

# **SOUTH EAST EUROPEAN CLIMATE CHANGE FRAMEWORK ACTION PLAN FOR ADAPTATION**

**- Executive Summary and Action Plan -**

**PREPARED BY REPRESENTATIVES AND NOMINATED EXPERTS FROM:  
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**REGIONAL ENVIRONMENTAL CENTRE FOR CENTRAL AND EASTERN EUROPE**

**SEE SUB-REGIONAL VIRTUAL CLIMATE CHANGE CENTRE HOSTED BY REPUBLIC  
HYDROMETEOROLOGICAL SERVICE OF SERBIA**

**THE DEVELOPMENT OF SOUTH EAST EUROPEAN CLIMATE CHANGE FRAMEWORK  
ACTION PLAN FOR ADAPTATION WAS FINANCIALLY SUPPORTED BY THE ROYAL  
MINISTRY OF FOREIGN AFFAIRS OF NORWAY**

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## **Executive summary**

1. The present document contains the sub-regional South-East European Climate Change Framework Action Plan for Adaptation (SEE/CCFAP-A) and represents the outcome of a joint effort of interested South East European (SEE) countries in creating a common platform for sub-regional cooperation in climate change. The SEE/CCFAP-A was developed with financial support of the Royal Ministry of Foreign Affairs of Norway within the Regional Environmental Reconstruction Programme for South Eastern Europe.
2. The purpose of the SEE/CCFAP-A is to ensure that the SEE population build their resilience capacity to the risks and impacts of climate change through implementing adaptation actions; improving understanding of climate change and its effects; education and awareness raising; improving decision making and good governance; developing and strengthening partnership and cooperation; and to support the SEE Countries in implementation of Article 5 and Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC) and its Framework for Capacity Building and the Nairobi Programme of Work on Impacts, Vulnerability and Adaptation.
3. The objectives are: to understand the main characteristics of climate variability and hazards in SEE region; to understand existing programmes/projects and institutional arrangements for addressing climate change; to identify adaptation activities to climate hazards and climate change. The SEE/CCFAP-A will establish a framework for current and future regional project initiatives in terms of adaptation to the impacts of climate change. It will be revised and updated to reflect changes in climate sciences and in economic conditions in the SEE countries and emerging technologies. By taking action to address climate change, the SEE Governments will be taking action towards the development of a more sustainable society and economy.
4. The SEE/CCFAP-A was drafted as a result of a comprehensive consultation process involving a broad range of important governmental stakeholders from the SEE region based on various official documents and relevant literature (IPCC published refereed reports, UNFCCC decisions, EU-refereed electronic publications, as well as the inputs coming from SEE countries).
5. The development of SEE/CCFAP-A follows the first recommendation within the so-called Belgrade Initiative for enhancement of the sub-regional cooperation in the field of climate change. The Initiative as a result of the SEE Ministerial consultation process was adopted by the Sixth Ministerial UNECE Conference “Environment for Europe” held in Belgrade in October 2007, see document ECE/BELGRADE.CONF/2007/20.
6. Under the Belgrade initiative, the Ministers agreed: (i) that the interested countries of the SEE should strengthen their political support for the implementation of the SEE/CCFAP-A (ii) that the interested countries shall support the SEE pilot project aimed at setting up functions of the Sub-Regional Virtual Climate Change Centre hosted by Republic Hydrometeorological Service of Serbia which will contribute to coordination implementation of the SEE/CCFAP-A; (iii) that in order to develop and implement the SEE/CCFAP-A programmes, countries of the SEE shall establish partnerships with relevant international organizations; (iv) to invite countries of the SEE, international organizations, financing institutions, donors, and other stakeholders to join this open-ended initiative and to be involved fully, sharing their experience and providing much needed support for sub-regional climate change activities.

7. Ministers of SEE took full advantage of the Environment for Europe process to establish SEE Sub-regional, Virtual Climate Change related Centre for Research and Systematic Observation, Education, Training, Public Awareness, and Capacity Building (SEE/VCCC) hosted by Republic Hydrometeorological Service of Serbia. SEE/VCCC is a network of national institutions of participating countries (ministries, hydrometeorological services, scientific institutions, NGOs, and other stakeholders).

8. As the latest Assessment Report of the UN Intergovernmental Panel on Climate Change (IPCC) shows, the projections of global climate changes made for various scenarios of anthropogenic emissions of greenhouse gases indicate that the average global warming of the surface atmosphere at the end of 21 century, in comparison with the year 2000, will range from 1.8°C to 4.0°C. It is expected that such a rise in the mean annual temperature in Europe will be higher than the increase at the global level (in the European continent, the rise of the mean annual temperature will be between 2.2°C to 5.1°C until the end of the 21<sup>st</sup> Century).

9. In addition to changes in the mean values of climate parameters, changes in the frequency and intensity of climate extremes (storms accompanied with floods and destructive effects of wind, drought, extremely high or low air temperatures, heat waves, snow storms, avalanches, landslides, forest fires, etc.) have been projected for South Eastern Europe. As a consequence of such negative effects on food and energy production, water supply, biological diversification, hydropower potential, summer tourism, crop productivity and human health, the IPCC Fourth Assessment report recognized the region of Southern Europe as highly vulnerable to climate change.

10. Increasing vulnerability to climate change and other natural disasters in the countries of South-Eastern Europe, necessitated further strengthening of the regional and international technical and scientific cooperation in providing more successful climate change monitoring and forecasting, as well as assessment of climate change impacts on the human health, economic activities, availability of water and other natural resources, and the need for timely problem identification and adoption of measures and strategies to adapt to the changed climate conditions.

