



# Climate Change Adaptation and Disaster Risk Reduction in Europe

## *A Review of Risk Governance*



United Nations  
International Strategy for Disaster Reduction





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## **Preface**

This study aims to analyse climate related disasters risk reduction governance in the European context. There will be a particular focus on the flow of information from researchers to policy makers and the way in which the decision-making process in climate adaptation and risk reduction is commonly managed. The study will confine itself to Europe and will look into practical cases of European regional and national adaptation strategies. It will also investigate specific projects and initiatives addressing Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR). The paper is divided into three sections:

1. An overview of the climate-risks and disaster risk reduction field(s).
2. An analysis of the current governance structure (studying the flow of information and decision-making processes).
3. Recommendations for the enhancement of these practices in regional and international organisations.

This study was conducted using a desk review and analysis of secondary resources, national and regional policy paper documents dealing with CCA, DRR and environmental management, and greatly benefited from the information shared through interviews with key informants such as academic experts in the area of CCA and DRR, officers working in relevant international and regional organisations and national decision makers involved in policies on CCA and DRR at country level.



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## List of Abbreviations

ACP	African, Caribbean and Pacific Group of States
ASG	Adaptation Steering Group
BCPR	Bureau for Crises Prevention and Recovery
CAF	Cancun Adaptation Framework
CCA	Climate Change Adaptation
CRED	Centre for Research on Epidemiology of Disasters
DG	Directorate General
DG Climate	Directorate General for Climate Action
DG DEVCO	Directorate General for Development and Cooperation
DG Echo	Directorate General for Humanitarian Aid and Civil Protection
DG Environment	Directorate General for Environment
DG Regio	European Fund for Regional Development
DG Research and Innovation	Directorate General for Research and Innovation
DKKV	Deutsches Komitee Katastrophenvorsorge
DRR	Disaster Risk Reduction
EC	European Commission
EEA	European Environment Agency
EFDRR	European Forum for Disaster Risk Reduction
ERA	European Research Area
EU	European Union
EUR-OPA	European and Mediterranean Major Hazards Agreement
FP6	Sixth Framework Programme
FP7	Seventh Framework Programme
GFMC	Global Fire Monitoring Centre
GPDRR	Global Platform for Disaster Risk Reduction
GWFN	Global Wildland Fire Network
HFA	Hyogo Framework for Action
ICCG	International Centre for Climate Governance
IIASA	International Institute for Applied Systems Analysis
INTERREG	Interregional Cooperation Programme
JRC	Joint Research Centre
ISDR	International Strategy for Disaster Reduction
NatCat	MunichRe's Natural Hazard Database
NGO	Non Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
Sigma	SwissRe's Natural Hazard Database
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHabitat	United Nations Agency for Human Settlements
UNISDR	United Nations International Strategy for Disaster Reduction



## Executive Summary

*“In 2010 climate-related disasters due to floods, storms, droughts and extreme temperatures accounted for more than US\$ 15 billion worth of damage and losses in Europe.”<sup>1</sup>*

A key aspect of resilience to climate-related hazards lies in the way the governance of risk is undertaken at the national and local level through well-planned policies and projects.

The central role of governance in reducing risk is recognised at the international level by the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA) (strategic goal 1 – priority 1). In Europe, the White Paper “Adapting to climate change: Towards a European framework for action” sets clear regional policy guidance on reducing climate-related risks as a central issue for a sound adaptation to a changing climate. The Council of Europe, through its Major Hazards Partial Agreement EUR-OPA, has also encouraged the necessary interaction between decision makers and scientists to improve the governance of risk.

In the last decade, a growing number of national programmes and community-based projects have been developed in the European region. There is a growing accumulation of knowledge on “what has worked” (and what has not) in implementing policies, programmes and projects, which address climate adaptation with the objective of reducing risks posed by climate-related hazards.

“What has worked” in climate adaptation intervention depends on multiple factors. However a pre-condition is for clear guidance to be provided by national and local policy makers.

There are two reasons for this:

- Adaptation and DRR are both short- and long-term processes. There is no real adaptation to climate change if there is not a long-term vision and strategy on the side of national and local policy makers.
- Adaptation to climate change and interventions need integration at multiple levels. A sound governance of adaptation and DRR is needed to create and maintain a framework of intervention, which well connects the community to the national to the regional and international level.

Climate change is an increasingly important topic gaining attention among governments and international organisations. Though still primarily focused on climate change mitigation, Climate Change Adaptation (CCA) continues to grow as researchers, decision makers and the general public have started to realise that we are unable to fully mitigate the effects of climate change.

In this scenario, Disaster Risk Reduction (DRR) is an approach that greatly contributes to adaptation to a changing climate. DRR is both a short- and long-term strategy focusing on reducing vulnerability to natural hazards by increasing human, social and environmental capacity and improving physical infrastructure to address the projected changes of future climate.

While in recent years the scientific community has broadened the body of scientific knowledge on climate change and CCA there is still a need to consolidate scientific information alongside the assimilation of lessons learned from practitioners involved in the management of adaptation projects. Governmental decision makers demand guidance and information to enable well informed decisions on how best to invest in risk reduction measures to prevent the risks associated to weather-related hazards.

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<sup>1</sup> EM-DAT, CRED

## Aim and Objectives

The main aim of this review is to provide policy guidance and capacity to European decision makers in the governance of climate-risks. This study presents a critical analysis of on-going research projects dealing with the social dimension of CCA.

In doing so, the research process set out the following objectives and tasks:

1. Develop a project sample profile of on-going research projects, which addresses the social dimension of CCA and a synopsis of relevant programmes and projects which focus on community climate adaptation and risk reduction.
2. Construct an overview of most relevant actors (international organisations, academia, national organisations, centres of excellence, NGOs, etc.), which operate at the national and community level to implement CCA and DRR interventions.
3. Carry out a critical analysis of the use of European research projects findings by European policy and decision makers.
4. Undertake an assessment of the level of integration of on-going climate adaptation programmes and projects within the broader regional and international policy frameworks.
5. Formulate recommendations to guide European decision makers in enhancing the effectiveness of national and local governance of climate-related risks.

## Methodology

The study primarily considered the flow of information from researchers to policy makers and the way in which the decision-making process in climate adaptation and risk reduction is commonly managed. The study looked into practical cases of European regional and national adaptation strategies and specific projects and initiatives addressing climate adaptation and DRR. Based on the literature and cases reviewed, a critical analysis of the key elements of good governance of CCA and DRR in Europe is proposed.

Specific steps and tasks followed in the course of the research were as follows:

- Information and data collection from relevant literature (EC, UNISDR, EUR-OPA, etc.) on on-going activities that in Europe address CCA and DRR.
- A desk review of the current European policy frameworks related to CCA (e.g. EU White Paper, EU Water Framework Directive, etc.) and main international policy agreements (e.g. Hyogo Framework for Action – HFA).
- Review a sample of the on-going FP7 projects addressing climate risk modelling, CCA and DRR.
- Mapping of the organisations (international/regional organisations, governmental organisations, academia, National Platforms, NGOs, etc.), which at the European level are involved in implementing adaptation and DRR programmes and projects providing information on their main current activities, how and from where these institutions/organisations get their climate and risk information, and from where they receive resources.
- Interviewing relevant key informants (FP7 project coordinators, EUR-OPA specialised centres managers, international and regional organisation officers, governmental officers, academia representatives, etc.) to collect information and data relevant to the study's objective.

## Findings

This review looks at the major players in CCA and DRR at the European level. And it identifies seven prominent frameworks in the field of CCA and DRR:

1. Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters
2. The EU's White Paper 'Adapting to Climate Change: Towards a European framework for action';
3. Cancun Adaptation Framework, Part of the Cancun Agreements at the 2010 Climate Change Conference in Cancun, Mexico (COP 16), Paras 11-35
4. The EU Water Framework Directive on establishing a framework for Community action in the field of water policy (DIRECTIVE 2000/60/EC);
5. European Parliament and Council of the European Union Communication on "Addressing the challenge of water scarcity and droughts in the European Union";
6. The EU Flood Framework Directive on the assessment and management of flood risks (DIRECTIVE 2007/60/EC); and
7. EU Civil protection, prevention of disasters (Council Decision 2007/779/ EC).

The review then assesses 27 different projects across Europe from the following research funding programmes:

- Sixth Framework Programme (FP6)
- Seventh Framework Programme (FP7)
- INTERREG IVB North West Europe
- INTERREG IIIB North West Europe
- INTERREG IVC, INTERREG IIIC
- INTERREG Baltic Sea Region

Based on the research projects and the objectives of the frameworks this study identified the following categories in which to group the research projects:

1. Policy Assessment.
2. Science Assessment.
3. Policy and Science Assessment.
4. Cooperation and Networks.
5. Knowledge Sharing.
6. Water, Floods & Sea level Rise.

There is a wide range in project size, scope and effort, and in order for research institutes to secure funding it is important to understand the research decision-making process, particularly at the EC level.

The CCA and DRR fields, in Europe, are complex and fragmented. They involve multiple actors on the local, sub-national, national and international level. Major disasters often cross borders, and countries must collaborate to find effective DRR solutions. DRR is not always directly associated with CCA, either being viewed as its own field or as part of disaster management. This increases the difficulty in locating DRR within governments. The complexity of disasters and DRR strategies increases the difficulty in holding government officials accountable. This is partly caused by the lack of public access to and understanding of DRR information, generally coming from the media and education system, but also from problems with the flow of information from researchers to policy makers. This process is further complicated by misunderstandings and differences in the priorities of researchers and policy makers.

Issues with DRR are compounded when working in Europe because in addition to addressing the above barriers, all solutions and strategies must work within existing European legislations and directives. Otherwise they must find ways to change them, working across language barriers and styles, and in an environment where access to and availability of finance is decreasing. A number of EU legislations and directives including the Water and Flood Frameworks Directives were not developed for CCA and DRR although they include components that can be

applied to them both. In Europe (both EU and non-EU), it is time consuming to create different legislations and directives, and it is therefore important to be knowledgeable about existing frameworks and to find ways of incorporating them into CCA and DRR initiatives and projects. Despite the use of English as the most common working language across Europe, there is still a gap in information flow across borders. Access to finance limits the extent and scope in which policy makers, researchers and international institutions can address DRR. Some potential benefits however do accrue from a lower availability of funding in that the importance of joint projects and activities is increased. All these issues increase the complexity of DRR, but because groups are working to further identify and understand the major issues, progress will be made in finding practical solutions and strategies for overcoming the barriers.

