://www.uncsd2012.org>

2 <http://www.fao.org/DOCREP/005/Y3872E/y3872e0d.htm>

11. A revised version of the Charter was discussed at the second World Meeting of Mountain Populations in September 2002 in Quito (Ecuador).

12. The Bishkek Global Mountain Summit (29 October – 1 November 2002, Bishkek, Kyrgyzstan), coinciding with the International Year of Mountains, resulted in the **Bishkek Mountain Platform**, a declaration by the participating countries to strengthen and enhance SMD-related initiatives by providing a framework to mobilize the necessary resources, provide orientation and guidance, and promote synergies and partnerships. The Platform also contributes to the achievement of the MDGs. Furthermore, the Platform sought to further the development of the International Partnership for Sustainable Development in Mountain Regions,³ as launched at the WSSD in Johannesburg in 2002.

13. Other notable non-binding SMD-related instruments that have been developed since Rio 1992 for mountain systems around the world include:⁴

- The **Charter for the Protection of the Pyrénées** of 1995 aims to (a) preserve the range's ecological values, (b) provide access for visitors without altering access points, and (c) promote economic development that respects the environment.
- The **UIAA Kathmandu Declaration of 1997** (Kathmandu, Nepal) called for (a) effective protection of mountain environments, (b) respect for the culture and dignity of mountain peoples, and (c) the promotion of contact between mountaineers in a spirit of friendship, respect and peace.
- The **African Mountains and Highlands Declaration** of 1997 (Antananarivo, Madagascar) highlights the major challenges affecting the mountain ecosystems of Africa and provides policy recommendations to deal with them.
- The **Euromontana Final Declaration** of 2000 (Trento, Italy)⁵ noted that the comparative advantage of mountain regions as hubs of environmental and cultural diversity is quality, and that the sustainability of economic activities in mountain areas in this era of globalization can only be ensured by high quality, value-added products.
- The **Cusco Declaration on Sustainable Development of Mountain Ecosystems** of 2001 (Cusco, Peru) identifies those environmental, social and economic measures that are widely recognized as essential to SMD.

MOUNTAINS AND CRITICAL ECOSYSTEM SERVICE DELIVERY

14. The mountains of Central, Eastern and South-Eastern Europe play vital roles in the delivery of ecosystem services that are critical in sustaining the well-being of people living both within the mountains systems themselves, as well as those on the lowlands. The ecosystem services provided by mountains in general fall under four main categories, although these vary considerably across spatial and temporal scales and interact with each other continuously:

- *Provisioning services*: food, water, wood, fiber and fuel, originating from agricultural, forestry and natural ecosystems, including rivers
- *Regulating services*: climate regulation, flood regulation and drought control, regulation of water and air quality, and crop pollination
- *Cultural services*: benefits arising from tourism, recreation, aesthetic experience, cognitive development, relaxation, and spiritual/religious reflection
- *Supporting services*: necessary for the production of all ecosystem services, e.g., primary production (photosynthesis), nutrient cycling and soil formation

3 http://mountains.unep.ch/bgms/intl_partnership.html

4 <http://www.fao.org/DOCREP/005/Y3872E/y3872e0d.htm>

5 Euromontana is an association of 36 mountain organizations from 15 countries of Central, Eastern and Western Europe.

15. These ecosystem services are of paramount importance to both upland and lowland communities, meaning that their successful management, protection and restoration depend heavily on the quality and degree to which these communities interact and complement one another. Unfortunately though, trade-offs and compromises regularly need to be made, often with the lowland communities being the recipient of the lion's share of the benefits, resulting in conflict and tension. However, within the context of SMD and the emerging concept of the 'green economy'⁶, the careful restoration, protection and sustainable management of these vital ecosystem services can continue to provide for the needs of the future.

SUSTAINABLE MOUNTAIN DEVELOPMENT AND THE 'GREEN ECONOMY'

16. The 'green economy'⁷, while still being developed as a concept, presents an alternative to mainstream economics, fiscal management and business development; one in which the environmental plays a key role and which both draws upon environmental services as a means of meaningful employment and income generation, but also contributes positively to the management, restoration and improvement of the environment both locally and as part of the larger global system. The concept has also evolved further in recent years to include addressing the social dimension.

17. Within the context of mountain systems, the green economy builds upon and supports the responsible long-term development of many activities already taking place, including tourism, agriculture and non-timber forest products, craft production, forestry, hunting, etc., re-injecting much-needed public and private investment into communities that have long suffered from heavy out-migration and marginalization, albeit in an inclusive and consultative manner that respects their cultural needs and views. Furthermore, it represents a re-connection between lowland and urban populations with their upland counterparts, thereby potentially improving complementarities and mutual understanding.

B. GOALS AND EXPECTED OUTPUTS

18. This desktop study assessment aims to provide information on the SMD progress achieved (noting the gaps, challenges and opportunities) in the Balkans and Dinaric Arc, Carpathians and Caucasus since the 1992 Earth Summit, with a view to looking towards Rio+20 and beyond. Specifically, this assessment aims to:

- Review the regional and country commitments and take stock of what has been achieved in the region in promoting SMD since 1992.
- Identify current and emerging challenges and to explore pathways and opportunities on how these can be addressed.
- Identify the role of different stakeholders and to propose a "plan of action".

19. The result output of this study includes a draft regional synthesis report for submission to an international conference to be held in Lucerne (Switzerland) in mid-October 2011, followed by the final status report for submission to the Rio+20 conference in mid-2012.

C. APPROACH AND SCOPE

20. The mountain ranges and related countries chosen for this study comprise of both land-locked and coastal regions, uplands and lowlands, stretched over a huge geographical area. Furthermore, they

⁶ UNEP has developed a working definition of the 'green economy' as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a 'green economy' can be thought of as one which is low carbon, resource efficient and socially inclusive. See also <http://www.unep.org/greeneconomy> for more information.

⁷ The 'green economy' is one of the two main themes of Rio+20: "The green economy in the context of poverty eradication and sustainable development".

are comprised of a variety of socio-economic and political systems, cultures, development agendas, ideologies and so on. However, in spite of these apparent differences, the countries and mountain ranges all share common challenges and opportunities, particularly in terms of forest management, agriculture (including both farmland and pastures), and water management. Industrial development in the lowlands is also beginning to take its toll on the health of mountain ecosystems.

21. The target audience for this report on the Balkans and Dinaric Arc, Carpathians and Caucasus is policy and decision makers at the international and national level, including multilateral and bilateral development agencies, national governments, private sector, and local and regional administrations. This report also aims to address the civil society organizations including international and national NGOs and foundations; private as well as public sector enterprises, including transnational corporations; academic institutions; scientists; and researcher, scholars and academia in the countries of these mountain groups.

22. This study focuses primarily on the Central, Eastern and South-Eastern European countries that make up the Balkans and Dinaric Arc (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo (UN Administered Territory under UNSCR 1244/99), the Former Yugoslav Republic of Macedonia, Montenegro, Romania, Serbia, Slovenia and Turkey), Carpathians (Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia and Ukraine) and Caucasus (Armenia, Azerbaijan, Georgia, the Islamic Republic of Iran, Russian Federation and Turkey) mountain ranges.



PART 2. REGIONAL OVERVIEW AND PROGRESS SINCE 1992

23. This section provides an overview of some of the major challenges being faced by the mountain systems in Central, Eastern and South-Eastern Europe and the progress of the countries towards meeting their Agenda 21 commitments of SMD

D. THE BALKANS AND DINARIC ARC

24. The Balkan mountains (a 557km-long chain running down the eastern side of the Balkan Peninsula) and the Dinaric Arc (a 645km-long chain running along the Adriatic coast) are located in 12 countries in South-Eastern Europe, namely Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo (UN Administered Territory under UNSCR 1244/99), the Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Slovenia and Turkey. Besides forming the eastern boundary of the European Union (EU), these mountain systems are incredibly diverse, with a rich multitude of ethnic groups, cultures and religions, numerous relic and endemic flora and fauna, high diversity of avifauna, and significant numbers of large mammals.

25. However, social instability, war, transition towards market economies, have all impacted the countries of South-Eastern Europe to one degree or another; the effects of these socio-economic and political changes are still being felt, with the lingering effects of national economic debt crises, such as is currently taking place in Greece, being the latest shock. The region is also under consistently strong pressure to develop economically (while simultaneously experiencing political and economic marginalization, exacerbating out-migration and unemployment) and to improve national living standards, often to the detriment of natural resources and biodiversity (and the associated ecosystem services), including mineral resource and timber extraction, air/water pollution and poor waste management, land conversion, etc. Climate change is also making its presence felt with increasing drought periods affecting agriculture and drinking water.

26. According to UNEP ISCC (2006), the environmental threats in the Balkans include:

- Unsustainable use of natural resources
- Unsustainable forest management and illegal logging
- Inadequate river basin management
- Drainage of wetlands and destruction of river ecosystems
- Loss, degradation and fragmentation of habitats due to urbanisation and land development

- Loss of native plant and animal species, both wild species and traditional breeds
- Introduction of alien invasive species of flora and fauna
- Tourism pressure on all ecosystems
- Industrial and agricultural pollutants, and municipal waste
- Insufficient law enforcement in physical planning and preventing illegal activities that negatively impact the environment

27. In an attempt to meet these challenges, at the end of the 2005 meeting in Bolzano (Italy), “Sharing the experience – Capacity Building on Legal Instruments for the Protection and Sustainable Development of Mountain Regions in Eastern Europe”, the participants issued a statement that their governments should consider developing a regional legal functioning framework for cooperation between relevant national authorities and regional/local stakeholders.

28. In the Resolution on the Sustainable Development of the Dinaric Arc Region, adopted in Brdo (Slovenia), on 9 March 2011, Ministers declared to strive to develop a legal framework of cooperation (with the assistance of UNEP) to jointly protect, maintain and sustainably manage the natural resources of the region, including ensuring ecological integrity and territorial cohesion.⁸



Figure 2. Mountains in the Dinaric Arc and Balkans region
(source: Wikipedia Commons; UNEP Grid)

8 For the full text, see: http://www.alpconv.org/NR/rdonlyres/060339C1-CF51-4BA4-88D1-1B21C1CCD764/0/DinaricArcResolution_fin_sig.pdf

CLIMATE CHANGE

29. Detailed climate change scenarios for the individual Balkan countries hardly exist, although a case study of Albania (from the conference on “Climate change and Biodiversity in SEE” held in Belgrade 18-19 June 2008) estimated an increase in temperature of 1.8°C by 2050 and a decrease in precipitation of 3.8% by 2025. Furthermore, cloud cover is expected to decrease by 2.6% and wind speed is expected to increase by 1.3% in 2050, together resulting in increased evapo-transpiration. Körner et al. (2005) indicated a drying trend in the Mediterranean region through a case study of Samos Island (Greece) in which 28 cases were documented of important springs disappearing in the western part of the island over the past 30 years. In addition, Xoplaki (2001) suggests a reduction in precipitation in the wider region over the past century.