11. All SEE countries are in process of preparation for full EU membership. Standards of living, unemployment rates, and relatively modest economic growth rates are the central economic problems. One of the key challenges is the implementation and acceleration of economic reforms and ensuring a balanced economic development; closely related are challenges of improving living standards and reducing poverty. Integration of climate change issues into development policies will represent a special challenge. Raising the awareness and capacity building for the inclusion of the concept of climate change into the sustainable development strategies is of utmost importance.

12. The SEE/CCFAP-A will complement existing SEE countries' policy objectives and commitments to sustainable development. SEE/CCFAP-A will establish a framework for current and future regional project initiatives in terms of adaptation to the impacts of climate change. SEE/CCFAP-A is intended to be a "living document". It will be revised and updated to reflect changes in climate sciences and in economic conditions in the SEE countries, including emerging technologies. By taking action to address climate change, the SEE Governments will be taking action towards the development of a more sustainable society and economy.

13. **Timeline.** The SEE/CCFAP-A runs from 2009 – 2015 and is consistent with the timeframes of the *Millennium Declaration, the Johannesburg Plan of Implementation* and subsequent work of the UN Commission on Sustainable Development, the “Hyogo Framework for Action 2005 – 2015: Building the Resilience of Nations and Communities to Disasters”; as well as the EU Green Paper on adaptation, Water Initiative, etc. The Framework Action Plan will be subject to a mid-term review in 2012 to determine the overall progress and to identify emerging gaps requiring priority action and adjustment of priorities in the future.

14. The SEE/CCFAP-A covers different sectors and areas of activity. The first three chapters are dedicated to general issues such as purpose and methodology for drafting the plan, vulnerability and adaptation circumstances of SEE countries, timeline of SEE/CCFAP-A, objectives and expected results and the present status of climate change policy frameworks in the field of adaptation.

15. **Chapter 4 of the SEE/CCFAP-A** reflects the conclusions and actions identified within the SEE Disaster Reduction Management Initiative (SEE DRMI) by UN International Strategy for Disaster Reduction (UN/ISDR) and World Meteorological Organization Regional Association VI (Europe) Strategic Plan. In this Chapter continues update of SEE climate change perspective is given together with identified actions and needs taken from other initiatives (SEEDRMI, WMO RA-VI Action Plan). It comprises (i) Climate Observations, Monitoring and Forecasting in SEE; (ii) Climate Modeling and Scenarios in SEE; (iii) Reduction of Climate Related Risks in SEE; and (iv) Socio Economic Information on Climate Impacts in SEE. The UNFCCC has recognized the importance of research and systematic observation to reduce uncertainties regarding the effects of climate change and impacts and responses to it. As part of this recognition, the Conference of the Parties to the UNFCCC invited the Global Climate Observing System (GCOS) to identify the priority capacity-building needs and identify gaps in regional systematic observation (FCCC/SBSTA/2006). Regional GCOS action plans for eastern and central Europe and for the Mediterranean Basin were developed, which highlighted the need for a better knowledge base, better forecasting and climate services, and the need to improve observations at all levels in order to enhance the ability of countries to adapt. In addition, early warning and risk management systems are recognized as efficient contributors that can facilitate adaptation to climate variability and change.

16. The list of identified actions and needs taken from other initiatives (SEEDRMI, WMO RA-VI Action Plan) has to be continuously updated. It is presented in Table 1, Action Plan Part A

17. **Chapter 5 of the SEE/CCFAP-A** consists of programmes for adaptation and defines proposed actions and needs in different sub-regional programs. These focus on the following sectors: (i) public health, safety and emergency preparedness; (ii) water resources management; (iii) agriculture and forestry; (iv) land use, buildings and transportation; (v) tourism; (vi) coastal zones; (vii) biodiversity and ecosystems; and (viii) energy.

18. The proposed actions and needs in eight sub-regional programs corresponding to different strategic foci are given in Table 2, Action Plan Part B. They are public health, water management, agriculture and forestry, land use, buildings and transportation, tourism, coastal zones, biodiversity and ecosystems and energy.

19. **Chapter 6 of the SEE/CCFAP-A** contains the important cross-cutting issues which are relevant to actions related to continuous climate change update in SEE and for all sub-regional programs from Chapter 5. These common cross-cutting activities comprise: SEE cooperation in adaptation; capacity building in SEE; education, training and public awareness in SEE; creating a roster of experts in SEE; and building partnerships in climate change. Priority actions are presented in Table 3, Action Plan Part C. In **Chapter 7** implementation modalities for SEE/CCFAP-A are given.

20. Establishment of a sub-regional **roster of SEE experts** is important for increasing capacity to successfully deal with climate change issues in SEE region, see Annex 2 of SEE/CCFAP-A. Roster of experts will serve as the main source of knowledge for development and implementation of programmes and projects under the SEE/CCFAP-A and its monitoring. Currently proposed list of experts from Albania, Bosnia and Herzegovina, The Former Yugoslav Republic of Macedonia, Montenegro and Serbia is presented in the open list of the experts from SEE region in Annex 2 to the SEE/CCFAP-A. Under the SEE Roster of experts development of a directory of organizations and individuals is envisaged (with an indication of their experience and expertise relevant to Articles 5 and 6, Framework for Capacity Building and Nairobi Work Programme on Impacts, Vulnerability and Adaptation, with a view to building active networks involved in the implementation of CCFAP activities). In addition, list of countries institutions and experts contributing to development of the SEE-CCFAP-A is presented in Annex 4.

