



Fourth Meeting of the Conference of the Parties to the  
Framework Convention on the Protection and Sustainable  
Development of the Carpathians

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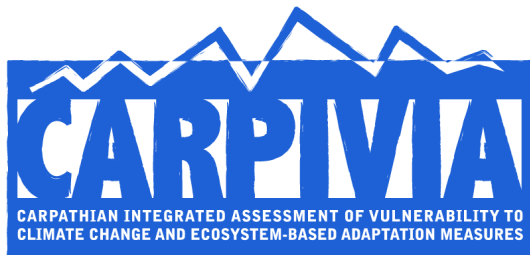
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**STRATEGIC AGENDA on**

**ADAPTATION TO CLIMATE CHANGE**

**in the**

**CARPATHIAN REGION**



| This revised draft version dates July 2014



## Fourth Meeting of the Conference of the Parties to the Framework Convention on the Protection and Sustainable Development of the Carpathians

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# STRATEGIC AGENDA on ADAPTATION to CLIMATE CHANGE in the CARPATHIAN REGION

### Introduction

This Strategic Agenda is developed by the Working Group on Adaptation to Climate Change under the Carpathian Convention with support from the CARPIVIA<sup>1</sup> project. The aim of this strategic agenda is to assist Member States of the Carpathian Convention, local and regional authorities and other stakeholders involved in management of the Carpathian region in formulating responses to climate change as a contribution to securing sustainable development of the Carpathian region.

The draft Strategic Agenda on Adaptation to Climate Change has been discussed in a number of meetings and workshops with Country representatives and observers to the Carpathian Convention as well as interested stakeholders.

The Strategic Agenda holds recommendations for policy development, institutional change and ecosystem based adaptation measures and by adopting this Strategic Agenda the Conference of the Parties to the Carpathian Convention endorses the proposals formulated in this Strategic Agenda and calls upon Contracting Parties, local and regional authorities and other stakeholders involved in management and development of the Carpathian region to formulate policies and design adaptation strategies to adapt to climate change impacts and to mitigate adverse impacts of climate change.

The challenges posed by climate change to the Carpathians as shown by the reports of the CARPIVIA and CarpathCC<sup>2</sup> projects illustrate that the impacts of Climate Change on the Carpathian region are significant and that current management should be reconsidered. Adaptation to climate change calls for strengthened international cooperation in the Carpathian region and in accordance with its mandate, the Carpathian Convention is well placed to stimulate and coordinate the efforts to adapt to climate change as a contribution to sustainable development of the Carpathian region. In the light of the challenges, the evaluation of the Working Group in 2013 and the mandate of the Carpathian Convention, the Working Group recommends to seek for possibilities to establish the Working Group as a permanent Working Group. In agreement with the mandate of the Carpathian Convention, the aim of the Working Group would be to guide the implementation of the Strategic Agenda and provide advice and direction to the Carpathian Convention and its Contracting Parties on climate change adaptation policies and measures.

**1 Opportunities exist to steer the Carpathian region onto a sustainable, climate-proofed path. This document aims to assist governments and other stakeholders in formulating responses to climate change towards this goal. The document offers a draft Strategic Agenda on Adaptation to Climate Change as a basis for consultation<sup>3</sup> with signatories and observers of the Carpathian Convention as well as interested stakeholders.**

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<sup>1</sup> Carpathian Integrated Assessment to Climate Change and Ecosystem Based Adaptation Measures; Tender DG ENV.D.1/SER/2010/0048

<sup>2</sup> Preparatory action on climate in the Carpathian region – Framework contract for in-depth assessments of vulnerability of environmental resources and ecosystem-based adaptation measures; Framework Contract Number DG ENV.D.1/FRA/2011/0006

<sup>3</sup> The consultations are to result in a Strategic Agenda offered by the members of the Working Group on Adaptation to Climate Change to the Carpathian Convention for approval by the Carpathian Convention Implementation Committee before the Fourth Meeting of the Conference of the Parties to the Carpathian Convention (COP 4) to be held in Czech Republic in 2014.



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### What this document is:

2 A Carpathian-wide, strategic policy guidance with suggestions for future policy, programming and institutional directions to move the Carpathian Space towards a climate-proofed future. Generic-level measures are given, together with other opportunities for action, by way of illustration. In particular, the document is a support to assist the Working Group on Adaptation to Climate Change (Climate Change WG), established at COP3 in May 2011, fulfil its tasks including the development of policy proposals in line with the European Commission's White Paper and the Carpathian Convention<sup>4</sup>.

### What this document is not:

3 A detailed analysis of reference conditions or climate change scenarios, nor a climate change adaptation strategy, nor a programme-of-measures, nor a prescriptive list of what is required.

### This document is accompanied by:

4 Annex: Matrix of Policy Opportunities for Climate Change Adaptation Measures in the Carpathians, listing possible adaptation measures, policy linkages, actors involved, and forthcoming funding opportunities with timelines of decision-making.

### **Background: Climate Change in the Carpathians<sup>5</sup> and What does Adaptation Mean?**

5 According to the IPCC's 4<sup>th</sup> Assessment Report (2007) the great majority of organisms and ecosystems are likely to have difficulty in adapting to climate change, with central Europe likely to be one of the hardest hit regions<sup>6</sup>. Regional climate change projections suggest more irregular rainfall and a warmer climate in the Carpathian basin. According to the endorsed Working Group II contribution to the Fifth Assessment Report of the IPCC's "climate change will increase the likelihood of systemic failures across European countries caused by extreme climate events affecting multiple sectors (medium confidence). (...) adaptation can prevent most of the projected damages (high confidence)."

