

Appendix 1: Project list

project list - updated in January 2012

Project	Project title	Funding	Region	Project aim	Project running period	Prio
CARPATH_B	CARPPIVA project: Carpathian integrated assessment of vulnerability to climate change and ecosystem-based adaptation measures	EU funded	BG, CZ, HR, HU, MD, PL, RO, RS, SK, UA	The objective is to investigate the detailed weather-related and spatial structure of the Carpathians Region with integrated or at least comparable methods. The basic results will be a contribution to regional climate variability and change studies, and applied climatology. In the 2010 allocation, the EC proposed to focus work on the analysis of the vulnerability of water and ecosystems of the region to climate change impacts and other man-made pressures and on identifying potential adaptation measures, focusing on adaptive water management and ecosystem-based approaches. This would provide strong benefits to national and regional authorities of the Carpathian Region, and contribute to concrete policy proposals in line with the Commission White Paper on Adapting to Climate Change, such as National or Regional adaptation strategies, or a Danube Climate Adaptation Strategy. The results of this analysis will be strongly interrelated with the work already underway and will also provide a contribution to the forthcoming EU Information System on CC Vulnerability and Adaptation (EU Clearinghouse).	early 2011 to mid 2013 (30 months)	1
CC-WATERS	Climate Change and Impacts on Water Supply	South East Europe Transnational Cooperation Programme	SEE, AT, BG, GR, HR, HU, IT, RO, RS, SI	The main objective of CC-WaterS is to safeguard water availability and safety for a sustainable water supply for citizens in different European regions for several decades under the influence of climate change, provoking land-use changes. Elaborated measures to adapt to those changes build the ground for a Water Supply Management System regarding optimization of water extraction, land use restrictions, and socio-economic consequences under climate change scenarios for water suppliers in SEE. The joint actions to produce this technical system will be performed on a transnational level in the Alps, Danube Middle and Lower Plains and coastal areas representing different SEE-characteristic climates and topography. Work packages: Climate Change, Water Resources Availability, Land Uses and Water Safety, Socio-economic Evaluation, Water Supply Management Measures	1.5.2009 - 30.04.2012	1
CECILIA	Central and Eastern Europe Climate Change Impact and vulnerability Assessment	European Commission 6th Framework Programme	CEE	The main objective is to deliver a climate change impacts and vulnerability assessment in targeted areas of Central and Eastern Europe. Emphasis is given to applications of regional climate modelling studies at a resolution of 10 km for local impact studies in key sectors of the region. The project contains studies of hydrology, water quality, and water management, air quality issues in urban areas (Black Triangle), agriculture and forestry. The high spatial and temporal resolution of dense national observational networks at high temporal resolution and of the CECILIA regional model experiments will uniquely feed into investigations of climate change consequences for weather extremes in the region under study. Comparison with the results based on statistical downscaling techniques will also be provided. Statistical downscaling methods for verification of the regional model results will be developed and applied, and assessments of their use in localization of model output for impact studies will be performed (16 institutions from 12 European countries)	June 2006 - December 2009	1
CLAVIER	Climate Change and Variability: Impact on Central and Eastern Europe	European Commission 6th Framework Programme	CEE, BG, HU, RO	The nations in central and eastern Europe (CEE) face triple challenges of the ongoing economic and political transition, continuing vulnerability to environmental hazards, and longer term impacts of global climate change. The overall aim of the project CLAVIER is to make a contribution to successfully cope with these challenges. Three representative CEE Countries are studied in detail: Hungary, Romania, and Bulgaria. Ongoing and future climate changes are analysed based on existing data and on climate projections with very high detail to fulfill the need of local and regional impact assessment. Linkages between climate change and its impact on weather patterns, air pollution, extreme events, and on water resources are investigated. Furthermore, an evaluation of the economic impact on agriculture, tourism, energy supply and the public sector is conducted.	2006 -2009	1
CLIMATEWATER	Climate Water	European Commission 7th Framework Programme	EUROPE	The overall objective of the ClimateWater project is to study European and international adaptation measures and strategies related to climate change impacts and how these are taken into account in water policies. The project will formulate a coherent framework on adaptation strategies of climate change impacts on water resources, water cycling and water uses of the society and nature with special regard to those that water policy has to take into account when considering climate change impacts. The project will bring together scientific and policy experiences on the existing and/or missing links between climate change and water management and will help to identify research needs on climate change impacts on water cycle and resources, develop and apply methodologies for adaptation measures to climate change, develop scenarios of water demand and to potential implementation on water policies.	November 2008 - November 2011	1
CLIMWATADAPT	Climate Adaptation – modelling water scenarios and sectoral impacts	European Commission	EUROPE	The European Commission's White Paper on Adaptation (2009) recognises that adaptation is already happening in Europe, but in a piecemeal manner. This project addresses a number of the strategic issues and knowledge gaps identified in the White Paper. In its whole, the project results represent a series of tools which shall help improve the quality of adaptation measures, the knowledge base, and facilitate the exchange of adaptation best practice between countries and regions. Stakeholder feedback is a key component of this project to ensure that your needs and opinions are adequately reflected; your feedback on the workshop subjects is much appreciated. The project's main result is an Integrated Assessment Framework (IAF), a compilation of datasets and tools which both supports and documents systematic analysis, and which brings together the different project components. This 1st Stakeholder Workshop addresses the following IAF components: a) Scenarios, b) Vulnerability Indicators and c) Inventory of Measures.	2009-2011	1
ECCONET	Effects of climate change on the inland waterway networks	European Commission 7th Framework Programme	UDRB, MDRB	The objective of this project is to gather the expertise of partners from different fields related to meteorology, hydrology, infrastructure operation, transportation and economics in order to assess the effect of climate change on the transport network, taking the inland waterway network as a case-study. Analysis of various effects of climate change on IWT and related sectors. Analysis of adaptation strategies and their impacts as well as development of recommendations and strategic framework for the further development of the IWT model. WP1: Determine the effects of climate change on the inland waterway network by applying recent findings from meteorological and hydrological modeling. WP2: Determine and assess a broad range of adaptation strategies with relevance to climate change. WP3: Use transport economic modeling to calculate network based effects on critical links, based on the input from WP1 and WP2. WP4: Make a broader analysis of the results from WP2 and WP3 and combine these into a cost-effectiveness study. WP5: Formulate policy advice for a sustainable development of the inland waterway network under climate change conditions.	2010-2012	1
ESPON	Climate Change and Territorial Effects on Regions and Local Economies in Europe	European Union Part-financed by the European Regional Development Fund	EUROPE	This project shall analyse how and to which degree climate change will impact on the competitiveness and cohesion of European regions and Europe as a whole. In addition, it shall investigate in which way policy can contribute to mitigate climate change, and to adapt to and manage those results of climate change that cannot be avoided, while making sure that synergies of mitigation and adaptation policies are being exploited.	March 2009 - April 2011	1
EUROWASSER	Impact of Climate Change on Water Availability and Floods in Germany and Europe	BMBF	EUROPE	The main goal of the EuroWasser study was to estimate the impacts of climate change on water availability, water withdrawals, flood and drought frequencies, as well as hydropower potential in Germany and Europe. The integrated assessment combined physical with policy-relevant factors and utilized existing data and models. In particular the WaterGAP model was applied which allows, in a unique way, to calculate both water availability and water withdrawals on a grid-, watershed-, and country-scale. The project aimed to produce approximate but consistent results for the whole of Europe in order to identify those river basins which show critical indications regarding their future development of water resources and hydrology.	March 1999 - February 2001	1

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EU-WATERUSE	European Outlook on Water Use; Outlook on Water Use in Europe	South East Europe Transnational Cooperation Programme	EUROPE	This study was prepared on behalf of the European Environment Agency (EEA) as a contribution to the next State of the Environment Outlook Report 2005 (SoEOR2005). The major objective of this work was to produce quantitative estimates of water use in Europe up to 2030 and to assess the impact of climate change and changing water use on future water availability and water stress. This study explored quantitative scenarios of future water use up to 2030 in 30 European countries (the EU plus 5 EEA member countries). Estimates are also presented for future water availability and water stress. Two scenarios were developed – a baseline scenario reflecting a continuation of current trends and a climate policy scenario assuming drastic policies to limit greenhouse gas emissions. The scenarios account for a wide range of driving forces of water use including changing population, economic growth, technological changes, changes in electricity production, transition to new types of power station cooling, structural changes in domestic water use, extent and exploitation of irrigated areas, and climate change.	up to 2005	1
GLOWA-DANUBE	Global Change and the Hydrological Cycle	BMBF	DE, AT, UDRB	Global Climate Change will increasingly have regional impacts on the water resources. In order to facilitate the most effective planning of future investments for decades (e.g. in energy management, farming, tourism, industry), an intensive examination of the regional consequences of Climate Change is necessary. The aim of GLOWA-Danube is to investigate with different scenarios the impact of change in climate, population and land use on the water resources of the Upper Danube and to develop and evaluate regional adaptation strategies. Decision Support System DANUBIA.	2001 - 2010	1
HYDROCARE	Hydrological cycle of the CADSES regions	INTERREG III B CADSES	RO, SK	Development of an integrated view of the water resource management, bridging directly the evaluation of the quality and quantity of the water resources of the CADSES area with soundly based tools able to reconstruct and model the large and basin-scale hydrological cycle. Development of effective, internationally shared tools for public and private institutions for the correct management of the water resources as well as for planning future development of the CADSES area, with particular attention to dynamics of the costs of potable water. Development of set of standards at European level for the collection, evaluation, storage and interpretation of the hydro-meteorological data coming from different sources, with particular regard to extreme events of great potential impact on the welfare of the population and on the state of the environment.	January 2006 - December 2007	1
KLIWA	Klimaveränderung und Konsequenzen für die Wasserwirtschaft	UVM, STMUG	DE	KLIWA is the shortcut for the co-operation project "Climate change and consequences for water management". Special interest is laid on the subjects flood danger and therewith flood protection, water availability and therewith water supply, river protection, development and management. In April 1999, the water agencies of the German federal states Baden-Württemberg and Bavaria as well as the German Weather Service (DWD) have agreed on a joint, long-term co-operation for regional studies on the subject "Climate change and consequences for water management". For this purpose an action plan was initiated.	1999 - 2013	1
SCENES	Water Scenarios for Europe and for Neighbouring States	European Commission 6th Framework Programme	EUROPE	This project develops and analyses a set of comprehensive scenarios of Europe's freshwater futures up to 2025. It covers all of Greater Europe reaching to the Caucasus and Ural Mountains, and including the Mediterranean rim countries of north Africa and the near East. The scenarios provide a reference point for long term strategic planning of European water resource development, alert policymakers and stakeholders about emerging problems, and allow river basin managers to test regional and local water plans against uncertainties and surprises which are inherently imbedded in a longer term strategic planning process. The SCENES project delivers combined qualitative and quantitative scenarios. The qualitative scenarios (storylines) provide an internally consistent picture of how water resources in different parts of Europe may develop up to 2050. The quantitative scenarios, produced by state-of-the-art models, complement the storylines by providing numerical information and by enriching the qualitative scenarios by showing trends and dynamics not apparent in the storylines. The developed global water model WaterGAP provides estimates of water use (for the domestic, manufacturing, electricity production, irrigation and livestock sectors), water availability, and water stress.	2006 - 2011	1
ST_BLOESCHL_AT	Anpassungsstrategien an den Klimawandel für Österreichs Wasserwirtschaft	Austria, Lebensministerium	AT	The aim of this study is to give an overview about recent developments in climate change and water resources in Austria. Thereby lies the main focus on the "natural" development (CC, not man-induced changes). Furthermore adaptation strategies were developed. Topics: Water availability, runoff, low-flow, floods, water temperature, sediments, water quality, groundwater, lakes, hydropower, water supply and demand aspects how to deal with uncertainties: 1) space and time: a) long-term and large-scale (good) to short-term and small-scale (bad); b) information on air-temperature (good) to precipitation (bad); c) extremes (bad), because short term and locally. --> classification of information: hard, middle and weak 2) multi-model/method approach: information from different models, methods 3) adaptation strategies are not based on scenarios rather than the vulnerability of water resources in different Austrian regions.	until 2011	1
ST_CEU	Impacts of and Adaptation to Climate Change in the Danube-Carpathian Region. Overview study commissioned by the WWF Danube-Carpathian Programme	commissioned by the WWF Danube-Carpathian Programme	RO, UA, HU, CZ, SK, RS, BG, HR	Impacts of and Adaptation to Climate Change in the Danube-Carpathian Region mostly in regard to CC & ecosystems and biodiversity	2008	1
ST_IPCC	Climate Change and Water, IPCC Technical Paper VI		EUROPE, WORLD	The Intergovernmental Panel on Climate Change (IPCC) Technical Paper on Climate Change and Water is the sixth paper in the IPCC Technical Paper series and was produced in response to a proposal by the Secretariat of the World Climate Programme - Water (WCP-Water) and the International Steering Committee of the Dialogue on Water and Climate at the 19th Plenary Session of the IPCC which took place in Geneva in April 2002. The Technical Paper addresses the issue of freshwater. Sealevel rise is dealt with only insofar as it can lead to impacts on freshwater in coastal areas and beyond. Climate, freshwater, biophysical and socio-economic systems are interconnected in complex ways. Hence, a change in any one of these can induce a change in any other. Freshwater-related issues are critical in determining key regional and sectoral vulnerabilities. Therefore, the relationship between climate change and freshwater resources is of primary concern to human society and also has implications for all living species.	2008	1
ST_UBA	Impacts of climate change on water resources - adaptation strategies for Europe		EUROPE, DE, HU	The present research study provides a synthesis of scientific evidence on climate change impacts on water resources in Europe. Observed and projected changes at regional level are analysed in detail. Challenges for European societies that result from these changes in water resources are derived, and options for adaptation are compiled in order to provide support to policy-makers in developing adaptation strategies.	2008	1

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WATCAP	Water and Climate Adaptation Plan for the Sava River Basin	World Bank	RS, HR, SI, BA, ME	The project will combine general analysis on the river basin level with more detailed analysis on the investment of the World Bank in the region and the climate change adaptation measures needed. The results of the WATCAP project will be very important for the assessment of Programme of Measures within the development of the Sava River Basin Management Plan and development of the Sava River Basin Flood Risk Management Plan. According to the last findings on climate change, the Sava River Basin is predicted to experience higher temperatures and more severe precipitation events and droughts. These changes will impact water resources management, water supply, hydropower, agriculture, navigation and flood control. Climate impacts will have significant consequences on investments in water systems associated with water services and managing water. There is a concern in the South Eastern Europe that recent growth in economic sectors and livelihoods of the population may be constrained by the climate change impacts. To fill the knowledge gap on the impact of climate change on water sector and to inform decision making sector (e.g. governments and other national authorities) how to increase the climate resilience of the critical water management infrastructure investments and integrated water resource management, the World Bank has initiated the project Water and Climate Adaptation Plan for the Sava River Basin (WATCAP). The hydrological model of the Sava River Basin and a hydraulic model of the Sava River, which are under finalisation, will be used in the WATCAP project.	June 2010 - December 2012	1
VAHAVA	Changes-Impacts-Responses (Változás-Hatás-Válaszadás)	KvVm, MTA	HU	The research project "VAHAVA – Getting Prepared to (combat) Climate Changes in Hungary" was carried out between 2003 and 2006 by the Hungarian Academy of Sciences and the Hungarian Ministry for Environment and Water Management, with participation of researchers based at higher education and research institutions. The objective of this project was to summarise and synthesise knowledge, data and experiences gained in the past decades in the field of climate research and the impact areas of climate change in Hungary. The project also targeted the creation of possible adaptation mechanisms. The results of the project can be useful for broader international community to develop adaptation strategies to climate change.	2003 - 2006	1
WATCH	Water and Global Change	European Commission 6th Framework Programme	WORLD, EUROPE, SK	This Integrated Project Water and Global Change (WATCH) will bring together the hydrological, water resources and climate communities, to analyse, quantify and predict the components of the current and future global water cycles and related water resources states, evaluate their uncertainties and clarify the overall vulnerability of global water resources related to the main societal and economic sectors.	01.02.2007 - 31.07.2011	1
WWF-DCP	WWF Danube Carpathian Programme	WWF	RO, UA, HU, CZ, SK, RS, BG, HR	Since early in 2007, EUROPARC and WWF have worked closely together on this programme which will help ensure that: - the Carpathian protected areas are supported by a network of skilled professional protected area practitioners; - we can achieve an increased participation of key stakeholders in protected-area design, management and benefit sharing; - critical gaps in the protected-area network are filled, with a particular focus on the creation of large intact blocks, freshwater ecosystems, wilderness and trans-boundary protected areas. The main impact of climate change in the Danube-Carpathian region will not be so much rising temperatures as climate anomalies, with increasing frequency and severity of extreme weather events, including both droughts and flooding. Parts of southern Hungary and northern Serbia are likely to experience desertification. Many areas, especially in Bulgaria, could experience severe water shortages. Snow cover and the number of cold days will decrease, with far-reaching consequences not only for the availability of water, but also winter tourism. Ski areas below 1,500 meters – including most ski areas across the region – will be unviable. Within the next decades, over a quarter of the species of flora and fauna in the region will likely face extinction.	since 2007	1
ADAM	Adaption and Mitigation Strategies - supporting European climate policy	European Commission 6th Framework Programme	TRB, HU	ADAM supports the EU in the development of post-2012 global climate policies, the definition of European mitigation policies to reach its 2020 goals, and the emergence of new adaptation policies for Europe with special attention to the role of extreme weather events. The main impact of the ADAM project is to improve the quality and relevance of scientific and stakeholder contributions to the development and evaluation of climate change policy options within the European Commission. This will help the EU to deliver on its current medium-term climate policy objectives and help inform its development of a longer-term climate strategy.	March 2006 - July 2009	2
ADAPTALP	AdaptAlp (Adaptation to Climate Change in the Alpine Space)	INTERREG IV B Alpine Space Programme	ALPINE SPACE	Climate change is to a large extent constituted of increasing temperatures and changed precipitation patterns. Any change of these critical factors has implications on the frequency and extent of natural hazards. The uncertainties and the increase of natural hazards due to the impacts of climate change require concerted management in the Alpine Space. AdaptAlp will improve information on impacts of climate change especially on regional level (e.g. high resolution modeling, design events) and evaluate different methods of risk assessment, hazard mapping and risk management in the Alpine Space. The activities concentrate on the identification of best methods and the transfer of best practice experiences into adaptation measures in model regions. Risk reduction by raising the awareness of local stakeholders is a further issue in AdaptAlp. The know-how generated in AdaptAlp will be synthesised and integrated into practice of technical authorities. Recommendations will be given to policy makers and local stakeholders.	September 2008 - August 2011	2
ALP-WATER-SCARCE	Water Management Strategies against Water Scarcity in the Alps	INTERREG III B Alpine Space Programme	ALPINE SPACE	The main challenges of this project are to create local Early Warning Systems against Water Scarcity in the Alps based on sound and perennial monitoring and modeling and anchored strongly and actively within a Stakeholder Forum linked across comparative and contrasting regions across the Alps. The Early Warning System is based on the linkage and improvement of field monitoring and assemblage of qualitative and quantitative data derived from anthropogenic water use in selected pilot regions in France, Italy, Austria, Slovenia and Switzerland. The aims are to implement water management at the short term (annual) scale as well as the long term (future scenarios) scale based on modeling under climate change and anthropogenic scenarios. Future water shortages should be prognosed and prevented by innovative measures of mitigation and adaptation. Awareness raising and stakeholder interaction will form an important part of problem identification, participation in the project, dissemination of results and implementation of new approaches.	October 2008 - September 2011	2
AQUATERRA	Global Change and Ecosystems Integrated Project: AquaTerra	European Commission 6th Framework Programme	EUROPE, DRB, AT, HU	AquaTerra is an integrated project of the 6th EU RTD Framework Programme that aims to provide the scientific basis for an improved river basin management through a better understanding of the river-sediment-soil-groundwater system as a whole, by integrating both natural and socio-economics aspects at different temporal and spatial scales. AquaTerra's objectives - Among others, AquaTerra aims - to provide better understanding of the river-sediment-soil-groundwater system at various temporal and spatial scales - to provide the scientific basis for improved river basin management - to develop specific tools for water and soil quality monitoring - to develop integrated modelling for impact evaluation of pollution as well as climate and land-use changes for definition of long-term management schemes.	2004 - 2009	2