21. **Funding** is of vital importance for the planning and implementation of adaptation plans and projects. A basic conclusion of the Stern Review was that the costs of strong and urgent action on climate change would be less than the thereby avoided costs of the impacts of climate change under business as usual. All countries, rich and poor, need to adapt to climate change, and this will be costly. Developing countries, already the hardest hit by climate change, have little capacity (both in terms of human capacity and financial resources) to adapt. Research to date indicates that climate change may have a major effect on SEE countries' water resources, agriculture, forestry, coastal management, tourism, energy, land use, buildings, transportation, natural ecosystems, and human health.

22. The possible sources of funding for implementing Climate Change Framework Action Plan for Adaptation in the SEE region (SEE/CCFAP-A) are but not limited to: UNFCCC/GEF including Strategic Priorities for Adaptation (SPA) to which the region is eligible and the Adaptation Fund under the Kyoto Protocol. In addition to that there are other funds set up recently by the UNDP, UNEP, WB, FAO, UNESCO, EU (Instrument for Pre-Accession Assistance – IPA, Seventh EU Framework Programme – FP7), WMO Programme for Technical Cooperation, SEE Initiative for Disaster Reduction and Adaptation through World Bank, and bilateral financial and technical assistance (ODA) funds. Other opportunities such as Multilateral Environmental Agreements (MEAs), the areas of work of which could be synergetic with adaptation, may also provide further funding for adaptation. These MEAs include the Convention on Biological Diversity, the UN Convention to Combat Desertification and Drought and the Ramsar Convention on Wetlands. Other Specific Assistance of cooperative projects include Project-type Technical Cooperation, Climate Technology Initiative (CTI), different bilateral programmes of technical assistance, SEE countries national funds and private foundations, as well as in-kind contribution from participating SEE countries. The Republic of Serbia through the Republic Hydrometeorological Service of Serbia, as a government authority hosting the

SEE/VCCC contributes in-kind to the virtual Centre with its personnel, communications, computer and technical infrastructure resources, including the premises with the necessary office equipment.

23. Resilience to climate change impacts will require a high degree of coordination among states, national and local authorities, business leaders, and residents. In some areas of regional vulnerability, such as water management, agriculture, forestry, coastal zones, biodiversity, energy, infrastructure, tourism, health, the need for coordination is especially high. The goals and actions in this plan thus simply represent SEE actions in context of these necessary cooperation and partnerships.

24. The **overall coordination** of the SEE/CCFAP-A will be done by an ad-hoc working group comprising representatives and nominated experts from the interested SEE countries. REC and SEEVCCC will provide secretariat and technical support to this group. The SEEVCCC expressed interest to perform variety of other tasks related to maintaining the web site, fundraising, draft correspondence, reports preparation, news releases, brochures, fact sheets, expert opinions *etc.*

25. The coordination of the specific work under Chapter 4 “Continuous update of SEE climate change perspective“ will be done by SEE/VCCC. The projects and activities under Chapter 5 “Development and implementation of programmes for adaptation“ will be directed by different interested countries. During the SEE/CCFAP-A preparatory process countries expressed preliminary views on the leadership. Republic of Albania expressed intention to coordinate sub-regional projects and activities in the field of adaptation in hydropower sector which has a mitigation potential as well. Albanian Vulnerability and Adaptation experts performed in depth studies in this field. Bosnia and Herzegovina expressed intention to coordinate sub-regional projects and activities in the field of adaptation in energy and in agriculture sector. The Former Yugoslav Republic of Macedonia expressed intention for coordination sub-regional projects and activities in the field of adaptation in water management and agriculture sectors. Montenegro expressed intention to coordinate sub-regional projects and activities in the field of adaptation in tourism and coastal zones. Republic of Serbia expressed intention to coordinate the sub-regional projects and activities in the field of adaptation in water management, forestry, agriculture, public health, land use, biodiversity and buildings. The REC in cooperation with the SEE/VCCC expressed interest to coordinate projects and activities under SEE/CCFAP-A Chapter 6 “Cross-cutting issues”.

26. Montenegro is also interested to support the establishment of the Balkans Regional Climate Change Forum (BR CCF) for political and policy dialogue to facilitate the coordination of the activities on adaptation and mitigation in the region. This Forum should be used by the UNFCCC focal points and the informal Open Balkan Group to get endorsement from the Ministers for joint regional action in the global climate change process as well as for better understanding of policies they need to develop and implement with involvement of other ministries (energy, economy, agriculture, *etc.*).

27. Expression of interest for coordination of implementation by different interested countries should be based on national priorities set in national strategic and planning documents and existing legal, institutional and technical capacities. Official letter of interest by the Minister of Environment should follow proposed programmes, projects and/or activities, based on previous

support by relevant involved beneficiary/ies. In case of research programs link with the Governmental institutions can be achieved through the inclusion of respected ministries or other governmental institutions as a program/project partner. Keeping informed the ministry responsible for climate change is of crucial importance for maintaining proper national project base on climate change adaptation activities in the country.

28. Additional effort will be invested in presenting and disseminating the SEE/CCFAP-A and information on its findings and activities to the respective governmental SEE institutions and agencies and interested environmental stakeholders.

29. The SEE-CCFAP-A and its different programmes for adaptation will assure faster and better cooperation and exchange of information between the experts and countries in the region. In addition, SEE cooperation in adaptation will contribute to capacity building and public awareness in all countries of SEE. At the same time, cooperation will accelerate the development and implementation of cost-effective adaptation measures in the participating countries, as well as in the region as a whole.

30. Ministers of South-Eastern Europe recognized the importance of adaptation to climate change for sustainable development and poverty eradication in SEE region and the significance that integration of climate change considerations into the development of key economic sectors may have for the protection of the environment.