Studies of temperature change over the Carpathian Basin, summarised by CARPIVIA, largely agree increases in temperature. The Carpathian mountains will experience an increase between 3.0 °C in the north-western part to 4.5°C in the south during this century.

6 Model studies largely agree in projecting a small increase of winter precipitation and a significant decrease of summer precipitation. Although the mean annual values of precipitation will remain almost constant, decreases in summer precipitation are projected of above -20% and increases in winter precipitation in most areas of between +5 to +20% this century.

7 These changes will have profound consequences on the environment, on the economy, and on human health and wellbeing. These consequences will be summarised in the next section.

### Climate Change Adaptation

8 The European Commission Communication "An EU Strategy on adaptation to climate change" (COM/2013/216) aims to contribute to a more climate-resilient Europe by enhancing the preparedness and capacity to respond to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination, including with support of the European Climate Adaptation Platform (Climate-ADAPT)<sup>7</sup>. The EU Adaptation Strategy, together with the Water Framework Directive, the

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<sup>4</sup> The scope and mandate of the WG on Adaptation to Climate Change, according to the Terms of Reference, includes recommendations on policy proposals, follow-up projects including on adaptation measures, and a discussion on the cost, benefits and feasibility of adaptation measures, in particular on adaptive water management and ecosystem-based measures.

<sup>5</sup> Climate data taken from: DLO Alterra, 2011, Interim Report Task 2 CARPIVIA Project [Tender DG ENV.D.1/SER/2010/0048]: Preliminary Assessment vulnerability & potential adaptation measures, 82pp., Wageningen, Netherlands. Available online at <http://www.CARPIVIA.eu/about-CARPIVIA/downloads>

<sup>6</sup> IPCC, 2007, 4th Assessment Report, Chapter 12 – Europe, p.563.

<sup>7</sup> <http://climate-adapt.eea.europa.eu/>

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Directive on Floods, and the EU Water Scarcity and Droughts Strategy – form the core of EU policy on climate change and stress the importance of<sup>8</sup>:

- Building resilience against the added risk of climate change by acting on existing anthropogenic risk,
- Using a cyclic management approach to include increasing knowledge over time on climate change impacts, and incorporating this into a comprehensive information system for use in decision-making for adaptive management,
- Using the opportunity of implementation of existing initiatives to:
  - restore natural ecosystem function within catchments, in particular the ability of catchments to retain and slowly release water and to degrade pollutants,
  - reduce fragmentation and improve connectivity of habitats to allow species movements,
  - balance ecology and economic developments,
- Mainstreaming of climate concerns into other policy areas, programmes, processes and funding supports.

9 These elements constitute climate change adaptation, and their implementation rests upon certain fundamental principles against which possible measures should be formulated and judged, namely:

- Investing in the future, not the past
- Working with nature, not against it
- Inclusivity of stakeholders and increasing public awareness
- Building capacity for adaptive management
- Focussing on „no-regrets” and „win-win” measures and solutions
- Change management practices and infrastructure that add to long-term vulnerability resilience.

10 Adaptation to climate variability and change is both a technical and a social process of assessing and responding to present and future impacts, planning to reduce the risk of adverse outcomes, and increasing adaptive capacity and resilience in responding to multiple stresses (EU WFD p.29). Thus, the development of appropriate institutional architecture for adapting to climate change is a very necessary task, and one which other European mountain regions, such as the Alps, have started already<sup>9</sup>.

### *Uncertainty*

11 There remains – and will always remain – elements of uncertainty. In practical terms, decisions related to climate change, its impacts and adaptation options cannot be made on simple, single values but need to encompass the range of possible future climate projections. Thus, decision makers will have to handle a bandwidth of values or different scenarios and accept and be explicit about uncertainty. No matter how complex and multi-variable the context is, doing nothing is no longer an option. This, therefore, demands an emphasis on risk management and on measures that build adaptive capacity and flexibility.

### *Diversity*

12 Climate change adaptation is by its nature location-specific, and mountain ecoregions such as the Carpathians contain such great diversity in geography, micro-climate, habitats and species, and culture that inevitably many or most adaptation measures will be developed for a unique location. There is still a role, however, for overarching, transnational, and cross-cutting measures and approaches, since these are necessary to flag, create, and communicate opportunities, funding, best practices, and systematised information flows to ground and community levels.

### *Part of a Transition to a Climate-proofed Green Economy*

13 Countries in the Carpathian region recognise that the global transition to a greener, low-carbon future, has already begun. The European Commission (EC) “urges each Member State to develop national low carbon

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<sup>8</sup> EU Guidance Document Number 24 – River Basin Management in a Changing Climate, technical report – 2009 – 040, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), p.16, Brussels, Belgium.

<sup>9</sup> For example, see progress and results of the CLISP project: Climate Change Adaptation by Spatial Planning in the Alpine Space, available at [www.clisp.eu](http://www.clisp.eu) and the CLIMALPTOUR project: Climate Change and its Impact on Tourism in the Alpine Space at [www.climalptour.eu](http://www.climalptour.eu).