## Recommendations

The study identifies five main areas of recommended strategies for enhancing DRR and consequently, CCA for researchers, policy makers and international organisations:

### 1. Expanding and enhancing Networks and Communication

- UNISDR shall further promote its visibility as “broker” of contacts and information in Europe among relevant regional and national institutions working in areas related to CCA and DRR.
- Projects should include relevant policy makers from the beginning. It is important to make sure that the EC science adviser is engaged.
- Hold an annual meeting for the major European donors and funders in which they present their current and next year’s funding and project initiatives.
- Increase and create opportunities for researchers and policymakers to exchange information.

### 2. Capacity Building

- International institutions such as EC, Council of Europe, UNISDR and regional platforms such as the European Forum for DRR and their national actors (HFA Focal points, National Platform Coordinators, Permanent Correspondents, etc.) should be involved in hosting workshops focusing on specific aspects of CCA and DRR, on a central topic of science/policy interface.
- Governments and policy makers should be more involved in preparing educational curricula for universities and post-graduates, as well as being invited to speak at lectures.
- EU/UN level should fund projects which look at facilitating good communication practices as well as potentially trying to quantify the cost of communication both in terms of benefits achieved and costs of achievement.
- The promotion of the use of the existing UNISDR terminology in CCA and DRR<sup>2</sup> is an important starting point to build a common correct understanding of the concepts attached to CCA and DRR and improve communication among different stakeholders and communities.

### 3. Joint Projects and Programmes

- Have international organisations host joint capacity building workshops, which will increase resource efficiency and enhance networks.
- At the EC level, have the topic evaluators of major EC projects (FP7, FP6, etc.) identify selected projects where there is either an overlap or potential links and synergies for working together.

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<sup>2</sup> <http://www.unisdr.org/we/inform/publications/7817>



#### **4. Increasing the effectiveness of and number of National Platforms**

- National Platforms need to serve as an intermediate body between policy and researchers, playing an active role in research by joining the steering committees of their country's major research projects as well as becoming more involved with the relevant European research projects.
- National Platforms can create partnerships among research communities, governments and the private sector.
- National Platforms need to extend beyond their countries' borders. Twinning among European National Platforms is a cost-efficient tool to share best practice and techniques on practical issues.

#### **5. Improving the Flow of Information**

- The EU clearinghouse and PreventionWeb can build specific synergy to assure that the data and information that will be published in the EU clearinghouse website (expected to go live in 2012) are well disseminated among the CCA and DRR community reached by PreventionWeb and its mailing list.
- Given the importance of local knowledge in addressing CCA and DRR, it is imperative to record local disaster data, particularly damage and loss at the local level.
- Develop entities responsible for English translation either as part of National Platforms, regional or international organisations and incorporate translation to main European languages as part of a project or institution's budget.

All these strategies share synergies and do not operate in isolation. This review outlines the recommendations above and provides suggestions for their implementation. It is important to note that the goal of this publication is to serve as the first step in a continual process for identifying issues and implementing practical solutions.



# 1

## **An Overview of the Climate-Risks and Disaster Risk Reduction Fields**



## 1.1 Background

Climate Change Adaptation (CCA) as defined by UNISDR is “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.”<sup>3</sup>

CCA is a long-term strategy, which focuses on increasing social capacity and physical infrastructure to address the changes of a future climate. Climate change is an increasingly important topic gaining attention at last among governments and international organisations. Though governments and international organisations still primarily focused on climate change mitigation, the field of CCA continues to grow as we have started to realise that we are unable to fully mitigate the effects of climate change. Though the CCA field is growing in terms of the number of groups participating and funding available, it is a vast complex field that requires effective actions to prioritise and respond to the growing issues.

Disaster Risk Reduction (DRR) is defined by the UNISDR as “the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”<sup>4</sup>

Given the two definitions, DRR is a means to adapt to climate change impacts instead of an entirely separate field, since reducing the risks of disasters and natural hazards is an effective long-term form of adaptation. DRR “is therefore tailor-made to help counteract the added risks arising from climate change.”<sup>5</sup>

As stated in the Hyogo Framework for Action (HFA) and referenced in the UNISDR 2008 Briefing Note 1 on CCA and DRR, it is important to “promote the

integration of risk reduction associated with existing climate variability and future climate change into strategies for the reduction of disaster risk and adaptation to climate change...”<sup>6</sup> Furthermore, as stated in paragraph 10 page 2 of the Chair’s Summary on the 2009 Global Platform, “a number of countries [have] put forward concrete proposals to integrate or coordinate their efforts in disaster risk reduction and climate change adaptation ... [including] one group of countries [which] proposed that a minimum of 30% of the adaptation finance available to developing countries should be applied to weather- and climate-related risk reduction projects.”<sup>7</sup> On an international scale, the recent Cancun Adaptation Framework (CAF) aims to enhance “climate change related disaster risk reduction strategies, taking into consideration the Hyogo Framework for Action...”<sup>8</sup> Furthermore, many of the actions recommended in the CAF support DRR strategies, even if not directly referred to as DRR.

CCA and DRR require long-term strategies with upfront investment to properly prepare and minimise future risk of disasters. Both focus on taking proactive steps towards reducing risks and adapting instead of simply responding to events. It is necessary to assure that DRR policies and programmes operate in synergy with CCA strategies from the local to the national and international level. Conceptually, it makes sense that DRR is a means for CCA, however this does not always transfer to the operational level. According to UNISDR, (2009a), “environment authorities usually have responsibility for climate change adaptation, whereas authorities for disaster management, civil defence and home affairs typically have responsibility for disaster risk reduction.” This is a misinterpretation of the principles behind CCA and DRR, and in the future there needs to be greater collaboration between the respective parties.

Given the cross-sectoral nature of CCA and DRR the full contribution of adaptation measures often goes unrecognised. There is no single institution or

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<sup>3</sup> UNISDR, 2009c

<sup>4</sup> UNISDR, 2009c

<sup>5</sup> UNISDR, 2008

<sup>6</sup> United Nations, 2005

<sup>7</sup> UNISDR, 2009b

<sup>8</sup> UNFCCC, 2010



Flooding in Riga Latvia

government department that is responsible for all aspects of CCA or DRR and therefore, CCA and DRR policies must be implemented and incorporated into the policies of all sectors. Government offices often have mandates to address certain issues exclusively related to their office, which reduces the amount of time, and resources they can dedicate to cross-sectoral policies and programmes. Furthermore, most governments have bureaucratic policies and procedures in place, which limit their ability to work with other groups and government offices. An element of competition among different government offices exists, which is good in theory but is problematic when dealing with CCA, as the cross-sectoral nature requires cooperation. In Europe, as assessed by the 2009 HFA Regional Report, competition is further generated because of the “scarce

financial resources [available], particularly at the local and regional levels.”<sup>9</sup>

Cooperation exists between different government offices but often it takes time to develop trust and build a team approach for working together. At the country level, mechanisms such as the presence of a National Platform for DRR can improve cooperation among different institutions within government and coordination with non-governmental actors and academic centres.<sup>10</sup> DRR extends beyond all levels of government across multiple sectors and includes research institutes, universities, international organisations, NGOs and the private sector. Each of these groups has a different focus within DRR including climate, disasters, adaptation, vulnerability,

<sup>9</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>10</sup> For more information on the NP guidelines see (<http://www.preventionweb.net/english/professional/publications/v.php?id=601&pid:184>)

risk assessment, etc. Due to the vast, scattered nature of CCA and DRR, they are difficult fields to address, especially when many of the organisations and institutions operate in isolation from one another. A lack of available funding and difference in priorities and understanding causes different organisations and institutions to compete with one another for resources, decreasing their willingness to cooperate and work together.

The complexity and difficulty of DRR is increased when considering the different perspectives and experiences of researchers and policy makers, often causing disconnect between the two groups, even when addressing the same issues. Some progress has been made in bringing researchers and policy makers together to better understand the issues but there is still the “challenge for policy-makers ... to understand ... climate change impacts and to develop and implement policies to ensure an optimal level of adaptation [and disaster risk reduction]”<sup>11</sup> This is a fundamental issue when addressing CCA and DRR because without an appropriate understanding of the issues policy makers cannot create scientifically supported policies. When policy makers have a greater understanding of science, they can implement DRR actions, policies and programmes, and move away from a disaster management culture. A disaster management culture that focuses on recovery and response instead of DRR is more costly and ineffective over the long-term. For example, “China spent US\$3.15 billion on flood control between 1960 and 2000, which is estimated to have averted losses of about US\$12 billion” and “property-owners in the US Gulf States who implemented hurricane protection methods employed at nearly 500 locations avoided US\$500 million in property losses from Hurricane Katrina, after customer investments of only US\$2.5 million.”<sup>12</sup>

Given the fragmentation in DRR, it is not surprising that many issues and problems go unaddressed. Policies and institutions linking DRR with adaptation and development are embryonic and unsystematic. European strategies for DRR rely on a number of

institutions with their own legal frameworks and there is no discrete body or law to control DRR.<sup>13</sup> In spite of these stumbling blocks, however, the principles of DRR are receiving more attention and funding with some countries linking CCA and DRR with their overall development plans. The Global Platform has recognised the importance of taking these initiatives to a global level.<sup>14</sup> However, without urgent attention to an internationally agreed system of guidance on these matters the development of these systems can only be haphazard at best.

## 1.2 Major institutions involved in CCA and DRR

This study looks at a sample of the major players in the CCA and DRR space on a European level and maps them based on where they fit on the research/policy spectrum. It lays out the activities and mandates of the various groups in order to get a better understanding of the field. For more information than what is listed below, please refer to Appendix 1.

### Global Institutions – Advisory/Intermediary role

There is no global governance system with any legal authority, however there are several global groups that heavily influence policy and research in an advisory/networking role. The following organisations listed in Appendix 1 (e.g. UNDP, CRED, GFDRR, IIASA, OECD, etc.) play an important part in advising policy and facilitating coordination and collaboration across borders and levels of government, as well as bring the research and policy communities together.