30. Besides the immediate climatic changes, Thuiller et al. (2005) report that mountain species, specifically those near the Mediterranean Basin, are disproportionately sensitive to the effects of climate change, with an estimated species loss of 60% by 2080. It is already well recognised that mountains are among the most fragile environments in the world, and the shift in temperatures, rainfall patterns and cloud cover will have a profound impact on species ranges and habitats, both in terms of natural and agricultural environments.

AGRICULTURE AND THE ENVIRONMENT

31. **Agriculture:** The structure of agricultural production in the Balkans is generally heavily skewed towards crop production, although these crops are also very sensitive to even mild drought conditions (Mizik, 2012), a factor that will increasingly become apparent in the near future, as noted above. While irrigation would alleviate some of these problems, access to sufficient water is also becoming a challenge, as noted below. In addition, the corn rootworm (*Diabrotica virgifera*) was accidentally introduced into the Balkans in the late 1990s during the conflict, and is now spreading and threatening the region's corn production.

32. According to the study by Giovarelli and Bledsoe (2001) on the Balkan countries of Albania and the Former Yugoslavia, “As all of the surveyed countries except Albania were Yugoslav republics during the post-war years when collectivization was attempted and then abandoned, privatization and private farming has been and remains in an advanced state. However, some socially owned and state owned farms remain.” More recently, Volk (2010) adds that private farming in the Western Balkans remains characterized by being small-scale and fragmented, and the average farm size ranges from 1.2 ha in Albania to around 4 ha in Serbia. However, in some countries (e.g., Croatia, the Former Yugoslav Republic of Macedonia and Serbia), typically made up of large-scale former state and collective farms and traditional small family farms, medium-sized commercial farms are beginning to emerge, signaling a new agricultural era as more money flows into this sector, usually as a result of lower labor costs than in the rest of the EU.

33. Despite and perhaps also because of these challenges, there is a growing interest in environmental approaches to farming in the Western Balkans, as noted in the “Workshop on High Nature Value Farming in the Western Balkans” held on 2-3 February 2006 in Belgrade (WWF Danube-Carpathian Programme, 2006).

34. **Forests:** Since 2000, most of the Balkan countries have adopted new laws on forests and national forest policies. Forests are generally managed sustainably, with annual cuts significantly below the annual increment; Croatian state forests even received the Forest Stewardship Council certification. However, public forest services depend on logging revenues to finance their operations, leading to wood extraction as a primary priority, with less attention being put onto the environmental and social functions of the forests.

35. The basic threats for forests in Bosnia and Herzegovina are minefields, degradation due to the illegal exploitation and uncontrolled change in land use for urbanization and infrastructure (Committee on Environmental Policy, 2004). An estimated 1,2 million m³ of timber are exported illegally from Bosnia and Herzegovina, of which a large proportion is firewood (WWF, 2008). In Bulgaria, 12-15% of the forest has been destroyed as a result of over-exploitation and mass felling from short-sighted policies between 1992 and 2008, with ongoing forest decline continuing at alarming rates. In some river valleys, 80% of the forest has been destroyed over the past 15 years alone (Green Balkans, n.d.)!

36. Protected areas: While the Balkans has an exceptional wealth of biodiversity of flora and fauna, many species are of conservation importance and a large number is critically endangered. For example, the rate of species loss in Albania over the past 50 years has been among the highest in Europe (UNEP/GRID, 2007a). As is common in so many places, the main threat to biodiversity is increasing anthropogenic pressures, including hunting, conventional farming activities (including pesticide and chemical fertilizer misuse) and encroachment (including land conversion and reform), and the unsustainable collection of medicinal plants.

37. Only about 6% of the Balkans is currently under legal protection, ranging from 0.8% in Bosnia and Herzegovina to 9.1% in Albania and Croatia. The largest protected area in the Balkans, the Stara Planina Nature Park, covers an area of 142,220 ha in Serbia and Bulgaria (UNEP/GRID, 2007a). Other protected areas in the region include various national parks: Sutjeska (17,350 ha) in Bosnia and Herzegovina; Mavrovo (73,088 ha), Galicica (22,750 ha) and Pelister (12,500 ha) in the Former Yugoslav Republic of Macedonia; Durmitor (32,000 ha) in Montenegro; and Djerdap (63,608 ha), Fruska Gora (25,393 ha), the Sar Planina/Sharr Mountains (39,000 ha), Tara (19,175 ha) and Kopaonik (11,810 ha) in Serbia.



Figure 3. Protected areas in the Balkans (source: UNEP/GRID, 2007b)

38. Water: The Balkans are rich in wetlands with 43 Ramsar sites in the region. Unfortunately though, the loss of wetlands has not been well quantified for the region, except for the Danube floodplains. In Bulgaria, the exploitation of riverbed materials in the Maritsa, Tundja and other rivers has increased significantly over the past decade, particularly as a result of poor law enforcement, resulting in the destruction of riparian habitats, extinction of species, subsidence of groundwater, increased risk of flooding, and the destruction of buildings and roads.



Figure 4. Watersheds in the Western Balkans (source: UNEP, Zoi Environment Network 2010)

39. Mining and mineral extraction: The open-pit production of certain precious ores and minerals in the Sakar, Eastern Rhodopes, the Balkan Mountains and the Sredna Gora Mountains poses a serious threat to biodiversity in these areas. These open quarries not only irreversibly destroy the habitats of rare species, but also permanently damage the landscape. Besides the direct consequences for people (air and water pollution, noise, dust, etc.), chances for the development of tourism and other sustainable practices are usually destroyed as well (Green Balkans, n.d.). According to UNEP (2010), poorly operated and abandoned mining sites have caused severe pollution in the region, sometimes being transboundary in nature, including heavy metal spills from Baia Borsa tailings in Romania; the cyanide spill from Baia Mare in Romania; heavy metal spills from Sasa tailings in Former Yugoslav Republic of Macedonia; and various releases at Majdanpek and Veliki Majdan in Serbia, and Mojkovac in Montenegro. However, governments in the Western Balkans are in the process of privatizing and closing mines, providing a sound basis for the cleaning up of a substantial number of mining sites.



Figure 5. Mining sites in the Western Balkans (source: UNEP, Zoi Environment Network 2010)

ENERGY

40. One of the key priorities of **Bosnia and Herzegovina's** energy policy is to encourage energy savings by using new energy-saving technologies, encouraging the use of public transportation and rationalizing the use of cars in cities. Another priority is to reform the energy pricing system. Thirteen hydroelectric power stations exist with a total generating capacity of 2,034 megawatts. An American consortium (E&I Group) also announced it would build the country's first bio-ethanol factory and refinery in the district of Brcko.

41. The 2002 Energy Strategy of **Croatia** includes the diversification of sources, support for the development of renewable sources and ensuring environmental protection. A special energy fund co-finances national energy programmes focused on energy efficiency and use of renewables. There are numerous hydropower plants in the country, usually along the Adriatic coastline and near the Slovenian-Croatian border.

42. In 2002 in **the Former Yugoslav Republic of Macedonia**, wood-derived energy consumption accounted for nearly 13 percent of the country's total energy consumption. Besides some geothermal wells, there are seven large hydroelectric plants with a combined capacity of 480 MW, and several smaller hydroelectric plants with total capacity of around 50 MW.

43. As of 2000, **Slovenia** had an installed solar capacity of 42 MWt producing 196 GWh/yr. Geothermal resources are primarily used for thermal spas and recreation, space heating and cooling, green-

houses, industrial processing, and heat pumps. By 2005, only a third of the country's feasible hydropower potential was exploited, with increasing hydroelectric power generation as a strategic objective of the national energy policy.

SOCIAL AND ECONOMIC DEVELOPMENT

44. Tourism and recreation: Tourism both affects and is affected by the state of the environment in a country, and the continued loss of biodiversity and landscape attractiveness is already affecting tourist destinations throughout the Balkans. It is estimated that the 10 Balkan countries will receive 79 million tourists in 2020, with the leading destinations being Greece, Turkey and Croatia, posing serious questions about the implications of increasing degradation and destruction of most of the remaining valuable natural and cultural areas of the region.

45. Disasters and conflicts: In the past 20 years, south-eastern Europe has gone through serious conflict and transition. Although the UNEP Post Conflict Assessment Unit concluded that the war in the former Yugoslavia did not directly result in an environmental disaster, the region is still affected by war-related environmental impacts that threaten the economy, health and livelihoods of the people living there (ISDR, 2008). However, the entire region has been supported by the framework of the Regional Environmental Reconstruction Programme for South Eastern Europe (REReP), and the various UNECE environmental conventions. Transboundary efforts are supported by ENVSEC projects focusing on *Improving regional co-operation for risk management from pollution hot spots, as well as for the trans-boundary management of shared natural resources in South Eastern Europe* in order to concurrently advance and protect peace and the environment.

GOVERNANCE AND INSTITUTIONS

46. South and south-east European regional cooperation was discussed during the Second Global Meeting of the Mountain Partnership in Cusco (Peru) in 2004, and the idea of a Balkan Convention was initiated by the UNEP–Vienna office, European Academy Bolzano and MAKMONTANA-Macedonia. Supporting this process, the experience of UNEP in the development of the Alpine and Carpathian Conventions was proposed as a model for the development of the South East European (Balkan) Framework Convention.

47. As EU member countries, Greece (1981), Slovenia (2004) and Bulgaria and Romania (both 2007) are subject to EU environmental policy. At the same time, Albania, Bosnia-Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia are also working on harmonizing their national environmental legislation with European legislation. UNEP is supporting this harmonisation process through cooperation activities for the protection and sustainable development of mountain regions in the region, aimed at developing a framework of cooperation for the Dinaric Arc and Balkan region.

E. THE CARPATHIANS

48. The Carpathians are the largest, longest and most fragmented mountain chain in Europe (covering some 209,000km² and stretching 1,500km), reaching across seven Central and Eastern European countries, including the Czech Republic, Hungary, Poland, Slovakia, Romania, Serbia and Ukraine and is home to a population of around 17 million people. The Carpathians form a natural ecological bridge between Western and Eastern Europe for the migration and genetic exchange of species, resulting in a wealth of flora and fauna species, and contain some of the most intact ecosystems in Europe.

49. In spite of this obvious cultural and natural wealth, the Carpathians are also subject to greater anthropogenic pressures than other mountain systems in Europe; this is further compounded by the impacts of globalization (including the rapid transition to aggressive market-based economies) and climate change. According to the Carpathians Environment Outlook 2007, a substantial part of the challenge for SMD in the Carpathians lies in how the countries deal with variations in terms of socio-economic develop-

ment, prevailing management of limited natural resources, and accession status to the EU (UNEP, 2007). The Carpathians Environment Outlook also notes some of the more pressing challenges to be addressed in the region:

- Environmental security, particularly related to climate change, including floods, landslides, windstorms and drought, coupled with unregulated hunting and overgrazing
- Land use change and deforestation, with associated soil erosion being severe in some locations
- New legal and poorly/unregulated infrastructure development (e.g., large dams, highways, factories, mining and mineral extraction, winter-sport tourist developments)
- Increases in municipal waste and problems associated with local waste management
- Significant increases in individual motor vehicle use and the related environmental impacts

50. At the same time, there have also been several positive trends in environmental indicators for the region, including major air emissions and water pollutants, industrial and agricultural waste, clean-up of hazardous and toxic waste sites, and reduced natural resource consumption. In many respects, however, this positive development in SMD may be attributed to (a) the accession of some countries to the EU (and compliance with strict EU environmental and economic development regulations), and (b) more recently by the development of the Carpathian Convention. The Carpathian Convention represents a radical shift in the manner in which natural resources are understood and managed in the region, and was inspired by the model of the Alpine Convention.