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roadmaps, if not already done”, and is ready to assist countries to develop such a strategic overview climate/energy roadmap or vision. EC has some tools available, and will be using the opportunity of the review and planning for the Multi-Annual Financial Framework 2014 - 2020 to see from where funding supports, for example from Cohesion Funds and the Common Agricultural Policy (CAP) can be tapped for financing the longer-term transition.<sup>10</sup> Climate change adaptation should be a fundamental part of this transition, increasingly reflected in National Climate Change Adaptation Plans and National Communications to the UNFCCC process.

14 Countries in the Carpathian region can therefore grasp these opportunities and collectively map out a path towards a climate-proofed future which draws upon, and conserves, the unique natural and cultural values of the Carpathian region, using this as precious capital for a prosperous future in a changing climate.

### *New Partnerships*

15 To succeed, new partnerships will be required. Of course, the involvement not just of government but also civil society, the research and education institutions, and international organisations will be key. So will the involvement of the private sector. If climate change adaptation is integral to the green economy, and the green economy is mostly about jobs, and most jobs are provided by the private sector, then it follows that the private sector is a vital partner in this process. According to UNFCCC the specific expertise of the private sector, its capacity to innovate and produce new technologies for adaptation, and its financial leverage can form an important part in the multi-sectoral partnership that is required for planning and implementation of adaptation<sup>11</sup>.

## **The Issues: Impacts of Climate Change in the Carpathians**

### *Temperature Change*

16 Rising winter and summer temperatures threaten local and national policy objectives related to agriculture, winter tourism, rural development and a host of economic and social issues. There will likely be increases in pest incidence and possible spread of invasive and alien species. Some alien species produce allergenic substances which have implications for human health. Higher temperatures can shorten the snow season and raise the snow-line, but lengthen the growing season for agriculture and increase plant productivity (unless it is limited by water availability, see below). Early melting of snows will reduce natural availability of water during summer.

### *Precipitation Change*

17 Most studies indicate an increase in winter precipitation and changes in snow cover. Regional studies point also at periods of lowering precipitation in the summer resulting in lower summer river flows. At the same time, during summer extreme high precipitation over short periods of time are expected. More intensive, short-duration precipitation will lead to increased risk of erosion and risks of land slides. These processes will aggravate the risks of floods and increase the chances of damage caused by floods. These processes will in turn negatively affect water quality. In periods of low precipitation and high temperatures less flow will enhance eutrophication and can trigger toxic algal bloom. Pollutants that originate from point and diffuse sources are less diluted, so concentrations of dangerous and emerging substances will increase. Erosion and landslides will also negatively impact the water quality.

### *Droughts*

18 In general, lower river discharges and drought periods as well as water scarcity events are expected to increase. Groundwater recharge is likely to be reduced, whilst more frequent droughts in summertime will reduce low flows and result in water shortages. In particular, southern parts of Hungary and Romania as well as the Republic of Serbia, are expected to face severe droughts and water shortages. Drier summers will impact chiefly on agriculture and tourism but might also lead to groundwater depletion and deteriorating water supplies, including the quantity and quality of drinking water available for human consumption and livestock. Indirect, drought will increase the use of groundwater for irrigation and probably also the use for human consumption

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<sup>10</sup> European Commission, 2011, A Roadmap for moving to a competitive low carbon economy in 2050, COM2011 (112 Final), p.14., Brussels, Belgium.

<sup>11</sup> UNFCCC, 2010, Adaptation Assessment, Planning and Practice: An Overview from the Nairobi Work Programme on Impacts, Vulnerability, and Adaptation to Climate Change, 84pp., Bonn, Germany.

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(especially in summer). Groundwater resources with a high ratio of withdrawals are more vulnerable to these climate change effects.

### *Floods*

19 The floods have affected the livelihoods, threat to the health and lives of people in the Carpathian mountains and foothills. Decreasing snow cover, the unforeseen heavy rains caused by altered climate variability and the related water storage will alter flood regimes and increase risk of flood events, their magnitude, intensity and frequency. In recent years, the number of frequent catastrophic floods has increased, their economic, social and environmental impacts have worsened leading to increased casualties in the region. The floods cause the mud slides, bank erosion, flooding the settlements (especially in lower reaches of rivers). The floods do not respect borders between countries, regions, so there is need for transboundary risk management and adaptation.

### *Risks to Governmental Policy Objectives*

20 National priorities, targets, and goals for development will be impacted by climate change, including governmental objectives on the economy, human health, and the environment. Financially and economically, without adequate and timely adaptation measures, climate change could prove disastrous. The Stern Report estimated that GDP could be reduced by as much as 5% per year, up to 20% by the year 2050<sup>12</sup>.

### *Impacts on Forests*

21 Forests will be altered by climate change. Increasing temperatures and higher incidences of drought will lead to shifts in species composition at lower altitudes towards more drought-resistant tree species. More frequent and increased drought stress will increase vulnerability to pest and pathogenic damages, as well as damage from fire. The tree-lines will move upwards, and the northern limit of species will migrate northwards. Some species and communities might collapse as a result of these shifts especially where connectivity and ecological corridors are limited. Particularly vulnerable species include spruce at lower altitudes, beech, maple, oak and lime. Increased soil vulnerability will increase risk of landslides in lower mountain areas. Detailed information on expected impacts on forests is contained in the CARPIVIA report<sup>13</sup>, and the IPCC 4th Assessment Report.