The SEE/CCFAP-A is a practical and specific regional response of the SEE countries towards achieving concrete results in the field of adaptation to climate change. Further support may be provided to the region by interested countries and by the international donor community, as appropriate.

The SEE/CCFAP-A provides an identification of initial climate change actions that could be implemented, cost-effectively, and could serve as a foundation for building widespread support for additional long-term actions. Countries find SEE-CCFAP-A as a basic document for future regional cooperation as it lays ground for urgent measures and clarifies the support needed.

**SOUTH EAST EUROPEAN CLIMATE CHANGE FRAMEWORK  
ACTION PLAN FOR ADAPTATION**

**- Action Plan -**

**Table 1:** Summary of necessary needs and actions identified within other initiatives (SEEDRMI, WMO RA-VI Strategic Plan) for the Continuous update of SEE climate change (Part A: relevant to the SEE/CCFAP-A, Chapter 4):

**A1. CLIMATE OBSERVATIONS, MONITORING AND FORECASTING IN SEE**

<p><b>A.1.1. Promotion of the implementation of systematic observation, focusing on issues relating to impacts, vulnerability and improvement of SEE sub regional data exchange:</b></p>	<p>Facilitate the implementation of a Regional project for the modernization of National Meteorological and Hydrological Services of all western Balkan countries (WMO/WB/ISDR SE European NMHS);</p>
	<p>Facilitate the implementation of projects listed in GCOS Regional Action Plans for central and eastern Europe and for the Mediterranean Basin;</p>
	<p>Facilitate assistance for the maintenance of meteorological equipment to ensure ongoing reliable data at the national level;</p>
	<p>Provide routine climate analysis and monitoring products of temperature and precipitation for the SEE region; production of special sub-regional climate analysis and monitoring products focused on snow cover, drought, and severe weather and climate events in SEE.</p>
	<p>Create systematic archives of climate extremes in the SEE region (extreme air temperature, heat waves, intense rainfall and floods, persistent drought conditions, intense snowstorms, extreme seasonal snow accumulations and rapid melt events, severe thunderstorm conditions and associated lightning, hail, intense short duration rainfall, damaging winds, freezing rain, forest fires, <i>etc.</i>).</p>
<p><b>A.1.2. Improvement of the quality and database management of climate data and climate prediction products and promotion of data exchange between the SEE countries:</b></p>	<p>Compile historical hydrological data on water levels, sediment transport and flow regime, including extremes for all international water bodies (rivers and lakes) in the region.</p>
	<p>Provide interpretation and assessment of seasonal forecasting (three-month and six-month) products from global prediction models focusing on the SEE region;</p>
	<p>Routinely generate and distribute user-tailored products to meet NMHSs needs (one-month forecast, <i>etc.</i>, statistically downscaled point-wise probabilistic prediction products, for both precipitation and temperature, at some major points in SEE); publishing a regular sub-regional climate outlook;</p>
	<p>Undertake product verification (in accordance with WMO guidelines) and the necessary exchange of basic data, including both hind cast and observation data for verification;</p>
	<p>Develop a sub-regional SEE climate alert system with the objective to support the introduction of climate information and predictions into early warning and disaster prevention systems (various climate indices forecast: UV index, heat index and heat wave early warning system, forest fire index, drought and flood indices, <i>etc.</i>); Encourage greater exchange, harmonisation and integration of early warnings for weather and water hazards, climate extremes and disasters; Promote integration into the national preparedness systems.</p>
	<p>Develop the capacity to produce climate forecasts through development of human resources, training activities, education and training fellowships organized by the Sub-regional Climate Change Centre in cooperation with the WMO and partner national and international institutions (group training courses for staff of the SEE NMHSs; programme of special assistance on cooperation and exchange of seasonal-inter annual forecast methods between the NMHSs, international conferences and seminars);</p>
	<p>Improve the capability of the database service on (meta) data management and provide the public with climate monitoring analysis and prediction products through Internet Web sites.</p>
<p><b>A.1.3. Enhancement the capacity to supply/use the data - regional and national impact assessments + exchange of info on observed reg impacts + outreach activities:</b></p>	<p>Promote free and unrestricted use and access to data for agreed purposes in the context of WMO Resolutions 25 and 40; Develop a regional climate data policy for access and distribution of climate data.</p>
	<p>Provide capacity building workshops on the use of data and scenarios for climate impact and other related research in cooperation with IPCC;</p>
	<p>Assist end users in specifying their needs and requirements for climate data and products, including organization of workshops and other forums on the needs of users in cooperation with WMO, IPCC, <i>etc.</i> (SEE Regional Climate Outlook Forum).</p>
	<p>Improve climate information explanation during sub-regional workshops on products dissemination and strengthen coordination and cooperation with the NMHSs in the SEE region.</p>

## A.2. CLIMATE MODELLING AND SCENARIOS IN SEE

<p><b>A.2.1. Identify gaps in the development of regional and sub-regional climate scenarios, including the necessity for, and availability and applicability of climate models:</b></p>	<p>Develop climate change scenarios using climate models, especially those that provide subregional and regional specificities, such as the regional climate models PRECIS, ClimEta, <i>etc.</i>, including data downscaled from general circulation models.</p>
<p><b>A.2.2. Identify practical opportunities to improve access to, and use of outputs of different models, including training opportunities:</b></p>	<p>Enhance capacity and experience in the use of the different models, statistical approaches and outputs through development of human resources, planned training activities, education and training fellowships (one of the planned projects is the GCOS Project No.10. Capacity Building in Regional Downscaling and Modelling – A Proposal for an International Workshop – fundraising negotiations are in the final phase);</p> <p>Encourage and enhance participation of experts from the SEE region in scientific assessment under IPCC and research under WMO, EU/FP7 programmes.</p>
<p><b>A.2.3. Improve the availability and applicability of climate change modelling and downscaling data for use by policy makers at all levels:</b></p>	<p>Provide data archiving and improved accessibility to information on climate model output and climate change scenarios for the SEE region considering the user needs at all levels;</p> <p>Promote the use of climate model outputs in simulating the response of water resources(ground and surface water regime) in the SEE region to possible climate change scenarios;</p> <p>Promote the use of GIS (Geographic Information System) technology.</p>