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C3-ALPS	Capitalising Climate Change Knowledge for Adaptation in the Alpine Space	Interreg IVb, Alpine Space Programme	ALPINE SPACE	C3-Alps is a new & strategic type of capitalisation project that will synthesize, transfer & implement in policy & practice the results of previous & running ASP climate change & adaptation projects. The capitalisation approach aims at a) generating new forms of state-of-the art synthesis adaptation knowledge in the Alps, harmonised across sectors and usable & useful to adaptation decision-makers, b) its effective & tailor-made communication & transfer to target groups, c) enhancing effectiveness of adaptation policy & governance frameworks, and d) initiating, supporting & pioneering tailored & cross-cutting adaptation processes, strategies, action plans & decision support in pilot regions & municipalities. From the beginning, all activities are focused on the information & user needs of target groups. By supporting bottom-up action, C3-Alps will contribute to implementation of national adaptation policies on reg. & municipal levels and to advancement of national adaptation strategies. C3-Alps will deliver an innovative & strategic approach to capitalising existing ASP project results on climate change & adaptation in the Alps.	2012-2015 2011???	2
CLIMCHALP	Climate change, impacts and adaptation strategies in the Alpine Space	INTERREG III B Alpine Space Programme	ALPINE SPACE, AT, FR, DE, IT, FL, SI, CH	A concrete input for a future Alpine Space Program based on alpine climate changes and its potential effects. The aim of the ClimChAlp project was to find ways for the communities in the Alpine Space to cope successfully with the impacts of climate change whilst ensuring sustainable development in the area.	until 2008	2
COST734	Impacts of Climate Change and Variability on European Agriculture - CLIVAGRI EUROPEAN COOPERATION IN THE FIELD OF SCIENTIFIC AND TECHNICAL RESEARCH	EU RTD Framework Programme	EU, AT, BE, BG, HR, CY, CZ, DK, FI, FR, DE, GR, HU, IE, IT, LU, NL, NO, PL, PT, RO, SR, SK, SI, ES, SE, CH, TR, UK	The main objective of the Action is the evaluation of possible impacts from climate change and variability on agriculture and the assessment of critical thresholds for various European areas. This goal will be achieved through the accomplishment of intermediate aims, in order to define the current and future levels of critical thresholds and hazards for agricultural activity and environmental resources. Secondary objectives • The collection and review of existing agroclimatic indices and simulation models to assess hazard impacts on various European agricultural areas • relating hazards to climatic conditions • Building climate scenarios for the next few decades • The definition of harmonised criteria to evaluate the impacts of climatic change and variability on agriculture • The definition of warning systems guidelines	17.11.2006 - 16.11.2010	2
ENVIROGRIDS	Building Capacity for a Black Sea Catchment Observation and Assessment System supporting Sustainable Development	European Commission 7th Framework Programme	DRB, BLACK SEA	The scientific aim of the EnviroGRIDS project is to assemble an observation system of the Black Sea catchment that will address several GEO Societal Benefit Areas within a changing climate framework. This system will incorporate a shared information system that operates on the boundary of scientific/technical partners, stakeholders and the public. It will contain an early warning system able to inform in advance decision-makers and the public about risks to human health, biodiversity and ecosystems integrity, agriculture production or energy supply caused by climatic, demographic and land cover changes on a 50-year time horizon.	April 2009 - March 2013	2
EUROLIMPACS	Evaluating the Impacts of Global Change on European Freshwater Ecosystems	European Commission 6th Framework Programme	EUROPE	The main purpose is to investigate the effects of the future climate changes on European freshwater ecosystems. Euro-limpacs was an EU funded Framework 6 project concerned with the effects of climate change on freshwaters systems (rivers, streams, lakes and wetlands). In particular the Project sought to understand the effects on these vulnerable ecosystems of the interactions between changing climate and other potentially damaging processes caused by changes in the physical characteristics of rivers, nutrient pollution, acidification and the deposition of toxic metals and organic pollutants. Euro-limpacs examined how these multiple effects impact on efforts to manage freshwater ecosystems, in particular the implication for meeting the requirements of legislation such as the Water Framework Directive and Habitats Directive. The Project finished in January 2009 after 5 years. REFRESH builds on the improved scientific understanding generated in Euro-limpacs to enable the successful implementation of adaptation strategies to combat the deleterious effects of climate change on freshwater ecosystems.	Februar 2004 - Januar 2009	2
KLIMAKKT	KLIMA-KKT: Climate, environment, hazard, society	Uni Corvinus	HU	Climate Change in Hungary (no information available in English language)	ongoing	2
KLIWAS	Auswirkungen des Klimawandels auf Wasserstraßen und Schifffahrt – Entwicklung von Anpassungsoptionen	BMVBS	DE	KLIWAS - Impacts of climate change on waterways and navigation - Searching for options of adaptation. The purpose of the research programme KLIWAS is the assessment of climate-induced changes of flows and water levels in navigable inland waterways. In coastal waters, the question is how climate influences currents and tidal water levels and what consequences such variations may have for navigation. Other fields of interest are the span of such variations, their effects on the physico-chemical status (temperature, salinity, behaviour of contaminants) and on the ecology of waters, the economic consequences - especially for navigation - and ultimately the identification of options for the adaptation to changes. Another purpose of this research is to provide decision-makers with a set of relevant indicators enabling them to find appropriate strategies for adaptation to changed environmental conditions. All adaptation options that the KLIWAS research programme will identify and assess for their effectiveness and their influences on other adaptation strategies will find consideration in this decision-aiding tool.	2009 - 2013	2
NEWATER	New approaches to adaptive water management under uncertainty	European Commission 6th Framework Programme	TRB, UA, SK, H, RO, RS	The research objective of the project is to develop and test new concepts and methods for integrated water resources management in river basins. NeWater will focus on several key research and application issues within the EU Water Initiative (EUWI) and the European Water Framework Directive (WFD). The project directs its investigations on selected river basins which aim to serve as exemplary cases for the development of future scenarios and generalized approaches for integrated water resource management. Tisza Basin (157 km ²), one of the biggest tributaries of the Danube: Transboundary water resource and flood management issues are of major concern globally. In Europe, this concern was dramatically increased upon the catastrophic transboundary cyanide and heavy metal pollution accidents in the Tisza River Basin, in 2000. Moreover, due to increasing frequency and discharges of floods during the last 70 years and, on the contrary, scarcity of adequately clean water resources in dry periods produce a degree of vulnerability of the population living in the Tisza floodplains as well as of the unique freshwater wetland ecosystems. Moreover, the international Tisza river basin is situated at the current borderline of the EU between Hungary and the Ukraine and thus the national and regional water management might follow different frameworks for the one river. These are the main reasons why the Tisza was selected as a case study for NeWater.	January 2005 - February 2009	2
PESETA	Projection of Economic impacts of climate change in Sectors of the European Union based on boTtom-up Analysis	European Commission (EC) Joint Research Center (JRC)	EUROPE	The objective of the PESETA project (Projection of Economic impacts of climate change in Sectors of the European Union based on boTtom-up Analysis) is to make a multi-sectoral assessment of the impacts of climate change in Europe for the 2011-2040 and 2071-2100 time horizons. The project benefits largely from past DG Research projects that have developed impact modelling capabilities (e.g. the DIVA model) and high-resolution climate scenarios for Europe (the PRUDENCE project). The PESETA project focuses on the impacts of climate change on the following sectors: Coastal systems, Human health, Agriculture, Tourism, and Floods. For each of these sectoral categories, a corresponding sectoral-based study is developed by the project partners.	up to 2009	2

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ST_BARTHOLY1_7_HU	Analysis of expected climate change in the Carpathian Basin using the PRUDENCE results (ST_BARTHOLY1_HU)		HU, CADSES	Expected temperature and precipitation changes are analyzed for the Carpathian Basin and in Hungary, for the 2071-2100 period using outputs of the PRUDENCE project for the A2 and B2 emission scenarios. Different regional climate models of PRUDENCE use 50 km as horizontal spatial resolution, which enables us to estimate the cc on regional scale. Composite maps of the expected seasonal temperature change and trend analysis of extreme temperature indices suggest that a regional warming trend is evident in the Carpathian Basin. According to the results the largest warming is expected in summer. Negative temperature extremes are projected to decrease while positive extremes tend to increase significantly. The climate simulation results suggest that the expected change of annual total precipitation is not significant in the Carpathian Basin. However, significantly large and opposite trends are expected in different seasons. Seasonal precipitation amount is very likely to increase in winter, and it is expected to decrease in summer, which implies that the annual distribution of precipitation is expected to be restructured. (ST_BARTHOLY1_HU)	2008	2
ST_DANKERS	Flood hazard in Europe in an ensemble of regional climate scenarios		EUROPE	We analyze changes in flood hazard in Europe by examining extreme discharge levels as simulated by the hydrological model LISFLOOD when driven by a multimodel ensemble of climate simulations. The ensemble consists of simulations from two regional climate models (RCMs), both run with boundary conditions from two global models, and for two scenarios of greenhouse gas emissions. In northeastern Europe, a general decrease in extreme river discharge is observed in the scenario period, suggesting a reduction in the hazard of extreme snowmelt floods. Elsewhere, we find a consistent tendency toward a higher flood hazard in the majority of the model experiments in several major European rivers. These changes can partly be attributed to large, decadal-scale variability in the simulated climate and can be expected to occur naturally when comparing two 30-year time periods, even without a change in greenhouse gas forcing. We furthermore find evidence for a considerable influence of especially the global model that is used to drive the RCMs. At the scale of individual river basins, using a different combination of climate models or assuming a different emissions scenario sometimes results in a very different or even opposite climate change signal in flood hazard. We therefore believe that a multimodel approach as adopted in the present paper provides the best way to address the various uncertainties in impact studies of hydrometeorological extremes. Probabilistic scenarios that consist of multiple realizations of the current and future climate state are indispensable to better identify the climate signal amidst large variability.	2009	2
ST_KLEIN	ASSESSING CLIMATE CHANGE IMPACTS ON WATER BALANCE IN THE UPPER DANUBE BASIN BASED ON A 23 MEMBER RCM ENSEMBLE		UDRB	Increasing global temperatures as indicated by climate projections of the Fourth Assessment Report of the IPCC would lead to changes in the hydrological cycle. This would have various impacts on natural and managed aquatic systems such as the transboundary River Danube with its various economic and ecological functions. Against this background adaptation measures have to be developed to fulfil or improve these functions also in the future. Due to the large uncertainties of the future climatic evolution and the complexity of the system there are also large uncertainties in the future water balance of river basins. Hence a "multi-model approach" has to be used to account for the uncertainties that lead to a range of potential future changes. Here the simulation runs of 23 Regional Climate Models from the EU-ENSEMBLES project are used as input of the semi-distributed water balance model "COSERO" running with a monthly time step. This model is calibrated for twelve sub basins of the Upper Danube River up to the gauge Achleiten at the German-Austrian border (76.660 km²). With the results of the water balance simulations it is possible to analyse possible changes of the runoff in the Upper Danube basin up to the end of the 21st century. The bandwidth of the results at gauge Achleiten indicates changes in the runoff regime due to a changed snow regime and a reduction of runoff in summer due to an increased evapotranspiration. In this study the impact of climate change on monthly water balance is analysed. Hence no conclusions on high flow situations and only indirect conclusions on low flow situations can be drawn from these results.	2011	2
ST_KOBOLD_SI	Trends of River Discharge in Slovenia		SI	Trends of river discharges are very important in recognition of climate changes and also in water management. In last years droughts and floods are more and more frequent, therefore monitoring and investigating of hydrological situation became one of the guidance scientific approach. In analysis of mean annual discharges made in Agency of the Republic of Slovenia for the Environment in last years, statistical significance trend was find out only by rivers of northwest alpine region. In recent research of time changing discharges, presumption of generally decreasing of water quantity all over Slovenia was confirmed. Our basic conclusion – in Slovenia it is well recognized decreasing of water quantity in long period of observation. This fact and also worsening of water quality became alarming problems of our future, especially in dry months of the year.	2008	2
ST_LEBENSMINI STERIUM_AT	Auswirkungen des Klimawandels auf die österreichische Wasserwirtschaft		AT	The alpine region is very sensitive to climate change because of a seasonal precipitation shift and a great variability of the climate and hydrological processes. This study shows possible climate change impacts on water resources and water management in Austria in a interdisciplinary manner. A broad range of topics is covered: temperature, precipitation, glaciological and hydrological processes, water supply, energy, agriculture, forestry, hydro-biology.	2008	2
WASKLIM	Wasserwirtschaftliche Anpassungsstrategien an den Klimawandel	UBA	DE	Generally less water will be available in summer and more in winter. For the detailed analysis of the water balance sensitivity simulations were conducted for three pilot areas (Iller, Wupper, Salza) using the numerical model WaSiMETH and the climate data from the WETTREG and REMO regional models. The simulations were calculated for the emissions scenarios A1B, A2 and B1. To determine the usable potential for adaptation of the water resource management in consideration of the social conditions for different water uses and based on the named analyses, further literature overview and own investigations, the water demand was compared to the water availability. Based on these investigations the decision support system "WASKlim-EUS" was developed and tested in the three pilot areas. During the implementation process of the WASKlim-EUS the evaluation of the water demand, the water availability and the adaptation measures has proven to be challenging for stakeholders. For the first assessments of the climate change impacts in the WASKlim-EUS expert knowledge is used, which could be supplemented by stakeholder surveys.	November 2007 - September 2009	2
WEATHER	Weather extremes: Impacts on Transport Systems and Hazards for European regions	European Commission 7th Framework Programme	DE, AT	The WEATHER project aims at analysing the economic costs of more frequent and more extreme weather events on transport and on the wider economy and explores adaptation strategies for reducing them in the context of sustainable policy design. The research is carried out by an international team of eight European institutes, lead by the Fraunhofer-Institute for Systems and Innovation Research (ISI). Records of reinsurance companies clearly highlight the rising damages caused by natural catastrophes and extreme weather events, which can at least partly be attributed to climate change. While many studies focus on CO2 mitigation in transport, research on the vulnerability of the sector on climate driven effects, namely extreme weather events, is coming up only recently. Little knowledge has so far been developed on the economic costs of climate and extreme weather driven damages to transport, and even less evidence is available on the options, costs and benefits of adaptation measures. Thus there is a need for European studies addressing local conditions.	November 2009 - April 2012	2