### *Impacts on Agriculture*

22 Due to changing precipitation, temperature, and seasonality agriculture will experience significant pressures. The precise impacts are likely to be highly focused in specific locations and in some places and for some crops are likely to be positive. In general a shift during spring planting towards winter crops will be possible. Agriculture may also become feasible at higher altitudes, but the effects of elevated CO<sub>2</sub> levels in the atmosphere stimulating plant growth are often threatened by higher temperatures especially in lower altitudes. In some parts of the Carpathians maize and wheat yields will decline, whilst elsewhere sunflower and soya yields might increase due to higher temperatures and migration of these crops' northern limit. Likewise, winter wheat is expected to increase. Unfortunately, vulnerability to pests is predicted to rise, and increasing productivity losses are also expected as a result of soil erosion, groundwater depletion, and extreme weather events. Detailed information on expected impacts on soils and agriculture<sup>14</sup> is contained in the CARPIVIA report, the European Commission's report on climate change and agriculture<sup>14</sup>, the CEU/WWF study<sup>15</sup>, and the IPCC 4th Assessment Report.

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<sup>12</sup> Stern, 2006, The Stern Review: The Economics of Climate Change – from the executive Summary of the Stern Review, available online at [http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/sternreview\\_index.htm](http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/sternreview_index.htm)

<sup>13</sup> Interim Report CARPIVIA Project (2011) Preliminary Assessment vulnerability & potential adaptation measures, 82pp. Available online at <http://www.CARPIVIA.eu/about-CARPIVIA/downloads>

<sup>14</sup> AEA Energy & Environment, 2007, Adaptation to Climate Change in the Agricultural Sector, Report to European Commission Directorate-General on Agriculture and Rural Development, Report no. AGRI-2006-G4-05, by AEA Energy & Environment and Universidad de Politecnica de Madrid, 245pp., Madrid, Spain.

<sup>15</sup> CEU, 2008, Impacts of and Adaptation to Climate Change in the Danube-Carpathian Region, Overview study commissioned by the WWF Danube-Carpathian Programme, September 2008, 56pp., Budapest, Hungary.





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### *Impacts on water*

23 Both water quantity and quality, in addition to seasonally, will be affected by climate change. Overall, a decline in total annual run-off is predicted for southern and eastern parts of the Danube basin, while western and northern parts might experience increases. The changes in annual run-off in the mountain part of the Dniester basin will not be as severe as in the Lower Dniester, however the changes will be visible seasonally through the increase of the run-off during winter period. Water temperature in streams, rivers and lakes will increase. Because of temperature increase, the modernization and/or development of irrigation system in downstream areas will be needed, that could be complicated in the situation of water deficit. The possible impacts on the quantity and quality of drinking water maybe important in the region as well. Detailed information on expected impacts on water and water management is contained in the CARPIVIA report, the ICPDR Danube Adaptation Study<sup>3</sup>, the CEU/WWF study, UNECE Dniester project and the IPCC 4<sup>th</sup> Assessment Report.

### *Impacts on Grasslands*

24 Grasslands are very important in the Carpathians and could said to be emblematic of the ecoregion. Temperature increases, more extreme droughts and floods, soil erosion, an upward shifting tree line and increased vulnerability to invasive species are all expected to reduce grassland quality and coverage, leading to habitat fragmentation and loss of species. Whilst for the time being arable agricultural intensification and abandonment of traditional grazing practices are a more immediate threat, the longer-term impacts of climate change are expected to be severe. Detailed information on expected impacts on grasslands is contained in the CARPIVIA report, the CEU/WWF study, and the IPCC 4th Assessment Report.

### *Impacts on Biodiversity*

25 Landscapes, habitats, flora and fauna show characteristics and unique features occurring only in the Carpathians. Endemic, alpine, relict habitats and species are the result of long-term evolution, migration and adaptation processes, which started long before human influences came into the area. Carpathian ecosystems also represent specific animal characteristics, with endemic species that face extinction in other mountain areas in Europe. Specific bird species are also in relatively good population numbers protected. The changes of temperature and precipitation regimes will affect the physiological processes of fauna and flora, and can cause the displacement of natural boundaries and the loss of natural ecosystem, including the "corridors" for the migration of rare and endemic species. Because of the increasing of temperature, the migration of pests, fungus and acarus, as well as atypical species will increase; this can cause the replacement of valuable species by low value species. Detailed information on expected impacts on biodiversity is contained in the IPCC 4th Assessment Report (Chapter 1 - 1.3.5 Terrestrial biological systems).

### *Impacts on Wetlands*

26 High altitude wetlands are crucial for both flood management (acting as sponges and thus levelling off flood peaks in winter and low flows in summer) and for biodiversity. Increased air temperatures will lead to drying out of wetland soils through increased evapotranspiration, - compounded by higher incidence of drought. Further wetland loss would reduce habitats for the many dependent plant and animal species, and lead to habitat fragmentation which could threaten migratory birds and amphibians at a regional scale. Detailed information on expected impacts on wetlands is contained in the CARPIVIA report, the ICPDR Danube Adaptation Study, the CEU/WWF study, and the IPCC 4th Assessment Report.

### *Impacts on Tourism*

27 Tourism- will experience both positive and negative pressures from climate change. Shorter and milder winters will impact upon snowfall levels meaning that basic conditions for ski-based and other winter sports tourism are less favourable than currently. On the other hand, rising temperatures in summertime elsewhere, for example the Mediterranean, might drive more tourists to the mountains for relatively more comfortable summer vacations. Summer seasons might become longer, winter seasons shorter. Detailed information on expected impacts on tourism is contained in the CARPIVIA report, the CLIMALPTOUR report (focussing on the Alps), the CEU/WWF study, and the IPCC 4th Assessment Report.