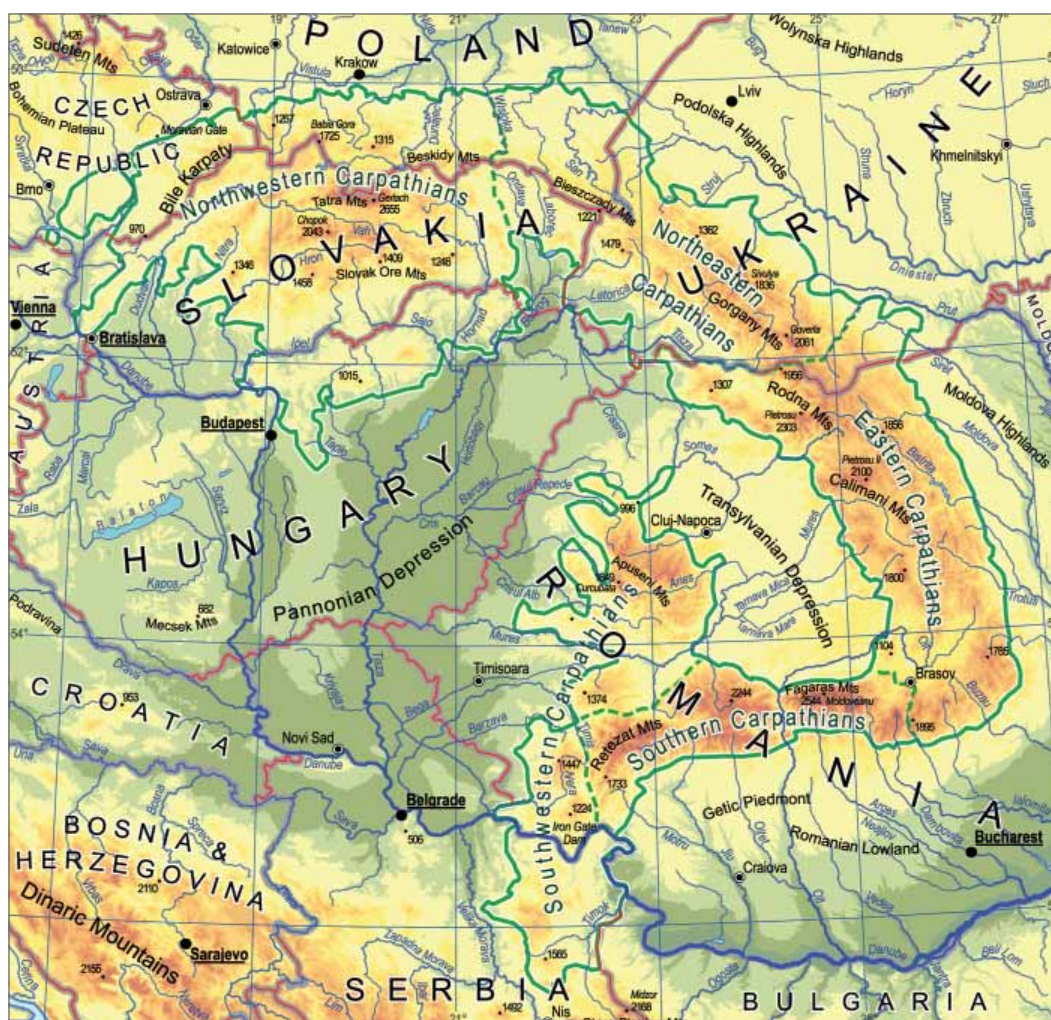


Figure 6. Map of the Carpathians and their sub-units
(source: KEO, *Carpathian Environmental Outlook*, 2007)

CLIMATE CHANGE

51. According to Kozac et al. (2011), “The climate change, with special focus on temperature, precipitation patterns and the occurrence of extreme events have not been sufficiently assessed at the pan-Carpathian scale.” Most research stations are located in the valleys and foothills (very few have longer-term datasets of 50-60 years), with the large majority of studies focusing only at the local and national levels (Bokwa, 2012). In order to contribute to fill these gaps the European Commission launched in 2010 the preparatory action “Climate of the Carpathian Basin”, within which the projects CARPIVIA (Carpathian Integrated Assessment of Vulnerability to Climate Change and Ecosystem – based Adaptation Measures) and CarpathCC (Preparatory action on climate in the Carpathian region - Framework contract for in-depth assessments of vulnerability of environmental resources and ecosystem-based adaptation measures) are developed. A Carpathian Convention Working Group on Adaptation to Climate Change has been established within the CARPIVIA project in order to facilitate the institutional follow – up of CARPIVIA and other relevant projects and initiatives on climate change in the Carpathians.

52. According to Rakonczai (2011), however, significant parts of the Carpathian Basin have been so heavily impacted by anthropogenic activities over the ages that the actual effects of climate change are not able to be determined directly, although the last century has seen a rise of 0.8°C in surface temperatures and a 60-80 mm decrease in precipitation in the region. Considering the indirect factors, decreasing precipitation appears to have caused a drop in the groundwater table, altering soil and vegetation conditions and contributing to significant landscape changes and effectively serving as a base for a climate-sensitivity map.

AGRICULTURE AND THE ENVIRONMENT

53. **Agriculture:** The Carpathians are characterized through agriculture and forestry, with much of the agriculture taking place on the Transylvanian Plateau, intra-montane basins and lower mountain slopes. The northern slopes are typically dominated by wheat, rye, oats and potato cultivation, while the southern slopes are sown with corn, sugar beets, grapes and tobacco. In the highlands, forestry and animal herding are the primary activities.

54. However, the sustainability and reach/impact of agriculture in the region hindered by several challenges, including economic transition, changes in land ownership and ongoing privatization, land abandonment, low productivity and income of agriculture, poverty and marginalization of population, lack of technology and state funding, gaps in or, in some countries, absence of appropriate agricultural policy and legislation, poor land management leading to excessive soil erosion, etc. (CEI, 2001; UNEP-Vienna ISCC, 2006). These issues are being addressed through the implementation of the 2003 Framework Convention on the Protection and Sustainable Development of the Carpathians, as discussed below.

55. **Forests:** While the forests of the Carpathians have experienced pressure for thousands of years (from the time of the Roman empire), more recent over-exploitation for the railway age and state management under communism have resulted in large areas being converted over to single-species monocultures, often using exotic species (CEI, 2001). Fortunately though, the level of exploitation have never reached the same levels as that experienced in Western Europe, probably largely due to accessibility and low population densities, and also in part due to the coordinated, centrally managed communist system.

56. More recently though, with the fall of communism and restitution of land to private ownership, moves towards rapid economic gain through clear-felling has been noted in some cases, particularly as rural poverty increases and proper forest management skills remain elusive. While authorities are attempting to rectify this situation through policies and legislation, enforcement remains weak as a result of a lack of adequate human and financial resources, poor understanding of the local cultural context and/or corruption. Interestingly, the move towards forests in a more holistic sense in the Slovak Republic, as enshrined in international conservation treaties and signed by the Slovak Republic, have created tensions between land managers and the government, whose national policy remains one of seeing forests as a source of timber only (CEI, 2001). In order to promote a sustainable management of forests in the Carpathian Region a specific Protocol on Sustainable Forest Management (Forest Protocol), has been adopted at the Third Meeting of the Conference of the Parties to the Carpathian Convention (COP 3). It is the first European legally binding agreement of this kind.

57. **Biodiversity and protected areas:** According to UNEP (2007), a total of 13% of the Carpathians are protected by 33 national and natural parks and a further 42 landscape areas and landscape parks. The establishment, development and management of these protected areas have been fostered further through the following projects, contributing to the mission of the Carpathian Convention:

58. **Towards a Carpathian Network of Protected Areas⁹:** Established in 2006, the Carpathian Network of Protected Areas (CNPA) has been working to (a) improve cooperation between the seven Carpathian countries, (b) facilitate technical and institutional exchanges between the Carpathian protected areas, (c) raise awareness about the fragile ecosystems in the massif, and (d) realize practical measures, such as the creation of an ecological network to ensure the survival of endangered species. This is achieved through the implementation of decisions and recommendations of the various Convention bodies and other international programmes and directives, such as the Habitats Directive, Birds Directive, NATURA 2000 network, Water Framework Directive, etc., in joint programmes and projects.

59. The **Carpathian EcoRegion Initiative (CERI)** was created on 1 March 2006 to “to achieve the long term conservation of the unique nature of the globally important Carpathian Mountains, while supporting its economy and culture for the lasting benefit of people through international partnership.”¹⁰ In trying to do so, CERI works on the protection of biodiversity both inside and outside of protected areas, as well as forests, grasslands, freshwater systems, and various species issues.