### A.3. REDUCTION OF CLIMATE RELATED RISKS IN SEE

<p><b>A.3.1. Improvement of knowledge of biophysical and socio-economic changes in human systems that would affect the ability to cope with the future climate:</b></p>	<p>Enhance capacity to understand, assess and predict, current and future climate variability, trends in long-term climate change, occurrence and scale of extreme events and their impacts through development of human resources, planned training activities, education and training fellowships;</p> <p>Assist in the adoption, calibration and validation of impact models for agriculture, water resources, biodiversity and coastal zones, which can be used to assess the impacts of climate change;</p> <p>Provide investigations of weather and water hazards, climate extremes and disasters in the SEE region, including economic evaluations of damage.</p>
<p><b>A.3.2. Enhancement of the capacity to assess climate related risks through vulnerability-based and natural hazards-based assessments:</b></p>	<p>Enhance capacity to assess climate related risks through vulnerability-based assessments, development of human resources, planned training activities, education and training fellowships;</p> <p>Enhance capacity to assess climate related risks through natural hazard-based assessments, through development of human resources, planned training activities, education and training fellowships;</p>
<p><b>A.3.3. Exchange and use of information on analyses and experience in climate risk assessment and management:</b></p>	<p>Enhance capacity in climate risk assessment and management through planned training activities, international seminars and conferences;</p> <p>Production of climate change risk maps.</p>
<p><b>A.3.4. Promotion of the use of tools and systems for these purposes.</b></p>	<p>Enhance capacity to use tools and systems for climate risk assessment and management through planned training activities.</p>

### A.4. SOCIO ECONOMIC INFORMATION ON CLIMATE IMPACTS IN SEE

<p><b>A.4.1. Identification of the existing approaches and available data, needs, gaps, barriers and constraints, ways and means of improving the availability of, and access to, relevant socio-economic information and its integration into impact and vulnerability assessments:</b></p>	<p>Enhance capacity to use tools and systems for the development of socio-economic scenarios and their integration into impact and vulnerability assessments through planned training activities;</p> <p>Provide data archiving and improved accessibility to information on socio-economic scenarios and other relevant information.</p>
<p><b>A.4.2. Enhancement of capacity to understand the importance of socio-economic aspects of climate change, and integration of this information into impacts and vulnerability studies:</b></p>	<p>Enhance capacity to understand the importance of socio-economic aspects of climate change, through development of human resources, planned training activities, education and training fellowships.</p>

**Table 2:** Summary of proposed needs and actions in relevant climate change sub-programmes for adaptation (Part B: relevant to SEE/CCFAP-A, Chapter 5):

SUBREGIONAL PROGRAMME / STRATEGIC FOCUS	Needs for information exchange and technology transfer	Needs for additional research work	Specific needs
<p><b>B.1. Climate Change and Public Health, Safety and Emergency Preparedness</b></p>	<p><b>B.1.1:</b></p> <ul style="list-style-type: none"> <li>• improving current information on the health impacts of weather and climate extremes;</li> <li>• perform regular health monitoring, establish emergency alert systems and data sharing. There should be health surveillance monitoring in extreme cases of weather, <i>e.g.</i> to observe the possible effects of hot dry summers or flooding on human health;</li> <li>• facilitate the sharing of data and lessons learnt, <i>e.g.</i> awareness raising with examples of the best and good practices;</li> <li>• help addressing climate change issues in health adaptation into health and non-health policy areas (water, building, <i>etc.</i>);</li> <li>• Incorporate climate change adaptation measures in National Environmental Health Action Plans;</li> <li>• Incorporate climate change adaptation measures in National Action plans on environment and children's health;</li> <li>• Improve access to information for stakeholders and the public.</li> </ul>	<p><b>B.1.2:</b></p> <ul style="list-style-type: none"> <li>• impact assessment (effects on health of temperature increase, air pollution, probabilities of future risks from flooding, infectious diseases, <i>etc.</i>);</li> <li>• adaptation assessment (surveillance and monitoring of pathogens, epidemiological studies on exposure and relative risks, risk and (cost benefit modelling, <i>etc.</i>);</li> <li>• mapping of vector-borne diseases at the sub-regional level, produce risk maps to aid direct activities in those of potential risk areas.</li> </ul>	<p><b>B.1.3:</b></p> <ul style="list-style-type: none"> <li>• Establishment of national Early Warning Systems for notification of harmful effects of weather variables to human health;</li> <li>• Strengthening of capacities on the national and local level (education, awareness raising and the creation of legal frameworks, institutions and an environment that enables people to take well-informed decisions for the long-term benefit of their society).</li> </ul>