Project	Project title	Funding	Region	Project aim	Project running period	Prio
ADAGIO	ADAPtation of AGriculture in European ReglOns at Environmental Risk under Climate Change	European Commission 6th Framework Programme	SEE, CE, BG, HR, RS, SK	Historically, agricultural management options have been improved according to economic and environmental conditions. This has been achieved by adopting new technologies and production strategies. Hence, future agricultural policy should be adapted to the new climate conditions. To increase awareness of these potential consequences regional courses, meetings with local experts and farmers will be launched and published in relevant media. Furthermore, the interaction with stakeholders and agricultural decision-makers will point out which other relevant policies, as CAP, WFD, etc. could interact with the foreseen agricultural climate risks. Significance for Central and Eastern Europe: Agricultural production in the large landplanes of the EU and EU-associated countries of Central and Eastern Europe means not only an important percent of the total EU cropping production, but also an important contribution to the countries' national income.	1.1.2007 - 30.6.2009	3
BALATON	Lake Balaton Integrated Vulnerability Assessment, Early Warning and Adaptation Strategies	UNDP	HU	The aim of this project is to bring together scientific research about the Lake Balaton Region concerning sustainability in context of the global and local (demography, climatology, economic and land use) change. Hence, effective policy and adaptation strategies should be deviated. The project should enable stakeholders to develop a specific lake and catchment information data base to identify, follow, understand and analyse critical aspects of vulnerability aspects and sustainable development.		3
BALWOIS	Water Observation and Information System for Balkan Countries	European Commission 5th Framework Programme	BALKAN	The general concern is to create a community of the main stakeholders in the field of water protection and water management ranging from scientists, private sector, experts, NGO's, to decision makers and large public. It is done through the implementation - at the regional scale of Balkan countries - of a Water Observation and Information System for Decision Support - WOISYDES - which collect and combine various data and information on the water cycle, on the water resources, on their natural environment and on their uses in order to disseminate suitable and reliable knowledge products to end-users. In other words, the role of BALWOIS - network and information system - is to enhance the links between research institutions and operational centers, to help the decision makers and all water stakeholders as well as to disseminate to large public useful information on related water issues. Three main actions are carried out in BALWOIS project: (i) the creation of a network of scientists and stakeholders working in water related fields, (ii) the implementation of a Water observation and information system, and (iii) the organization of working groups, workshops, scientific visits, training courses and significant scientific events.	since 2002	3
BIOFRESH	Biodiversity of Freshwater Ecosystems: Status, Trends, Pressure, and Conservation Priorities	European Commission 7th Framework Programme	AK, US, UK	BioFresh is an EU-funded international project that aims to build a global information platform for scientists and ecosystem managers with access to all available databases describing the distribution, status and trends of global freshwater biodiversity. BioFresh integrates the freshwater biodiversity competencies and expertise of 19 research institutions.	2010 - 2014	3
CARPATH_P	Carpathian Project-Projection and sustainable Development of the Carpathians in a Transnational Framework	INTERREG III B CADSES	CADSES	In the Carpathian Project, 18 project partners from 10 countries joined their efforts to work on common and harmonised data and maps from the Carpathian Space and to develop analyses, recommendations and a common conceptual document covering the contents of the Carpathian Convention (biodiversity and natural heritage; cultural heritage; sustainable rural development, agriculture and forestry; sustainable transport, infrastructure, industry and energy; sustainable tourism and spatial planning) as well as to implement pilot activities for selected topics (e.g. on sustainable tourism). The outputs of the project gave a detailed status quo of the Carpathian region which includes eight Central and East European countries with differing basic conditions. Among the most valuable outputs of the Carpathian Project you can find the Handbook for Local Authorities and Development Actors in four languages, the Carpathian Environment Outlook, the Carpathian Spatial Development Vision (VASICA), the Carpathian Atlas, etc.	2000 - 2006	3
CLIFAD	Climate Impact of Low Flows and Droughts	Klima- und Energiefonds Austria	AT	The purpose of the project is to analyse the potential impact of climate change on low flows and droughts in Austria. Scenario based analyses of future low flows and droughts are performed in both statistical and deterministic modes to be able to account for differences in the predictability of future climate variables. Future air temperatures are known with better confidence than is future precipitation and these differences are mapped onto the low flow and drought projections. To support these projections, statistical analyses of hydrological low flows and droughts are performed in a space-time context which go beyond the traditional single-site trend analyses and identify spatial fluctuations and trends by exploiting the space-time correlations of low flow and drought patterns. By assessing the relative credibility of the various analyses steps the potential climate impact on low flows and droughts will be inferred. An important result are estimates of uncertainty bounds of the projections to understand the robustness of the project findings.	1.1.2011 - 31.12.2013	3
CLIMATECARPATHIANR	Climate of the Carpathian Region	JRC IES	CADSES, BG, CZ, HR, HU, MD, PL, RO, RS, SK, UA	The main aim of the project is to investigate the detailed weather-related and spatial structure of the Carpathians and the Carpathian basin with integrated or at least comparable methods. The basic results will be a contribution to regional climate variability and change studies, and applied climatology. The climate of the region has not been described as a geographical unit for about 90 years. The main aim of the service is to improve the basis of climate data in the Carpathian Region for applied regional climatological studies such as a Climate Atlas and/or drought monitoring. The service will investigate the fine temporal and spatial structure of the climate in the Carpathian Mountains and the Carpathian basin with unified or at least directly comparable methods. Currently, there is no valid description of the climate of the Carpathian Region.	Duration 36 months, Start?	3
CLISP	Climate Change Adaptation by Spatial Planning in the Alpine Space	INTERREG IV B Alpine Space Programme	ALPINE SPACE	Climate change impacts, especially growing risks from natural hazards, increasingly threaten settlements, infrastructure, lives and future development in the Alpine Space. CLISP aims at preventing increasing climate change-related spatial conflicts, vulnerability, damages and costs by providing climate proof spatial planning solutions as a substantial basis for future sustainable territorial development in the Alps. As climate change adaptation and mitigation is a novel field for spatial planning policy and administration, CLISP is a strategic pilot project. Its main pillars are assessment of the vulnerability of Alpine regions/municipalities to climate-change related risks, evaluation of the climate change fitness of current spatial planning systems and intense risk communication and governance in model regions. Finally the project aims at building the basis for the elaboration of climate proof spatial planning strategies for the Alpine Space and the Alpine countries and providing practical support for sustainable development decisions on regional/local level.	September 2008 - August 2011	3
ENSEMBLES	Providing ensemble-based predictions of climate and their impacts	European Commission 6th Framework Programme	EUROPE	Develop an ensemble prediction system for climate change based on the principal state-of-the-art, high resolution, global and regional Earth System models developed in Europe, validated against quality controlled, high resolution gridded datasets for Europe, to produce for the first time, an objective probabilistic estimate of uncertainty in future climate at the seasonal to decadal and longer timescales. Quantify and reduce the uncertainty in the representation of physical, chemical, biological and human-related feedbacks in the Earth System (including water resource, land use, and air quality issues, and carbon cycle feedbacks). Maximise the exploitation of the results by linking the outputs of the ensemble prediction system to a range of applications, including agriculture, health, food security, energy, water resources, insurance and weather risk management.	1.9.2004 - 31.12.2009	3

Project	Project title	Funding	Region	Project aim	Project running period	Prio
EWENT	Extreme weather impacts on European networks of transport	European Commission 7th Framework Programme	EUROPE	The objective of the EWENT project is to assess the impacts and consequences of extreme weather events on EU transport system. These impacts will be monetised. EWENT will also evaluate the efficiency, applicability and finance needs for adoption and mitigation measures which will dampen and reduce the costs of weather impacts. The methodological approach is based on generic risk management framework that follows a standardised process from identification of hazardous phenomena (extreme weather), followed by impact assessment and closed by mitigation and risk control measures.	2010 - 2012	3
FLOODRISK	Stakeholder Oriented Flood Risk Assessment for the Danube Floodplains	South East Europe Transnational Cooperation Programme	SEE, DRB	This project has a far reaching strategic focus beyond risk management and could become a flagship project for the SEE programme. It will improve safer sustainable conditions for living environment and economy in the Danube floodplains. It integrates stakeholders and different acting groups and disciplines. The DANUBE FLOODRISK project focuses on the most cost-effective measures for flood risk reduction: risk assessment, risk mapping, involvement of stakeholders, risk reduction by adequate spatial planning.	2007 - 2013	3
FLOODSITE	Integrated Flood Risk Analysis and Management Methodologies	European Commission 6th Framework Programme	TRB	FLOODSITE aims to deliver tools and methodologies to support integrated flood risk analysis and management. Effective communication and dissemination is essential if the true potential of the research work is to be realised. To this end, the project has developed its own Communication and Dissemination Plan.	01.01.2004 bis 28.02.2009	3
GENESIS	groundwater and dependant ecosystems	European Commission 7th Framework Programme	EUROPE	Groundwater resources are facing increasing quantitative pressure from land-use and consumption pressures. In some areas, groundwater quantity and quality have been reduced, resulting in negative impacts on drinking water and important ecosystems relying on groundwater. There is a strong need to reduce input of pollutants to prevent groundwater pollution. Additional threats from climate change are unknown, highly interwoven and complex. The objective of GENESIS is to integrate pre-existing and new scientific knowledge into new methods, concepts and tools for the revision of the Ground Water Directive and better management of groundwater resources.	2007 - 2013	3
GLOCHAMORE	Global Change in Mountain Regions	European Commission 6th Framework Programme	WORLD	Development of a state-of-the-art integrated and implementable research strategy to gain a better understanding of the causes and consequences of global change in a selection of 28 UNESCO Mountain Biosphere Reserves (MBRs) around the world.	2003 - December 2005	3
JRP-ROBG	Joint Research Project Romania-Bulgaria: Observed changes in precipitation regime in the Danube river lower basin in the context of	Ministry of Environment and Forests Romania	LDRB, RO, BG	AIM: 1. to complete the current research work and knowledge about precipitation variability and change focusing on extremes on the Danube river lower basin on the background of global climate change. 2. to put emphasis on the understanding the role of natural mechanisms and antropogenic influences on precipitation extreme variability and changes in the region.	1. Juni 2008 - 30.11. 2009	3
MICE	Modelling the Impact of Climate Extremes	European Commission 5th Framework Programme	EUROPE	It is widely recognized that the impacts of climate change will be manifest more through changes in extremes than as a result of changes in the mean climate. It is the aim of MICE to study changes in extreme event occurrence resulting from anthropogenic climate change, as predicted for Europe by global and regional climate models; and to evaluate the impacts of the predicted changes on selected categories of the human environment and activities. Spatial and temporal patterns of extreme event occurrence will be analysed for precipitation (flood, drought and snow lying), temperature (heat stress) and windstorm. MICE will estimate likely future changes in extremes and define the uncertainties. The impacts of interest are forestry, agriculture, energy use, tourism, and property and life insurance. Interpretation of the results for use by stakeholders and policy-makers is central to the project.	1.1.2002 - 31.12.2004	3
PRELUDE	Prospective Environmental analysis of Land Use Development in Europe, Land-use scenarios for Europe: qualitative and quantitative analysis on a European scale	EEA	EUROPE	Land use change and its consequences for the environment. A highly visual presentation from the European Environment Agency in Copenhagen, explores five possible futures for a Europe that is experiencing major changes in the way we use our land. In each scenario, factors, including demographic trends, spatial planning patterns, agricultural policy, climate change and other key driving forces, lead to changes in land use and land cover. This results in a range of impacts on biodiversity, water quality, flooding, greenhouse gas emissions, soil erosion and landscape identity.	finished in 2007	3
PRUDENCE	Prediction of Regional scenarios and Uncertainties for Defining European Climate risks and effects	European Commission 5th Framework Programme	EUROPE	A European-scale investigation with the objectives: to address and reduce deficiencies in projections of future climate change; to quantify our confidence and the uncertainties in predictions of future climate and its impacts, using an array of climate models and impact models and expert judgment on their performance; to interpret these results in relation to European policies for adapting to or mitigating climate change.	1.11.2001 - 31.10.2004	3
QBIC3	Anpassung des regionalen Flussgebietsmanagements in Bayern und Québec an den Klimawandel / Québec-Bavarian International Collaboration on Climate Change (QBIC3)	LfU Bayern	DE, CA	One of the major challenges in water resources management over the next decades certainly is the adaptation to climate change impacts, especially in intensely used watersheds. It is most crucial in this domain, since projected increase in mean air temperature in combination with an expected increase in the temporal variability of precipitation patterns will contribute to pressure on current water availability, allocation and management practices. Managed watersheds often host important and valuable infrastructure, such as dams, reservoirs and water transfer systems, for which adaptation options must be developed over long-term and often dynamic planning horizons. Research to establish novel methodologies for improved adaptation to climate change is thus very important and only beginning to emerge in regional watershed management. The watersheds under investigation in the Québec-Bavarian Collaborative project on Climate Change (Q-BIC3), namely the Haut-Saint Francois and Gatineau watersheds in Québec and the Isar and Regnitz catchments in Bavaria, are under heavy anthropogenic use. Intense dam and reservoir operations and even water transfer systems are in place to satisfy multi-purpose demands on available water resources. These are imposing extreme modifications to the natural flow regimes. Therefore, the presented project Q-BIC3, funded by the Bavarian Ministry for the Environment and the Québec Ministère du Développement économique, de l'Innovation et de l'Exportation, aims to develop and apply a newly designed spectrum of tools to support the improved assessment of adaptation options to climate change in regional watershed management.	06.2009 - 11.2011 (expected extension)	3
RECLIP-CENTURY		ARCP-Projekt	AT	To date, no transient climate simulations at high resolution and parameterized for the Alps and focusing Austria were available. Europe-wide simulations of the EU-project "ENSEMBLES" are available only at 20km resolution (http://www.ensembles-eu.org). The REMO-UBA simulations with 10km grid spacing (http://www.remo-rcm.de/REMO-UBA_1189.0.html) published 2006 / 2007 by MPI-Hamburg were tailored for Germany and show less reliable results for the Alps – especially regarding precipitation. Climate models are simplified approximations to reality. Many atmospheric, marine, surface- and subsurface processes are simulated, but not all in detail, since one has to deal with complex interactions at various spatial scales and different time periods. As the continuous processes must be spatially and temporally discretized, sub-scale processes are disregarded. These drawbacks result in uncertainties, whose ranges need to be explored by comparing different climate simulations. This requires applying different global climate models, different regional models as well as different greenhouse gas scenarios.	since 10/2008	3
RECLIP-MORE	Research for climate protection - model run evaluation -mesoscale climate modelling	K-wiss 1st Programme	AT	A reliable assessment of future climate impacts in Austria makes necessary to provide regional climate model (RCM) runs, and additional tasks to deliver high resolution downscaled datasets for past and future climate targeting the entire eastern alps covering Austria. The major scientific goals are: quantify the uncertainties of regional climate simulations related to observed climate data, investigate the sensitivity of regional climate simulations and interpolated climate data to the influence of different model parameters and data processing techniques, deliver regional climate change scenarios at mesoscale and microscale resolutions for the eastern Alps covering Austria.	November 2003 - June 2006	3

Project	Project title	Funding	Region	Project aim	Project running period	Prio
REFRESH	Adaptive Strategies to Mitigate the Impacts of Climate Change on European Freshwater Ecosystems	European Commission 6th Framework Programme	EUROPE	Understanding how freshwater ecosystems will respond to future climate change is essential for the development of policies and strategies to protect aquatic and riparian ecosystems. Deltarec participates in a European research project to develop the scientific basis for measures to restore freshwater ecosystems to good ecological health or to sustain priority species as required by EU Directives. It will develop a system to enable water managers to design cost-effective restoration programmes for freshwater ecosystems at the local and catchment scales that account for the expected future impacts of climate change and land-use change in the context of the WFD and Habitats Directive. REFRESH will advance our fundamental and applied science in 5 key areas: i) understanding how the functioning of freshwater ecosystems is affected by climate change; ii) new indicators of functional response and tools for assessing vulnerability; iii) modelling ecological processes; iv) integrated modelling; and v) adaptive management.	Feb 2010	3
ST_BOGATAJ_SI	Climate Change and Future Adaptation		SI	This paper provides a summary of the current scientific understanding of the IPCC on the natural and anthropogenic drivers of changes in global climate. It presents an overview of observed changes in the climate system and their relationships with physical processes as well as an overview of projections for future climate changes. A summary of observed climate changes in Slovenia in the last decades is given and future projections are discussed. Europe has warmed by almost 1°C in the last century, faster than the global average. Precipitation has significantly increased in northern Europe, whereas drying has been observed in the Mediterranean. Continuing the observed trend, average precipitation as well as extreme precipitation are very likely to further increase in most of northern Europe whereas precipitation is very likely to decrease in the Mediterranean. The reduction of precipitation in summer in Slovenia is expected to have serious effects, e.g. more frequent droughts, with considerable impacts on horticulture and the availability of water. Adaptation can reduce vulnerability to climate variability and change.	2008	3
ST_BONACCINI_HR	Analysis of the water temperature regime of the Danube and its tributaries in Croatia		HR	Changes in water temperature along stretches of the Kupa, Sava, Drava and Danube Rivers measured in Croatia during the last 20–60 years were investigated. Characteristic (minimum, mean and maximum) annual water temperatures measured at 15 discharge and water temperature stations are analysed. Massive construction on the Danube River basin and on the rivers themselves during the last centuries, as well as recent climate change and/or variability has caused many different and possibly dangerous changes to its water temperature regime. Water temperature, as one of the most important physical characteristics of river water, strongly affects all other physical, chemical and biological processes in the river system. The investigation focuses on changes that have occurred during the last 20-odd years, probably caused by climate change and/or variability. Methods of rescaled adjusted partial sums (RAPS) as well as regression and correlation analyses are used in order to explain changes in water temperature regimes. The water-air temperature relationship is also discussed in the article. In all analysed cases, water temperature is strongly and directly affected by air temperature. There is evidence in the time series of rises in the minimum and mean annual water temperatures of the River Danube and its main tributaries in Croatia (the Kupa, Sava and Drava Rivers). The rising of mean annual air as well as water temperatures is shown to have started in 1988.	2008	3
ST_CORBUSI_RO	ASSESSMENT OF CLIMATE CHANGE IMPACT ON PEAK FLOW REGIME IN THE MUREŞ RIVER BASIN		RO	The estimation of the impact of climate change and climate variability upon the peak flow regime in the Mureş River basin was based on long-term simulations carried out with the hydrologic model CONSUL, using as input data series of precipitation and temperatures resulting from simulations of climate evolution conducted with the regional meteorological model REMO version 5.7., using as boundary conditions the simulations performed with the coupled ocean - atmosphere global model ECHAM5. Two types of simulations of climate evolution were used: a control simulation for the period 1951 – 2000, to establish the reference climate regime, and a simulation based on the A1B evolution scenario of the emission of greenhouse gases, for the period 2001 – 2050. Series of meteorological input data, in grid format, were used to obtain series of precipitation and temperature averaged over the sub-basins, at a time step of 6 hours, in accordance with the computation scheme of the hydrological model in the Mureş River basin. Flow series, at a time step of 6 hours, resulting from the two simulations (for the periods 1951-2000 and 2001-2050), were analyzed comparatively in order to estimate the impact of climate change on hydrological regime of maximum flow in the Mureş River basin.	2011?	3
ST_DFG_GEPRI_S	Lakes at risk under climate change: Climate variability matters		CE	The project will enhance the understanding of lake ecosystems' responsiveness to global warming, particularly to the variability in climate and weather conditions. The focal question is in what ways the detailed seasonal pattern of observed and projected climate warming affects the physical and biological structure of lakes. The rationale of this approach is that mean temperature changes (averaged over years or seasons) are inadequate measures of the changes that ecosystems experience, especially since the same average temperature change can derive from a multitude of warming patterns from sub-daily to decadal temporal scales. We thus challenge the supposition that the risk of critical ecosystem change increases quasi-linearly with rising mean temperature. For a suite of different lakes in Central Europe and beyond, the project will systematically analyse effects of different degrees of local and global warming upon key lake properties such as stratification events and plankton population dynamics. Using multi-decadal observational time series, already observed climate changes will be grouped according to their average annual and seasonal warming rates, followed by analysis of the ecological variability within these groups as imposed by short-term variability in the weather. Analogously, ecological impacts and risks of change under a range of future scenarios that explicitly cover a large range of possible realisations of seasonal weather evolution will be explored by use of statistical and mechanistic models and a probability-based analytical framework. The project is expected to contribute substantially to the understanding of climate change impacts upon the temporal variability of ecosystems.	2009-2012	3
ST_FEYEN	Impact of global warming on streamflow drought in Europe		EUROPE	Recent developments in climate modeling suggest that global warming is likely to favor conditions for the development of droughts in many regions of Europe. Studies evaluating possible changes in drought hazard typically have employed indices that are derived solely from climate variables such as temperature and precipitation, whereas many of the impacts of droughts are more related to hydrological variables such as river flow. This study examines the impact of global warming on streamflow drought in Europe by comparing low-flow predictions of a hydrological model driven by high-resolution regional climate simulations for the end of the previous century and for the end of this century based on the Special Report on Emissions Scenarios A2 greenhouse gas emission scenario. For both time slices, low-flow characteristics were derived from the simulated streamflow series using extreme value analysis. More specifically, we employed the methods of block maxima and partial duration series to obtain minimum flows and flow deficits and fitted extreme value distributions by the maximum likelihood method. In order not to mix drought events with different physical causes the analysis was performed separately for the frost and nonfrost season. Results show that in the frost-free season streamflow droughts will become more severe and persistent in most parts of Europe by the end of this century, except in the most northern and northeastern regions. In the frost season, streamflow drought conditions will be of less importance under future climate conditions.		3