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### Priorities for the Signatories:

#### Policy Responses to create a Path to a Climate-Proofed Carpathian Economy

28 Whilst much practical adaptation is done at the farm, business, or household level, policies and funding frameworks can boost or hinder the capacity for adaptation, and as noted by IPCC (2007) there is an important role for public policy in facilitating adaptation to climate change. This includes reducing vulnerability and increasing adaptive capacity of people and infrastructure, providing information on risks for private and public investments and decision-making, and protecting public goods such as habitats, species and culturally important resources.<sup>16</sup>

29 Mainstreaming of climate change adaptation objectives into policy and funding framework is a first step, in order to prevent precious investment being wasted as a result of changing (climatic) baseline conditions when initiatives come on stream. Key economic sectors such as water, agriculture, transport, and health require planning against a range of available climate change scenarios in order to test which plans and measures will continue to make technical and financial sense, and thus, to decide upon low-risk and no-regret actions. According to IPCC, there is scope for mainstreaming at both national and international levels. The Carpathian Convention process is seen as potentially an ideal vehicle for providing leadership and coordination for developing a united, comprehensive, regional approach to adaptation activities<sup>17</sup>.

30 The Carpathian Convention's emphasis on ecosystem management and recognition of the importance of ecological integrity lends itself naturally to a focus on ecosystem-based adaptive approaches to climate change adaptation in the region. As noted by the European Commission, focusing especially on the resilience of healthy aquatic and water bound ecosystems to changing and degrading conditions provide a cost-effective and relatively easy way to achieve adaptation<sup>18</sup>. Increased transnational cooperation for example in the joint spatial planning, designation, and management of expanded protected areas to act as refuges for habitats and species also focusing on habitat connectivity would therefore make both ecological and economic sense for the countries in the region as well as contribute to climate change adaptation.

31 The added value of increased transnational cooperation and joint activities is especially strong in terms of planning for climate change adaptation. So much of the predicted impacts of climate change relate to seasonal and geographical shifts. This is true for species and communities (forests, tree-lines, northern limits) as well as for socio-economic aspects (tourist arrivals, tourism seasons). Many of the possible measures are thus best planned using a geographical scale of the ecoregion, rather than the nation-state. Further, many of the tools and capacities required for climate change adaptation which are currently missing, such as the capacity for designation and mapping of future refuge habitats for wetlands and grasslands, synthesised and comparable climatological data, and firm strategies for adaptation on a sector-by-sector basis, are either only possible at the transnational level, or are equally missing in each country, meaning that joint initiatives with external funding could fill these gaps and build cooperative capacity at the same time.

32 In addition, the priority areas of the Carpathian Convention process, as defined by the current Working Groups and the overall Strategic Action Plan for the Carpathian Area<sup>19</sup>, now require climate change considerations to be built into future activities of the Working Groups of the Carpathian Convention, workplans and decision-making. This is also true of the EU Strategy for the Danube Region (EUSDR<sup>20</sup>) which is highly relevant for the Carpathian Space especially in terms of policy synergies and funding priorities and opportunities. Indeed, the Strategy's Action Plan foresees cooperation and project-based activities of the Strategy's

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<sup>16</sup> IPCC, 2007, 4th Assessment Report, Working Group II, Impacts, Adaptation and Vulnerability Section 17.4.1., IPCC, Geneva, Switzerland and New York, USA.

<sup>17</sup> CEU, 2008, Impacts of and Adaptation to Climate Change in the Danube-Carpathian Region, Overview study commissioned by the WWF Danube-Carpathian Programme, September 2008, p.36., Budapest, Hungary.

<sup>18</sup> EU Guidance Document Number 24 – River Basin Management in a Changing Climate, technical report – 2009 – 040, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), p.40, Brussels, Belgium.

<sup>19</sup> UNEP, undated, Strategic Action Plan for the Carpathian Area, 21pp., agreed at COP3, Bratislava, Slovakia.

<sup>20</sup> See <http://www.danube-region.eu/pages/what-is-the-eusdr>





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implementation as an opportunity to put in place the required elements on which to build a Danube Adaptation Strategy (finalised in December 2012)- in the nearest possible future<sup>21</sup>.

### Institutional and organisational responses

33 Examination of the Alpine experience suggests that a designated pan-Convention policy-, funding-, coordination and communication context for climate change adaptation would be very valuable. Hence the designation of a Carpathian Space is recommended. The uniqueness and diversity of the Carpathians, together with the fact that when seen in isolation in each national context, they are normally a relatively small proportion of any given country, lend themselves to joint actions. Many measures, especially „preventative” and „preparatory” ones relating to information gaps, research, and monitoring together with broad capacity-building and awareness-raising, make sense if carried out a broad ecoregional scale. Policies and funding frameworks which reflect this geography would therefore be very useful.

34 Adaptive management<sup>22</sup> requires a good information base and constant updating and review of data. This is especially true for climate change adaptation, which rests first on thorough analysis of the baseline and time-series data in order to set context for future projections and scenarios. The Carpathians are lacking need a systematised, easily comparable set of climatological and climate impact related datasets between countries. A common and accessible information system is created by CHM and the aspects regarding climate changes must to be taking in consideration in this system already in place. .