### *European Policy Institutions*

Several European policy institutions play a large role in shaping European policy through working with member states. The main ones are located within the European Commission as different Directorate Generals (including DG Climate, DG Development and Cooperation, DG Environment, DG Humanitarian Aid and Civil Protection, etc...) as well as other major European institutions such as the European

<sup>11</sup> Commission of the European Communities, 2009b

<sup>12</sup> UNISDR, 2008

<sup>13</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>14</sup> UNISDR, 2009b

Environment Agency (EEA) and the Council of Europe.

### *European Research Institutions*

There are fewer European research institutions than policy institutions. Three of the main actors are DG Research and Innovation, International Centre for Climate Governance, Joint Research Centre and South East European Virtual Climate Change Center. Their main role is to support the European policy institutions with the necessary research in order to develop more relevant research driven policies. The European research institutions work closely with member states and the research community to fund the most relevant research topics.

## **1.3 Major European frameworks and directives**

In looking at the link from research to policy we focused on prominent frameworks in CCA and DRR then looked at a sample of different projects across Europe from research funding programmes and identified how these research projects correspond to the objectives outlined in the frameworks.

Seven prominent frameworks and communications in the field of CCA and DRR were identified: the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, the EU's White Paper 'Adapting to Climate Change: Towards a European framework for action,' the Cancun Adaptation Framework, Part of the Cancun Agreements at the 2010 Climate Change Conference in Cancun, Mexico (COP 16), the EU Water Framework Directive on establishing a framework for Community action in the field of water policy (DIRECTIVE 2000/60/EC), the European Parliament and Council of the European Union Communication on "Addressing the challenge of water scarcity and droughts in the European Union," the EU Flood Framework Directive on the assessment and management of flood risks (DIRECTIVE 2007/60/EC), and EU Civil protection, prevention of disasters (Council Decision 2007/779/ EC).

### *Hyogo Framework for Action*

The Hyogo Framework for Action (HFA) is an example of countries coming together to unanimously decide on a single framework in which to work towards. "An important feature of the HFA is its legally non-binding character, which allows it to set out a well-grounded set of technical and organisational requirements for reducing disaster risks, while leaving the details of its implementation to the decision of governments and relevant organisations, according to their needs and capacities."<sup>15</sup>

The HFA is one of the first steps that has shown the importance of DRR as a means to adapt to climate change and set a blueprint for actions for governments, international organisations, NGOs, academic institution and civil society organisations guiding them on how to collaborate on CCA and DRR. The HFA envisages that countries shall monitor their improvements on the five priorities of action (see Figure 1 for details) using an agreed set of common indicators. In the last reporting cycle 17 European countries reported their progresses against the HFA indicators.<sup>16</sup> The HFA promotes "closer collaboration and cooperation among national actors and among/with regional organisations."<sup>17</sup>

The HFA stresses the importance of integrating DRR into sustainable development policies, planning and programming, and strengthening the institutions, mechanisms and capacities at all levels to build resilience to disasters. In order to achieve the objectives and goals described above, the HFA has five priorities for action in which to monitor and track the success of implementing the terms and conditions of the framework. The HFA has become an important component of the Cancun Adaptation Framework by "enhancing climate change related disaster risk reduction strategies, taking into consideration the Hyogo Framework for Action."<sup>18</sup>

For more details on the Hyogo Framework for Action see Appendix 2.

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<sup>15</sup> UNISDR, 2007

<sup>16</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>17</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>18</sup> UNFCCC, 2010



*WHITE PAPER – Adapting to climate change: Towards a European framework for action*

The EU's White Paper on Climate Change Adaptation develops a framework to enhance the EU's resilience and capacity to address the impacts of climate change while supporting the EU's objective of sustainable development.<sup>19</sup> The framework takes a phased approach. "Phase 1 (2009-2012) will lay the ground work for preparing a comprehensive EU adaptation strategy to be implemented during Phase 2, commencing in 2013."<sup>20</sup> Phase 1 is broken down into four pillars of action. The first pillar focuses on "building a solid knowledge base on the impact and consequences of climate change for the EU." The second pillar looks at "integrating adaptation into EU key policy areas." The third pillar focuses on "employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) to ensure effective delivery of adaptation." Finally, the fourth pillar is centred around "stepping up international cooperation on adaptation."<sup>21</sup> In order for this framework to be successful, Member States must work together in partnership and there must be collaboration among the EU, national, regional and local authorities.

Currently, the Commission is developing an adaptation clearinghouse mechanism in order to support the knowledge base. This will be a tool that allows for sharing of information on climate change risks, impacts and best practices. It will be targeted at governments, agencies, and organisations working on adaptation policies. The clearinghouse aims to be operational in 2012 and disaster risk reduction is one of the areas covered by the tool.

Mainstreaming adaptation into key EU policies is an ongoing area of work. This includes mainstreaming into EU financing instruments, and integrating adaptation into regional policy, agriculture, research, disaster prevention and preparedness, as well as external policies. In relation to development cooperation, the

Commission staff-working document on the implementation plan for a EU strategy for supporting DRR in developing countries 2011-2014 (SEC (2011) 215 final) promotes coherence between disaster risk reduction and adaptation to climate change.

The Commission is now developing a EU adaptation strategy foreseen for adoption in 2013. The immediate focus will include strengthening on-going work under the White Paper on the knowledge base and mainstreaming adaptation into EU policies. Supporting and facilitating the development and implementation of national climate adaptation strategies will also be very important.

For more details on the White Paper Framework see Appendix 2. Cancun Adaptation Framework, Part of the Cancun Agreements at the 2010 Climate Change Conference in Cancun, Mexico (COP 16), Paras 11-35

"The objective of the Cancun Adaptation Framework (paras 11-35) is to enhance action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention. Ultimately enhanced action on adaptation seeks to reduce vulnerability and build resilience in developing country Parties, taking into account the urgent and immediate needs of those developing countries that are particularly vulnerable."<sup>22</sup> In order to achieve its objective that CAF consists of five clusters: implementation, support, institutions, principles and stakeholder engagement.

*Water Framework Directive – establishing a framework for Community action in the field of water policy (DIRECTIVE 2000/60/EC)*

The Water Framework Directive aims "to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater."<sup>23</sup> The Directive aims to protect aquatic ecosystems, and depending on their connection with water needs, terrestrial ecosystem and wetlands. It promotes long-

<sup>19</sup> Commission of the European Communities, 2009b

<sup>20</sup> Commission of the European Communities, 2009b

<sup>21</sup> Commission of the European Communities, 2009b

<sup>22</sup> UNFCCC, 2011

<sup>23</sup> European Parliament and Council of the European Union, 2000

term sustainable water use strategies. It also aims to increase protection and improve the aquatic environment, progressively reducing groundwater pollution and preventing further pollution, and work towards reducing the effects of floods and droughts.<sup>24</sup>

Though there is no direct link between the Water Framework Directive and adaptation and risk reduction, the Framework developed a stage for further interactions which link to CCA and DRR. The Water Framework Directive helps develop “close cooperation and coherent action at Community, Member State and local level as well as on information, consultation and involvement of the public...”<sup>25</sup> The relationships and networks that were developed as a result of the Water Framework Directive help set the groundwork for future collaboration regarding DRR, including “establishing a framework for Community action in the field of water policy”<sup>26</sup> which enabled the success of the EU Floods Framework Directive.

For more details on the Water Framework Directive see Appendix 2.

*European Parliament and Council of the European Union Communication on “Addressing the challenge of water scarcity and droughts in the European Union”*

The Water Scarcity and Drought Communication looks at the challenges of water scarcity and drought in Europe and identifies a first set of policy options.<sup>27</sup> The purpose of this communication is to create a debate on how best to adapt to water scarcity and drought, particularly given the increased effects of climate change. It builds on the work of the Water Framework Directive by identifying seven important components to increase efficient water resources management:

1. Correctly pricing water
2. More efficiently allocating water and water-related funding
3. Improving drought risk management

4. Consider additional water supply infrastructures
5. Foster water efficient technologies and practices
6. Foster the emergence of a water-saving culture in Europe
7. Improve knowledge and data collection

The Water Scarcity and Drought Communication aims to further integrate “water-related concerns into water-related sectoral policies ... in order to move towards a water-saving culture.”<sup>28</sup>

*EU Flood Framework Directive on the assessment and management of flood risks (DIRECTIVE 2007/60/EC)*

The EU Flood Framework Directive builds on the Directive 2000/60/EC (Water Framework Directive) but looks more at reducing current and future flood risk as one of its main objectives. The purpose of the Flood Framework Directive “is to establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community.” It outlines several actions and activities that member states must take including undertaking a preliminary flood risk assessment, preparing flood hazard maps and flood risk maps, establishing flood risk management plans based on risk maps, looking for opportunities for improving efficiency, information exchange and for achieving common synergies and benefits.<sup>29</sup>

Unlike the Water Framework Directive, the Floods Framework Directive has a direct effect on CCA and DRR. It provides guidance and sets requirements for Member States to assess flood risk, create hazard and risk maps, and develop flood risk management plans including implementation measures. The risk management plans must coordinate with information and procedures outlined in the Water Framework Directive. Member States are required to comply with

<sup>24</sup> European Parliament and Council of the European Union, 2000

<sup>25</sup> European Parliament and Council of the European Union, 2000

<sup>26</sup> European Commission, 2007

<sup>27</sup> European Parliament and Council of the European Union, 2007

<sup>28</sup> European Parliament and Council of the European Union, 2007

<sup>29</sup> European Commission, 2007



Flooding in Frankfurt 2011

the Flood Framework Directive and report to the Commission. Once the flood risk management plan is developed, Member States must update it regularly, generally on a six-year cycle.<sup>30</sup>

*EU Civil protection, prevention of disasters (Council Decision 2007/779/ EC)*

The Community Civil Protection Mechanism was created in 2001. In 2007 the EU Council adopted a Decision recasting the original Decision establishing the Mechanism. The political framework for EU policy has been set by a Commission Communication adopted in February 2009, supported by Council Conclusions adopted in November 2009. These Council conclusions invite Member States and the Commission to further develop approaches and procedures to risk management, based on building blocks such as risk mapping, risk assessment and analyses and covering the potential major natural and man-made disasters. The

importance of prevention policy on all levels has been generally recognised including the synergies with adaptation to climate change.