<p><b>B.2. Climate Change and Water Resources Management, Freshwater Quantity and Quality and Water Supply</b></p>	<p><b>B.2. 1:</b></p> <ul style="list-style-type: none"> <li>• Share the information and research outputs within sub-regional countries (current climate trends and extremes and their impacts in Water Resources Management, Freshwater Quantity and Quality, and Water Supply, cost benefit analyses and cross-sector studies - if any);</li> <li>• Share the lesson of learnt for the connections between water issues and land-use planning, in particular in relation to flood risk management.</li> </ul>	<p><b>B.2.2:</b></p> <ul style="list-style-type: none"> <li>• Establish a high-quality climate and hydrological database, archival and reference data sets;</li> <li>• Employ unified methods of data quality control, analyses of historical data for climate change detection studies, trend analyses, model development/validation;</li> <li>• Research on the assessment of anthropogenic influences to hydrological changes;</li> <li>• Assessment of climate-induced changes in the hydrological cycle and cost-benefit analyses of adaptation options (this requires major research advances in the fields of climatology, hydrology, land use planning, socio-economy and multi-objective decision-making under uncertainty);</li> <li>• Development of a methodology for ground water vulnerability assessment;</li> <li>• Employment of high resolution models for climate change projections;</li> <li>• Simulation of Water Balance under Climate Change Conditions</li> <li>• Development of methodologies to evaluate the efficiency of measures for flood and drought management;</li> <li>• Research on improved design standards for each domain of intervention (irrigation, water supply, flood and droughts, erosion and sedimentation, water resources management, monitoring and water quality)</li> <li>• Flooding and erosion risk mapping.</li> </ul>	<p><b>B.2.3:</b></p> <ul style="list-style-type: none"> <li>• Development of a database of extremes (droughts and floods) and Establishment of an Early Warning System for floods and droughts;</li> <li>• Incorporate climate change adaptation measures in relevant national strategic and planning documents;</li> <li>• Training and equipment for national/local water management organizations and operators;</li> <li>• Modernization/construction of irrigation systems in drought prone areas;</li> <li>• Refurbishment of the existing and construction of new flood protection and drainage systems;</li> <li>• Enlargement and modernization of the existing network of meteorological and hydrological stations, including ground water monitoring system (quality and quantity);</li> <li>• improvement of national insurance schemes against flood and drought damage.</li> <li>• Strengthening of the capacities of the National Hydrometeorological Services, particularly their observation networks, telecommunications, processing, forecasting and early warning systems.</li> </ul>
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<p><b>B.3. Climate Change and Agriculture and Forestry</b></p>	<p><b>B.3.1:</b></p> <ul style="list-style-type: none"> <li>• dissemination of information already available on the coping of agriculture and forestry with current climatic variability;</li> <li>• dissemination of information already available on vulnerability from extreme events and their cost evaluation, and "no regret" measures;</li> <li>• organization of awareness and information campaigns, training programmes for decision-makers and potential users, farmers and foresters, on the environmental and socio-economic implications of climate change, <i>etc.</i>;</li> <li>• Training of institutions and farmers for adopting the best available practices for climate change adaptation.</li> </ul>	<p><b>B.3.2:</b></p> <ul style="list-style-type: none"> <li>• Research on the impact of climate change on planting dates and cultivars;</li> <li>• Research on the impact of climate change on crop and forest yield, pests and diseases;</li> <li>• Research on the impact of climate change on effects of extreme events such as forest fires on agriculture and forestry directly and on the market for agricultural and forestry products, <i>etc.</i>;</li> <li>• Development of a database of droughts and forest fire and risk mapping;</li> <li>• Identification and development of adaptation measures and techniques to combat negative effects of climate the change on agricultural production and forestry.</li> </ul>	<p><b>B.3.3:</b></p> <ul style="list-style-type: none"> <li>• Construction/upgrade of the monitoring /warning systems to survey fires, insects, diseases and other disturbances in forestry/agriculture.</li> <li>• development of monitoring tools for drought sensitivity and other indicators of vulnerability to climate change impacts;</li> <li>• Incorporate climate change adaptation measures in national agricultural and forestry strategic development documents;</li> <li>• Development of adaptation programmes on climate change in the forestry sector;</li> <li>• Enlargement and modernization of the existing network of meteorological/agro meteorological stations and drought and establishment of a forest fire early warning system;</li> <li>• Preparation of basic regional maps in GIS format (soil, vegetation, erosion, drought and forest fire risk map, <i>etc.</i>).</li> </ul>
<p><b>B.4. Climate Change and Land Use, Buildings and Transportation</b></p>	<p><b>B.4.1:</b></p> <ul style="list-style-type: none"> <li>• Dissemination of information already available on coping with Land Use, Buildings and Transportation with current climatic variability;</li> <li>• Organization of awareness and information campaigns, training programmes for support both for policy-makers in the spatial development sphere and planners in particular, on the environmental and socio-economic implications of climate change, requirement for new codes for buildings, <i>etc.</i>;</li> <li>• Raising awareness of the need for protection of cultural resources, such as historic buildings, cultural properties and archaeological sites, from damage caused by climate change impacts, such as flooding, erosion and storm events;</li> </ul>	<p><b>B.4.2:</b></p> <ul style="list-style-type: none"> <li>• Evaluation and planning for the potential impacts of coastal flooding associated with sea level rise;</li> <li>• Evaluation of the land-use changes under climate changes conditions;</li> <li>• Cost calculation of potential adaptation measures and assessment of no action costs;</li> <li>• Improved design standards for buildings;</li> <li>• Incorporation of climate change impacts info into construction, operations and maintenance of infrastructure projects (Road Strategic Plans and Standards, Project Management Manual, Design Procedure Manual, Transportation System Strategy. Plan, Surface Water Design Manual, <i>etc.</i>).</li> </ul>	<p><b>B.4.3:</b></p> <ul style="list-style-type: none"> <li>• Regularly updated risk maps as a planning tool for regional planning work;</li> <li>• Risk and vulnerability assessments for regions;</li> <li>• Incorporation of climate change adaptation measures in Spatial plan;</li> <li>• Incorporation of climate change adaptation measures in physical and urban plans;</li> <li>• Incorporation of climate change adaptation measures in Strategic impact assessment.</li> </ul>