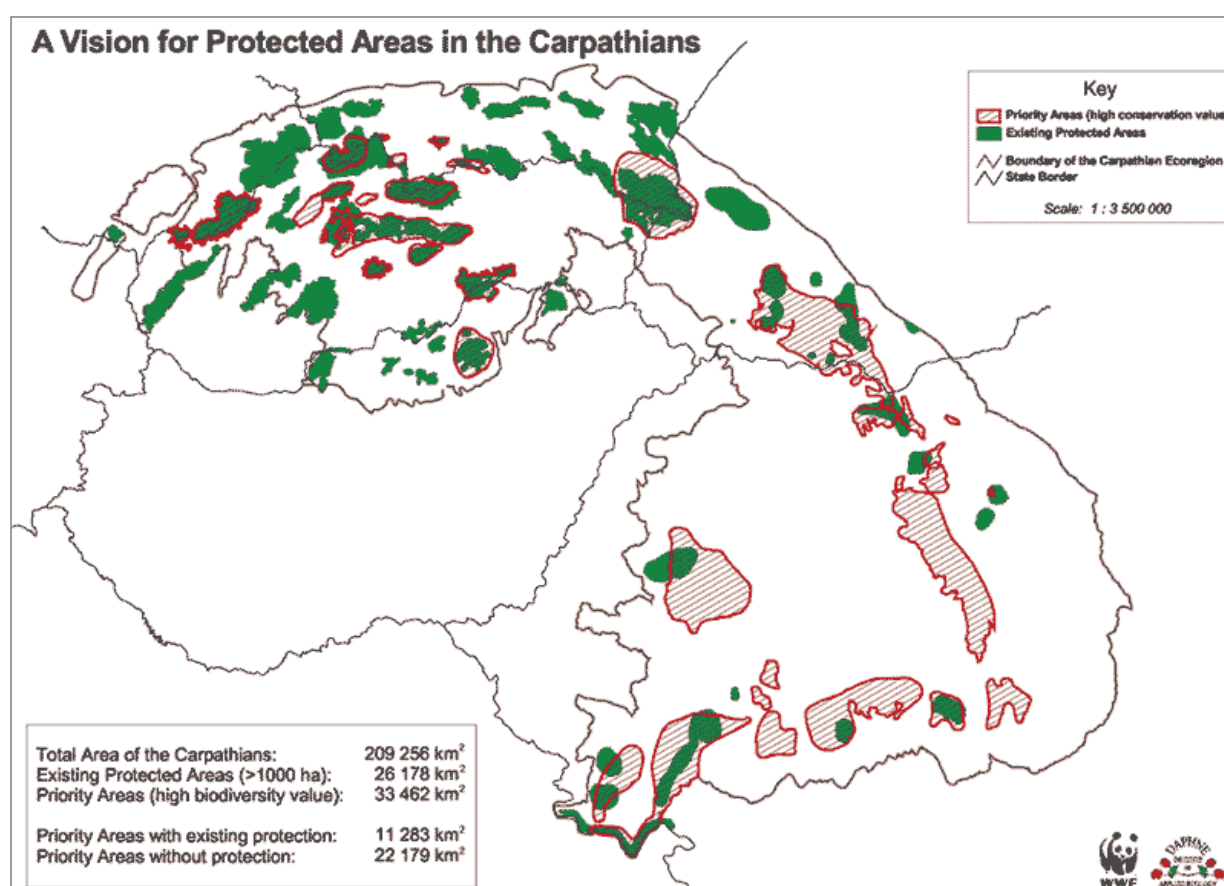


Figure 7. A vision for protected areas in the Carpathians (source: Carpathian EcoRegion Initiative)

60. With a membership of 45 organizations in the seven Carpathian countries, and based out of Bratislava (Slovakia), the CERI Secretariat aims to support the implementation of the Carpathian Convention by acting as a single focal point for communication and coordination of projects and research throughout the Carpathians. The projects implemented by CERI to date include:

9 http://www.carpathianparks.org/index.php?option=com_content&task=view&id=121&Itemid=204&lang=en
 10 <http://www.carpates.org>

- Proposal for Western Carpathian Ecological Network as a precondition for effective cross-border nature protection (February 2008 – January 2010)
- World of Carpathians – Awareness Raising about the Carpathian Biodiversity (December 2007 – December 2009)
- Deutsche Bundesstiftung Umwelt (DBU) Project (April 2006 – present)
- Development of a Carpathian Ecological Network: Strengthening the Capacities of the Carpathian EcoRegion Initiative (CERI) in supporting the implementation of the Carpathian Convention (completed).

61. In order to promote an integrated management of protected areas and ecological connectivity in the Carpathian Region, UNEP Vienna – Interim Secretariat of the Carpathian Convention (ISCC) promoted the European Transnational Cooperation South East Europe BIOREGIO Carpathians project. The project (2011-2013) aims at implementing the main provisions of the Carpathian Convention Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity (Biodiversity Protocol), the only Carpathian Convention Protocol already entered into force, and is led by the Piatra Craiului National Park. BIOREGIO Carpathians involves 16 partners from all the Carpathians Countries and from the Alps and all the Carpathian Ministers of the Environment are observers.

62. A specific project aimed at increasing the ecological connectivity in the Carpathian Region and between the Alps and the Carpathians is the EU Cross Border Austria – Slovakia “Alpine – Carpathian Corridor project”, that promotes the establishment of ecological corridors between Vienna and Bratislava.

SOCIAL AND ECONOMIC DEVELOPMENT

63. Tourism and recreation: The Tourism for Nature project¹¹ has been working in the Aggtelek Biosphere Reserve and National Park (Hungary), Babia Góra Biosphere Reserve and National Park (Poland) and Šumava Biosphere Reserve and National Park (the Czech Republic) to:

- Support the development and implementation of tourism management plans that incorporate biodiversity objectives.
- Create an enabling environment for sustainable tourism development and biodiversity conservation.
- Support transboundary cooperation among the participating countries to enhance knowledge about tourism and biodiversity.
- Facilitate a consultative process with key stakeholders for the development of public policies for sustainable tourism development and environmental management.

64. The European Transnational Cooperation South East Europe ACCESS2MOUNTAIN project (2011 - 2013) aims at achieving durable environmentally friendly tourism accessibility and connection to, between and in sensitive regions of the Alps and Carpathians, benefiting all (potential) users through visualisation of existing problems, awareness raising, development of common knowledge and creation of a monitoring base.

65. The Carpathian Convention Protocol on Sustainable Tourism (Tourism Protocol) has been adopted at COP 3 in Bratislava in May 2011.

66. Education for SMD: *The Move4Nature ESD Programme (Teacher Training Education for Sustainable Development)*¹² aimed to introduce the concept of the Carpathian Ecoregion to rural mountainous schools in the region. Developed by the Carpathian Sustainable Education Network (CASALEN), in partnership with Environment and School Initiatives (ENSI), and supported by the international corporate social responsibility initiative OMV Move & Help, Move4Nature was initiated at the 2nd meeting of CASALEN, held during the Second Meeting of the Conference of the Parties to the Carpathi-

¹¹ <http://www.tourism4nature.org>

¹² See <http://www.carpathianconvention.org/framework/projects/Projects5.htm> for more information.

an Convention (COP2) on 17-19 June 2008 in Bucharest (Romania). The first phase of the programme was aimed to: (a) mainstream protection and sustainable development into the teaching practices and curricula of local schools, (b) distribute teaching materials based the Carpathian Convention to local schools, and (c) train teachers to apply education for sustainable development as an interactive approach in the classroom and in the protected areas of the Carpathians. The second phase is focusing on transferring the experience of the programme other mountain regions, such as the Balkans and the Caucasus. Outcomes of the project have included:

- An ESD network of project partners and professionals
- A Carpathian ESD Teacher Training Tool Kit¹³
- A Teacher Training Tour in Romania in May 2006, supported by the Ministry of Education Research and Innovation of Romania.

GOVERNANCE AND INSTITUTIONS

67. The Framework Convention on the Protection and Sustainable Development of the Carpathians¹⁴ (or **Carpathian Convention**) is undoubtedly the most revolutionary development to take place in the Carpathians region in terms of SMD since 1992. The Convention rose out of a request by the Government of Ukraine in 2001 to the United Nations Environment Programme – Regional Office for Europe (UNEP-ROE) to facilitate a regional cooperation process for the sustainable development and protection of the seven countries making up the Carpathians region. UNEP/ROE then proceeded to promote an Alpine-Carpathian Partnership and, in 2002, during the UN International Year of the Mountains, the Partnership was initiated and launched by the Ministry of the Environment, Land and Sea of Italy, then President of the Alpine Convention.

68. Signed on 22 May 2003 in Kiyv (Ukraine) at the Fifth Ministerial Conference “Environment for Europe” by the Ministers of Environment from Czech Republic, Hungary, Poland, Romania, Serbia and Montenegro, Slovak Republic and Ukraine, the Convention provides a landmark framework for regional cooperation and multi-sectoral policy coordination, as well as a platform for the development and implementation of joint strategies for sustainable development, and a stakeholder dialogue forum. As already mentioned the Carpathian Convention Biodiversity Protocol has entered into force and the Forest and Tourism Protocols have been adopted.

69. **Sustainable Agriculture and Rural Development in Mountains (SARD-M)**¹⁵: The SARD Initiative is a multi-stakeholder umbrella framework designed to make rapid progress toward the achievement of the Agenda 21 vision for SARD. The SARD-M Project, the response to Chapter 13 of Agenda 21, is seen as complementary to the Carpathian Convention, especially Article 7 on Sustainable Agriculture and Forestry. In 2005, the UN Food and Agriculture Organization (FAO), in conjunction with UNEP ISCC, carried out a SARD-M process within the Carpathians to:

- Identify sub-regional and regional priority areas and policies that need to be addressed by future relevant protocols.
- Develop recommendations and proposals for follow-up activities in the Carpathians.
- Evaluate the outputs of the SARD-M policy assessments and formulate policy recommendations in 2009.

70. **EU-specific legal frameworks that impact the Carpathians**: The accession of the Czech Republic, Hungary, Poland, Slovakia and Romania to the EU has meant that these countries have had to adopt all EU legislation, including all directives related to the environment, such as air quality, waste management, water protection, nature protection, industrial pollution control, risk management, genetically modified organisms

13 See Carpathian Convention and ENSI (2009).

14 <http://www.carpathianconvention.org/index.htm>

15 <http://www.carpathianconvention.org/NR/rdonlyres/4CE3AC72-BEA3-4D8C-B282-B69F65C0DE09/0/SARDMViennaseminarv090512.pdf> and <http://www.carpathianconvention.org/NR/rdonlyres/3E90538D-FD68-45B7-8FB4-D4B5EE03D906/0/RobinsonMountaindevelopmentbasedonculturalandenvironmentalassets.pdf>

and nuclear safety. This accession process has also meant an improvement in cross-border cooperation between these countries for dealing with common environmental challenges, including the Water Framework Directive and the Birds and Habitats Directives, as well as the European Strategy for Soil Protection.

71. The Carpathian Convention plays an important role in the implementation of the EU Strategy for the Danube Region (EUSDR) for the parts relevant for the Carpathian Region and at the COP 3 a Strategic Action Plan for the Carpathian Area has been adopted by the Parties to the Convention as a basis for a possible future EU macro regional strategy for the Carpathians.

72. The European Neighbourhood Policy is extending the EU experience in environmental management into Carpathians. Based on this, the Djerdap National Park (Serbia), the Iron Gate Natural Park and the Maramureş Natural Park (both in Romania), the Marmarosky National Park (Ukraine), and the Eastern Carpathians Trilateral Biosphere Reserve (Ukraine, Poland and Slovakia) are strengthening co-operation at the EU's borders.

73. Environmental legislative processes have yielded mixed results though. Although modern legislation has been adopted and is EU-compatible in the Czech Republic, Hungary, Poland, Romania and Slovakia, in Serbia and Ukraine, however, the degree of EU-compatibility differs. That said, protected areas in Serbia and Ukraine are part of the EMERALD network of the Pan-European Network of Protected Areas (based on the Bern Convention, as is Natura 2000).

74. On the basis of the request of the Polish Presidency of the European Union the European Commission is considering the possible accession of the EU to the Carpathian Convention

F. THE CAUCASUS MOUNTAINS

75. The 1,210km-long Caucasus mountain range lies in the thin land divide between the Black and Caspian Seas in Eurasia, and is commonly divided into the Greater and Lesser Caucasus Mountains. The six countries that make up the wider Caucasus (Armenia, Azerbaijan, Georgia, the Islamic Republic of Iran, the Russian Federation and Turkey) give the region an enormous linguistic and cultural diversity. Located on the fault-line between the Arabian and Eurasian Plates has also bestowed the region with constant tectonic movement, resulting in a rugged mountain range rich in fauna and floristic biodiversity with high rates of endemism, and unique climatic conditions.