Project	Project title	Funding	Region	Project aim	Project running period	Prio
ST_FODOR_HU	THE AGRO-ECOLOGICAL POTENTIAL OF HUNGARY AND ITS PROSPECTIVE DEVELOPMENT DUE TO CLIMATE CHANGE		HU	The climate change is one of the most relevant challenges that agriculture is facing in Hungary and all over the World. It is very difficult to express the agriculture related effects of the climate change in numbers and figures, since the atmosphere-soil-plant system is very complex. A crop simulation model was used for exploring the prospective effects of climate change on the agro-ecological potential of Hungary. The model was linked to a detailed meteorological and soil database of Hungary to provide the required input data. Simulations first employing measured meteorological data then combining them with a climate change scenario were used to determine the present and the prospective agro-ecological potential of Hungary. The simulation results indicate that the Hungarian agriculture can not avoid the effects of climate change, and unfortunately the majority of these effects would be negative. The yields of the spring crops will prospectively decrease while higher yields might be expected for the autumn crops. The amount of N-based green house gases emitted from the soil will prospectively increase because of the changes in the annual distribution of precipitation. On the basis of the simulation results the role of the autumn crops is likely to become more significant in Hungary. Another alternative for the Hungarian agriculture is to find new crops maybe species of Mediterranean origin that could be profitably grown here.	2010	3
ST_FRANTAR_SI	Water balance of Slovenia 1971-2000		SI	The water is becoming more and more valuable natural resource. The increasing water demand and climate changes are making water a precious and not always available valuable. The water balance is the most appropriate way to make a full overview of water cycle in Slovenia, to find general information about hydrological characteristics of drainage basins, precipitation, evaporation and runoff. The article presents the methodology and the results of the Water balance project of Slovenia. Slovenia has the geographical position at the juncture of 4 main European georegions: The Alps, the Panonian Basin, the Mediterranean and the Dinaric Mountains. This makes the territory very diverse also from a hydrological point of view. Our major watershed divides the precipitation runoff into two watershed areas – the Adriatic Sea and the Black Sea. Due to this watershed almost all the Slovenia's rivers have headwaters in our territory. Water balance is calculation of water inputs and outputs over the defined area. The basic elements of the water balance include all the inflows and outflows for a given basin and serve for the computation of the water regime of a catchment area. It is defined by the parameters precipitation (P), evaporation (E), discharge (Q) and the change of the water reserves (dS). Main results of the water balance elements for the 1971 – 2000 period for Slovenia are: Average annual precipitation in Slovenia is 1579 mm, average annual evapotranspiration is 717 mm and calculated runoff is 862 mm. Compared to water amounts in the World, where the average precipitation is 750 mm, evapotranspiration is 480 mm and runoff is 270 mm, Slovenia shows an abundance of water quantities. Also the runoff coefficient with 55 % is much higher as 36 % of the world. The major questions remain if we are capable to live with this water amounts within the limits of sustainable development and what will be the effects of climate change to water balance.	2008	3
ST_HORANYI_HU	CLIMATE CHANGE FOR THE CARPATHIAN BASIN: MODELLING RESULTS AND RELATED UNCERTAINTIES		HU	This contribution is providing a brief overview of the climate modelling activities at the Hungarian Meteorological Service with special emphasis on some climate projection results over the Carpathian Basin. The two adapted and applied regional climate models ALADIN-Climate and REMO are briefly introduced, evaluated and interpreted in a parallel way, i.e. the projection results are shown for both models without explicitly referring to the models themselves. This interpretation aims to provide some basic uncertainty assessment as well. As far as the results are concerned the warming trend is clearly identified by both models in a statistically significant way, however the precipitation changes are rather uncertain. Small annual changes are anticipated with a redistribution in the seasonal precipitation. The models are in agreement in the summer precipitation decrease, however the winter direction of change is uncertain since the model results are contradicting. The outputs of the regional climate models together with their quantified uncertainties should be directly used by climate impact assessments and for the determination of adaptation strategies.		3
ST_JOLANKAI_HU	Climate Change impacts and adaptation in agriculture		HU	The United Nations Development Programme (UNDP) has produced an elaboration concerning agriculture and food security. In the following we would like to summarize the main topics of that (UNDP 2003). Agriculture in general and crop production in particular are highly affected by climate change impacts. Results of recent climate change researches have highlighted for Hungary (Láng et al 2007), that climate change impacts may influence production efficiency, quantitative and qualitative deterioration of crop yields produced for alimentary purposes, and determine post harvest manifestation of agricultural products inducing hazard in the field of food safety, transport, storage and distribution. Expert teams of various fields of agriculture have been working within the framework of the national VAHAVA project (Jolánkai and Birkás 2007). The main task of this work was to study climate change impacts and possible responses in the respective fields.	2007?	3
ST_KAPOR_RS	On the Analysis of Trends of Average Flow on Watercourses in Serbia which belong to the Danube River Basin	Republic of Serbia Ministry of Education and Science	RS	Phenomenon of climate change in the history of planet Earth, which was noticed in earlier research, is attributed to natural causes. Only recent studies of 'greenhouse gases', are trying to determine whether there is an influence of man and his activities on weather and climate in general. In this paper, we analysed possible trends as well as the existence of certain laws or changes in the inhomogeneity in the observed amounts of surface waters, based on the average flow recorded in water bodies belonging to the Danube river basin in the Republic of Serbia. We analyzed the time series of hydrological data from 30 hydrological stations, which have a series of at least 50 years, including 5 stations that comprise watersheds without human impacts. In the second part of the paper, the obtained results are evaluated using the same model to the data series in 5 of 30 selected stations where there are observations for more than 80 years. It should be emphasized that the results indicate that the observed changes do not have a clearly defined trend, and finally cannot be attributed to climate change.	2011-2014	3
ST_KARABOVA	ANALYSIS OF THE DANUBE RIVER RUNOFF REGIME		UDRB, MDRB	In this article, there is a possibility of a simple exploratory analysis of water bearing fluctuations as an indicator of possible climate change presented. Eleven stream gauging stations on the Danube River from gauging stations in Germany to its mouth in Ukraine were analyzed. For each station, average monthly discharges were collected and were used to derive the statistical flow characteristics. The long-term trends of the average monthly discharges in the year and each month, monthly fluctuation of the water bearing of the stream, the deflections of the mean monthly discharges from long-term monthly average, and the deflections of the mean annual discharges from the long-term annual average were analyzed. The work is focused on the development and monitoring of watery and dry periods by the deflections of the mean monthly discharges as changes of its time-space occurrence. Results of the long series data analysis for particular months showed some changes in the flow mode, especially for the Upper and Middle Danube. The linear trends in single months show the increase in average monthly discharges in winter and spring and their reduction in summer. Results published in this article show the complexity of the fluctuations of watery and dry periods on the Danube River. Results of the long series data analysis for particular months showed some changes in the flow mode, especially for the Upper and Middle Danube. The linear trends in single months show the increase in average monthly discharges in winter and spring and their reduction in summer. Results published in this article show the complexity of the fluctuations of watery and dry periods on the Danube River.	2010?	3

Project	Project title	Funding	Region	Project aim	Project running period	Prio
ST_KJELLSTROEM	Modelling daily temperature extremes: recent climate and future changes over Europe		EUROPE	Probability distributions of daily maximum and minimum temperatures in a suite of ten RCMs are investigated for biases compared to observations in the present day climate and climate change signals compared to the simulated present day climate. The simulated inter-model differences and climate changes are also compared to the observed natural variability as reflected in some very long instrumental records. All models have been forced with driving conditions from the same global model and run for both a control period and a future scenario period following the A2 emission scenario from IPCC. The simulated changes in extreme temperatures both in summer and winter are larger than changes in the median for large areas. Differences between models are larger for the extremes than for mean temperatures. A comparison with historical data shows that the spread in model predicted changes in extreme temperatures is larger than the natural variability during the last centuries.	2007	3
ST_LAPIN_SK	Possible impacts of climate change on hydrologic cycle in Slovakia and results of observations in 1951–2007		SK	The hydrologic cycle in Slovakia is determined mainly by three basic components: precipitation, evapotranspiration, and runoff. Regimes of potential and actual evapotranspiration, soil moisture and R have been changed mainly in the southern Slovakia. A physical model for the estimation of the energy balance equation components (total radiation balance and its components, potential and actual evapotranspiration, sensible heat flux) has been developed. Input data are the air temperature and humidity, cloudiness, the number of days with snow cover and precipitation, all measured in the network of 31 meteorological stations in Slovakia since 1951. The 20-year period 1988–2007 was by 0.9°C warmer than the normal period mean. The observed increase is at the upper limit of all climate change scenarios projected for Slovakia in 1991–2001. Annual P totals have not changed significantly, but substantial changes have been found in the P regime. The scenarios show significant changes in the hydrological cycle not only at river basins balance but also in case of soil water balance, mainly in the south.	2009	3
ST_MARES	The 21st Century Precipitation Estimation in the Danube Middle and Lower Basin by Non-Homogeneous Hidden Markov Model Simulation		MDRB, LDRB	The goal of the study is the estimation the changes in the precipitation in the 21st century in the middle and lower Danube basin, by applying a non - homogeneous hidden Markov model to the precipitation simulated and corrected by biases in association with predictors from the pressure field. In this study the estimation of changes in the springtime precipitation from ten stations situated in the Danube middle and lower basin (DMLB) in the 21st century, in association with changes in the indices of the atmospheric circulation is analyzed. This analysis is achieved by means of nonhomogeneous hidden Markov model (NHMM).	2010	3
ST_MIKLANEK	Mean monthly runoff scenarios of the Danube River	Slovak Research and Development Agency	MDRB	This paper is a statistical analysis and long-term prognosis of monthly flows of the Danube River at Bratislava. The proposed scenario for the time horizon 2075 was compared to other two scenarios derived from several global and regional runoff models. Our scenario originates from analysis of the actual monthly flows recorded over the period 876–2006, while the second and the third scenarios were created on the basis of the complex climatic and rainfall–runoff models using data from 1960–1990.	2010	3
ST_NIKALOVA_RO	Observed changes in precipitation in the Danube river lower basin in the context of climate change		RO, BG	The study presents the observed variability and changes in precipitation regime in the Danube river lower basin, which is situated along both sides of the border between Bulgaria and Romania. The research is based on monthly precipitation totals recorded at 22 meteorological stations from Bulgaria and Romania. The investigated period is 1961-2007 out of which two reference periods are considered, the last 30 years (1978-2007) and the usually used WMO reference for the contemporary climate (1961-1990). The main objective of the study is to give actual information about precipitation variability in the region in the context of global climate change. The results of the work point out on some characteristics of extreme precipitation events in the region – drought and high precipitation, and on the role of natural mechanisms for precipitation variability.	2011	3
ST_PEKAROVA_SK	Is the Water Temperature of the Danube River at Bratislava, Slovakia, Rising?	Science and Technology Assistance Agency	SK	This paper aims to reveal the annual regime, time series, and long-term water temperature trends of the Danube River at Bratislava, Slovakia, between the years 1926 and 2005.	2008	3
ST_SANDU_RO	Effect of global warming on climate parameters and hydrology of the Mures River Basin		RO	Obviously, changes in precipitation and increase in atmospheric temperature impact lakes and rivers. While lakes are primarily affected in turnover behaviour and nutrient cycling, the more dynamic rivers are impacted on discharge, flow, and temperature, which in turn directly affect the biota. Mures is a transboundary river between Romania and Hungary (Eastern Europe), with an average discharge of ~200 m ³ /s and a catchment of 28 310 km ² . The river is moderately regulated and highly polluted in some stretches, crossing diverse relief forms and featuring a high habitat heterogeneity and biodiversity. Mures River has been a focus of the International Association for Danube Research (IAD) since 2004, with the intention to foster the catchment approach to support the implementation of the European Water Framework Directive and obtain "good ecological status". Hydromorphological mapping was conducted in 2007–2009 to show its ecological potential. We exemplify the long-term fluctuations and changes of annual precipitation, discharge, and air and water temperatures in the Mures River Basin in Romania–Hungary and discuss the consequences of such changes for river morphology and aquatic flora and fauna.	2009	3
ST_SIPKAY_HU	Community ecological effects 4 of climate change		HU	In our present study we would like to examine closely the effects of climate change on community ecology, throwing light on some methodological questions and possibilities of studying the topic. To understand the effects of climate change it is not enough to collect ecological field observations and experimental approaches yield results only with limited validity as well. Therefore great importance is attached to the presentation of modelling methods and some possibilities of application are described by means of concrete case studies. This chapter describes the so-called strategic model of a theoretical 1 community in detail, with the help of which relevant results can be yielded in relation to ecological issues such as "Intermediate Disturbance Hypothesis" (IDH). Adapting the model to real field data, the so-called tactical model of the phytoplankton community of a great atrophic river (Danube, Hungary) was developed. Thus we show in a hydro biological case study which influence warming can have on the maximum amount of phytoplankton in the examined aquatic habitat. The case studies of the strategic and tactical models are contrasted with other approaches, such as the method of „geographical analogy“. The usefulness of the method is demonstrated with the example of Hungarian agro-ecosystems.	2009?	3
ST_STANIC_RS	trend analysis		RS	climate change in Hungary, trend analysis of the runoff situation for the Sava River (SRM) and the Danube river, gauge Bezdan at the inflows into Serbia.	2011	3
ST_WEBB_AT	Water temperature behaviour in the River Danube during the twentieth century		DRB	Monthly mean water temperatures in the River Danube at Linz, Austria during the period 1901-1990 have been investigated in relation to equivalent information on air temperature and river discharge.	1994	3
ST_WEBB_NOB_AT	Long-term changes in river temperature and the influence of climatic and hydrological factors		AT	River temperature is an important physical characteristic of water quality, and long-term monitoring in Austria has provided a unique perspective on river temperature changes during the 20th century. Significant rises in annual mean values were apparent and broadly followed changes in air temperature. However, especially in relation to seasonal mean values, trends were influenced by catchment characteristics and contrasts were evident between sites located in a headwater tributary, at the outlet of a catchment with a sizeable lake area, and on the mainstream of the Danube. There is evidence that inter-annual variations in water temperature were influenced by the climate pattern of the North Atlantic Oscillation, especially in the winter months.	2011	3

Project	Project title	Funding	Region	Project aim	Project running period	Prio
ST_WIRSING_AT	Impacts of climate change on agriculture land use in the Austrian Upper Danube catchment - first results of ACRE-Danube		AT	ACRE-Danube is an Agro-eConomic pRoduction model at regional level and was developed as a decision tool for policy making with respect to questions of global change and policy scenarios for the Upper Danube basin. In order to estimate the impacts of climate change on the Austrian part of the Danube river basin, scenarios were simulated considering climate change as well as the CAP reform 2003. This paper introduces the first results.	2007	3
STARDEX	Statistical and Regional dynamical Downscaling of Extremes for European regions	European Commission 5th Framework Programme	EUROPE	To rigorously and systematically inter-compare and evaluate statistical, dynamical and statistical-dynamical downscaling methods for the reconstruction of observed extremes and the construction of scenarios of extremes for selected European regions. To identify the more robust downscaling techniques and to apply them to provide reliable and plausible future scenarios of temperature and precipitation-based extremes for selected European regions.	February 2002 to July 2005	3
WISER	Integrative water bodies in Europe: Integrative Systems to assess Ecological status and Recovery	European Commission 7th Framework Programme	EUROPE	WISER will develop tools for integrated status assessment with a focus on lakes, coastal and transitional waters and will evaluate recovery processes for rivers, lakes, coastal and transitional waters. WISER aims at developing assessment methods for organism groups (fish, invertebrates and aquatic flora) and ecosystem types (lakes, coastal and transitional waters) for which sufficient methods are still lacking. WISER will support the implementation of the Water Framework Directive (WFD) by developing tools for the integrated assessment of the ecological status of European surface waters. The project will analyse existing data from more than 90 databases compiled in previous and ongoing projects, covering all water categories, organism groups and environmental stressor types. Field-sampling campaigns will supplement the data on lakes and coastal systems. The data will be used to test and complement existing assessment schemes with a focus on uncertainty. Measure of confidence to express the degree to which a result is subject to chance affects on classification strength.	2009 - 2012	3