Disaster risk management comprises actions such as assessment, planning, identification, as well as communication and consultation. Prevention policies at the EU level should therefore address the following core elements to support the development of national disaster risk management policies: (1) actions to improve the knowledge base (2) national risk assessment and mapping, (3) minimum prevention standards and (4) national risk management planning.

On 21 December 2010, the Commission issued guidance on risk assessments in the form of non-binding guidelines. The risk assessment work will be complemented by guidelines on minimum prevention standards by the end of 2012.

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<sup>30</sup> European Commission, 2007

In 2011 a stakeholder consultation takes place to review civil protection legislation and propose possible changes.

## 1.4 Major European Research Funding Programmes

This report reviewed 27 different projects across Europe from the following research funding programmes: Sixth Framework Programme (FP6), Seventh Framework Programme (FP7), INTERREG IVB North West Europe, INTERREG IIIB North West Europe, INTERREG IVC, INTERREG IIIC and INTERREG Baltic Sea Region.

### *EU Framework Programmes*

#### **Sixth Framework Programme (2002-2006)**

The Sixth Framework Programme (FP6) main objective is to contribute to the creation of the European Research Area (ERA) by improving cooperation of research in Europe. In order to accomplish this, the FP6 worked to increase the scientific and technological foundations of industry and enhance international competitiveness while promoting research activities in support of other EU policies.<sup>31</sup> FP6 is broken into three blocks: focusing and integrating European research, structuring the ERA and strengthening the foundations of ERA. With a budget of 17.5 billion euros for the years 2002 – 2006 the FP6 represents about 4 to 5 percent of the overall expenditure on Research and Technological Development in EU Member States.<sup>32</sup>

FP6 does not cover all areas of science and technology and focuses on the following 7 priority thematic areas: Life sciences, Genomics and Biotechnology for Health; Information Society Technologies; Nano-technologies and nano-sciences, knowledge-based multifunctional, materials, new production processes and devices;

Aeronautics and Space; Food Quality and Safety; Sustainable Development, Global Change and Ecosystems; and Citizens and Governance in a knowledge-based society.<sup>33</sup>

#### **Seventh Framework Programme (2007-2013)**

The Seventh Framework Programme (FP7) is the EU's primary instrument for funding research in Europe by bringing all research-related EU initiatives under the same programme. The FP7 will run from 2007 to 2013 and has an EC budget of 50.5 billion euros for seven years and a Euratom budget of 2.7 billion euros for five years, 'representing a 41 percent increase from FP6 at 2004 and a 63 percent increase at current prices'.<sup>34</sup>

The FP7 is crucial to achieving the European Union's Lisbon Strategy to become the 'most dynamic competitive knowledge-based economy in the world'.<sup>35</sup> In order to achieve this, the FP7 focuses on 3 key areas of research, education and innovation, also known as the 'knowledge triangle'. Within the knowledge triangle, the objectives of the FP7 are grouped into four categories: cooperation, ideas, people and capacities. There is a specific programme for each objective, corresponding to the main areas of EU research policy.<sup>36</sup>

### *INTERREG Programmes*

#### **INTERREG IIIB North West Europe**

The INTERREG IIIB North West Europe (NWE) Programme was the precursor to the current NWE programme. The IIIB consisted of more than 900 partners across North-West Europe who collectively developed 99 projects that enhanced sustainable development in the region with a total Programme portfolio of 660 million euros.<sup>37</sup>

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<sup>31</sup> European Commission, 2002

<sup>32</sup> European Commission, 2002

<sup>33</sup> European Commission, 2002

<sup>34</sup> European Commission, 2006

<sup>35</sup> European Commission, 2011

<sup>36</sup> European Commission, 2011

<sup>37</sup> European Community Initiative INTERREG IIIB, 2011

### **INTERREG IVB North West Europe**

“INTERREG IVB North West Europe is a financial instrument of the European Union’s Cohesion Policy. It funds projects, which support transnational cooperation.

The aim is to find innovative ways to make the most of territorial assets and tackle shared problems of Member States, regions and other authorities.”<sup>38</sup>

### **INTERREG IIIC (2002-2006)**

INTERREG IIIC aimed to promote interregional cooperation between regional and other public authorities to improve the effectiveness of regional development policies and instruments throughout the entire EU territory and neighbouring countries. These co-operations have increased access and exposure to different actors involved in regional development policy and helped create synergies and linkages between “best practice” projects and the Structural Fund’s mainstream programmes.<sup>39</sup> The INTERREG IIIC programme was financed by the European Regional Development Fund (ERDF) and co-financed by national project partners.<sup>40</sup>

### **INTERREG IVC (2007-2013)**

“INTERREG IVC provides funding for interregional cooperation across Europe. It is implemented under the European Community’s territorial co-operation objective and funded through the European Regional Development Fund (ERDF).”<sup>41</sup>

The overall objective of the INTERREG IVC Programme is to enhance the effectiveness of regional policies and instruments by supporting the areas of innovation and the knowledge economy, environment and risk prevention. INTERREG IVC is linked to the objectives of Lisbon and Gothenburg agendas.<sup>42</sup>

### **INTERREG Baltic Sea Region (2007-2013)**

“The European Union’s Baltic Sea Region Programme ... promotes regional development through transnational cooperation. Eleven countries around the Baltic Sea work together to find joint solutions to common problems [with the] goal to make the Baltic Sea region an attractive place to invest work and live.”<sup>43</sup>

#### **1.5 Research Project integration with Frameworks**

Research conducted in the course of this study identified how the various research projects correspond to the objectives outlined in the above frameworks. It is important to note that most of the projects reviewed are currently on going and it is therefore difficult to tell how they will fully integrate with policy and meet the criteria of the frameworks. Below is a further overview of the frameworks and the research programmes identified in this study.

Looking at the 27 research projects and the objectives of the frameworks we have identified the following categories in which to group the research projects to:

- Policy Assessment
- Science Assessment
- Policy and Science Assessment
- Cooperation and Networks
- Knowledge Sharing
- Water, Floods & Sea level Rise

We then identified how each project fits within the above categories and meet the objectives outlined by the frameworks. Please note that the projects reviewed in this study are only a sample of the relevant projects and were selected because of their focus areas. The projects listed are not an extensive list. For more information on some of the other relevant projects, please see the book of abstracts on the “Proceedings of the International Workshop on Climate Change Impact

<sup>38</sup> INTERREG IVB NWE, 2011

<sup>39</sup> INTERREG IIIC, 2011

<sup>40</sup> INTERREG IIIC, 2011

<sup>41</sup> INTERREG IVC, 2011

<sup>42</sup> INTERREG IVC, 2011

<sup>43</sup> Baltic Sea Region Programme, 2011

and Adaptation: Reducing Water-related risks in Europe.” The full citation is in the reference section.

Further information on the projects listed is included in Appendix 3.

### *Policy Assessment*

Policy Assessment projects look at and assess how climate change and DRR can be further integrated to policies and practices. Below is a list of the projects that fit within the Policy Assessment category.

- Adaptation and Mitigation – an Integrated Climate Policy Approach (AMICA) – The objective is to motivate local governments to include climate protection and adaptation in their planning practices.
- European Responses to Climate Change: Deep Emissions Reductions and Mainstreaming of Mitigation and Adaptation (RESPONSES) – The objective is to identify and assess integrated EU climate change policy responses that achieves ambitious mitigation and environmental targets and, at the same time, reduces the Union’s vulnerability to inevitable climate change impacts.

For a more detailed summary of the above projects please see Appendix 3.

### *Science Assessment*

Science Assessment focuses on expanding the knowledge base through research on climate change and disasters. Below is a list of the projects that fit within the Science Assessment category.

- Assessing Climate Impacts on the Quantity and quality of WAter (ACQWA) – The objective is to assess the impacts of a changing climate, focusing on the quantity and quality of water originating in mountain regions, particularly where snow- and ice-melt represent a large, sometimes the largest, streamflow component.
- Climate Induced Changes on the Hydrology of Mediterranean Basins (CLIMB) – The objective is to analyse on going and future climate induced changes in hydrological budgets and extremes across the Mediterranean and neighbouring regions.
- Extreme weather impact on European networks of

transport (EWENT) – The objective is to estimate and monetise the disruptive effects of extreme weather events on the operation and performance of the EU transportation system.

- Integrated Assessment of Health Risks of environmental stressors in Europe (INTARESE) – The objective is to develop and apply new, integrated approaches to the assessment of environmental health risks and consequences, and to provide methods and tools that are essential to enable integrated assessment of environment and health risks.
- Integrated Climate Policy Assessment: Scenarios and Economic Impacts Institute for Prospective Technological Studies (ICPA-SEI) – The objective is to provide updated and reliable projections on carbon and other GHG emissions, under alternative hypothesis and to address the corresponding impact in terms of environmental performance and costs.
- Noah’s Ark Project – Global Climate Change Impact on Built Heritage and Cultural Landscapes. The objective is to estimate and assess the effects of climate change on Europe’s built cultural heritage providing maps showing future scenarios for the 21st century.
- Projection of Economic Impacts of Climate Change in Sectors of the European Union based on bottom-up Analysis (PESETA) – The objective is to make a multi-sectoral assessment of the impacts of climate change in Europe for the 2011-2040 and 2071-2100 time horizons.
- Sea Level Change Affecting The Spatial Development In Baltic Sea Region (SEAREG) – The objective is to assess impacts of future sea level rise in several case study areas in the Baltic Sea Region.

For a more detailed summary of the above projects please see Appendix 3.

### *Policy and Science Assessment*

There are several projects which overlap in their objectives and contain both policy and science assessment components. Below is a list of the projects that fit within the Policy and Science Assessment category.

- Adaptation and Mitigation (ADAM) – The objective is to improve the quality and relevance of scientific and stakeholder contributions to the development



Flooded Houses in the United Kingdom

and evaluation of climate change policy options within the European Commission. Will look to identify the associated costs and effectiveness of an unchecked 5°C mitigation scenario and to develop and appraise a portfolio of longer-term strategic policy options.