<p><b>B.5. Climate Change and Tourism</b></p>	<p><b>B.5. 1:</b></p> <ul style="list-style-type: none"> <li>• Dissemination of information already available on the coping of Tourism with current climatic variability;</li> <li>• Organization of awareness and information campaigns, training programmes for support both for policy-makers and tourism practitioners, on the environmental and socio-economic implications of climate change;</li> <li>• Introduce education and awareness programmes for all tourism stakeholders – public and private sector – as well as consumers;</li> <li>• Raising awareness of the need for protection of cultural resources, such as historic buildings, cultural properties and archaeological sites, from damage caused by climate change impacts, such as flooding, erosion and storm events.</li> </ul>	<p><b>B.5. 2:</b></p> <ul style="list-style-type: none"> <li>• Evaluation and planning for the potential impacts of coastal flooding associated with sea level rise;</li> <li>• Development of efficiency standards development in the new tourist accommodations, as well as mechanisms for energy conservation;</li> <li>• Development of regional and local climate information services tailored to the tourism sector and promote their use among tourism stakeholders. Build capacities for interpretation and application of this information;</li> <li>• Assessment of the suitability of the SEE climate for tourism in 2020, 2050, 2080, based on existing models and scenarios.</li> </ul>	
<p><b>B.6. Climate Change and Coastal Zones</b></p>	<p><b>B.6. 1:</b></p> <ul style="list-style-type: none"> <li>• Sharing of information, knowledge, experience and best practices on adaptation measures in coastal zones;</li> <li>• Dissemination of information already available on the coping of the development of coastal zones with current climatic variability;</li> <li>• Organization of awareness and information campaigns, training programmes for the support of policy-makers and the public on the environmental and socio-economic implications of climate change to coastal areas;</li> <li>• Raising awareness of the need for protection of coastal areas from damage caused by climate change impacts, such as flooding, erosion and storm events.</li> </ul>	<p><b>B.6. 2:</b></p> <ul style="list-style-type: none"> <li>• Evaluation and planning for the potential impacts of coastal flooding associated with sea level rise;</li> <li>• Evaluation of the impacts of sea level rise in ground water and water availability;</li> <li>• Evaluation of the impacts of climate change on fisheries, as well as other marine species;</li> <li>• Development and transfer of adaptation technologies.</li> </ul>	<p><b>B.6. 3:</b></p> <ul style="list-style-type: none"> <li>• Construction/upgrade the monitoring/warning systems to survey vulnerabilities in coastal areas;</li> <li>• Integrated impact scenarios for coastal areas;</li> <li>• Improvement of early warning and response systems.</li> </ul>

<p><b>B.7. Climate Change and Biodiversity and Ecosystems</b></p>	<p><b>B.7. 1:</b></p> <ul style="list-style-type: none"> <li>• Share experience in addressing the impacts of climate change on biodiversity and for the development of strategies for adaptation to increase resilience and build accommodation for biodiversity under climate change;</li> <li>• Dissemination of information already available on the coping of biodiversity with current climatic variability;</li> <li>• Organization of awareness and information campaigns, training programmes for support for both policy-makers and local communities on the impact of human-induced activities and climate change on biodiversity and ecosystems;</li> <li>• Raising of awareness of the need for protection of biodiversity and ecosystems from damage caused by climate change impacts, such as flooding, erosion and storm events;</li> <li>• Distribution map of the major types of ecosystems, map of biomes and mapping of habitats and types of vegetation for precise inventarisation of biodiversity</li> </ul>	<p><b>B.7. 2:</b></p> <ul style="list-style-type: none"> <li>• Research on the impact of climate change and extreme weather events on species survival;</li> <li>• Research on the impact of climate change on changes in composition and structure habitats, including the expected increase in invasive species and diseases;</li> <li>• Research on the impact of climate change on changes in seasonal timings that will affect the dependencies and reproductive success of species;</li> <li>• Research on the impact of climate change on land use as agriculture, water and forestry on biodiversity;</li> <li>• Development of scientific tools to evaluate the affects of climate change on local fish and wildlife populations and habitats;</li> <li>• Assessment of climate change impacts on SEE Wetland Ecosystems;</li> <li>• Assessment of climate change impacts on SEE Mountain Ecosystems.</li> </ul>	<p><b>B.7. 3:</b></p> <ul style="list-style-type: none"> <li>• Development and update regional climate scenarios and projections;</li> <li>• Enhancement of capacity to use tools and impact assessment models for biodiversity;</li> <li>• Risk and vulnerability assessments for protected areas in the SEE region;</li> <li>• Enlargement and modernization of the existing network for monitoring the status of biodiversity components through monitoring of the phenology of bioindicator species;</li> <li>• Enlargement and modernization of the existing network of mountain meteorological stations with vertical and slope distribution for biodiversity vulnerability assessment.</li> </ul>
<p><b>B.8. Climate Change and Energy</b></p>	<p><b>B.8. 1:</b></p> <ul style="list-style-type: none"> <li>• Dissemination of information already available on the impact of current climatic variability on energy production and consumption (supply and demand side);</li> <li>• Organization of awareness and information campaigns, training programmes for support for both policy- and energy decision makers, as well as users, on the socio-economic implications of climate change;</li> <li>• Raising awareness of the need for using alternative sources for energy production;</li> </ul>	<p><b>B.8. 2:</b></p> <ul style="list-style-type: none"> <li>• Integrated research on climate impact on water resources (precipitation, runoff) and energy production/consumption;</li> <li>• Research on climate change impact on the potential of renewable energy sources (wind, solar energy maps, hydro, geothermal, biofuel, <i>etc.</i>);</li> <li>• Methodology development for evaluation of climate impact on energy production and consumption;</li> </ul>	<p><b>B.8. 3:</b></p> <ul style="list-style-type: none"> <li>• Development and update of high resolution regional climate scenarios and projections;</li> <li>• Unified methodology for the evaluation of climate impact in energy sector, cost benefit analysis and assessment of the costs of no action;• Establishment of capacities to monitor and respond to anticipated climate change impacts at the institutional and community levels;</li> <li>• Incorporation of climate change adaptation measures in national energy strategic and planning documents.</li> </ul>