Prio	Status	Project	Region LKZ	CLIMATE / METEO	WATER AVAILABILITY	FLOOD & DROUGHT	WATER QUALITY	WATER TEMPERATURE	INDUSTRY	ENERGY	AGRICULTURE	FORESTRY	LANDUSE	TOURISM	NAVIGATION	DRINKING WATER	IRRIGATION	ARTIFICIAL-SNOW	SETTLEMENTS	TRANSPORT	ECOSYSTEMS	BIODIVERSITY	SOCIO-ECONOMY	ADAPTATION	
1	a	ST_IPCC	EUROPE, WORLD		x	x	x	x		x	x	x	x				x				x	x	x	x	
1	a	GLOWA-DANUBE	DE, AT, UDRB	x	x	x	x		x	x	x	x		x	x			x				x	x	x	x
1	a	VAHAVA	HU	x	x	x				x			x	x	x					x			x	x	x
1	a	ST_CEU	RO, UA, HU, CZ, SK, RS, BG, HR	x	x	x	x	x			x	x		x	x					x		x	x	x	x
1	a	ESPON	EUROPE	x	x	x			x	x	x	x		x					x				x	x	
1	c	CARPATH_B	BG, CZ, HR, HU, MD, PL, RO, RS, SK, UA	x	x	x				x	x			x	x							x	x	x	
1	a	CLIMWATADAPT	EUROPE	x	x	x				x	x			x								x	x		x
1	a	KLIWA	DE	x	x	x	x			x	x											x			x
1	b	WATCH	WORLD, EUROPE, SK		x	x			x	x	x		x	x		x						x			
1	b	CLIMATEWATER	EUROPE		x	x	x		x	x	x			x	x										
1	a	ST_UBA	EUROPE, DE, HU	x	x	x				x	x			x	x								x		
1	a	CLAVIER	CEE, BG, HU, RO	x	x	x				x	x			x									x	x	
1	b	WATCAP	RS, HR, SI, BA, ME	x	x	x				x	x												x	x	
1	a	EU-WATERUSE	EUROPE	x	x				x	x	x						x						x	x	
1	c	CC-WATERS	SEE, AT, BG, GR, HR, HU, IT, RO, RS, S	x	x		x		x				x			x							x	x	
1	a	ST_BLOESCHL_AT	AT	x	x	x	x	x		x															x
1	a	CECILIA	CEE	x	x	x	x				x					x									x
1	a	ECCONET	UDRB, MDRB	x	x	x									x								x	x	
1	b	WWF-DCP	RO, UA, HU, CZ, SK, RS, BG, HR	x		x								x								x	x		x
1	a	SCENES	EUROPE	x	x				x	x	x														
1	a	EUROWASSER	EUROPE		x	x				x															
1	a	HYDROCARE	RO, SK		x		x																		
2	b	ALP-WATER-SCARCE	ALPINE SPACE	x	x		x			x	x			x		x		x	x				x	x	
2	a	CLIMCHALP	ALPINE SPACE	x	x	x					x	x	x	x					x						x
2	a	ST_LEBENSMINISTERIUM_AT	AT	x	x	x		x		x	x	x											x		
2	a	WASKLIM	DE	x	x	x		x		x					x										x
2	b	KLIWAS	DE	x	x	x	x								x							x			x
2	a	ADAM	TRB, HU	x	x	x					x					x						x			x
2	a	AQUATERRA	EUROPE, DRB, AT, HU	x	x		x				x		x												x
2	b	WEATHER	DE, AT	x	x	x									x										x
2	b	EUROLIMPACS	EUROPE	x																		x	x		x
2	c	COST734	EU	x		x					x														x
2	a	ADAPTALP	ALPINE SPACE	x	x	x																			x
2	a	PESETA	EUROPE	x		x					x			x											
2	c	KLIMAKKT	HU	x	x	x?																			
2	b	ENVIROGRIDS	DRB, BLACK SEA		x		x																		
2	a	ST_DANKERS	EUROPE	x	x	x																			
2	c	C3-ALPS	ALPINE SPACE	x	x	x																			
2	a	ST_KLEIN	UDRB	x	x					x															
2	a	ST_BARTHOLY1_7_HU	HU, CADSES	x		x																			
2	a	NEWATER	TRB, UA, SK, H, RO, RS			x																			
2	a	ST_KOBOLD_SI	SI			x																			
3	a	CARPATH_P	CADSES	x		x			x	x	x		x	x					x	x		x	x	x	x
3	a	GLOCHAMORE	WORLD	x	x	x							x										x	x	x
3	a	ST_SANDU_RO	RO	x	x	x	x	x														x	x		x
3	a	ST_BOGATAJ_SI	SI	x	x	x					x														x
3	a	ST_JOLANKAI_HU	HU	x							x						x						x		x
3	b	QBIC3	DE, CA	x	x	x	x																		x
3	c	BALWOIS	BALKAN	x	x	x	x																		
3	a	ENSEMBLES	EUROPE	x	x					x	x														
3	b	CLISP	ALPINE SPACE											x					x	x					
3	b	REFRESH	EUROPE	x			x															x	x		
3	a	ST_SIPKAY_HU	HU	x							x														x
3	a	ST_BONACCI_HR	HR	x						x												x			x
3	a	PRUDENCE	EUROPE	x	x	x																			
3	a	ADAGIO	SEE, CE, BG, HR, RS, SK	x							x														
3	b	CLIMATECARPATHIAN	CADSES	x	x	x																			
3	b	EWENT	EUROPE	x		x									x										
3	a	ST_PEKAROVA_SK	SK	x	x			x																	
3	a	ST_WEBB_NOB_AT	AT	x	x																				
3	a	STARDEX	EUROPE	x		x																			
3	b	WISER	EUROPE																						
3	b	BIOFRESH	AK, US, UK	x																					
3	c	ST_FEYEN	EUROPE		x	x																			
3	a	ST_LAPIN_SK	SK	x	x																				
3	a	FLOODSITE	TRB			x																			x
3	b	CLIFAD	AT	x		x																			

Prio	Status	Project	Region LKZ	CLIMATE / METEO	WATER AVAILABILITY	FLOOD & DROUGHT	WATER QUALITY	WATER TEMPERATURE	INDUSTRY	ENERGY	AGRICULTURE	FORESTRY	LANDUSE	TOURISM	NAVIGATION	DRINKING WATER	IRRIGATION	ARTIFICIAL-SNOW	SETTLEMENTS	TRANSPORT	ECOSYSTEMS	BIODIVERSITY	SOCIO-ECONOMY	ADAPTATION
3	a	ST FRANTAR SI	SI	x	x																			
3	a	ST MIKLANEK	MDRB	x	x																			
3	a	ST NIKOLOVA RO	RO, BG	x		x																		
3	a	ST FODOR HU	HU	x							x													x
3	a	ST STANIC RS	RS	x	x																			
3	a	ST CORBUS RO	RO		x	x																		
3	a	PRELUDE	EUROPE																				x	
3	a	MICE	EUROPE	x																				
3	a	JRP-ROBG	LDRB, RO, BG	x																				
3	b	BALATON	HU																			x		
3	a	ST KJELLSTROEM	EUROPE	x																				
3	b	FLOODRISK	SEE, DRB			x																		
3	c	GENESIS	EUROPE		x																			
3	a	ST WIRSING AT	AT								x													
3	c	ST DFG GEPRIS	CE				x																	
3	a	RECLIP-MORE	AT	x																				
3	a	ST MARES	MDRB, LDRB	x																				
3	a	ST HORANYI HU	HU	x																				
3	a	ST KAPOR RS	RS		x																			
3	a	ST KARABOVA	UDRB, MDRB	x																				
3	b	RECLIP-CENTURY	AT	x																				
3	a	ST WEBB AT	DRB					x																

- Prio
- 1 high relevance: covers a large region in the DRB and / or many topics
 - 2 medium relevance: in-between Prio 1 and Prio 3
 - 3 low relevance: covers a smaller region in the DRB and / or less topics

- Status
- a finished, much information available
 - b ongoing, not so much information available yet
 - c less or no information available yet

Appendix 2: List of adaptation activities sorted by priorities

	Title	Type	Content	Spatial coverage
National Adaptation Strategies	National Adaptation Strategy (NAS) to Climate Change Austria	Action Plan (NAS)	climate change and recommendations for adaption in Austria	AT
	Bayerische Klima-Anpassungsstrategie (BayKLAS)\ Bavarian Climate Adaptation Strategy	Action Plan (NAS)	recommendations and measures to adapt to climate change in Bavaria	BY
	Bulgarian National Action Plan on Climate Change	Action Plan (NAS)	climate change and mitigation; adaptation measures until 2013	BG
	Croatian adaptation plans	Action Plan (NAS)	presentation about the background of climate change impacts and adaptation strategies in Croatia	HR
	Adaptation strategy in water management in the Czech Republic	NAS (Presentation)	From floods to droughts - adaptation strategy in water management in the Czech Republic: presentation about CC impact on floods and droughts and related adaptation activities	CZ
	German Strategy for Adaptation to Climate Change	Action Plan (NAS)	climate change in Germany; impacts on nature and society and action options (for agriculture, forestry, fisheries, biodiversity, construction, human health, transport and transport infrastructure, water resources / water management / marine protection, soil, tourism, trade and industry, energy industry and finance), The German Adaptation Strategy: Approach and next steps;	DE
	Hungarian National Climate Change Strategy	NAS	forsees measures in compliance with the EU and international requirements in order to reduce the emissions of climate change gases and to prevent their increase in the future -> reduction of energy use; key elements of the fight against unfavorable ecological and soci-economic effects of the inevitable climate change of the improvement of the adaptability to the consequences of the climate change; emphasizes the need of social awareness in relation to CC; water related CC adaptation are integrated in the Hungarian Development Plan (2007 to 2013)	HU
	Climate Change in Moldova Socio-Economic Impact and Policy Options for Adaptation	Action Plan (NAS)	This Report, which marks the 15th anniversary of the NHDRs in Moldova, focuses on the impact of climate change on Moldova's environment, society and economy. It discusses adaptation options and their potential synergies with the overarching development goals of the country. At the same time, the importance of mitigating future greenhouse gas emissions and climate change cannot be neglected, and, as underlined in the Report, adaptation has to go hand in hand with mitigation. Being the first of its kind, the Report will, we hope, contribute to the ongoing national effort to address the climate change challenge while promoting human development.	MD
	National Sustainable Development Strategy of Romania	NAS	National Sustainable Development Strategy of Romania	RO
	Action Plan for the Implementation of the National Sustainable Development	NAS	measures and/or activities for the implementation of the National Sustainable Development Strategy of the Republic of Serbia;	RS

	Title	Type	Content	Spatial coverage
National Communications under UNFCCC	5th national communication under UNFCCC Austria	Communication	Greenhouse Gas Inventory Information; Policies and Measures; Projections and the Total Effect of Policies and Measures; Vulnerability Assessment, climate change Impacts and Adaptation Measures; Financial Resources and Transfer of Technology; Research and Systematic Observation; Education, Training and Public Awareness; Examples of Research Projects (summary)	AT
	Initial national communication under UNFCCC Bosnia Herzegovina	Communication	research on the impact and vulnerability to CC, adapt to CC (identify and implement measures)	BA
	5th national communication under UNFCCC Bulgaria	Communication	defines conditions for participation of Bulgaria to the Kyoto Protocol; adaptation measures (Chapter 6);	BG
	5th national communication under UNFCCC Czech Republic	Communication	defines conditions for participation of the Czech Republic to the Kyoto Protocol; adaptation measures (Chapter 6);	CZ
	5th national communication under UNFCCC EU	Communication	defines conditions for participation of the EU to the Kyoto Protocol; adaptation measures (Chapter 7);	EU
	5th National Report of the Government of the Federal Republic of Germany (Fifth National Communication)	Communication	Inventories of anthropogenic emissions of greenhouse gases; Policies and measures; Emissions scenarios and projections, and assessment of measures' effects; Vulnerability, impacts of climate changes and impacts of adaptation measures; Financial support and technology co-operation including financial support under Article 11; Research and systematic monitoring; Education, training and efforts to promote public awareness	DE
	5th national communication under UNFCCC Hungary	Communication	defines conditions for participation of Hungary to the Kyoto Protocol; adaptation measures (Chapter 6);	HU
	2nd national communication under UNFCCC Moldova	Communication	defines conditions for participation of Moldova to the Kyoto Protocol; adaptation measures (Chapter 4, 7, appendix);	MD
	The initial national communication on climate change of Montenegro to the United Nations Framework Convention on Climate Change (UNFCCC)	Communication	defines conditions for participation of Montenegro to the Kyoto Protocol; adaptation measures (Chapter 6);	ME
	First national communication under UNFCCC Serbia	Communication	defines conditions for participation of Serbia to the Kyoto Protocol; adaptation measures (Chapter 4);	RS
	5th national communication under UNFCCC Romania	Communication	Vulnerability assesment, cc impacts and adaptiaion measures (Chapter 6)	RO
	5th national communication under UNFCCC Slovenia	Communication	Greenhouse Gas Inventory Information; Policies and Measures; Projections and the Total Effect of Policies and Measures; Vulnerability Assessment, climate change Impacts and Adaptation Measures; Financial Resources and Transfer of Technology; Research and Systematic Observation; Education, Training and Public Awareness;	SI
	5th national communication under UNFCCC Slovakia	Communication	GHG Inventory; Policies and measurs to reduce GHG; projections, total effect of policies and measures and supplementarity relating to kyoto protocol mechanisms; adaptation measures, research and systematic observation; eductaion, training and public awareness	SK

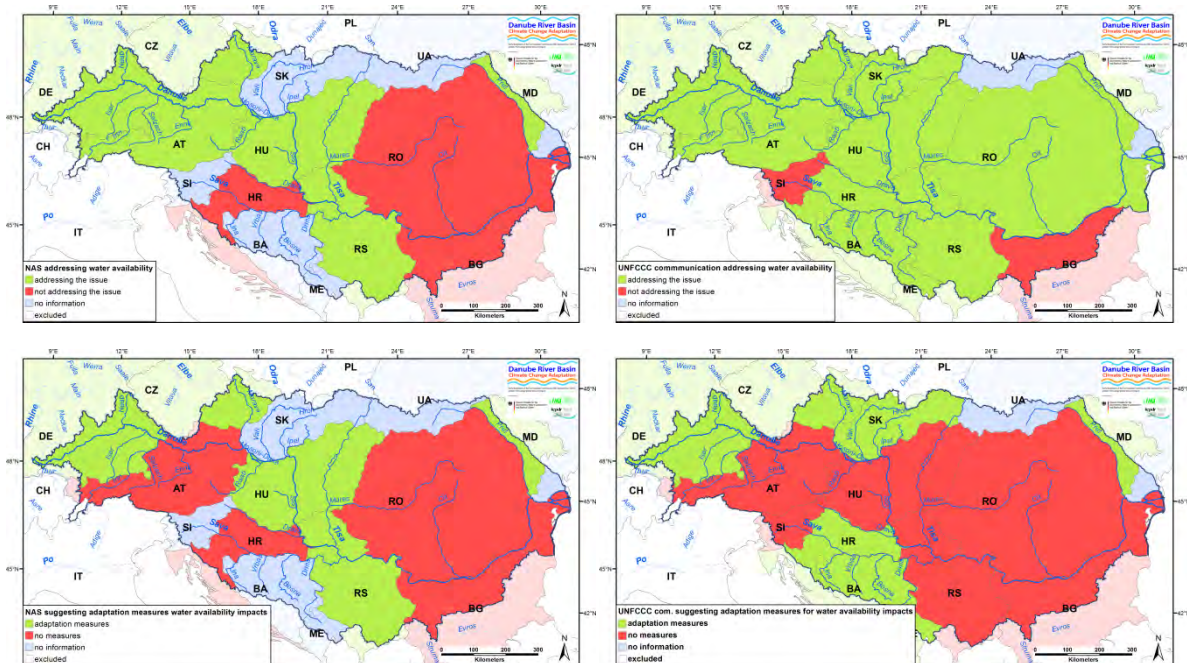
	Title	Type	Content	Spatial coverage
Conventions & Declarations	Alpine Convention (2009): Water and water management issues	Convention	Water and Water Management Issues - Report on the State of the Alps; Action Plan on CC in the Alps	Alpine space
	Danube River Protection Convention by the Danube Declaration of the Ministerial Meeting 2010 of the ICDPR	Convention	The Ministers evaluated the progress towards the protection and sustainable use of water and other ecological resources and reaffirm and strengthened their commitment to transboundary cooperation in the Danube River Basin; The Ministerial Meeting adopted the Danube River Basin Management Plan, which outlines concrete measures to be implemented by the year 2015 to improve the environmental condition of the Danube and its tributaries; Flood action plans for the 17 sub-basins in the Danube catchment area has been adopted.	DRB
	Drava Declararion (2008): water management, flood protection, hydropower utilization and nature and biodiversity conservation	Declaration	a Declaration concerning common approaches to water management, flood protection, hydropower utilization and nature and biodiversity conservation in the Drava River Basin	DRB
	Danube Declaration	Declaration	forms the overall legal instrument for co-operation on transboundary water management in the Danube River Basin; aims to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably	DRB
	Title	Type	Content	Spatial coverage
Water Framework Directive Documents	Drinking Water Directive	Directive	1. This Directive concerns the quality of water intended for human consumption. 2. The objective of this Directive shall be to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.	EU
	Water Framework Directive (2000)	Directive	to achieve good qualitative and quantitative status of all water bodies by 2015	EU
	Floods Directive (2007)	Directive	a Declaration on the assessment and management of flood risks	EU
	EU COM "Addressing the challenge of water scarcity and droughts in the EU" (2007)	EU Communication	the Communication presents an initial set of policy options at European, national and regional levels to address and mitigate the challenge posed by water scarcity and drought within the Union	EU
	WFD Guidance Document No. 24 (2009): RBM in a changing climate	Guidance	In the context of the WFD Common Implementation Strategy, an activity on climate change and Water was initiated in 2007 to produce guidance on how Member States should incorporate consideration of climate variability and change into the implementation of EU water policy.	EU
	River Basin Management Plan 2009 Austria	RBMP	implementation of WFD in Austria	AT
	River Basin Management Plan 2009 Danube Bavaria	RBMP	implementation of WFD in Bavaria	Bavaria
	ICPDR (2009): Danube RBMP	RBMP	implementation of WFD in the Danube River Basin	DRB
EU Climate Change Documents	EU Clearinghouse for CC impacts, vulnerability and adaptation (2011)	Information exchange platform	The Clearinghouse will be both an integrated and interoperable information system providing access to geospatial information and knowledge service, from multiple sources, for the development of adaptation policies, and a partnership between users and data providers for its development.	EU
	White Paper EU (2009)	EU White Paper	a taking-stock exercise, reviewing the literature and gathering the views of services and stakeholders, on the basis of the 2007 Green Paper; it should serve as a reference framework to develop an EU adaptation policy in future;	EU

	Title	Type	Content	Spatial coverage
Reports dealing with climate change and adaptation in the water sector	EEA report (8/2009): Regional Climate Change and Adaptation: The Alps facing the challenge of changing water resources	Report	The EU White Paper on Adaptation (EC, 2009) names mountain areas, in particular the Alps, as among the most vulnerable areas to climate change in Europe. The Alps have undergone an exceptionally high temperature increase of around + 2 °C between the late 19th and early 21st century, more than twice the rate of average warming of the Northern hemisphere, leading to widespread melting of glaciers, climbing of the snowline, changes in the run-off regime of rivers and general water resources availability (Auer et al., 2007). Objectives of the study: support networking on adaptation actions between stakeholders, science and administration, to assess possible needs, constraints and opportunities for adaptation to the adverse impacts of climate change on water resources; to gain some insights into the vulnerability of the Alps and surrounding European regions with regard to the impacts of climate change on water resources and specific water-sensitive regions in the Alps;	Alpine space
	Carpathian Environmental Outlook (KEO)	Report	The Outlook brings the most accurate and up-to-date science available on the status of the environment in this region and has also helped initialise a "KEO database" developed by the UNEP/GRID-Warsaw Centre. The KEO report is a source of knowledge that can evolve to support the new and developing needs of the Carpathian countries and relevant organizations in their quest to deliver common and concrete solutions to the challenges and opportunities now and in the years to come;	CR, HU, PL, RO, RS, SK, UA
	EEA report (2/2007): Climate Change and water adaptation issues	Report	<ul style="list-style-type: none"> to evaluate the implications for water resource policy and regulation across Europe of the need to adapt to climate change; to assess the strengths and weaknesses of current policies and regulations; to describe progress and activities in European countries. 	EU
	Research at the JRC in support of EU Climate change policy making (2009)	Report	The present and third edition of "Research at the JRC in Support of EU climate change Policy Making" shows the concrete research activities and results that contributed to EC policy initiatives in preparation for the COP15. They include the Commission's Communications "Towards a comprehensive climate change agreement in Copenhagen" and "Stepping up international climate finance: A European blueprint for the Copenhagen deal", the White Paper "Adapting to climate change: towards a European framework for action" and the EU Greenhouse Gas Monitoring System. This booklet also presents activities, coordinated within the JRC's climate change Priority Area, that will contribute to a sound foundation of scientific information for future policy actions.	Europe
	JRC Impacts of Europe's changing climate - 2008 indicator-based assessment	Report	overview to the impacts of Europe's changing climate	Europe
	JRC Climate Change and the European Water Dimension (2005)	Report	an very detailed evaluation of the possible impact of climate change on water resources and quality in the European inland and marine/coastal waters	Europe
	Climate Change in Germany - vulnerability and adaptation of climate sensitive sectors	Report	objectives: document existing knowledge on global change in Germany and analysis of impacts on seven sectors; present degree of adaptation and adaptive capacity; conclusions of vulnerability; discussion	DE
	OECD Water: the experience in OECD countries	Report	This report was prepared at the request of the OECD Working Party on Environmental Performance (WPEP) as background documentation to the meeting of the Fourth World Water Forum (Mexico, March 2006). This report has been written under the supervision of Christian Avérous, by Henri Smets and Eduard Goldberg (consultants), and with the technical assistance of Maria João Santos, Frédérique Zegel, Sylvie Dénaux and Nadine Rocher. The report has benefited from comments by a number of experts and officials of OECD member countries. It is published under the authority of the Secretary-General of the OECD.	AT, DE, SI, HU, CR, SK
	Romania Danube Delta	Report	overview of climate change impacts and adaptation measures in the Danube Delta in Romania	RO
	Towards a RBMP for the Tisza river supporting sustainable development of the region (ICPDR)	Report	Towards a River Basin Management Plan for the Tisza river supporting sustainable development of the region Memorandum of Understanding	Tisza River Basin