- Climate change – terrestrial adaption and mitigation in Europe (CCTAME) – The objective is to assess the efficiency of current and future land use adaptation and mitigation processes and to identify and quantify the adaptation induced by policies.
- Costs of Natural Hazards (CONHAZ) – The objective is to provide insights into the methods and terminology used in European case studies in assessing the costs of natural hazards, taking a comprehensive perspective on the costs of natural hazards that include droughts, floods, storms, and alpine hazards. Then to evaluate these methods and to synthesise the results and give recommendations according to current best practice.
- Developing Policies & Adaptation Strategies to

Climate Change in the Baltic Sea Region (ASTRA) – The objective is to assess regional impacts of climate change and develop strategies and policies for adaptation.

- Full cost of climate change (CLIMATECOST) – The objective is to advance knowledge in the full economic costs of climate change in the following three areas: long-term targets and mitigation policies, costs of inaction (the economic effects of climate change) and costs and benefits of adaptation.

For a more detailed summary of the above projects please see Appendix 3.

#### *Cooperation and Networks*

As mentioned earlier, cooperation and building networks for collaboration is important for CCA and DRR. As such, projects listed below focus on ways to enhance CCA and DRR processes through joint developments and cross-sector/level interactions.

Below is a list of the projects that fit within the Cooperation and Networks category.

- Climate change integrated assessment methodology for cross-sectoral adaptation and vulnerability in Europe (CLIMSAVE) – The objective is to develop and apply an integrated methodology for climate change impact and vulnerability assessment that explicitly evaluates regional and continental scale adaptation options, and cross-sectoral interactions between the key sectors driving landscape change in Europe.
- Climate Proof Areas (CPA) – The objective is to accelerate the climate change adaptation process in the North Sea Region (NSR) by means of the joint development and testing of innovative adaptation measures in pilot locations for a variety of areas representative for the NSR as a whole, and use the results to give recommendations for regional, national and NSR wide adaptation strategies and create a toolkit for adaptation in the NSR, thus preparing these regions, countries and the NSR for anticipated changes in the climate.
- Regional cooperation towards adaptation to climate change (RegioClima) – The objective is to enhance cooperation between selected EU regions towards avoiding risk and reaping the benefits from a changing climate by assisting societies to adapt to the new climate conditions.

For a more detailed summary of the above projects please see Appendix 3.

### *Knowledge Sharing*

Similar to cooperation and networks, knowledge sharing is an important process to ensure the most efficient use of resources and to learn from the experiences of others. Below is a list of the projects that fit within the Knowledge Sharing category.

- Adaptive and Sustainable Water Management and Protection of Society and Nature in an Extreme Climate (CLIWAT) – The objective is to initiate cross-border cooperation and evaluation of the effect of different climate scenarios focusing on different hydrological models for adaptive and sustainable water management in extreme climates in the EU North Sea region.

- FLOODS – Institute for environment and sustainability – The objective is to complement Member States' activities towards flood hazard and risk by developing harmonised EU-wide methodologies and information systems towards the prevention and prediction of floods.
- Integrated Climate Policy Assessment: Emissions and Environmental Impacts – Institute for environment and sustainability (ICPA – EEI) – The objective is to integrate knowledge and tools from different scientific disciplines to assess impacts and benefits of climate policy on the European and global climate and environment.
- Methodology for Effective Decision-making on Impacts and Adaptation (MEDIATION) – The objective is to integrate, consolidate and enhance access to the existing knowledge in the proper context of local, regional and sectoral application, methods and data by further developing and improving methods in selected priority areas, by increasing availability of knowledge, by applying a systematic approach to developing a common methodological framework that integrates policy needs and the diversity in assessment approaches, and by increasing the understanding, management and communication of uncertainties to allow for more harmonised approaches in European research to support robust decision-making.
- Risk Prevention and Safety in Construction – Institute for the Protection and the Security of the Citizen (SAFECONSTRUCT) – The objective is to make available the information and knowledge undertaken at the European level in regards to engineering, construction, seismic performance of buildings, etc.
- Sustainable flood management strategies for cross border river basins (FLOOD-WISE) – The objective is to identify, share and transfer good practices on sustainable cross-border flood management in European river basins, using the instruments of the Flood Risk Management Directive (FRMD).

For a more detailed summary of the above projects please see Appendix 3.

### *Water, Floods and Sea-level Rise*

Some projects are dedicated solely to addressing certain issues and sectors. This is particularly true for water-



related issues including floods and sea-level rise in Europe. Generally, there is fair amount of information on water-related events and a better understanding of perceived risk in Europe. As such, countries and institutions have been able to create the Water and Flood Frameworks Directive and have funded various projects that directly address water related issues.

The projects listed below focus more on implementation and so do not fit in the above categories. Note there are projects in the above categories that still address water related issues but their project objective corresponds more to a specific category. Below is a list of the projects that fit within the Water, Floods and Sea-level Rise category.

- Adaptive Land use for Flood Alleviation (ALFA) – The objective is to protect the North West Europe region against the effects of (the risk of) flooding due to climate changes by developing and implementing innovative technical solutions for increased capacity for water storage or discharge in the project areas, raising awareness among citizens about river catchments, and to optimise social, economic and ecological benefits by preserving the current land use function.
- Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region (BaltCICA) – The objective is to focus on changes in the occurrence of floods (river floods as well as storm surges) and sea level rise, as well as impacts on water availability and quality in the Baltic Sea Region.
- Combined functions in Coastal defence zones (COMCOAST) – The objective is to explore coastal defence strategies in the North Sea, plus new methods to evaluate flood defence zones; to develop new flood defence solutions.
- Improved integration of increased urban development and flood risks in major cities (FloodResilienCity) – The objective is to adapt the Scottish Sustainable Flood (risk) Management framework as a basis for the joint FloodResilienCity strategy in order to integrate the increasing demand for more houses and other buildings with the increasing need for more and better flood risk management measures in North West European cities along rivers.
- Improving Preparedness and Risk management for flash floods and debris (IMPRINTS) – The objective

is to contribute to the reduction of loss of life and economic damage through the improvement of the preparedness and the operational risk management of flash flood and debris flow generating events, as well as contributing to sustainable development through reducing damages to the environment.

- Water Adaptation is Valuable for Everyone (WAVE) – The objective is to prepare for future changes in regional water systems brought about by climate change and continue to develop more climate-proof water systems by developing policies that prevent damage and address opportunities, making stakeholders and nature less vulnerable, and introducing the importance of water, creation of awareness.

For a more detailed summary of the above projects please see Appendix 3.

## 1.6 Research and Decision-Making Process

As can be seen from the above research initiatives and projects there is a wide range in project size, scope and effort. In order for research institutes to secure funding for a project they must go through a series of steps and processes. It is important to have a good understanding of this process in order to find opportunities to increase efficiency and for researchers to know what is required. One of the largest funders of research at the European level is the European Commission. Looking at the research process for the EC's Directorate General of Research and Innovation will give insight into the complex processes and procedures involved and will enable researchers to better respond to research calls and allow funders to make improvements in their process.

Given the large scale of funding at the EC level, DG Research and Innovation has to undertake an extensive consultation process, which tries to incorporate both the science and policy communities. It includes consulting groups outside of the Commission to get an understanding of the primary research needs. They do this by organising workshops involving relevant actors at the international and national level including both policy makers and researchers. At these workshops and meetings, scientists present research topics and ideas as potential project areas. Besides this, policy makers are also consulted as regards the various identified research

topics and ideas and are also invited to express their research needs that would benefit adaptation and DRR policy. DG Research & Innovation also consults other DGs within the EC to collect research suggestions. After talking with the various groups about different potential research topics, DG Research and Innovation synthesises the topics/ideas into a draft document, which is sent out to a Programme Committee composed of EU Member States representatives as well as to the other DGs for comments and amendments. From there the document is widely circulated among the parties in the member states. Once DG Research and Innovation receives comments they publish calls for proposals incorporating the final list of research topics in which research teams can submit proposals for.

Next, research groups have to form consortia (following EU participation rules) and submit proposals for particular topics. Projects can address more than one topic, but they usually focus on specific topics and then might establish links to other themes. Once the proposals have been submitted they are reviewed remotely by a team of evaluators (minimum three experts) for each topic. The evaluators are experts in the field and they are invited to evaluate project proposals according to three criteria: research/scientific quality, management capacity and project impacts. Assessments are first submitted online to the Commission. This is followed by meetings held in Brussels where all the experts for each topic meet and discuss the various proposals, and come to a consensus on their ranking. Once a consensus is reached (and a consensus report agreed by all parties, including the Commission), the results are communicated to the Programme Committee and other EC DGs for possible comments, and only after their approval the highest rated proposals get selected and then the EC moves to contracting. In general the whole process takes about 18 months from the date of publication of the calls for proposal to issuing the grant (this includes the evaluation, the selection process and the contract negotiation).

DG Research and Innovation recognises that this is a time-consuming process and they are working on ways to improve it. One of the major problems that may cause delays and prolong the process is the registration and validation of partner organisations (concerning their legal status, financial criteria, etc.). Another

problem that is often mentioned by the research community is that the process is too complex and time consuming, especially for topics that do not meet the EC funding priorities. Therefore, the EC is planning to launch a two-step bottom-up approach with a first ten-page proposal being evaluated remotely. Selected proposals will then be invited to submit a full proposal. This approach will help limit unnecessary work from both scientists and evaluators. Proposals will still need to respond to research priorities established in the call, which are broader than traditional topic-oriented calls. This will allow researchers to submit more open topics, increasing flexibility for researchers and making the process simpler and less risky. This also makes the process more scientifically driven as the researchers and scientist are deciding the project proposals directly instead of having to design projects based on predefined topics.

CCA and DRR involve multiple areas of operations, different typologies of expertise and various levels of intervention from the community to the international sphere. According to several experts that contributed to this report there is no obvious place to put CCA and DRR within the European governmental institutions as it affects all levels of government. However, it is important where CCA and DRR are located within government because it directly affects factors including political influence, access to finance, access to the research community, coordination among different levels of government and sectors, and access and coordination to/with the international community.