**Table 3:** Summary of the priorities for action in cross-cutting themes (Part C: relevant to SEE/CCFAP-A, Chapter 6):**C.1. General priorities for actions to support SEE/CCFAP-A implementation:**

1. Joint activities to support revision of the national development strategies taking into consideration climate changes , vulnerabilities and adaptation; Appropriate integration of climate change impacts should be made an obligatory standard requirement in regional development;
2. Joint activities in capacity building and strengthening of meteorological and hydrological monitoring and forecasting systems, both at the country and sub-regional level;
3. Joint activities to increase the capacity for data-collection and data quality, and enhancement of data-sharing between the countries of the SEE sub-region;
4. Joint activities in the development, installation and maintenance of weather/climate/hydro early warning systems in the SEE region as a part of the EU early warning systems;
5. Sub-regional workshops to allow for knowledge dissemination and sharing and to encourage further sub-regional cooperation.
6. Joint activities, through the LEAP process, in the capacity building of the local communities, including the most vulnerable groups in the SEE countries;
7. Outreach activities related promotion of SEE/CCFAP-A.

**Table 3:** cnt'd

### **C.2. General priorities for Capacity building in SEE/CCFAP-A:**

1. Raising climate change to a higher SEE sub-regional level;
2. Enhancement of SEE cooperation in climate change research, development and transfer of technologies, know-how and practices;
3. Building capacities in the SEE region for the UNFCCC negotiation process and specifically for the on-going AWG process. The SEE region has a very delicate and specific status and requires assistance in understanding the process and addressing relevant issues; setting indicators for measuring the capacity building among countries, which is an issue under discussion in the AWG LCA process.
4. The provision of bases for sustainable capacities to deal with climate change in SSE countries;
5. Modernization of the National Hydrometeorological services in the SEE countries;
6. Improvement of the collection, management, exchange, access to and use of observational data and other relevant information on current and historical climate and its impacts to SEE;
7. Development/application of climate models, access to and use of information and data on projected climate change for SEE;
8. Provide capacity building workshops and training programmes on the use of tools and systems for the development of socio-economic scenarios and their integration into impact and vulnerability assessment;
9. Promotion of the understanding of the impacts of climate change and vulnerability to climate change; Enhancement of the capacity to supply and use the data, especially at regional and national levels, and exchange information on the impact of observed climate change;
10. Provide capacity building workshops on adoption, calibration and validation of impact models for agriculture, water resources and biodiversity which can be employed to assess the of climate change impacts;
11. Training of experts in modern technologies for adaptation is also required to overcome the gap in personnel capacities; promotion of the understanding, development and dissemination of information on practical measures, methodologies and tools aimed at increasing economic resilience and reducing reliance on vulnerable economic sectors;
12. Facilitating communication and cooperation among the SEE countries and relevant organizations, business, civil society, decision makers, and other stakeholders;
13. Training and equipment for water management organizations and operators;
14. Training of institutions and farmers for the adoption of the best available practices for adaptation.

**Table 3:** cnt' d**C.3. Education, training and public awareness in SEE/CCFAP-A:**

1. Encourage the integration of climate change into national educational systems:
2. Applying new, sub-regional and bilateral programmes for education and training and other forms of capacity building for the young staff of SEE countries, under the existing international framework and the development of regional partnership proposed with this Initiative (SEE/CCFAP-A).
3. Facilitate, develop and implement regional education and training programmes focused on climate change, targeting youth in particular, and including personnel exchange to train experts;
4. Facilitate, develop and implement regional public awareness programmes on climate change and its effects at the SEE regional and national levels by encouraging contributions and personal action in addressing climate change, supporting climate-friendly policies and fostering behavioural changes, including the use of popular media;
5. Facilitate public access to data and information by providing information on climate change initiatives, policies and results of SEE/CCFAP-A actions that is required by the public and other stakeholders to understand, address and respond to climate change,;
6. Promote public participation in addressing climate change and its effects and in developing adequate responses, by facilitating feedback, debate and partnership in climate change activities and in governance;
7. Perform training for local authorities and communities;
8. Raise awareness among national decision makers and local authorities to integrate adaptation measures to current climate vulnerabilities (caused by extremes) into national development plans;
9. Enhance sub-regional, regional and international cooperation in undertaking activities within the scope of the work programme related to Article 6 of the UNFCCC, and further enhance synergies between Rio conventions and improve the effectiveness of all sustainable development efforts;
10. Develop institutional and technical capacity to identify gaps and requirements for the implementation of Article 6, assess the effectiveness of SEE activities related to Article 6 and consider the linkages between Article 6 activities, implementation of policies and measures to mitigate and adapt to climate change, and other commitments under the Convention, such as technology transfer and capacity-building;
11. Under auspices of the SEE Roster of experts develop a directory of organizations and individuals, with an indication of their experience and expertise relevant to Article 6 activities, with the view of building active networks involved in the implementation of these activities.