76. Some of the key factors of global significance of the region were identified during the Working Meeting of Representatives of Ministries of Environment and Foreign Affairs of the Caucasus Region in October 2008 in Lagodekhi (Georgia) included:

- "The antiquity of agricultural use of the territory that resulted in the evolution of an exceedingly rich diversity of semi-natural, semi-man-made ecosystems in low hill and middle hill areas (woodlands, bush wood, meadows, steppes and semi-desert areas);
- Recognition of the Caucasus as one of the 12 centers of origin of cultivated crops and plants and domestic animals in the world; preservation of their wild ancestors and the presence of great numbers of unique 'folk' species of cultivated plants and breeding valuable domestic animals as an important genetic resource;
- Extraordinary diversity of traditional forms of agriculture, methods of utilization of biological resources and invocation of civil law in settlement of national and inter-national ecological conflicts."

77. According to the UNEP/REC Caucasus background paper to the Meeting of the Government-nominated Experts on the Caucasus Cooperation Process, 28-29 April 2009, Bolzano (Italy), the region's fragility has become ever more clear to the people living there, especially with regard to the political and socio-economic turmoil over the last 20 years. The resulting degradation of environmental conditions, regional infrastructure and cooperation, and the wellbeing of the local populations have severely affected the ability of the region to meet the fundamental conditions required for sustainable development. More specifically, challenges being faced by the region include:

- Fiscal restructuring has caused structural weaknesses, increased energy dependency, and reduced economic diversification, increasing land use change, water pollution, and soil and forest degradation.
- Unsustainable management of natural resources usually for short-term economic gain is threatening natural ecosystems and will likely impede the ability of future long-term economic growth and sustainable development; furthermore, poorly coordinated and informed decision-making about natural resources is leading to both national and cross-border tensions.
- The Protected Area network established during the Former Soviet Union times does not correspond to the ecological structure of the Caucasus and the ecological integrity of the natural subsystems throughout the Caucasus are today cut by the state borders, creating artificial barriers both to environmental processes and knowledge flows, disruptions to common cultural spaces, dramatic increases in the costs of economic development, and impediments to the general well-being of the population.
- Significant transformation is taking place in the internal Caucasus space with the formation of deep internal peripherals and new centers of high anthropogenic pressure.
- The development and implementation of long-term sustainable development and ecological monitoring programmes and plans is hampered by a lack of funds and technical capacity.

CLIMATE CHANGE

78. Climate change appears to revolve around two primary factors in the Caucasus region, namely (a) political consolidation as a result of increasingly serious global threats stemming from climate change of the climate, and (b) the reality of practical coordination of activities for adapting to and/or mitigating climate change. The Caucasus countries already participate in many of the various international climate change initiatives and it appears that the importance of climate change adaptation and mitigation measures are understood at the political level.

79. The impacts of climate change are being felt in the Caucasus in three primary ways: at the spatial level, at the interface between the spatial and temporal levels, and at the socio-cultural levels. At the landscape level, the most severe consequences are affecting the alpine areas, inter-mountain troughs, wide mountain dales located along the north-south line, piedmont and plain arid zones. Furthermore, intense degradation is expected in the nival-glacial zone, coupled with shifting of the forest borderline.

80. Seasonal shifts are affecting everything from the basic character of mountain rivers, including the volume and period of water flow (as a result of changes in snowfall patterns), to the frequency and power of hazardous natural processes, and significant changes to the basic agricultural and grazing patterns, often resulting in ecological degradation. This ever-increasing ecological degradation is causing an increase in rural out-migration and those that remain often abandon age-old farming/grazing practices in favor of high-input farming technologies that accelerate the destructive process further; the ultimate consequence is a combination of abandoned mountain areas and/or resource conflicts (even at the transboundary level).

AGRICULTURE AND THE ENVIRONMENT

81. Agriculture: The Caucasus region is heavily dependent on agriculture: about one-sixth of the GDP comes from agriculture, about 50% of the population is engaged in agriculture both directly and indirectly, and 54% of the available land is under cultivation (although this is largely confined to the low-lands; UNEP/GRID-Arendal, 2008a). As in most mountains areas though, grazing forms the dominant agricultural land use, although poor pasture management in the Caucasus for cattle, sheep and goats has lead to escalating soil erosion conditions, increasing incidents of landslides and mudslides (UNEP/GRID-Arendal, 2008b).

82. Forests: Although forest resources play a significant role in the national GDP of transition countries, such as those in the Caucasus, they also form part of the larger landscapes, being critical in the

maintenance and functioning of vital ecosystem services that are of regional and international importance. However, the need for effective forest management is being compounded by the impacts of climate change, thus re-emphasizing the need for both national and regional policies for dealing with this challenge.

83. Biodiversity and protected areas: In 2006, the Critical Ecosystem Partnership Fund (CEPF) pledged US\$300,000 towards the development of the Caucasus Protected Areas Fund to provide much-needed, long-term financial support for priority protected areas in Armenia, Azerbaijan and Georgia. Through its chief goal of transboundary cooperation, the CEPF has also been supporting the development of several new protected areas in the region since 2004, including the Arevik and Zangezur Protected Areas in Armenia (established in 2009), together with the expansion of others, such as the Borjomi National Park in Georgia (CEPF, 2006). An assessment workshop of CEPF investments in the region was held in Tbilisi, Georgia, on 28-29 September 2009, noting that besides the new Armenian protected areas, the organization has enabled (CEPF, 2009):

- Establishment of the regional Caucasus Biodiversity Council with governmental and non-governmental representation across the region, including Iran.
- Training of 200 journalists and 120 journalism students in environmental and conservation issues.
- Assisting in the re-routing of a road planned for the Shikahogh Reserve in Armenia and mitigation of the anticipated impacts of the 2014 Winter Olympics in Sochi, Russia.
- Development of alternative livelihoods for local communities in the region, including the creation of a sustainable hunting area in the Gabala-Ismailli area in Azerbaijan; the establishment of a quail farm and ecotourism guide training for communities in the Hyrcan Corridor of Azerbaijan; and the creation of a honey-production farm in the Kvareli district in Georgia.

84. The Caucasus Nature Fund is currently supporting protected areas in Armenia (Arevik National Park, Khosrov Forest State Reserve, and Shikahogh/Zangezur Protected Areas), Azerbaijan (Shirvan National Park) and Georgia (Borjomi-Kharagauli National Park, Lagodekhi Protected Areas, Tusheti Protected Areas and Vashlovai Protected Areas) in terms of financial sustainability, technical capacity, infrastructural development and income generation (e.g., eco-tourism).¹⁶

85. However, in spite of this increasing interest and assistance by the international conservation community, the protected areas in the Caucasus countries continue to be governed centrally and are typically characterized by top-down management, with a lack of local stakeholder involvement (IUCN, 2012).

86. Water: The management of transboundary water resources remains one of the most pressing matters for the countries of the Caucasus region; however, projects in this sector have generally not met with success. This has generally been attributed to:

- Poor coordination of those economic sectors that consume water.
- A lack of funding in the water supply sector.
- Poor coordination and cooperation at the governmental level.

87. Land degradation: The countries of the Caucasus mountains are facing critical economic and social development problems as a result of the scale and degree of land degradation, particularly desertification and ever-increasing threats to the already fragile ecosystem components. This has been exacerbated by poverty, the unsustainable use of natural resources, and poor agricultural practices, resulting in further decreases in land fertility, lower yields, poor quality crops and, finally, an even greater increase of poverty.

16 <http://www.caucasus-naturefund.org>



PART 3. RECOMMENDATIONS FOR SUSTAINABLE MOUNTAIN DEVELOPMENT FOR RIO+20 AND BEYOND

88. Recommendations for the region as a whole and the separate mountain groups are discussed below in terms of the three main pillars of sustainable development, namely the environmental, social and economic dimensions, with the addition of governance and institutions as the primary underlying enabling mechanism.

A. THE BALKANS AND DINARIC ARC

GOVERNANCE AND INSTITUTIONAL RECOMMENDATIONS

89. The need for the development of a Balkan intergovernmental legal framework for cooperation (Balkan Convention) is becoming more pressing as EU accession and its associated legal requirements, the increasing socio-economic and political integration with Western Europe, and the liberalization of markets is forcing region's governments have to take the responsibility to steer the development of all sectors towards a sustainable future. However, while drawing lessons from the development and implementation of the Alpine and Carpathian Conventions, the Balkan countries exhibit vastly varied states of development that need to be reconciled and accounted for in the development of a regional cooperation framework.

90. Although the Balkan countries are party to numerous environmental agreements, they unfortunately tend to be poorly implemented and/or seen in isolation rather than integrated into the national development and economic agenda. This is compounded by poor coordination, limited cooperation and severe budgetary constraints. The development of a legal intergovernmental cooperation framework on the protection and sustainable development of mountain ecosystems in the Balkans would assist countries to overcome some of the challenges related to the implementation of environmental agreements, particularly with relation to the conservation and sustainable use of biological diversity, sustainable local development based on rich natural and cultural heritage, and regional tourism efforts. Additional benefits for the region include:

- Enhancement of the implementation and harmonizing of existing instruments and implementation mechanisms
- Stimulation of future public-public and public-private partnerships and funding opportunities
- Establishment of a sub-regional platform for transfer of mountain technologies, knowledge and experience sharing, and coordinated/joint implementation

- Fostering of the integration of and coordination between sectors both within countries and across borders

ENVIRONMENTAL RECOMMENDATIONS

91. The conservation and protection of **biological and landscape diversity** in the Balkans will most effectively be realized through an enhanced transboundary Protected Areas network. This implies that in order to ensure long-term SMD in the Balkans (in which the conservation of biological diversity is an integral part of), the countries should:

- Explicitly integrate conservation and the sustainable use of biological and landscape diversity into national sector policies
- Ensure the protection of IUCN Red List species, especially through habitat conservation
- Establish networks of national and transboundary Protected Areas in the Balkans, each with an effective, participatory management system that is linked with other Protected Areas
- Implement economic development programmes that will enable local populations to derive benefit from traditional and sustainable land-use and tourism practices
- Strengthen the capacities of the Balkan countries for effective biodiversity conservation, especially in terms of collaborative transboundary conservation efforts and monitoring
- Develop an intergovernmental legal framework for cooperation for use as a discussion and knowledge sharing platform (using the experiences of the development and implementation of the Alpine and Carpathian Conventions)

92. Properly integrated **water resources management** (WRM) is essential for sustainable development and poverty reduction, having an impact on a wide range of users, from the household level and farms, to industrial use and power generation. Generally speaking, while the Balkans has sufficient water resources at the regional level, they are unevenly distributed and some countries experience localized water shortages (further exacerbated by the impacts of climate change). All the countries are working to put in place institutional frameworks, regulations and economic incentive regimes though that reflect multi-stakeholder consensus, while simultaneously providing for efficient water use and adequate service delivery. To achieve this has required the countries to overcome degraded infrastructure for water and sanitation, and poorly enforced irrigation and water regulation, linked to weak public sector institutions and broader fiscal and governance issues. Additional recommendations for the improvement of water resources management in the Balkans includes:

- Make use of an intergovernmental legal framework for cooperation, based on an assessment of existing regional and national WRM frameworks, to alleviate potential risks of conflicts over transboundary water management issues
- Develop and implement the South-Eastern European Transboundary River Basin and Lake Basin Management Programme
- Develop permanent transboundary institutions, with the technical capacity for river basin planning and project preparation
- Encourage civil society engagement in the above initiatives

93. **Forests** contribute to the protection of soils, of habitats and infrastructures, supply wood and NT-FPs, and support of various rural activities (e.g., grazing), tourism and recreation (including hunting). Protected Areas are usually used as an effective means to conserve forest ecosystems, but the existing Protected Area network in the Balkans is not sufficient to save all forest types. Furthermore, conservation is often poorly integrated into national natural resource use policies (e.g., commercial forestry). Fortunately though, forest cover is still significant in the Balkans and, at higher elevations, where there is less anthropogenic pressure, there are still vast areas of deciduous forests to be found, including the most extensive beech forests in Europe. Recommendations for improved forest management in the Balkans include:

- Strengthen national and regional policy and institutional frameworks for sustainable forest management, through cross-sectoral integration
- Foster data and information exchange through the development of an regional cooperation framework for sustainable forest management
- Improve technical support to the private sector for sustainable forestry practices and associated certification schemes
- Support the design and development of innovative forest management schemes, including the use of traditional knowledge, particularly at the community level
- Strengthening the integration of forestry with other sectors
- Increase financial support to improve implementation structures, new technologies, public awareness, etc.