# 2

## Governance



## 2.1 Positioning Disaster Risk Reduction in Government in Europe

New institutional arrangements for CCA and DRR now exist. In Europe, however, CCA and DRR are hardly ever incorporated into offices for national level planning and investment. In theory, DRR should be at the top of the political agenda. However, when a DRR office is integrated into the office of a Head of State it tends to become compromised, weak, underfunded and isolated from development and planning. Even when DRR offices are lucky enough to find themselves in the ministry of the environment or an emergency management agency, for instance, they still tend to have little influence and are disconnected from any development or investment decision-making. Ministries of defence or the interior concentrate more on preparation for and response to disasters rather than prevention. A preference for disaster management is also prevalent in decentralised systems and when interviewed European policy makers stated that while DRR was useful in consciousness raising, without adequate funding and political backing it would continue to be ineffectual.

A number of countries have tried to incorporate DRR at different levels of government and many of them have complained of major problems where new ideas come up against old laws and policies especially where DRR is present at all levels. The responsibility for DRR is quite often passed on to local government departments who do not have the wherewithal to properly accommodate them. This makes it even more difficult for the concepts of DRR to reach the public and contributes to its continued side lining.

In Europe it is critical to note the importance of local action and support in all policies and programmes. In principle, DRR activities should be locally grounded, stressing the importance of local knowledge (i.e. building structure, vegetation, etc.), with central governments providing technical, financial and policy support and taking over responsibility where local capacities are exceeded. There are many important differences across geographical regions within a

country that must be considered when planning for disasters. It is important to take into account local knowledge of an area including social, physical and environmental aspects. Though there will be overlap between different areas it is key to look at the differences in order to adjust strategies accordingly. Even when planning, at the local level, is done correctly, if local governments lack the necessary resources and staff to fulfil their responsibilities the central government needs to assist.

The 2011 Global Assessment Report on Disaster Risk Reduction suggests the incorporation of CCA and DRR in a central planning location or a relevant ministry with funds and the authority to support a risk reduction agenda. Planning departments generally have a propensity for long-term projects, and they also have good access to funding and to politicians.

An established central planning body with similar needs and aims could be an economical and practical home through which to effectively implement CCA and DRR programmes. Such a location, with its ready-made office procedures and infrastructure would be ideal and could allow independence and subsidiarity in a secure environment.

## 2.2 National Platforms for DRR in risk governance

An important component of risk governance is the National Platforms promoted by the HFA to help facilitate more effective strategies for DRR by helping to implement and coordinate such strategies at the national level.<sup>44</sup> When National Platforms are part of the political system they can directly influence decision-making processes. However, when they are set up under a civil society structure they must focus on advocacy and lobbying activities to influence decisions.<sup>45</sup> The difference between the political system and civil society structure comes out of the way they were developed and depends on the coordinating institution.

The way a National Platform is set up also affects its focus and approach to CCA and DRR. In Europe,

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<sup>44</sup> United Nations, 2005

<sup>45</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

“governments often due to international obligations entrust the task of facilitating the establishment of National Platforms to their respective civil protection organisations. Traditionally, they deal more frequently with preparedness for response and often do not possess full competence for the coordination of all multidisciplinary disaster risk reduction issues, which can cause a lack of awareness and thereby poor functionality and accessibility.”<sup>46</sup> As such, many European National Platforms lack direct political influence and are often focused on short-term recovery strategies instead of long-term adaptation and risk-reduction strategies.

In Europe, at the regional level, the platform for DRR is the European Forum for Disaster Risk Reduction (EFDRR) which includes HFA Focal Points and representatives of National Platforms in the European region, UNISDR-Europe, regional organisations (in particular representatives from the Council of Europe EUROPA and representatives from the European Commission, Civil Protection – Prevention & Preparedness Unit DG ECHO) and sub-regional organisations/institutions.

Among its main objectives, the EFDRR is intended to serve as a forum to stimulate and facilitate the exchange of information and knowledge among participating National HFA Focal Points and Platforms and regional/sub-regional partners. It has also created internal informal working groups in European countries, with a specific group of countries (the former Yugoslav Republic of Macedonia, Norway, Germany and France) focusing on issues related to CCA and risk reduction.

At sub-regional level (South Eastern Europe) there are organisations and initiatives which have a specific mandate in disaster prevention and risk reduction and climate adaptation such as the Disaster Preparedness and Prevention Initiative (DPPI) and the South Eastern Europe Virtual Climate Change Center (SEEVCCC) or in disaster management related field such as the Regional Cooperation Council (RCC), further

information on their mandate and activities can be found in Annex 1.

## 2.3 EU involvement

Within government it is important that CCA and DRR be located in a central body with a long-term focus that can work across sectors and departments at multiple levels with the financing and political influence to do so successfully. However, this will not be enough to effectively address CCA and DRR on a European level. It is important for the European Union (EU) to play a role in addressing the cross-border nature of disasters. In many areas adaptation and risk reduction procedures will affect multiple countries, as disasters are not contained to single country borders. Actions will need to be taken at both a local and national level, but where possible operations should be co-ordinated in a cost-effective way in order to mobilise actors at all levels across borders.<sup>47</sup>

An international body at the EU level would be able to help facilitate and manage this process in order to efficiently pull joint resources and capacity. “Furthermore, certain sectors (e.g. agriculture, water, biodiversity, fisheries, and energy networks) are largely integrated at EU level through the single market and common policies and it makes sense to integrate adaptation goals directly into them.”<sup>48</sup> In addition to managing and co-ordination, the EU can bring adaptation spending further into its programmes (e.g. research, cohesion, trans-European networks, rural development, agriculture, fisheries, social fund, external actions and the European Development Fund).<sup>49</sup> Frameworks have been set up to increase EU involvement and to strengthen its role within the CCA and DRR communities. The EU White Paper states that:

External EU policy should also make a substantial contribution to adaptation, via water management (the EU Water Initiative and the EU-ACP Water Facility), agriculture, biodiversity, forests, desertification energy, health, social policy (including gender issues), research, coastal erosion, and disaster risk reduction, the latter is an essential part of

<sup>46</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>47</sup> Commission of the European Communities, 2007

<sup>48</sup> Commission of the European Communities, 2007

<sup>49</sup> Commission of the European Communities, 2007

successful adaptation. Failure to adapt could have security implications. The EU is therefore strengthening its analysis and early warning systems and integrating climate change into existing tools such as conflict prevention mechanisms and security sector reform. The effects of climate change on migratory flows should also be considered in the broader EU reflection on security, development and migration policies.<sup>50</sup>

## 2.4 Current achievements in risk governance

The last twenty years have seen vast improvements in CCA and DRR research fields. While existing risk governance structures do not allow DRR access to development planning and investment, individual countries have been investing in their own improvements in their institutional and legislative support for DRR and its incorporation into national policies. Civil protection and defence agencies are now incorporated in looser more multi-layered systems, which allow DRR easier access to local government.

Despite these improvements, some European countries are stuck with the mindset of the past and continue to focus more on disaster management, particularly preparedness and response, instead of DRR and adaptation strategies.<sup>51</sup> Even though there is an effort to move towards multi-sector/multi-layered systems, in practice responsibility for these systems often gets lodged in a disaster management organisation, which usually lack the political leverage to influence planning and CCA/DRR investments decisions. Meanwhile, much of the implementation is mandated to the local level, and without the proper financial and capacity support from the top, many of these mandates are unfulfilled. It is important to note that action should be taken at the local level, as this is a primary driver of effective adaptation but only with the support and partnership of civil society and national governments.

## 2.5 Accountability

Many of the issues around governance stem from the problems with accountability. Without increased social

and political pressure, governments are less likely to take CCA and DRR seriously. People often judge governments on their ability for disaster management and recovery because they do not understand that the risks of disasters can be reduced and that there are adaptive steps that can be taken to minimise the damage caused by disasters. To effect a change in consciousness from disaster management to CCA and DRR, the general public needs to be given a better understanding of disaster risks. By understanding the principles of CCA and DRR the public will increasingly begin to hold governments accountable for their actions or failure to act in addressing DRR. The media and the education system need to play a stronger role in informing the public of DRR principles and current DRR actions of policy makers. In this regard, crucial public awareness campaigns on CCA and DRR such as the World Disaster Reduction Campaign “Making Cities Resilient: My City is Getting Ready!”<sup>52</sup> target local municipalities and mayors to enhance citizen awareness on the importance of investing in local DRR and adaptation measures.

Countries have difficulty generating political and economic incentives for DRR when they are unable to identify and assess their risks. When countries understand their risks and can assign responsibility, governments are more capable and willing to invest in DRR, especially if they can quantify those risks. However, in practice this is difficult because of the complexity of disasters. It is difficult to attribute the impacts of a disaster to a single action or lack of action, especially as there are factors that are outside the government’s control and that actions in the past still influence the effects of a disaster. Meanwhile, when a disaster strikes it is very visible and often receives high media coverage. Consequently, a government’s response to a disaster is very public and has a greater influence on their popularity, directly affecting investment.

The first step in increasing accountability and working towards a change in focus towards vulnerability and risk reduction is increasing access to information to both, government and citizens. When access to information becomes part of a culture that demands social

<sup>50</sup> Commission of the European Communities, 2009b

<sup>51</sup> UNISDR, Council of Europe (EUR-OPA) & DKKV, 2009

<sup>52</sup> For more information please see : <http://www.unisdr.org/english/campaigns/campaign2010-2011/>

accountability and understands the links between risk reduction and disasters, there will be a much greater focus and investment in CCA and DRR. Once there is greater transparency and understanding of disasters, a measure of accountability will be put in place. This will enable the creation of laws with corresponding penalties for violation and rewards for achievements. Furthermore, when legislation and regulations hold government officials responsible and accountable for their CCA and DRR expenditures and budgets these laws become more effective as there is a clear understanding of expectations and clearer accountability measures.

## 2.6 Flow of Information/Access to information

Effective decision-making requires more than good governance structures. It requires strong up-to-date information flows. The flow of information influences decision-making and is essential for increasing accountability and good governance. The flow of information from researchers to policy makers is important in developing the most up-to-date relevant policies supported by scientific data and processes. Not only does research have to be disseminated to policy makers but also it must reach a larger audience to

ensure that citizens are aware of the issues and can hold their governments accountable.

Additionally, research should be shared and accessible throughout the research community so that different groups can be informed of the work of their colleagues. However, in practice there are many barriers and obstacles to achieving a strong information flow and the way in which information on the importance of CCA and DRR is communicated from researchers to decision/policy makers and, broadly, the general public.