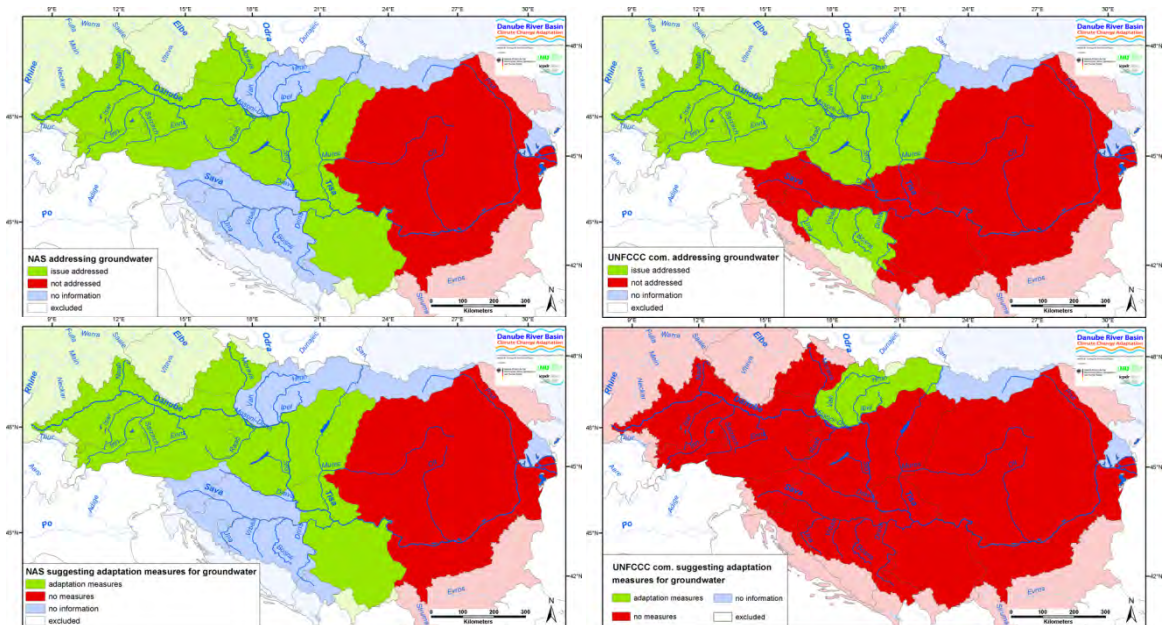
	Title	Type	Content	Spatial coverage
Guidances, Programs and Strategies	UNECE: Guidance on water supply and sanitation in extreme weather events	Guidance	a guidance document that disseminates knowledge and past experience to policymakers, managers of water supply and sanitation and the health sector; it recalls the basic scientific findings, provides advice on communication issues, addresses the vulnerability of coastal areas and bathing waters, discusses the impact on human health, places extreme weather events in the context of water safety plans and formulates advice for adaptation measures for water supply and sanitation services during such events	UNECE
	UNECE (2009): Guidance on water and adaptation to Climate Change	Guidance	The Guidance is a collaborative achievement: more than 80 experts from national authorities, academia, non-governmental and international organizations contributed to its preparation. Building on the principles of the Convention and on the experience gained in its implementation, the Guidance places special emphasis on the specific problems and requirements of transboundary basins, with the objectives of preventing, controlling and reducing transboundary impacts of national adaptation measures and thereby preventing and resolving possible conflict. The Guidance also underlines the benefits of cooperation in adapting to climate change in transboundary basins: sharing the costs and benefits of adaptation measures, better managing uncertainty through the exchange of information, broadening the knowledge base, and enlarging the range of measures available for prevention, preparedness and recovery, thus allowing us to find better and more cost-effective solutions.	UNECE
	National Program to abate the Climate Change Impacts in the Czech Republic	Program	defines conditions for participation of Czech Republic to the Kyoto Protocol; adaptation measures (Chapter 8);	CZ
	ICPDR's Flood Action Programme	Program	a framework, which defines the underlying principles and objectives for sustainable flood protection for the entire basin of the Danube River together with a timeframe	DRB
	Flood Forecasting and Warning System, Strategy for Flood Protection embedded in Water Act 254/2001 Czech Republic	Strategy	1) The purpose of this Act is to protect surface water and groundwater, stipulate conditions for economic utilisation of water resources whilst preserving and improving the quality of surface water and groundwater, create conditions for reducing the adverse effects of floods and drought and ensure the safety of water management structures. 2) The Act regulates legal relationships involving surface water and groundwater, the relationships of natural persons and legal entities with surface water and groundwater utilisation, as well as the relationships with plots of land and buildings directly connected with these waters, in the interests of ensuring sustainable water utilisation, the safety of water management structures and protection against floods and the impacts of drought.	CZ
	Strategy for the Danube Region	Strategy	an action plan that outlines actions and projects for the Danube Region, considering four main pillars: 1. Connecting the Danube Region; 2. Protecting the Environment in the Danube Region; 3. Building Prosperity in the Danube Region; 4. Strengthening the Danube Region	DRB

	Title	Type	Content	Spatial coverage
Excluded	NAS Bosnia and Herzegovina	NAS	no information available	BA
	NAS Slovenia	NAS	no information available	SI
	River Basin Management Plan 2009 Bulgaria	RBMP	not available in English	BG
	River Basin Management Plan 2009 Czech Republic	RBMP	not available in English	CR
	River Basin Management Plan 2009 Hungary	RBMP	not available in English	HU
	River Basin Management Plan 2009 Romania	RBMP	not available in English	RO
	River Basin Management Plan 2009 Slovenia	RBMP	not available in English	SI
	River Basin Management Plan 2009 Slovakia	RBMP	not available in English	SK
	5th national communication under UNFCCC Ukraine	Communication	Russian	UA

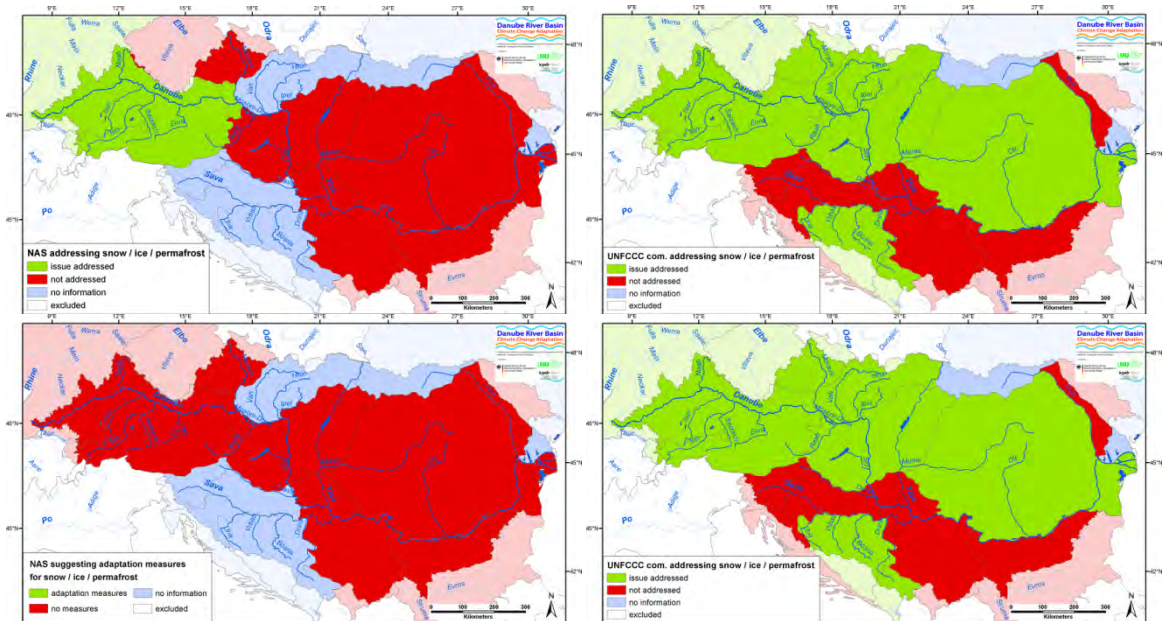
Appendix 3: Overview of adaptation activities suggested by National Adaptation Strategies and National Communications under the UNFCCC.



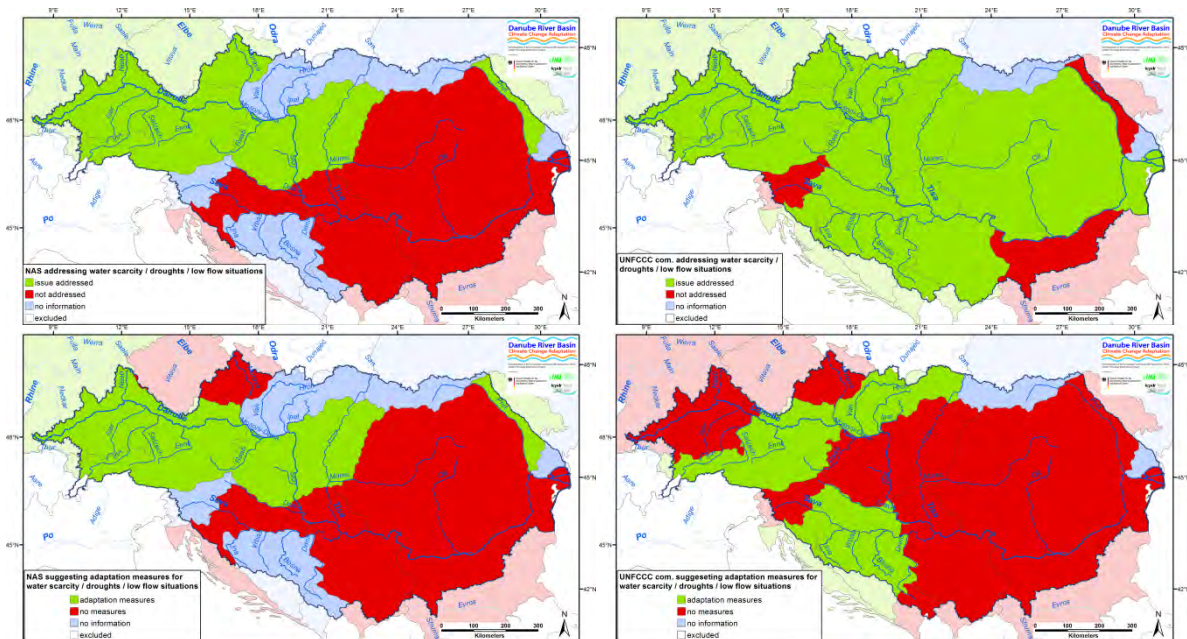
Countries where water availability is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



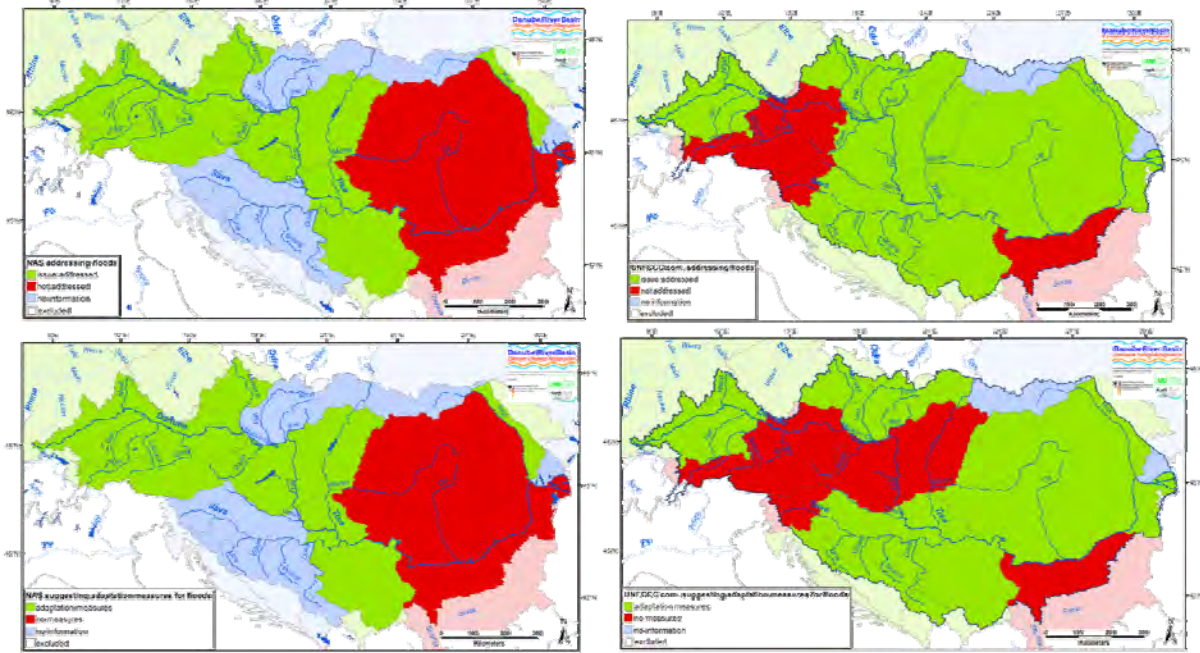
Countries where groundwater is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



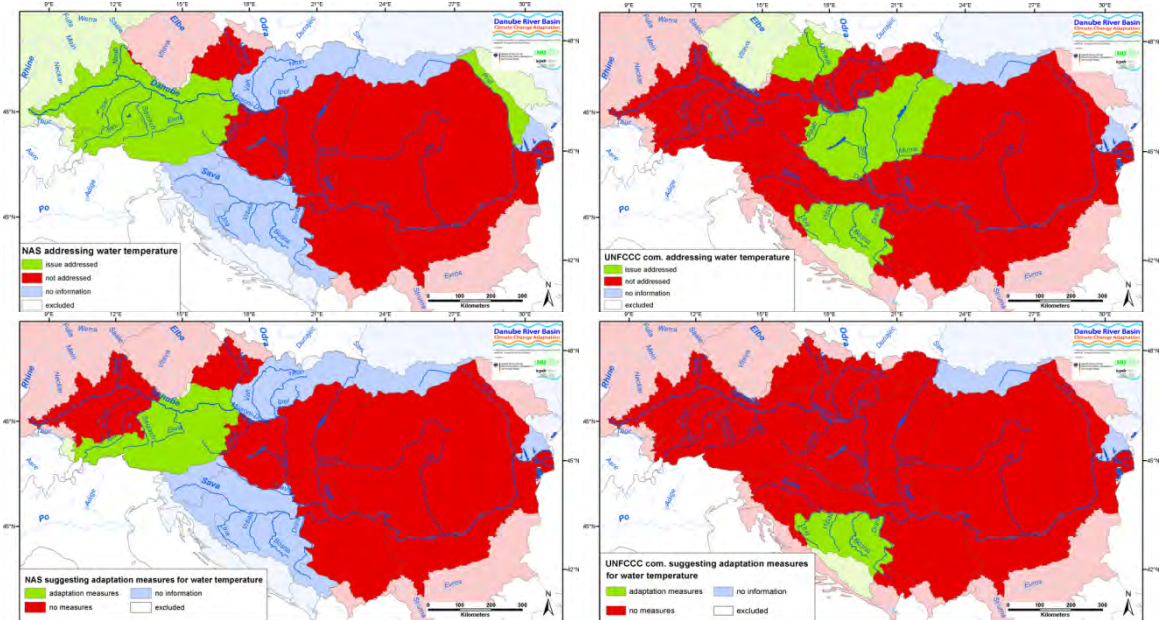
Countries where snow is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



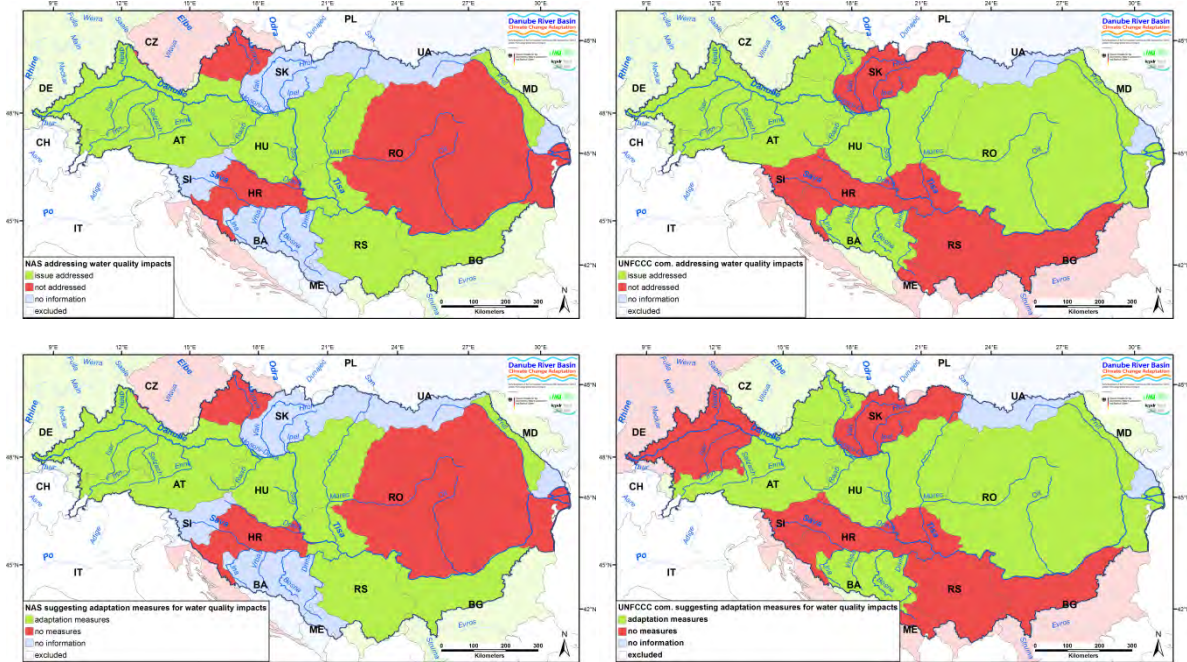
Countries where droughts are addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