35 Following on from that, a thorough research and literature analysis on climatological datasets, information, articles and scientific knowledge on climate change impacts and adaptation in the Carpathians is required, including – crucially – sources of information published or unpublished in local languages, since most relevant data for the Carpathians is in national languages. With this foundation, a logical monitoring and evaluation system can be established, with various models and examples available as a guide. More information on information, baselines, and monitoring is provided in the IPCC 4th Assessment Report, and the Nairobi Work Programme, an agenda item under the United Nations Framework Convention on Climate Change (UNFCCC) and under the IPCC 5th Assessment Report.

36 The EU Water Framework Directive (WFD) requires participatory river basin management planning, and although climate change is not explicitly included in its text, the step-wise and cyclical approach of the river basin management planning process makes it well suited to adaptively manage climate change impacts<sup>23</sup>. All Carpathian countries, if appropriate<sup>24</sup>, are implementing this Directive and relevant, associated approaches including the Directive on Floods and the EU Water Scarcity and Droughts Strategy to mitigate or prevent consequences of climate change. The Second Cycle of river basin management planning, for implementation over the period 2015-2021, is required to take into account adaptation requirements. Thus, opportunities exist to avoid duplication of adaptation measures between the Carpathian and Danube processes and to integrate Carpathian objectives into the Danube river basin management planning and into the Danube Climate Change Adaptation Strategy, currently finalized and for which- analysis have already been undertaken<sup>25</sup>.

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<sup>21</sup> European Commission Staff Working Document, 2010, Action Plan: Accompanying document to the Communication from the Commission on the European Union Strategy for the Danube Region, p.40., SEC (2010) 1489, Brussels, Belgium.

<sup>22</sup> EU WFD Guidance p.4: According to the Intergovernmental Panel on Climate Change (IPCC), adaptive capacity may be defined as the ability to cope, adapt or recover from the effects of a hazard (in this case, climate change). Examples of steps that can be taken to build adaptive capacity include: increasing knowledge of potential climate risks for individual river basins; strengthening data collection and knowledge exchange amongst key stakeholders; cross-sectoral integration and partnership working; awareness raising education and training.

<sup>23</sup> EU Guidance Document Number 24 – River Basin Management in a Changing Climate, technical report – 2009 – 040, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), p.2, Brussels, Belgium.

<sup>24</sup> Non EU Member States as far as they are part of the Carpathian Region they implement the Directives in the framework of the relevant decisions adopted within the Danube River Convention.

<sup>25</sup> ICPDR has to date conducted a detailed study on climate change and is now putting together a basin-wide strategy, for more details see [http://www.icpdr.org/icpdr-pages/climate\\_adaptation\\_study.htm](http://www.icpdr.org/icpdr-pages/climate_adaptation_study.htm)



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37 At the international level, there is further a strong need for liaison with river basin management planning bodies for the other major rivers draining from the Carpathians, namely the Dniester, Tisza and Vistula..

38 Financial resources are limited. A key action is to create flexible and equitable financial instruments that facilitate benefit - and burden-sharing, social learning and that support a diverse set of potentially better-adapted new activities rather than compensate for climate impacts on existing activities. The perception of fair sharing of costs and benefits between actors is central to the successful implementation of adaptation and has to be addressed in adaptation planning. In the region, European and/or national government financial support is often sought for to implement adaptation. However, mainstreaming adaptation can complicate existing relations with donors or subsidies. The European agro-environmental schemes for instance are not designed for inter-annual land use change depending on water availability. Thus, the effectiveness of European funding schemes has to be re-evaluated in supporting adaptation. Creating markets for adaptation is another key challenge (e.g. encouraging cities and industries to buy in on upstream flood water storage and floodplain management). Opportunities exist for public-private partnerships in which marketable products obtain additional public support in exchange for providing social and environmental services that support adaptation. This action supports economic incentives including pricing and taxation of water resources, micro-grants (e.g. to diversify production systems especially in low altitude ski-resorts), payments for ecosystem services, and water allocation schemes.

### Cross-Cutting Opportunities

39 There are many cross-cutting opportunities for mainstreaming climate change adaptation efforts into the relevant sectors. These include climate-cross compliance, and strategic environmental assessment. At relatively little or even zero cost, governments can boost adaptation policy, practice, and capacity by instigating such cross-cutting measures. Additional (human) capacity in the form of awareness, skills, and training are required. Recommendations for tentative actions of this type are given below in the section "Actions", and in the accompanying Matrix of Measures (Annex: Matrix of Potential Climate Change Adaptation Measures in the Carpathians, which lists possible adaptation measures, policy linkages, actors involved, and forthcoming funding opportunities with timelines of decision-making).

40 Climate-Cross Compliance is an area of particular promise for climate change adaptation. For several years now agriculture and rural development funding (payments, subsidies, grants) has been contingent upon compliance with EU environmental standards, meaning that in order to be eligible for a particular support, a farm has to demonstrate it is complying with various EU environmental objectives, laws, standards. The same principle<sup>26</sup> can be applied to climate change adaptation, meaning that all EU and national funding (not just agriculture) can be made contingent upon demonstrated consideration and adaptation to climate change variations. This would very rapidly mainstream adaptation measures into many sectors including agriculture, transport, small and medium sized enterprise development, and public sector procurement.