The first of these barriers is the issue of data on the impact of disasters. Data plays an important role in policy, as it is quantifiable evidence, which appeals to many policy makers and creates the condition for evidence-based decision-making on the economic feasibility and effectiveness of investment in adaptation and risk reduction. However, there are several problems when looking at the various data and data streams. In the first place data is collected by different research groups, private companies and government organisations but to a certain extent, some of it is inaccessible to the majority of institutions and governments (See Box 1 for an example of data accessibility).

### Box 1: Example of Data Accessibility and Accuracy: Global Natural Hazard Database

With regards to natural hazards, there are three main global sources for data: the EM-DAT, NatCat and Sigma. EM-DAT is the data collected by the Centre for Research on the Epidemiology of Disasters (CRED) that started in 1988 and has collected country data going back to 1900. The EM-DAT data includes data on ‘deaths, injuries and damage from news accounts and other (unspecified) sources for earthquakes, hurricanes, floods, and other disasters that killed 10 or more people, affected at least 100, or resulted in a “state of emergency” or a call for international assistance.’

Other databases collect data not by country but on different events and use different criteria, which means they are not directly comparable. The NatCat database is maintained by the Munich Reinsurance Company and the Sigma database is maintained by the Swiss Reinsurance Company. As such, EM-DAT is the only publicly available global disaster database on natural hazards.

Even with access, all three databases measure and record different aspects of disasters, each with their own advantages and weakness. For examples, from “1988–2002, EM-DAT reports 756 million people affected, NatCat reports 277 million, and Sigma [reports] 19 million” (Guha-Sapir 2002).

All of these databases have different levels of detail and focuses. It should be noted that the data itself could be skewed for a variety of reasons including exaggerated reports of mortality, different measurement approaches and methods, and human error. Also, insurance companies generally ignore countries where there are low commercial opportunities.

Source: United Nations and World Bank, 2010



Of the available data on disasters much of it is 'limited and suffers from a lack of comparability' as several criteria are used in assessing the effects of disasters in an area including number of victims, the amount of damage and the number of events occurring over a certain period of time. In Europe this problem is further complicated when looking at data on the physical and economic impacts of disasters.<sup>53</sup> Additionally, when comparing data from different institutions the issues are compounded as different institutions have different approaches and methods for the measuring and storing data.<sup>54</sup>

Access to and usability of data are major problems facing many of the major EU projects. A workshop on science and data gaps in EU water-related projects in January 2011, including over 25 coordinators from EU-FP6 and FP7 projects, further revealed that accessibility and usability of data are critical problems that create barriers to the success of current and future research projects.<sup>55</sup>

The Hyogo Framework for Action recognises "that if standardisation of data gathering and usage is promoted at all levels it could contribute to rapid response to disasters and help minimise disaster-related loss of life."<sup>56</sup> By having comparable data across multiple sectors, it will be possible to gain a better understanding of risk and take appropriate measures to reducing them and investing in adaptation strategies.

The European Commission recognises the problems of data and information sharing and in their 2009 Communication 'a community approach on the prevention of natural and man-made disasters' stated it "will develop a comprehensive inventory of existing sources of information related to disasters. This will make it possible to identify comparability issues as well as information gaps. It will also provide the basis for assessing how to better share information within the EU."<sup>57</sup> The EC further states that it "will launch an inventory of best practices and facilitate the exchange of information

between stakeholders [as well as carry out] studies and cooperation projects involving Member States and other stakeholders."<sup>58</sup> The EU White Paper on climate adaptation proposed the creation of a EU Clearinghouse in order to "facilitate the collection and dissemination of scientific information, data and case studies about climate change impacts and vulnerability, and adaptation policies and measures; assist an effective uptake of this knowledge by EU, national, regional, local or sectoral decision makers; and provide a greater level of co-ordination sectoral policies and institutional levels."<sup>59</sup>

A considerable amount of information and research already exists on climate change impact, vulnerabilities and adaption options, and much new information is being generated, but is not shared across Member States and is not easily accessible to those decision makers who need it most.

The European Commission has in 2010 set up a climate change Adaptation Steering Group (ASG) in order to help develop the EU adaptation strategy and prepare national adaptation strategies by Member States.<sup>60</sup> The Steering Group will focus on sharing proposals for mainstreaming climate change in EU policies towards a foreseen EU Adaptation Strategy by 2013. The ASG also has in 2010 established a Working Group on climate change adaptation Knowledge Base (WGKB). The aim of this WG will be to provide technical assistance and expert advice to the Commission in relation to the work to be undertaken under Pillar I of the 2009 White Paper – Adapting to Climate Change, including:

- Take the necessary steps to establish a Clearinghouse Mechanism
- Develop methods, models, data sets and prediction tools
- Develop indicators to better monitor the impact of climate change, including vulnerability impacts, and progress on adaptation
- Assess the cost and benefit of adaptation options

<sup>53</sup> Commission of the European Communities, 2009a

<sup>54</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>55</sup> EU-FP7 ACQWA Project Workshop Report, 2011

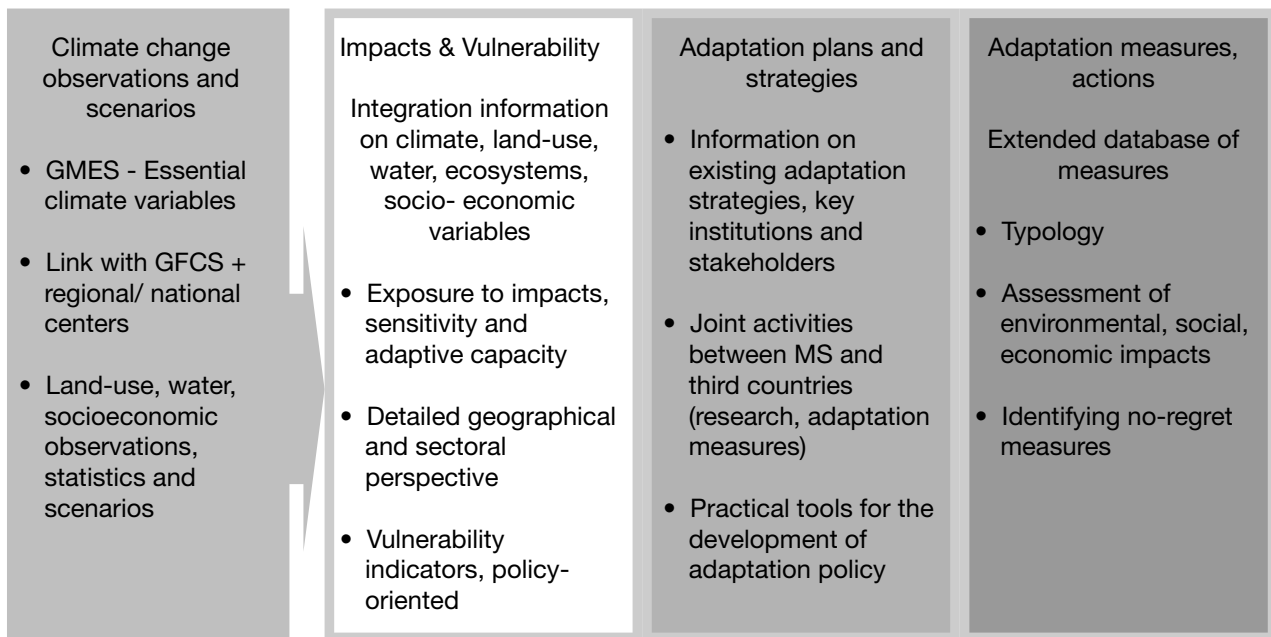
<sup>56</sup> UNISDR, Council of Europe (EUR-OPA), & DKKV, 2009

<sup>57</sup> Commission of the European Communities, 2009a

<sup>58</sup> Commission of the European Communities, 2009a

<sup>59</sup> European Commission, 2010

<sup>60</sup> Commission of the European Communities, 2009b



Source: European Commission, 2010; Jol, A, 2010

The Clearinghouse will provide access, from a single point, to key data sources on climate change observations, scenarios, projections and vulnerabilities and provide an extensive library of adaptation measures, national adaptation strategies, best practices and case studies. In addition it will provide analytical tools putting observations and scenarios into perspective and guide users to develop a national or sub-national adaptation strategy. The tool should also provide geospatial data and maps. According to the contract the tool should go ‘live’ mid March 2012, followed by a one-year guarantee period.

The EU Clearinghouse will be targeted at governments, agencies, and organisations working on adaptation policies. DRR is one of the areas covered by this tool. After its launch it will, in a second phase, be managed and maintained by EEA and the information will be updated in close collaboration with the Commission (including DG CLIMA, DG ENV, JRC, other DGs). In order to accomplish this, “the Steering Group will provide a coordinated approach to building the

evidence base on the impact of climate change, assessing the risks of climate change for the EU, the scope for increasing climate resilience and costing risks and opportunities.”<sup>61</sup> For more information on the content of the EU Clearinghouse, see the diagram below.

For more information on the partnerships and synergies needed to develop the EU Clearinghouse, see Appendix 4.

## 2.7 Making research applicable and relevant to policy makers

Data, even climate data and forecasts, does not tell the whole story and can sometimes misrepresent the critical issues. Policy makers and even scientists can often get caught up in the numbers and overlook assumptions, based on a high level of uncertainty. Making decisions under uncertainty continues to be an issue among policy makers who often need to know exact details and forecasts, which are unavailable. This provides an

<sup>61</sup> Commission of the European Communities, 2009b

**Box 2: Global Wildland Fire Network, a good example of access to information**

A good example of making information available is the Global Wildland Fire Network (GWFN), an online platform that was created on a volunteer basis from researchers working together and is managed by the Global Fire Monitoring Centre (GFMC) in Freiburg, Germany, and the UNISDR Wildland Fire Advisory Group. The GWFN was created in 2004 to disseminate research and data on wildland fires across the globe and to enhance international cooperation in fire management within regions and globally.

Common environmental, ecological, social and cultural conditions along common borders determine the geographies of the regional networks. Within each region, informational sources including data observations, country reports, training materials, links to other sites, case studies and best practices, and information on upcoming events and meetings are provided on the regional websites. The Global Wildland Fire Network provides sources for knowledge on wildland fires and combines the work of institutions and groups across the world.