SOCIAL RECOMMENDATIONS

94. The Balkans have been at the crossroads of various civilizations and religions throughout the centuries, effectively acting as a natural link between the East and the West, resulting in a rich **cultural heritage**. However, this heritage is currently fragmented within state boundaries and local systems, rather than being seen within the context of historical transnational cultural corridors. The countries of the region are becoming increasingly aware of the need for joint effort though in order to protect, use sustainably and promote the cultural heritage of the Balkans, as well as to build a modern regional system for cultural tourism, which is also integrated with the wider EU system. More specifically, countries in the Balkans should aim to:

- Devise concrete steps for protecting and promoting the unique cultural heritage of the Balkans as a bridge for the opening up of and integrating the region with the common European space
- Promote the cultural heritage of the Balkans to Europe and the world
- Identify sustainable ways to use the cultural heritage of the Balkans as a resource for economic and social development, as well as region cooperation
- Promote the integral nature of the cultural heritage of the Balkans as a basis for overcoming national, ethnic and religious divisions

95. Developing **ecotourism** in the Balkans should focus on the key aspects of sustainability, cultural and ecological diversity, institutional reform, gender equity, wider economic integration, local financial incentives, and peace and security. Currently, each country has its own national tourism agenda but there is no legislation or strategies dealing directly with the increasing pressure caused by tourism on the natural, cultural and socio-economic environments. Ecotourism can be an effective tool towards sustainable tourism development, assuming the following conditions are met: (a) it must be part of a wider sustainable development strategy, b) it must be compatible with conservation of natural ecosystems, and c) it must involve local people and cultures, ensuring that all have an equitable share in its benefits. Additional recommendations include:

- Joint development of sensitive tourism programmes and areas between sectors and/or countries, based on the conservation of the natural resources
- Development of national strategies and a regional strategy for sustainable tourism, preferably within the context of a regional cooperation framework
- Use of inclusive participatory planning approaches throughout the development of tourism strategies and programmes
- Capacity building of all stakeholders, including local communities
- Establish thematically-focused networks for information exchange

- Integrate tourism planning with a wider holistic regional development planning and ensure the integration of other sectors (e.g., agriculture, forestry, rural development)

ECONOMIC RECOMMENDATIONS

96. Mountain **agriculture** has a long tradition in the Balkans and, with about 45 percent of the total population living in the rural areas, agriculture and forestry are the main types of land use in region. Many agricultural and forestry practices are based on local traditional knowledge, resulting in extensive small-scale and organic agriculture with a high level of diversification. However, there is also constant a balance that needs to be met between local needs and local capacity. Rural out-migration and 'greying' are common, resulting in many cases in a breakdown in the rural social fabric, a decline of traditional lifestyles, land abandonment and a loss of natural and agro-biodiversity. SMD within the context of mountain agriculture entails:

- Preservation and perpetuation of endangered traditional local breeds of animals and crops (i.e., agro-genetic resources)
- Promotion of ecological farming and the creation of a regional market for organic products, including marketing and promotional support through, for example, tourism
- Development of national strategies for sustainable ecological agriculture and biodiversity conservation, including the development of guidelines to ensure that biodiversity issues are taken into consideration when national agricultural policies are developed
- Establishment of a regional sustainable agriculture network

97. **Transport** infrastructure in the Balkans is generally below European standards and has been severely affected by direct war damage and indirect damage (conflicts, negligence and under-investment). Disruption on the main corridors has led to diversion of traffic towards other, less adapted routes. Overall, however, the capacity of existing infrastructure – under normal operating conditions – is satisfactory, except for some links in the neighbourhood of the large cities of the region. Given the current condition of transport routes, reconstruction and renewal works of the existing infrastructure should be considered foremost. Furthermore, the transport sector should:

- Act upon the many already available recommendations for sustainable transport in the region
- Incorporate strategic environmental impact assessments in the planning and reconstruction of transport systems
- Encourage the exchange of knowledge and international cooperation, when necessary
- Seek private and public sector investment to ensure an effective and socially acceptable transport system
- Ensure inter-sectoral cooperation and integrate health and safety concerns into transport policies

98. The Balkan countries share several important **energy**-related physical and institutional characteristics. Primary energy sources in the region are limited and/or of poor quality, although there is hydro-electrical production in Albania, Bosnia-Herzegovina, Bulgaria and Croatia. Croatia and Romania have a limited production of oil and gas but this is insufficient to meet national demand, and Romania and Bulgaria have nuclear power stations on their territory. This means that the region is heavily dependent on imports for primary energy production. Recommendations for SMD in the energy sector include:

- Future development of the energy sector must take into account environmental concerns, particularly in terms of air/water pollution, waste management, and infrastructure development/decommissioning
- Any new projects should comply with the requirements of the relevant EU directives on the environment
- Energy infrastructure networks should be modernized to better ensure that the energy system of the region can meet the energy demands of each country efficiently and consistently

- National policies and strategies should be specifically tailored for energy infrastructure and service delivery in mountain ecosystems
- Incentives should be provided for the development of new energy technologies, cleaner production, and renewable energy resources

99. Badly operated or abandoned **mining sites** have caused severe pollution in the Western Balkans, with some case crossing national boundaries, particularly along watercourses. It is estimated that there are thousands of old abandoned sites (with no liable legal owner) scattered across the region. The ENVSEC initiative identified over 180 separate operations in Bosnia and Herzegovina, Montenegro, Serbia, Albania, the Former Yugoslav Republic of Macedonia and Kosovo (UN Administered Territory under UNSCR 1244/99) alone, of which about 1/3 appeared to be of significant environmental and security concern, and nearly 20 percent was deemed to pose potential transboundary risks. The numerous smelters in the region also contribute to severe air pollution, resulting in serious human health consequences and acid rain. However, in recognition of this severe environmental, social and economic issue, countries in the region are preparing and implementing the privatization and closure of many mines; the re-opening of sites under modern industrial practices, as per EU Directives, is making mitigation and remediation programmes part of mineral extraction 'business as usual'.

CROSS-CUTTING RECOMMENDATIONS

100. The challenge facing the Balkans is how to improve livelihoods of the population while simultaneously conserving and sustainably managing the rich biodiversity and cultural heritage of the region. This can best be achieved through careful spatial planning, whereby the basic premise is that socio-economic development and nature conservation should support each other. Furthermore, taking a regional approach to **spatial planning** will ensure the synchronization of development efforts, particularly in terms of:

- Creation of mechanisms for broad public participation in the decision-making process
- Promotion of local democracy, good governance, and decentralization
- Establishment of mechanisms for interaction and dialogue between civil society and public administration at local, regional and national levels
- Promoting mechanisms for networking, partnership and cooperation between municipalities specifically devoted to the implementation of Agenda 21
- Ensuring synergy between policy advice, advocacy and policy formulation, and identification and implementation of targeted demonstration projects
- Harmonization with respect to territorial planning, especially in transboundary areas

B. THE CARPATHIANS

GOVERNANCE AND INSTITUTIONAL RECOMMENDATIONS

101. The underlying thinking for SMD in the Carpathians is well stated in the Carpathians Environment Outlook 2007: "Only through international cooperation and maintaining a holistic view of the Carpathian environment, and a common (or at least not contradictory or conflicting) path of development will the governments and peoples of the region succeed in building a viable future within the 'Carpathian space'." The development and adoption of the Carpathian Convention in 2003 by the seven Carpathian countries is a significant step in the right direction to achieving this goal.

102. Through the framework of the Carpathian Convention, countries in the region are working together to tackle a variety of sustainable development challenges, implement EU policies related to biodiversity conservation, strengthen cross-border cooperation in Protected Areas management, integration of specific mountain issues in National Development Plans (NDPs), and the promotion of integrated cross-sectoral and trans-sectoral rural development planning and implementation. One of the key challenges in this process has been the integration of policies and processes related to land use in the region, specifically

to ensure that the needs of Natura 2000, the EU Common Agricultural Policy (CAP), Water Framework Directive, forest management/use, socio-cultural and other policies are collectively reinforcing, rather than contradictory.

103. In line with the outcomes of the Third Meeting of the Conference of the Parties to the Framework Convention on the Protection and Sustainable Development of the Carpathians (COP3) in Bratislava (Slovak Republic) on 27 May 2011, key recommendations for SMD in the region under the broader framework of the Carpathian Convention include:

- Establish an institutional link between the Carpathian Convention and the EU in order to ensure coordinated ongoing support to this important region through, for example, an EU operational programme for the Carpathians, the elaboration of a Carpathian macro-regional strategy, or the accession of the EU to the Carpathian Convention
- Continue to support the development and ratification of a Protocol on Sustainable Industry, Energy, Transport and Infrastructure
- Support the ongoing work of the Science for Carpathians Network as an important tool to coordinate and enhance cooperative research in the Carpathian region
- Continue to support ongoing efforts at the European level regarding to the scientific investigation on climate change and adaptation in the Carpathians, and encourage the exchange of experiences with the Alps on the subject of climate change within the framework of the Alpine Space Programme
- Support the work of and collaboration with civil society organizations, including the development of a Cultural Heritage Inventory, a Public Participation Strategy (particularly focussing on public participation in planning processes) and related action programmes

ENVIRONMENTAL RECOMMENDATIONS

104. The Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity, signed at the Second Conference of the Parties to the Carpathian Convention (COP2) on 19 June 2008 in Bucharest commits the seven countries to harmonize and coordinate efforts to enhancing the long-term conservation, restoration and sustainable use of biological and landscape diversity of the region. Specific measures include (a) the drawing up of a list of Carpathian Red List of Habitats and Species, (b) establishing a regional ecological network in the Carpathians (Protected Areas and other areas significant for biological and landscape diversity), and (c) taking measures to preventing the introduction or release of harmful invasive species. The Protocol also requires countries to support and enhance the Carpathian Network of Protected Areas.