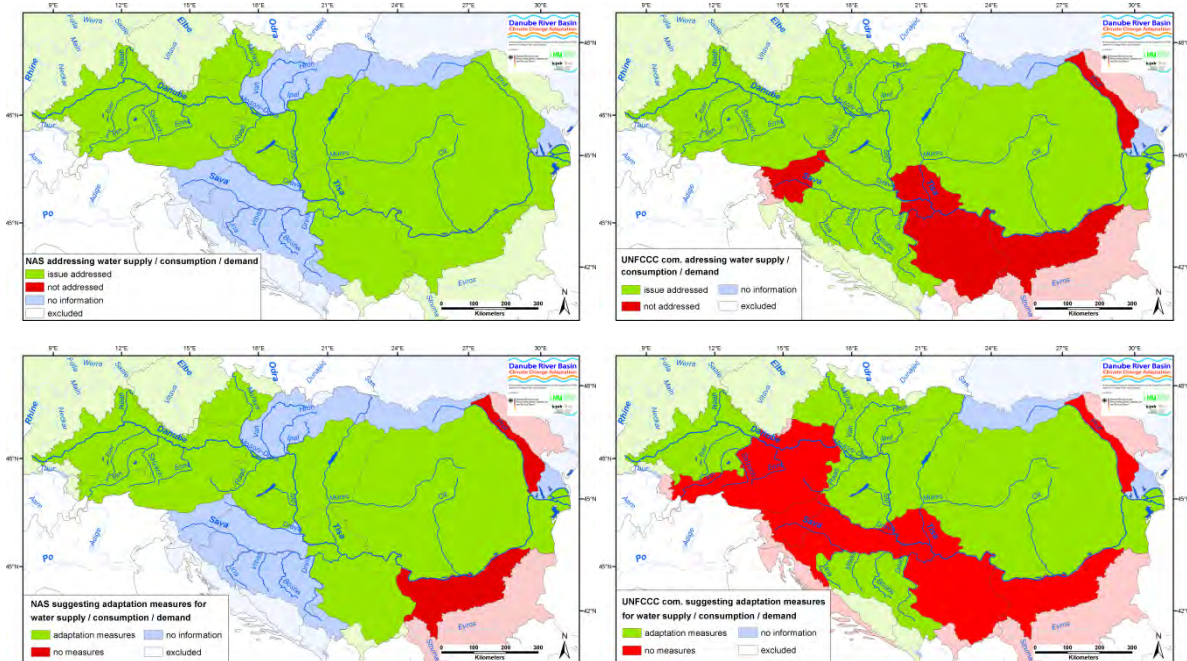
Countries where floods are addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



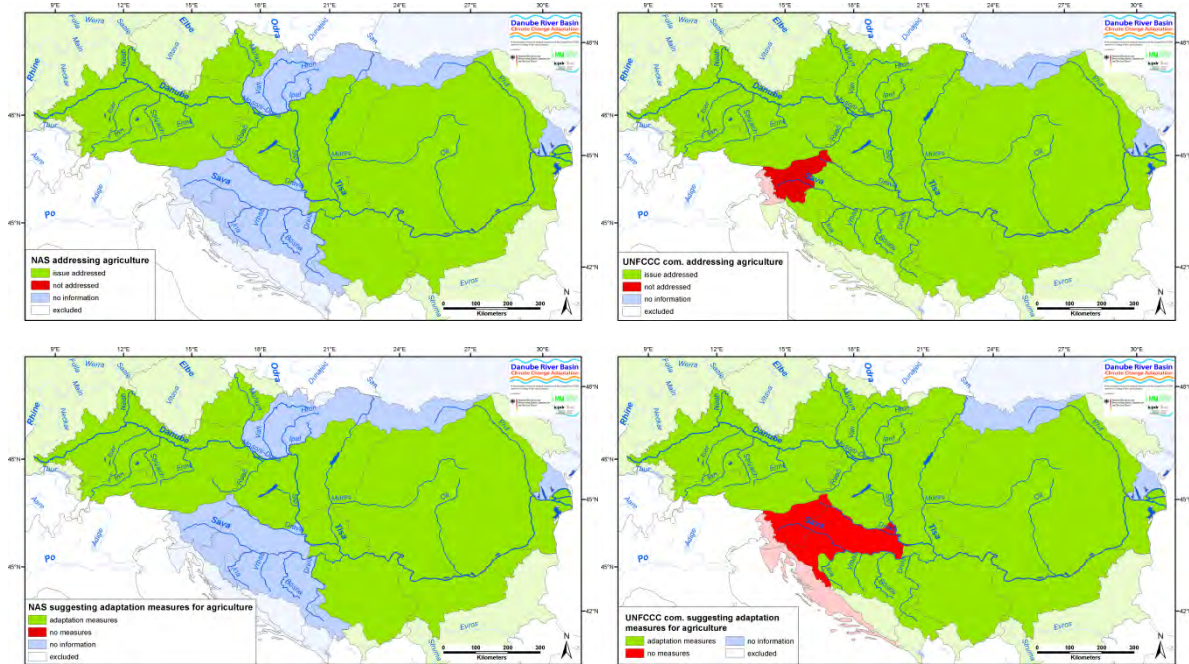
Countries where water temperature is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



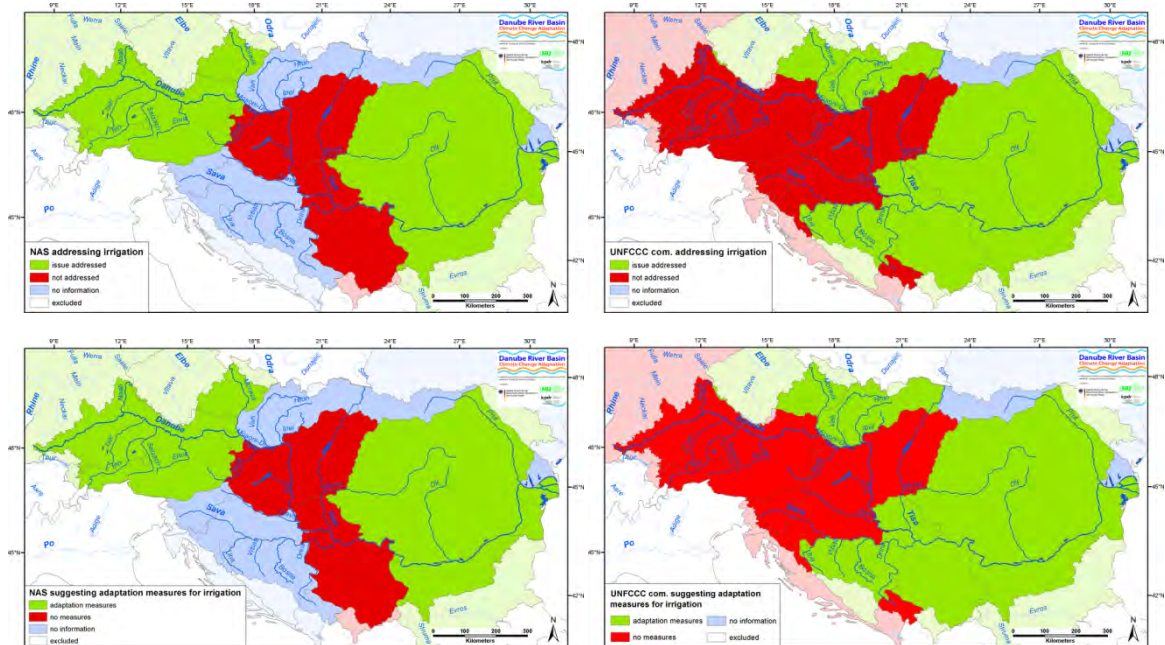
Countries where water quality is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



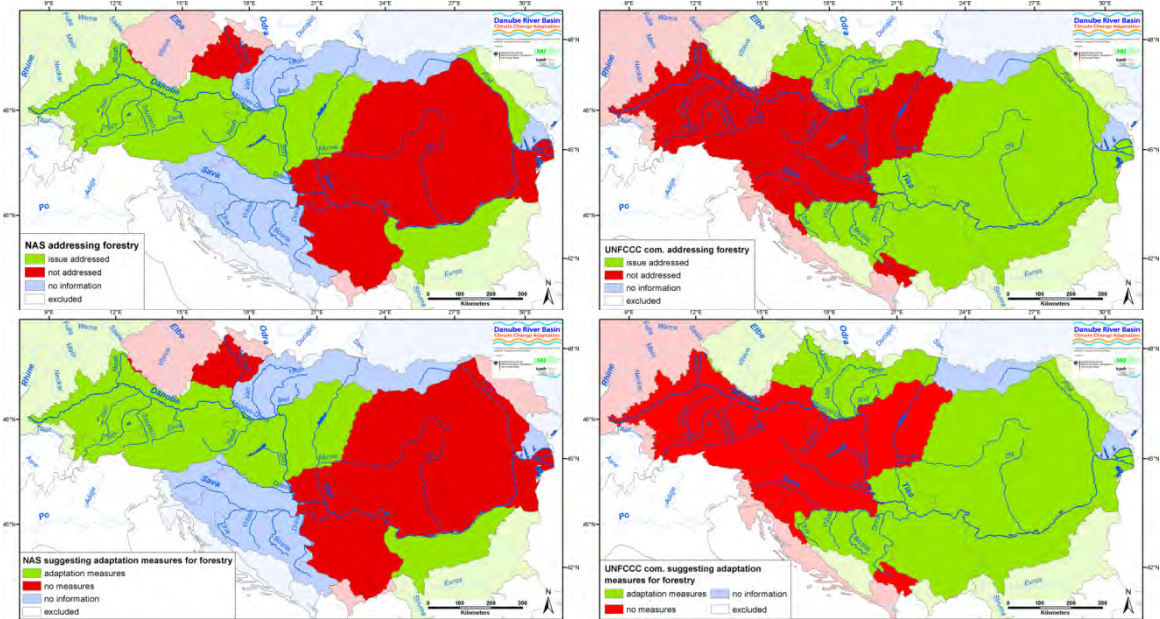
Countries where water supply is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



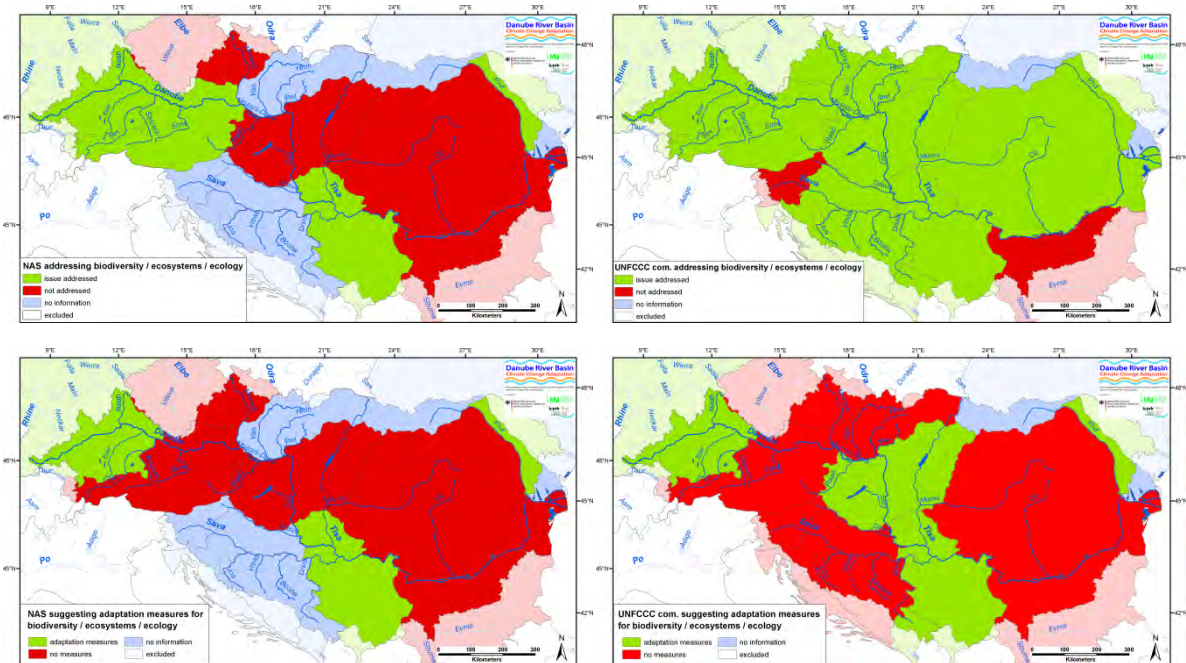
Countries where water related aspects of agriculture are addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



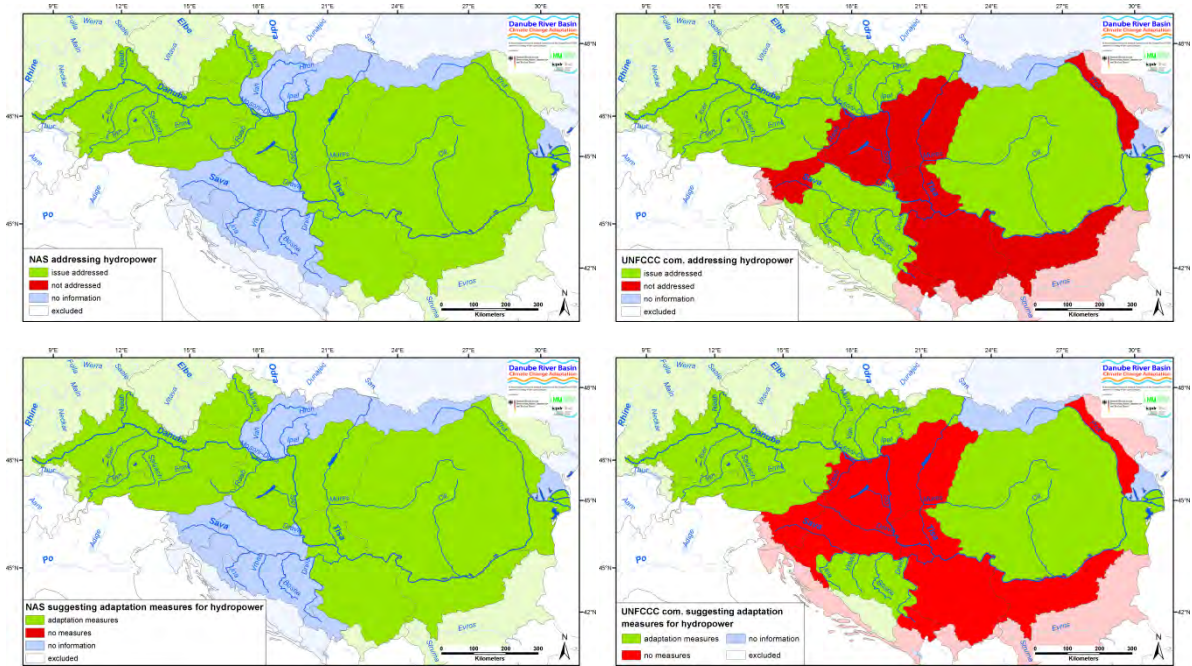
Countries where irrigation is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



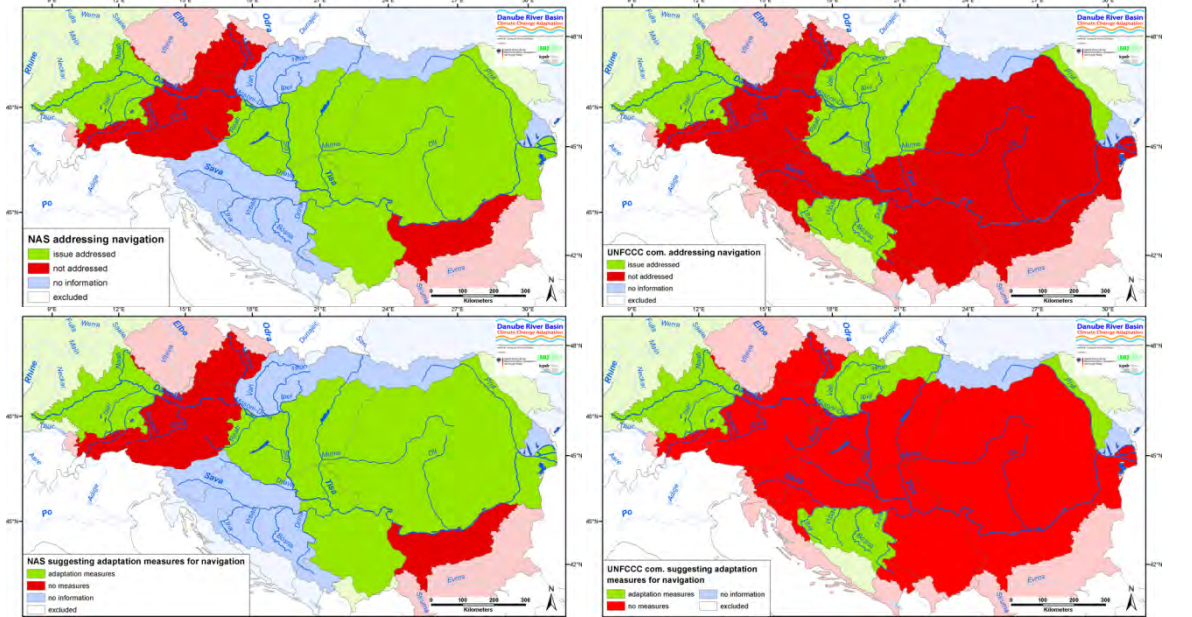
Countries where water related aspects of forestry are addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



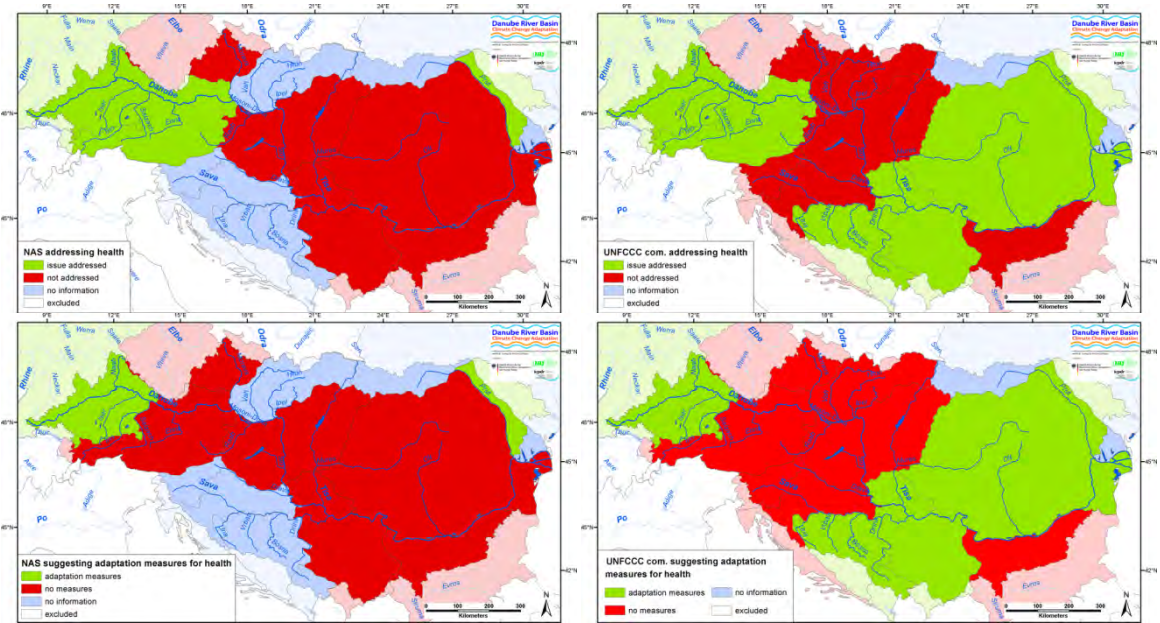
Countries where biodiversity is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



Countries where water related energy production is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



Countries where navigation is addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).