41 Strategic Environmental Assessment (SEA), either alone or as part of a sustainability appraisal, can help to ensure that plans and programmes take full account of climate change issues. The SEA Directive (2001/42/EC) requires identification and evaluation of planned impacts on a number of environmental issues, including climatic factors; and, where appropriate, to put measures in place to minimise and respond to significant impacts identified. ~~Greater use of, and adherence to,~~ A common effort to widen the SEA's scope to include climate change adaptation processes and a greater use of, and adherence to, SEA processes would therefore "climate-proof" all sectoral plans and investments.

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<sup>26</sup> A working definition of cross-compliance in its more usual use, accessed from the European Commission Agriculture and Rural Development webpages: [http://ec.europa.eu/agriculture/envir/cross-compliance/index\\_en.htm](http://ec.europa.eu/agriculture/envir/cross-compliance/index_en.htm) as follows: "Cross-compliance is a mechanism that links direct payments to compliance by farmers with basic standards concerning the environment, food safety, animal and plant health and animal welfare, as well as the requirement of maintaining land in good agricultural and environmental condition. Since 2005, all farmers receiving direct payments are subject to compulsory cross-compliance." (Accessed 18 May 2012).

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### **Project and programme oriented responses:**

#### **Opportunity for the EU Funds from 2014-2020: Steer the Region's Development Towards a Climate-Proofed Carpathian Space**

42 The path to a green economy and climate-proofing can be smoothed by participation in EU processes and through accessing EU and national funding sources which are increasingly supportive. The one trillion euro budget for 2014-2020 ~~is currently being discussed, related to the EU's multiannual financial framework for 2014-20~~ 20 (MFF 2014-2020) has been adopted by the Council and in order to secure a climate-proofed, low carbon future for Europe, will need to focus on two complementary priorities<sup>27</sup>:

- Making intelligent investments in green economic sectors that will be the lead markets of the future including renewable energies, energy savings, sustainable agriculture, and biodiversity management.
- Smarter spending through phasing out of subsidies that are environmentally harmful and economically ineffective. This would maximize win-win opportunities delivering benefits for the environment, jobs and the economy.

43 These investments need to be focussed also on stimulating climate change adaptation. The Carpathian space can be a leading example of ecosystem-based adaptation measures which are beneficial for both people and the environment, whilst at the same time maximising the resilience of the ecoregion to current and future climatic variations. Linking to existing policies and funding opportunities is therefore vital, as is shaping new funding architecture through joint definition of goals, measures, and coordinated actions. This latter will include the development of a new EU Biodiversity Strategy which halts further habitat loss and restores ecosystem services, and is part of the Europe 2020 Strategy<sup>28</sup>, together with the EU Roadmap on a Resource Efficient Europe, and the EU Adaptation Strategy. The other financial mechanisms, e.g. European Neighborhood and Partnership Instrument (ENPI) can also be involved for the adequate implementation of the climate change adaptation actions on the whole territory of the Carpathian Space.

44 Recommendations for tentative actions of this type are given below in the section "Actions", and in the accompanying Matrix of Measures (Annex: Matrix of Potential Climate Change Adaptation Measures and Actions in the Carpathians, which lists possible adaptation measures, policy linkages, actors involved, and forthcoming funding opportunities with timelines of decision-making).

### **Potential Priority Climate Change Adaptation Actions**

45 The Carpathian Convention responds to the challenge resulting from climate change by developing this strategic agenda. The following actions are recommended for ~~–prioritised implementation–~~ and represent initiatives which would act as a practical and inspiring demonstration of adaptation in this region, and at the same time help build vital capacity for further actions. Likely to attract external funding, they are proposed for the Carpathian Convention to discuss and consider for implementation and to build momentum towards the development of a Carpathian Climate Change Adaptation Strategy.

Capacity Building Programme which Draws on, and Enhances, the Connectivity of the Region  
Awareness-raising, training, and information exchange programme on climate change adaptation for local authorities, line ministries, and NGOs in the Carpathian region will enhance understanding of climate change in the Carpathians, opportunities for ecosystem-based adaptation, funding opportunities, and transnational planning.

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<sup>27</sup> WWF, 2011, WWF priority demands to the Danish Presidency 1 January – 30 June 2012, WWF Position Paper, 12pp., December 2011, Brussels, Belgium.

<sup>28</sup> European Commission, 2011, Communication COM(2011) 21 A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy, p.6., 17pp., 26.1.2011, Brussels, Belgium. Also available online at [http://ec.europa.eu/resource-efficient-Europe/pdf/resource\\_efficient\\_europe\\_en.pdf](http://ec.europa.eu/resource-efficient-Europe/pdf/resource_efficient_europe_en.pdf)



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### Information management and Awareness Raising

Programme of technical assistance, training, and data management hard- and software for local authorities, line ministries, and NGOs, together with stakeholders from the scientific and research community, on climate change data, scenarios, information management risk assessment and mapping to increase analytical and decision-making capacities for climate change adaptation. This could feature an "IPCC-style" process for pulling together scientists and knowledge in the region.

### Climate-Proofing of Infrastructure, Investments and Climate-Cross Compliance

Infrastructure improvement, including the re-evaluation of existing (water) infrastructure in the light of its contribution to vulnerability to climate change (e.g. the contribution of river regulation to high and low river flow levels). Assess and promote the location specific contribution of ecosystem-based approaches to climate-proof sustainable development.