- Actions recommended in the Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity need to be implemented
- Regulations between the types of Protected Areas should be clearly differentiated, in accordance with the IUCN Categories of Protected Areas
- Priority should be given to enhancing the integrated management of Protected Areas through improved capacity building and legal frameworks (e.g., Carpathian Network of Protected Areas)
- Sustainable exploitation of forests and pastures in Protected Areas should be carefully regulated and monitored

105. As of 2009, there are 12 **transboundary Protected Areas** in the Carpathians, forming part of the Carpathian Network of Protected Areas and thereby adding to the already long history of cross-border Protected Area cooperation.¹⁷ Cooperative arrangements and agreements between government agencies responsible for transboundary Protected Areas should be further encouraged and supported, and special attention should be given to:

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See the CNPA website for more details: <http://www.carpathianparks.org>.

- Improving and ensuring the continuity and connectivity of threatened habitat types
- Protecting ecological corridors and migratory routes of Red List species across state borders, allowing for unimpeded genetic exchange between populations
- Ensuring the protection of the Red List species and their natural habitats in transboundary Protected Areas in the Carpathians

106. Some 60% of the Carpathians are covered by **forests**, with the largest forest complexes to be found in the Eastern Carpathians (nearly all the remnants of natural and semi-natural forests in the Western Carpathians are now protected by national parks in the Czech Republic, Poland, Hungary, and Slovakia). The Western and Southern Carpathians, on the other hand, have experienced severe deforestation and land use conversion. Coupled with this, illegal clear-cutting, poaching and over-exploitation of NTFPs and rare animals/plants are on the rise. The implementation of the Protocol on Sustainable Forest Management will be a key priority area for the future.

107. The Natura 2000 Network and Water Framework Directive (WFD) provide a policy structure for truly cross-sectoral land use planning and management policies in order to improve biodiversity conservation, water management and water quality in the region. The following recommendations were made for **water resources** at the Carpathian Convention COP3 in May 2011:

- Maintain and improve conditions of the Carpathian region's freshwater resources for the protection and sustainable development of the Carpathian mountain region
- Support enhanced collaboration with the International Commission for the Protection of the Danube River, in particular in the context of the EU Strategy for the Danube Region and the implementation of the Tisza River Basin Memorandum of Understanding (MoU)

108. The management of **waste and hazardous materials** remains a challenge for the countries in the Carpathians, particularly increasing levels of household waste. Mountainous areas are also not suitable as landfills sites, with numerous underground streams transporting dangerous materials more rapidly and further than in the case of landfills on the lowlands. Low recycling rates are also compounding the challenge of managing landfills. The widespread and numerous 'brownfields' sites also pose significant problems to waste management in the region.

- Sites not complying with the EU Landfill Directive will either have to be closed down and rehabilitated or updated to comply with EU standards, requiring considerable investment
- National recycling programmes should be encouraged and enforced, particularly for organic matter, glass, metals, paper, and hazardous materials

SOCIAL RECOMMENDATIONS

109. Unfortunately, the current rate and approach to development in the Carpathians is leading to a loss of the region's unique **traditional knowledge**, livelihoods, practices and values. Before this trend has progressed too far, it is critical that coherent social and economic policies be formulated and implemented to preserve this cultural heritage, promote a Carpathian cultural identity and diversity, and strengthen linkages between urban and rural areas.

- Areas and sites of historical importance, including war sites and pilgrimage areas/routes, should be protected as part of the region's and countries' cultural heritage (this also applies to the preservation of all ethnicities, languages and religions in the region)
- Cooperation links should be made with other sectors to improve the awareness of the region's cultural heritage and encourage its protection, e.g., tourism, agriculture, mass media

110. Regional cooperation in the **tourism** sector can be a useful method to reduce conflicts between the need for human activities and economic development, and the protection of natural and cultural resources. Furthermore, as a large majority of the most environmentally valuable areas and several cultural

heritage sites (e.g., pilgrimage routes) cross state borders in the Carpathians, intergovernmental cooperation is critical. The increases in winter sports tourism, agri-tourism, and heritage 'nostalgia' tourism also require that both national and regional cooperation is needed not only between states, but also between the private sector, civil society organisations and the public. Recommendations for improving tourism in the region within the context of SMD include:

- Encourage the (re)development of high intensity tourist areas along the lines of sustainable tourism to better meet SMD aspirations, particularly regarding waste management, transport routes, noise pollution, and the protection of natural and cultural heritage sites
- Develop sustainable tourism opportunities in low intensity tourist areas as an alternative means of employment, income generation and urban-rural cooperation
- Invest in the reconstruction or development of forest light-gauge railways for local tourism purposes
- Strengthen professional skills in tourism through capacity building and regional exchange programmes/platforms

ECONOMIC RECOMMENDATIONS

111. The mountainous Carpathian countries exhibit diverse endowments for **agriculture** production, with the plains areas more suitable for crop production, while the mountain areas offer opportunities for animal husbandry, timber production and seasonal NTFPs. In the past, these areas tended to exchange goods with each other and agricultural markets formed a key part of local towns and cities. However, with the advent of socialism, large state enterprises became responsible for the procurement of agricultural products effectively centralizing distribution, and skipping small town markets with devastating effects on local economies. This economic and social downturn has been compounded by EU intervention and regulations, largely based on farms on plains. The agricultural and farm structure of the Carpathian countries is quite different to many EU countries (particularly in terms of farm size and proportion of the population employed in the agricultural sector); EU regulations should be flexible in understanding these important differences. Furthermore, as the mountain areas are also poorly suited for large-scale crop production, they should specialize in products for which they have better conditions, such as dairy products and NTFPs (especially wild berries and mushrooms), as well as linking with other sectors, such as tourism (e.g., agri-tourism, adventure tourism, etc.).

- Enhance regional cooperation through the Carpathian Convention
- Ensure that the stipulations in the European Charter for Mountain Quality Food Products are met in order to promote the production and markets of authentic mountain products in the Caucasus region, together with improving food labelling of special mountain products
- Develop concrete policy recommendations to feed into the EU CAP reform process, focusing primarily on farm payment structures, dairy and livestock management that address the particular concerns of mountain areas
- Facilitate the diversification of the mountain economy through linking with other sectors, e.g., forestry, tourism, etc.
- Encourage the development of local agricultural markets and food fairs to revive small towns/villages, ensure the protection/conservation of local agricultural varieties, and revive the exchange of mountains and plains agricultural products

112. **Rural out-migration**, as in most rural mountain areas, is a common feature of the Carpathians, largely as a result of poor employment opportunities, low investment in public services (e.g., communications, health, education). With urban areas unable to cope with the growing influx of rural poor, policy measures must be implemented and incentives developed so that the people are able to remain in their villages as key guardians of the landscape, traditional knowledge and livelihoods. New instruments should be found to establish and enhance rural-urban cooperation, including:

- Introduction of economic incentives to cooperate, conditional on action
- Establishment of legal regulations for inter-communal facilities as legal entities or juristic persons
- Differentiated support quotas for the facilities used by the non-resident population
- Promotion of common planning and policy development for education, health, transport, labour and the environment

113. Using the framework of the Carpathian Convention, **rural development** policies in the region should aim at sustainable farming and food security (including the control/eradication of GMO crops), support the conservation of traditional breeds and species, biomass utilization, and the expansion of sustainable tourism and SME businesses. Furthermore, integrated SMD policies should stimulate rural diversification and provide realistic opportunities for the promotion of high quality rural services.

- The development and implementation of a Protocol on Sustainable Agriculture and Rural Development in close cooperation with all relevant partners should to be fostered.

114. The Carpathian region's **transport** infrastructure has been affected by the changes of the political and economic system in various ways, with large transport corridors promising increased regional trade opportunities and connectivity, but also having negative impacts on tourism, rural livelihoods and the environment.

- The enhancement of trans-European **transport** capacities should be accompanied by impact assessments reflecting long-term effects on natural land uptake, biodiversity, urban development, air pollution and climate change.
- The development and implementation of a Protocol on Sustainable Industry, Energy, Transport and Infrastructure should be fostered.

115. Total **energy** demand has been growing in the Carpathians, largely as a result of increased industrialization, urbanization and transportation, meaning that technological improvements are urgently needed to reduce any adverse impacts on environment. The development of more environmentally-friendly practices and technologies also needs to be implemented, and sustainable initiatives in energy should be introduced and facilitated through appropriate policy measures.

116. The Carpathians have been an important place for **mining** in Europe over the centuries, with four major gold and silver mining areas: the North-East Carpathians, the Transylvanian Island Mountains, the North-West Carpathians, and the North Carpathians. Nowadays, Australian and Canadian companies are trying to revitalize gold mining in Romania and Slovakia, but the cyanide technology used in the extraction process poses serious environmental dangers and hazards. Coal mining has taken place in most of the Carpathian countries, with ongoing production in Poland and limited production in Slovakia, and some open pit lignite mines still operating in Hungary. Salt is also being extracted in several places in the Transylvanian Carpathians. The rise and fall of **industrial development** (primary mineral and forestry product processing, arms manufacturing, automobile production, etc.) has also had a serious impact on the environmental and socio-economic status of the countries in the region. Recommendations for the mining and industrial sectors of the Carpathians include:

- The widespread issue of industrial 'brownfields' urgently needs to be addressed throughout the region
- Conversion of abandoned industrial areas into public/civilian facilities should be enhanced, through private sector investment and other funding sources
- The development of small- and medium-sized enterprises (SMEs) should be encouraged and facilitated (through tax incentives, capacity building opportunities, etc.) especially in towns built up around large factories in socialist times, to reduce unemployment and economic hardship

CROSS-CUTTING RECOMMENDATIONS

117. Natural and technological risks and hazards represent a significant threat to the wellbeing of people living in the Carpathians. The Carpathian Convention provides countries in the region with a unique opportunity for collaborative action on integrated risk management between various fields and sectors, e.g., spatial planning, industry, transport, infrastructure, forestry, water supply, etc. through:

- Conducting, improving, integrating and harmonizing risk assessments and risk management standards
- Developing and elaborating strategies against hazards and for joint risk management plans
- Developing tools and approaches for mitigation and management of the impacts of climate change and other risks

C. THE CAUCASUS MOUNTAINS

GOVERNANCE AND INSTITUTIONAL RECOMMENDATIONS

118. Much of the potential for the future of SMD in the Caucasus lies in international governance, collaboration and understanding. However, the mechanisms needed to govern and regulate resource use at this scale include a combination of international and national policy and law, the market, the rule of tradition, and a clear understanding of natural resource limitations. Experience in development of regional cooperation frameworks for the Alpine and Carpathian regions reinforces the fact that that only with an optimal mix of these mechanisms can long-lasting sustainability in the management and equitable use of mountain resources be secured. The following are some of the key aspects that point to the need for developing such a regional cooperation framework for the Caucasus eco-region, drawing on the valuable experiences of both the Alpine and Carpathian Conventions and related to the environmental, social and economic recommendations noted above¹⁸:

- Open cooperation between the countries will ensure a holistic understanding of the present and future challenges, and should lead to the development of a common strategy and integrated vision for the entire region that properly balances environmental, social and economic development goals, in accordance with the natural resource limitations
- The Caucasus countries should and need to look beyond their national borders in order to better identify and confront current and future global environmental threats to the region (e.g., climate change impacts, biodiversity loss, etc.)
- Transboundary cooperation should aim to halt/reverse the fragmentation of the Caucasus, both in terms of ecological integrity and as a historical and cultural macro-region, and will require a concerted effort and the making of compromises to overcome unilateral eco-regional ambitions to ensure sustainability throughout the wider eco-region
- Improved planning of transport corridors that respect the ecological make-up of the Caucasus and avoid negative environmental impacts is only possible through close transboundary cooperation
- A regional intergovernmental cooperation framework can help ensure the sustainable use of natural resources in the Caucasus region, particularly with the provision of appropriate economic incentives and regulations for the agricultural, mining, infrastructural development, communications, energy, waste management, recreational and other sectors
- Joint cooperation programmes based on the experience of other regions will enable improved monitoring and cross-border exchange of information that is vital in preventing the potentially negative environmental costs and impacts of development of the Caucasus

¹⁸ Refer to the 2009 UNEP/REC Caucasus background paper to the Meeting of the Government-nominated Experts on the Caucasus Cooperation Process for further information.

119. While drawing lessons from process leading to development and implementation of the Alpine and Carpathian Conventions, the development of a similar regional cooperation framework for the Caucasus needs to address problems unique to the region. Most importantly, the both the Caucasus region as a whole and the countries that make it up do not yet have a mature and complementary combination of the state-legal, market, traditional and other regulatory mechanisms of natural resources use, often resulting in significant contradictions between them. All the mechanisms are related to resource use regulation though and, excepting state-legal mechanisms, are fundamentally of a transboundary nature and can thus promote effective intergovernmental cooperation. However, to be successful, the much-needed intergovernmental cooperation should be primarily driven by the states themselves, thus allowing them to fully 'own' the process.

ENVIRONMENTAL RECOMMENDATIONS

120. Efforts to conserve **biological and landscape diversity** are in some cases constrained by political tensions and cross-border conflicts, as well as disparities in the socio-economic conditions of the various countries in the region. A regional intergovernmental cooperation framework for SMD could solve some of these political tensions and would go a long way to ensuring closer scientific cooperation among the Caucasus countries, as well as allowing the addressing of trans-boundary Protected Areas and establishment of networks of **Protected Areas** to preserve ecological integrity.

121. Projects related to **transboundary water resources** by both international agencies and NGOs have generally failed due to a lack of proper coordination between those economic sectors consuming water, insufficient funding for addressing water supply, and poor coordination and cooperation at the governmental level. As such, a regional mechanism for cooperation at the river basin level is needed to ensure a properly coordinated, more efficient and sustainable approach to water management; currently, this may best be achieved initially through the common monitoring of water quality and hazard prevention/early warning.

122. **Forest resources** play a significant role in the national economies of many Caucasus countries, and yet are also critical to sustaining the health of the landscapes that make up the mountains. This balance is further threatened by the growing problems associated with climate change. Together, meeting these challenges effectively and efficiently implies that regional cooperation is critical in ensuring improved national and regional security, resilience and adaptation. Regional cooperation in terms of dialogue and action will not only facilitate the overall recovery of forest landscapes, but will also lead to the development of a representative network of protected forest areas, the establishment of common sustainable management guidelines for forests and pastures, and collaboration on afforestation, erosion control, and combating desertification.

SOCIAL RECOMMENDATIONS

123. The Caucasus' mountains are home to a rich **cultural heritage**, as a result of its enormous ethnic diversity, where unique crafts and architectural heritage, traditional villages, and **traditional knowledge** about construction techniques and agricultural planning have been well preserved. The preservation of this heritage can best be done through a cooperative region-wide approach, particularly for historical monuments situated in conflict and post-conflict zones.

124. **Education for Sustainable Development (ESD)** is a key tool towards achieving multi-sectoral SMD in the Caucasus and this is most effectively done by mainstreaming environmental protection and sustainable development in school curricula. Regional cooperation on ESD will allow for the free exchange of experience, local information and elaboration of teaching methods. While several ESD initiatives are underway in the Caucasus countries, a programme focused exclusively on the ESD in the mountain regions is still under development, with support from UNEP.

125. **Tourism**, a combination of several services, is one of the most promising areas for SMD in the Caucasus, but tends to be the most volatile sector of the economy due to various socio-political and environmental conditions (not to mention annual season fluctuations). Currently, tourism development in Azerbaijan, Armenia and Georgia focus primarily on national resources, although in order to make the most of tourism potential in the eco-region as a whole, intergovernmental cooperation is vital to becoming more economically viable, increase resilience to tourism

fluctuations, promote balanced development of related industries throughout the region as well as cross-border conservation.

ECONOMIC RECOMMENDATIONS

126. As a primary employer in the region (50% of the population) and accounting for about 50% of land use, countries are heavily dependent on the agricultural sector. Yet, despite this importance, agricultural efficiency and productivity remain relatively low, compounded by the uneven distribution of agricultural resources throughout the region. Regional coordination and the promotion of **sustainable agriculture** are seen as vital to remedying this situation, by allowing countries to identify and benefit from comparative advantages, achieve effective resource sharing, and ensure the sustainable development of the sector. Coordinated collaborative efforts will also facilitate access to international agricultural markets. Furthermore, sustainable agriculture is intimately linked to the wider development agenda and region-wide cooperation in the agricultural sector thus has the potential to contribute to the more effective delivery of SMD in the Caucasus eco-region.

127. With the increasing importance of the Caucasus as a transit corridor between Europe and Asia, the development and application of common environmental standards for **sustainable transport** is becoming increasingly important. New infrastructural strategies, programmes and projects should also be subjected to independently undertaken strategic environmental assessments (SEA) and environmental impact assessments (EIA), to ensure that the impacts on environmental and socio-cultural conditions are limited.

128. Based on the significant differences in the availability of local energy resources, as well as the means for energy accumulation and storage, comparative advantages should be identified and region-wide cooperation established. A unified policy of **sustainable energy** in the Caucasus, based on the conditions of each country, can do much to ensure regional energy security, sustainable energy demand and supply, and economic growth. A unified policy will also help to reduce energy consumption and carbon emissions in the region.

CROSS-CUTTING RECOMMENDATIONS

129. The negative impacts of **climate change** affect almost every sphere of the region's economic development and addressing climate change requires and benefits significantly from region-wide cooperation. A regional mitigation and adaptation strategy could become an important platform for the exchange of experiences and lessons learned, joint efforts in finding and soliciting support for the most effective solutions, and coordination of adaptation and mitigation efforts on the local and regional levels.

130. Spatial planning is a relatively new tool for the Caucasus countries and covers the full scope of economic development and tools for sustainable development, from biodiversity protection and climate change, to water management, tourism, forestry and agriculture. A regional approach to spatial planning will ensure the synchronization of development efforts, particularly in terms of:

- Developing balanced and polycentric urban systems
- Ensuring equitable access to infrastructure and knowledge
- Region-wide sustainable development, good governance and the protection of natural and cultural heritage

131. Environmental assessments, exchange of information, monitoring and early warning schemes are all used for planning and to reduce negative impacts on the environment. The conducting of EIAs in the Caucasus countries is a basic legal prerequisite for large-scale projects (particularly infrastructure), although the current process leaves much to be desired. Region-wide early warning systems are also poorly established in the region. A regional approach to these tools can contribute much to the sustainable development of countries.

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LIST OF ACRONYMS

CAP	Common Agricultural Policy
CASALEN	Carpathian Sustainable Education Network
CEPF	Critical Ecosystem Partnership Fund
CERI	Carpathian EcoRegion Initiative
CNPA	Carpathian Network of Protected Areas
COP	Conference of the Parties
DEWA	Division of Early Warning and Assessment
DRR	disaster risk reduction
ENSI	Environment and School Initiatives
ENVSEC	Environment and Security Initiative
EU	European Union
FAO	Food and Agriculture Organization
GA	General Assembly
GDP	Gross domestic product
JPOI	Johannesburg Plan of Implementation
KEO	Carpathians Environment Outlook
MDG	Millennium Development Goals
NTFP	non-timber forest product
PFIA21	Programme for Further Implementation of Agenda 21
REReP	Regional Environmental Reconstruction Programme for South Eastern Europe
SARD-M	Sustainable Agriculture and Rural Development in Mountains
SMD	Sustainable mountain development
UIAA	International Union of Alpinist Associations
UNCED	United Nations Conference on Environment and Development
UNEP-ROE	UNEP – Regional Office for Europe
WSSD	World Summit for Sustainable Development

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In 1992, at the United Nations Conference on Environment and Development – commonly referred to as ‘Rio 1992’ or ‘the Rio Earth Summit’ – mountains received unexpected high political attention. They were granted a chapter in the ‘Agenda 21’ as fragile ecosystems that matter for humankind.

Since then, efforts by different actors have been undertaken to promote Sustainable Mountain Development. Some of them relate to the above event, others just emerged on their own. However, in view of the UN Conference Rio+20 – United Nations Conference on Sustainable Development in 2012 it seemed relevant to assess and understand what has been achieved by whom and how. It appears equally important to learn what has worked and what has not worked, and why, in order to draw lessons for more effective interventions in future. The anticipation of possible future challenges or opportunities may further help to be better prepared for their management. This will certainly encompass the adaptation to and mitigation of global change as the mainstream concern of the last decade as well as the new, albeit disputed paradigm of a Green Economy. As in the past, major unexpected and unpredictable political, social, economic or technological innovations may overshadow such mainstreams.

The Swiss Agency for Development and Cooperation, committed to sustainable mountain development since many decades, has commissioned a number of regional reports to assess achievements and progress in major mountain regions such as in particular Central Asia, Hindu Kush-Himalaya and the South East Pacific, South and Meso America or the Middle East and North Africa. The Swiss Federal Office for Spatial Development has commissioned - in the context of the Swiss Presidency of the Alpine Convention 2011/12 – a report on the European Alps. In addition, UNEP has facilitated the production of the report on Africa’s mountains and mountains in Central, Eastern and South Eastern Europe; and the Aspen International Mountain Foundation together with the Telluride Institute has prepared a report on the mountains of North America.

The insights gained through these reports, which were presented at the Lucerne World Mountain Conference in 2011, and in which key local, regional and global actors have been actively involved provided the inputs for a mountain section in the outcome document of Rio+20. They are also meant to feed into future global and regional processes, institutional mechanisms, and initiatives that emerge as a result of Rio+20 in support of Sustainable Mountain Development.

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