Countries where health issues are addressed (top) and adaptation measures are suggested (bottom) by National Adaptation Strategies (left) and National Communications under the UNFCCC (right).

Appendix 4: Details for the derivation of the uncertainty (Chapter 3).

	Amount of statements projects								Amount of statements adaptation strategies					Agreement of statements		Certainty of the parameter due to the projects				Calculation		Certainty-category for DRB
	Parameter	UDRB	MDRB	LDRB	DRB	Europe	total	Code	UDRB	MDRB	LDRB	DRB	total	Assessment	Code	In what do they agree/not agree?	Assessment	Code	formula	encoding		
Climate/Meteorology	Temperature	15	18	8	6	12	59	4	11	7	7	5	30	high	4,0	▪ the temperature response is significant in warming	high	4,0	4,00	4	very high	
	Precipitation	14	17	11	5	10	57	4	12	7	7	6	32	high	4,0	▪ the precipitation response is both statistically little significant and model dependent ▪ more precipitation in winter, less in summer	medium	2,0	3,17	3	high	
	Radiation	1	0	0	0	0	1	0,5	2	0	1	1	4	no	0,5	▪ no agreement: increase, decrease, quite stable	no	0,5	0,50	1	low	
	Wind	1	1	0	0	2	4	0,5	3	2	0	2	7	high	4,0	▪ increase in speed, intensity ==> storm damages ▪ more extreme wind events ▪ increase of north-western / north-eastern winds	good	3,0	1,82	2	medium	
	Extremes	9	12	9	3	6	39	3	8	6	5	6	25	high	4,0	▪ more intense and frequent extreme weather conditions ▪ spatial distribution and quantity are not clear	medium to good	2,5	3,11	3	high	
	Weatherpattern	2	2	2	1	1	8	1	4	4	3	0	11	weak/low	1,0	▪ diffuse and uncertain results	weak/low	1,0	1,00	1	low	
	Wateravailability	5	2	0	0	4	11	1	9	5	4	3	21	medium to good	2,5	▪ seasonal shift, less in summer - more in winter ▪ decrease, esp. in the southeast, more water stress ▪ increase in some areas in the northwest due to more precipitation	medium	2,0	1,71	2	medium	
Water availability	Evaporation	7	3	0	0	4	14	1	6	5	5	3	19	medium	2,0	▪ increase in potential evapotranspiration ▪ quantity not clear	good	3,0	1,82	2	medium	
	Runoff	13	10	2	7	7	39	3	11	5	3	4	23	medium to good	2,5	▪ seasonal shift, less in summer - more in winter ▪ some contradicting studies in annual amount ▪ differences in scales and models ▪ decrease, esp. in the southeast, more water stress ▪ increase in some areas in the northwest due to more precipitation	medium	2,0	2,47	2	medium	
	Groundwater	5	1	1	1	5	13	1	6	2	0	4	12	good	3,0	▪ decrease in groundwater recharge, esp. in summer ▪ quantity not clear	medium	2,0	1,82	2	medium	
	Soil	2	3	0	0	0	5	0,5	5	4	5	4	18	medium to good	2,5	▪ increasing soil erosion and sedimentation ▪ decrease in soil water content ▪ quantity not clear	medium	2,0	1,36	1	low	
	Snow	11	4	3	0	7	18	1,5	11	4	3	4	22	good	3,0	▪ decrease in snow cover, height and duration ▪ less snow-days, more rain than snow in winter ▪ increase of snow melt period	good to high	3,5	2,51	3	high	
	Ice	5	1	1	0	1	8	1	6	2	0	5	13	high	4,0	▪ glacier retreat	high	4,0	2,52	3	high	
	Permafrost	2	0	0	0	0	2	0,5	2	0	0	3	5	good to high	3,5	▪ melting of permafrost ▪ increasing destabilisation of mountain rock-walls ▪ further problems (natural hazards, infrastructure)	good to high	3,5	1,83	2	medium	
	Limnology	1	0	0	1	1	3	0,5	2	1	0	1	4	medium	2,0	▪ changes in lake stratification due changes in water temperature ▪ results of different lakes are not necessarily comparable	medium	2,0	1,26	1	low	

	Amount of statements projects								Amount of statements adaptation strategies					Agreement of statements		Certainty of the parameter due to the projects				Calculation		Certainty-category for DRB
	Parameter	UDRB	MDRB	LDRB	DRB	Europe	total	Code	UDRB	MDRB	LDRB	DRB	total	Assessment	Code	In what do they agree/not agree?	Assessment	Code	formula	encoding		
Extremes	Low Flow (in case of adaptation strategy: Low Flow and Drought)	9	3	0	1	1	14	1	11	6	4	10	31	medium	2,0	<ul style="list-style-type: none"> seasonal shift, more low flow events in summer - less in winter increase in duration and intensity few contradicting findings about the behaviour of changes in frequency 	medium to good	2,5	1,71	2	medium	
	Drought	3	9	7	4	7	30	2,5						medium	2,0	<ul style="list-style-type: none"> seasonal shift, more often in summer increase in duration and intensity 	medium to good	2,5	2,32	2	medium	
	Water stress	1				4	5	0,5						good	3,0	<ul style="list-style-type: none"> UDRB: low; MDRB: medium; LDRB: high quantity not clear 	medium to good	2,5	1,55	2	medium	
	Flood	13	7	5	3	5	33	2,5	10	7	4	11	32	weak/low	1,0	<ul style="list-style-type: none"> no clear findings about the behaviour of extreme flood events possible increase in flash floods and winter floods little regional and local agreement high uncertainty in small catchments 	weak	1,0	1,36	1	low	
Water use	Irrigation	1	2	0	0	3	6	0,5	3	1	4	1	9	good	3,0	<ul style="list-style-type: none"> increase in irrigation anthropogenic influence with managerial and political measures 	medium to good	2,5	1,55	2	medium	
	Drinking Water/Water Supply *								6	5	5	4	20	medium to good	2,5	<ul style="list-style-type: none"> possible decrease in water supply unclear development in water demand quantity not clear 	medium	2,0				
	Tourism	1	2	2	2	1	8	1	9	3	2	3	17	good	3,0	<ul style="list-style-type: none"> winter: unstable occurrence and height of snow cover, shortening of skiing season extended summer season demand on water and energy will increase due to climate change 	good	3,0	2,08	2	medium	
	Energy/Hydropower	6	2	0	1	4	13	1	8	3	2	5	18	medium	2,0	<ul style="list-style-type: none"> Hydroelectric power generation: possible increase in winter and decrease in summer Thermal electricity production: possible temperature load problematic in the future quantity not clear 	medium	2,0	1,59	2	medium	
	Navigation	4	0	0	0	0	4	0,5	5	4	1	1	11	good	3,0	<ul style="list-style-type: none"> less icing in winter more days per year without possibility of shipping due to low flow conditions unstable runoff conditions due to more extreme precipitation events 	good	3,0	1,65	2	medium	
	Agriculture	5	8	3	2	5	23	2	9	5	7	6	27	medium to good	2,5	<ul style="list-style-type: none"> increasing vulnerability earlier flowering and harvesting higher demand of water for irrigation future yields for different corns are not uniform 	good	3,0	2,47	2	medium	
	Landuse	1	0	0	0	1	2	0,5	4	0	1	2	7	medium	2,0	<ul style="list-style-type: none"> climate change might affect all types of land use increase in vulnerability 	medium	2,0	1,26	1	low	

	Amount of statements projects								Amount of statements adaptation strategies					Agreement of statements		Certainty of the parameter due to the projects				Calculation		Certainty-category for DRB
	Parameter	UDRB	MDRB	LDRB	DRB	Europe	total	Code	UDRB	MDRB	LDRB	DRB	total	Assessment	Code	In what do they agree/not agree?	Assessment	Code	formula	encoding		
Forestry	Forestry	2	2	0	0	0	4	0,5	8	5	7	3	23	good to high	3,5	▪ Shift of forest zones ▪ Increasing vulnerability ▪ quantity not clear	medium	2,0	1,52	2	medium	
	Industry	0	0	0	0	2	2	0,5	2	1	1	2	6	weak/low	1,0	▪ higher vulnerability due to more extreme events	weak/low	1,0	0,79	1	low	
	Household	1	0	0	0	2	3	0,5	1	1	1	3	6	weak/low	1,0	▪ probably increase in water demand, but less information	weak/low	1,0	0,79	1	low	
	Economy	2	0	0	0	0	2	0,5	2	0	2	2	6	weak/low	1,0	droughts and floods affects the productivity	weak/low	1,0	0,79	1	low	
	Health	0	0	0	1	1	2	0,5	6	2	3	5	16	good	3,0	▪ possible increase in diseases, injuries and deaths ▪ mostly tendencies but no clear numbers	medium to good	2,5	1,55	2	medium	
	Population	1	1	1	0	3	6	0,5	1	1	1	0	3	good	3,0	▪ decrease in most regions, but some areas with increase	good	3,0	1,65	2	medium	
	Coastal Zones *								1	1	3	3	8	good to high	3,5	▪ increase in sea surface temperature and sea level rising ▪ quantity not clear	medium to good	2,5				
Water quality	Water Quality	3	1	2	1	1	8	1	8	2	2	8	20	good	3,0	▪ decrease in water quality is likely to occur ▪ higher vulnerability of aquatic systems during droughts	medium	2,0	1,82	2	medium	
	Water Temperature	5	3	2	1	1	12	1	7	2	1	6	16	good	3,0	▪ increase in water temperature	good	3,0	2,08	2	medium	
	Sedimentation/Erosion	3	0	0	1	0	4	0,5	6	1	0	1	8	medium	2,0	▪ increase in sedimentation and erosion	medium	2,0	1,26	1	low	
	Contamination	0	0	0	1	1	2	0,5	4	2	0	3	9	medium	2,0	▪ high anthropogenic impact	medium	2,0	1,26	1	low	
Ecosystem	River/Lake Ecosystem	1	6	3	1	3	14	1	6	4	1	2	13	medium to good	2,5	▪ shift of ecosystems and changes in growing season	medium	2,0	1,71	2	medium	
	Biodiversity	2	3	3	0	3	11	1	8	5	4	5	22	medium to good	2,5	▪ decrease in biodiversity ▪ less native species, more invasive species	good	3,0	1,96	2	medium	

* for these impacts, information is only available from adaptation strategies

Number of projects	Code
0-7	0,5
8-14	1
15-21	1,5
22-28	2
29-35	2,5
36-42	3
43-49	3,5
> 50	4

Encoding of agreement and certainty	
0,5	no
1,0	weak/low
1,5	weak to medium
2,0	medium
2,5	medium to good
3,0	good
3,5	good to high
4,0	high

Certainty	
1	low
2	medium
3	high
4	very high

Appendix 5: Abbreviations of projects cited in the adaptation lists.

Adaptation Strategy // Project/Study	Abbreviation
2nd national communication under UNFCCC Moldova	UNFCCC (MD)
5th national communication under UNFCCC Austria	UNFCCC (AT)
5th national communication under UNFCCC Bulgaria	UNFCCC (BG)
5th national communication under UNFCCC EU	UNFCCC (EU)
5th national communication under UNFCCC Hungary	UNFCCC (HU)
5th national communication under UNFCCC Romania	UNFCCC (RO)
5th national communication under UNFCCC Slovenia	UNFCCC (SI)
5th national communication under UNFCCC Slovakia	UNFCCC (SK)
Adaptation of Agriculture in European Regions at Environmental Risk under Climate Change	ADAGIO
ADAM - Adaptation and Mitigation Strategies: Supporting European Climate Policy	ADAM
Global Change and Ecosystems Integrated Project: AquaTerra	AQUATERRA
Adaptation strategy in water management in the Czech Republic	NAS (CZ)
Alpine Convention (2009): Water and water management issues	Alpine Convention
Water Management Strategies against Water Scarcity in the Alps	ALP-WATER-SCARCE
Bayerische Klima-Anpassungsstrategie (BayKLAS) /Bavarian Climate Adaptation Strategy	BAYKLAS
Bulgarian National Action Plan on Climate Change	NAP (BG)
Carpathian Environmental Outlook (KEO)	KEO
Climate Change and Impacts on Water Supply	CC-WATERS
Central and Eastern Europe Climate Change Impact and vulnerability Assessment	CECILIA
Climate Change and Variability: Impact on Central and Eastern Europe	CLAVIER
Climate Change in Germany - vulnerability and adaptation of climate sensitive sectors	CC (DE)
Climate Water - D3.1: Analysis and synthesis of methodologies of adaptation measures	CLIMATEWATER
Climate change, impacts and adaptation strategies in the Alpine Space	CLIMCHALP
Impacts of Climate Change and Variability on European Agriculture - CLIVAGRI	COST37
Croatia adaptation plans	NAP (HR)
Croatia: Fifth national communication under the UNFC on CC	UNFCCC (HR)
Czech Republic: Fifth National Communication of the Czech Republic on the UN Framework Convention on Climate change	UNFCCC (CZ)
Danube Declaration	Declaration (DRB)
Danube River Protection Convention by the Danube Declaration of the Ministerial Meeting 2010 of the ICDPR	DRPC
Drava Declaration (2008): water management, flood protection, hydropower utilization and nature and biodiversity conservation	Declaration (DRRB)
Drinking Water Directive	DWD
Effects of climate change on the inland waterway networks	ECCONET
EEA report (2/2007): Climate Change and water adaptation issues	EEA 2007
EEA report (8/2009): Regional Climate Change and Adaptation: The Alps facing the challenge of changing water resources	EEA Alps 2009
EU Clearinghouse for CC impacts, vulnerability and adaptation (2011)	EU Clearinghouse
EU COM "Addressing the challenge of water scarcity and droughts in the EU" (2007)	EU COM
European Outlook on Water Use; Outlook on Water Use in Europe	EU-WATERUSE
Fifth National Report of the Government of the Federal Republic of Germany (Fifth National Communication)	UNFCCC (DE)
First national communication under UNFCCC Serbia	UNFCCC (RS)

Flood Forecasting and Warning System, Strategy for Flood Protection embedded in Water Act 254/2001 Czech Republic	Water Act (CZ)
Floods Directive (2007)	Floods Directive
German Strategy for Adaptation to Climate Change	NAS (DE)
Global Change in Mountain Regions	GLOCHAMORE
Hungarian National Climate Change Strategy	NAS (HU)
ICPDR (2009): Danube RBMP	RBMP (DRB)
ICPDR's Flood Action Programme	ICPDR FAP
Initial national communication under UNFCCC Bosnia Herzegovina	UNFCCC (BA)
JRC Climate Change and the European Water Dimension (2005)	JRC 2005
JRC Impacts of Europe's changing climate - 2008 indicator-based assessment	JRC 2008
Klimaveränderung und Konsequenzen für die Wasserwirtschaft	KLIWA
of Moldova: Climate Change in Moldova Socio-Economic Impact and Policy Options for Adaptation	NAS (MD)
National Adaptation Strategy Romania	NAS (RO)
National Adaptation Strategy Serbia	NAS (RS)
National Action Plan on Climate Change of Romania (2005-2007)	NAP (RO)
National Adaptation Strategy on Climate Change of Austria	NAS (AT)
National Program to abate the Climate Change Impacts in the Czech Republic	NP (CZ)
National Strategy on Climate Change of Romania 2005-2007	NAS (RO)
OECD Water: the experience in OECD countries	OECD
Research at the JRC in support of EU Climate change policy making (2009)	JRC 2009
River Basin Management Plan 2009 Austria	RBMP (AT)
River Basin Management Plan 2009 Danube Bavaria	RBMP (Bavaria)
Romania Danube Delta	DD (RO)
Strategy for the Danube Region	SDR
Anpassungsstrategien an den Klimawandel für Österreichs Wasserwirtschaft	ST_BLOESCHL_AT
Analysis of the water temperature regime of the Danube and its tributaries in Croatia	ST_BONACCI_HR
Impacts of and Adaptation to Climate Change in the Danube-Carpathian Region	ST_CEU
The Agro-ecological potential of Hungary and its prospective development due to climate change	ST_FODOR_HU
Climate Change and Water, IPCC Technical Paper VI	ST_IPCC
Climate Change impacts and adaptation in agriculture	ST_JOLANKAI_HU
The initial national communication on climate change of Montenegro to the United Nations Framework Convention on Climate Change (UNFCCC)	UNFCCC (ME)
Towards a RBMP for the Tisza river supporting sustainable development of the region (ICPDR)	RBMP (TRB)
UNECE (2009): Guidance on water and adaptation to Climate Change	UNECE 2009
UNECE: Guidance on water supply and sanitation in extreme weather events (2007-2010)	UNECE 2010
VAHAVA	VAHAVA
Wasserwirtschaftliche Anpassungsstrategien an den Klimawandel	WASKLIM
Water Framework Directive (2000)	WFD
WFD Guidance Document No. 24 (2009): RBM in a changing climate	WFD 24
White Paper EU (2009)	White Paper EU
WWF Danube Carpathian Programme	WWF-DCP