Workshop series for line ministries of Agriculture, Economy, Spatial Planning, Environment, Energy and Transport, together with local authorities and NGOs, on mainstreaming climate change adaptation into national and regional policy frameworks, including EU funding possibilities both now and in the new, post-2014, budgetary timescale. Example: definition of policy needs to make agriculture and rural development support contingent upon incorporation of climate change adaptation measures into farm business plans, rural development plans, etc. (from CAP, LEADER, agri-environment, direct payments, subsidies and grants). This action could result in guidelines for climate proofing assessments.

### Development of Forestry Measures for Climate Change Adaptation

Joint development of specific forestry measures (see accompanying Matrix) by the Carpathian Convention Sustainable Forest Management Working Group (Forest WG), the Carpathian Convention Working Group on Conservation and Sustainable Use of Biological and Landscape Diversity (Biodiversity WG) and the Climate Change WG in a trans-national context, to focus on mapping and designation, identification of refuges, cross-border linkages, and management measures such as thinning, fire management, and invasive species management which enhance ecological integrity and climate change adaptation capacity of managed and natural forest ecosystems. In particular, the preparation of 'what if' plans to be implemented after an extreme event, e.g. preparation of a management strategy to be implemented upon significant forest loss after an extreme weather event or logging. In the vicinity of villages in particular direct activities to reduce the impact of (illegal) logging on landslides, erosion and flash floods.

### Making Biodiversity Management More Dynamic

Joint development of specific conservation and protected areas measures (see Matrix) by the Biodiversity WG, the Forest WG, and the Climate Change WG in a trans-national context, to focus on mapping and designation, identification of refuges for wetlands and grasslands, adaptive management best practices, cross-border linkages, and ecological integrity for climate change adaptation. Consider the directing (all) activities to near-nature areas and natural retention areas. Recognising the growing importance of non-native species in ecosystem management.

### Evaluation of Carpathian Ecosystem Services

The linkage between water, wetlands and forests exemplify the importance of managing ecosystems as a whole to protect their ecological character, their freshwater resources and related ecological services that are vital for human life. The Carpathian Ecosystems provide a wealth of services which in financial terms represent a huge value. In accordance with the Millennium Ecosystem Assessment the services provided can be subdivided into provisioning services ( agricultural products, forest products), regulating services (water retention and storage, erosion prevention, climate regulation) cultural (including recreational and tourism) and supporting (soil formation, nutrient cycling). Healthy ecosystems are more capable of delivering these services than deteriorating ecosystems. Investing in the protection, management and restoration of ecosystems supports the delivery of these valuable services. Valuing the services the Carpathian ecosystems deliver is a necessary step towards clarifying the need for the protection and management of the Carpathian ecosystems and their contribution to mitigate and adapt to climate change impacts. Valuing ecosystem services can help to design and implement actions to correct market failures that are harmful to the affected ecosystems and the economy.

### Capacity-Building on Proposal-Writing for Adaptation Funding



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Establishment of a small, multi-disciplinary, international team or network which works with local authorities and NGOs and delivers technical assistance on sourcing funds for climate change adaptation measures.

### Working Group on Climate Change

Continue the work of the Working Group on Climate Change with the mandate of the Contracting Parties to advice the Secretariat and the Contracting Parties on policies, actions, research, data gathering and projects relevant for mitigating and adapting to climate change impacts in the Carpathians. The WG has the overview of relevant projects and policies relevant for climate change in the Carpathians and bears the responsibility to coordinate climate change adaptation policies and projects in the Carpathians with other relevant government and non-government organisations.

More potential actions are listed in the accompanying Matrix.

*ENDS*.....





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### LIST OF ACRONYMS AND ABBREVIATIONS

|                     |   |
|---------------------|---|
| Biodiversity WG     | Carpathian Convention Working Group on Conservation and Sustainable Use of Biological and Landscape Diversity |
| CAP                 | Common Agricultural Policy  |
| CarpathCC           | Climate Change in the Carpathian Regio  |
| CARPIVIA            | Carpathian Integrated Assessment of Vulnerability to Climate Change and Ecosystem – Based Adaptation Measures |
| CEU/WWF             | Central European University/ World Wide Fund for Nature   |
| CHM                 | Clearing House Mechanism  |
| CLIMALPTOUR project | Climate Change and its Impact on Tourism in the Alpine Space  |
| Climate Change WG   | Working Group on Adaptation to Climate Change   |
| CLISP project       | Climate Change Adaptation by Spatial Planning in the Alpine Space   |
| COP 4               | Fourth Meeting of the Conference of the Parties to the Carpathian Convention                                  |
| COP3                | Third Meeting of the Conference of the Parties to the Carpathian Convention                                   |
| DG ENV              | Directorate General for Environment (European Commission)   |
| EC                  | European Commission   |
| ENPI                | European Neighborhood and Partnership Instrument  |
| EU                  | European Union  |
| EU WFD              | European Union Water Framework Directive  |
| EUSDR               | EU Strategy for the Danube Region   |
| Forest WG           | Carpathian Convention Sustainable Forest Management Working Group   |
| GDP                 | Gross domestic product  |
| ICPDR               | International Commission for the Protection of the Danube River   |
| IPCC                | Intergovernmental Panel on Climate Change   |
| SEA                 | Strategic Environmental Assessment  |
| UNECE               | United Nations Economic Commission for Europe   |
| UNEP                | United Nations Environment Programme  |



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|--------|---|
| UNFCCC | United Nations Framework Convention on Climate Change |
| WG     | Working Group   |