The impact of the GWFN on the larger community of policy makers is difficult to follow on the website. The website itself is somewhat difficult to navigate for first time users. Therefore the GFMC is available and willing to help people navigate the site and to direct the user to the specific documentation of interest, or provide advice how to use the search engine on the website – despite its limited staff.

There are five overlapping regions in Europe, providing needs and opportunities for increasing synergies and sharing resources among regions. This is particularly the case where the socio-economic and cultural features of East and West European countries, and the environmental characteristics of Mediterranean and North European ecosystems may require different approaches in fire management, but also call for common solutions. The GWFN has made progress despite the challenges of relying solely on volunteered contributions and the lack of an international global fire regime to assist in the overall management of networking with appropriate funders to support the initiatives and bring groups together to collaborate.

Source: Global Wildland Fire Network website

opportunity for researchers and intermediate institutions to step in and advise policy makers about the extent and limits of science while also providing suggestions on decision-making in spite of the uncertainties.

Policy makers can see models as a guide to help judge potential magnitudes rather than accurate predictions. Climate risk modelling is crucial for risk assessment, and it is important to complement it with holistic multi-hazard risk assessments which will provide policy makers with action oriented recommendations on investments that will guarantee the highest returns in terms of disaster prevention and climate-hazards risk reduction

The research field for CCA and DRR extends beyond data collection and analysis and includes a wide array of different areas. This includes work at all levels of government, and qualitative analysis and

recommendations of best practices and frameworks. Research is only the first step, and before it can become applicable for policy makers it must first be disseminated and understood. If policy makers do not have access to research or if research is inaccessible for reasons of language or complexity, it is highly unlikely that their findings will make their way into the policy-making process. The first step in making research relevant to policy makers would be to make it visible and accessible over time, by learning how to communicate research findings in an accessible way to non-technical individuals.

Research on CCA and DRR needs to enhance its policy orientation. Research findings will contribute to the formulation of policy options; therefore teamwork among researchers from different disciplines (climatology, hydrology, urban planning, economics,

etc.) is essential in order to be able to offer concrete recommendations to policy makers on practical investments in adaptation and risk reduction.

Several of the experts interviewed for this study pointed out a general disconnect between research outputs and policymaking. Lack of communication between policy makers and researchers also causes inefficiencies in the creation and usage of research findings. The problem seems to lie with both groups with neither group making enough effort to understand the needs of the other. In order to bridge the knowledge gap between researchers and policy makers, EUR-OPA suggests that its Member States identify problems and vulnerabilities from a policy perspective that are important to policy makers.<sup>62</sup> This will increase researchers' understanding of how policy makers view problems and vulnerabilities, give researchers a better understanding of policy makers priorities and help researchers make appropriate changes in their research approaches.<sup>63</sup>

Not only did a general disconnect between researchers and policy makers appear from the interviews, but also a further disconnection appeared between researchers, governments and international organisations in their respective communities. Many research groups "work in silos" focusing on their own projects and disciplinary specialities. There is an additional layer of separation between physical and social scientists who often have different perceptions of risk and priorities. In Europe this is often also the case with different government ministries creating policies and programmes within their departments unaware of what other ministries are involved in.

This problem also is experienced on the international level with different organisations and institutions operating with little knowledge of what other groups are supporting and funding. Synergies could be achieved at all levels between all institutions and governments if more of an effort was made to share information and communicate. Nevertheless, it is important to note "countries are seeing the shortcomings of such 'silo'

approaches and are seeking to systematically link climate change adaptation and disaster risk reduction, often as an element of their development planning."<sup>64</sup>

Another less avoidable barrier to the flow of information is language. Research is carried out in all European languages and is not always translated, making dissemination more difficult. Most groups and countries have started translating their research into English but often non-native English speakers, especially among policy makers, are less likely to read the research.

There is also a problem with the language style used among researchers and policy makers. Each sector within CCA and DRR and between researchers and policy makers uses different terminology, making it difficult to relay information and discuss different topics. The UNISDR has developed a terminology on DRR in order to help bring people together around a common set of definitions in which to discuss DRR. This is particularly useful in bridging the gap between researchers and policy makers by setting a stage where each party can understand the other without the need for very technical language.

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<sup>62</sup> Council of Europe (EUR-OPA), 2010

<sup>63</sup> Council of Europe (EUR-OPA), 2010

<sup>64</sup> UNISDR, 2009a

# 3

## Conclusion and Recommendations



CCA and DRR in Europe are complex and fragmented and involve multiple actors on the local, sub-national, national and international level. Major disasters often cross borders, and countries must collaborate to find effective DRR solutions. DRR is not always directly associated with CCA, either being viewed as an entirely separate field or as part of disaster management. All of these factors increase the difficulty in locating DRR within governments, as there is no uniform government office or department to locate DRR. The complexity of disasters and DRR strategies increases the difficulty in holding government officials accountable. This is partly caused by the lack of the public's access to and understanding of CCA and DRR information, generally from the media and education system, but also from problems with the flow of information from researchers to policy makers. This process is further complicated by disconnect in understanding and differences in the priorities of researchers and policy makers.

The issues with DRR are compounded when working in Europe because in addition to addressing the above barriers, all solutions and strategies must work within existing European regional (for EU) and national legislations and directives or find ways to change them, work across different languages and styles, and work in an environment where the access to and availability of finance is decreasing. There is a number of EU legislations and directives including the Water and Flood Frameworks Directives that were not developed for CCA and DRR but include components that can be applied to CCA and DRR. In Europe (both EU and non-EU), it is complex to create different legislations and directives, and therefore, it is important to have knowledge of existing frameworks and find ways to incorporate them into CCA and DRR initiatives and projects. Despite English being the working language across Europe, there is still a gap in information flow across borders. Access to finance limits the extent and scope in which policy makers, researchers and international institutions can address DRR. There are however some potential benefits of lower availability of funds in that it increases the importance of joint projects and activities. All of these issues increase the complexity of DRR; nevertheless, because groups are working to further identify and understand these major issues, progress will be made in finding practical solutions and strategies for overcoming these barriers.

This study identified five main areas of recommended strategies for researchers, policy makers and international organisations:

1. Expanding and enhancing Networks and Communication.
2. Increasing Capacity Building.
3. Participating in Joint Projects and Programmes.
4. Increasing the effectiveness of and number of National Platforms.
5. Improving the Flow of Information across various levels and sectors.

These strategies share synergies with each other and do not operate in isolation. This review outlines the recommendations above and provides suggestions for implementation. It is important to note that the goal of this study is to serve as the first step in a continual process for identifying issues and implementing practical solutions.

### **3.1 Expanding and Enhancing Networks and Communication**

The complex fragmented nature of DRR and the further disconnect between researchers and policy makers create an environment where researchers and policy makers rarely interact and information is not shared across projects, departments and institutions. Expanding and enhancing networks and communication between the key actors in DRR is one of the first steps in bridging the gaps between respective groups.

Often this disconnect is caused because the parties have low interaction and face-to-face communication with groups outside of their own institution, department or organisation. Most of the groups operating in DRR work independently from one another and are unaware of the others' action, creating a fragmented field and causing inefficiencies, which reduce the effectiveness for promoting change. Increasing interaction and communication through European networking at all levels across multiple sectors both externally between researchers, policy makers, international/regional institutions, NGOs and CBOs but also internally between different research groups (physical and social scientists), between government ministries and departments, and between the various international non

governmental, and community-based organisations, becomes an important component for developing a DRR culture and adapting to climate change.

This study divides networking and communication into six major levels/areas in which to address DRR:

1. Project level.
2. Institutional/operational level.
3. European level.
4. Research.
5. Policy.
6. Research/policy interaction.

At the project level, networking focuses on the relationship between researchers and policy makers. Major European research projects such as the Framework Programmes are designed to directly link and incorporate research into policy. As part of the project work plan, they include policy dissemination in which the research is designed to help guide and influence policy. However, in practice this is rarely the case, often because policy makers are either not encompassed in the beginning of the project or that the “wrong” policy makers are involved. When major project meetings are hosted, donors/funders are invited, but the policy makers, who will directly use the information, may not be included. The issue here is not just having policy makers attend meetings and workshops but having the right policy makers attend who are interested in the issues and have the capacity to effect change and interacting systematically with governmental institutions and policy-makers.

At an institutional/operational level, networking needs to become a more prominent part of an organisation’s culture. EC DG Research and Innovation and UNISDR organised workshops in Brussels aimed at addressing climate policy interfacing between researchers and policy makers. The themes and focus of these workshops were beneficial to the experts who attended but they felt there was still a need for future work on climate policy interfacing processes. Furthermore, the workshop was too broad in scope, making it difficult to find a common ground in which to discuss meaningful topics and strategies.

Greater and more systematic interaction and communication between donors/funders and

international/European institutions is needed at the European level. There are several donors and other funding institutions at the European level that are funding similar activities but there is a lack of communication regarding funding initiatives and projects. Furthermore, there is disconnect between donors and the international community because donors are not fully following through the recommendations from events such as the GPDRRs or the UNFCCC Conference of Parties and rather provide funding to scattered efforts by various agencies. Increasing networking and communication need to happen both externally across different European institutions but also internally within the organisations. For example, as some interviewees noted, international organisations such as the UN and EC are missing opportunities because of a lack of internal coordination and interaction between respective UN and EC groups. One potential example for further collaboration that was suggested by several interviewees of the need for a closer working relationship between UNISDR and UNFCCC that would further integrate CCA and DRR.

The research and science community within CCA and DRR can generally be divided into two types of researchers/scientist groups: physical scientist and social scientists. Both groups of researchers/scientists generally operate in isolation from one another and are unfamiliar with the work and findings of the other. It has been suggested by several experts that there needs to be a greater link between the two groups of researchers/scientists. Physical scientists are generally more focused on data and modelling, and usually perceive risk differently from that of social scientists by focusing more on quantitative and impact measures. Social scientists and researchers are usually more focused on social and qualitative aspects that the models have difficulty quantifying. When looking at risk, social researchers/scientists normally focus on risk reduction and adaptation. Greater interaction and networking between physical and social researchers and scientists will help develop a more uniform understanding and definition of risk across the research community, improving communication between the science/research community and policy makers by communicating more consistent messages.

In the European context, similar problems exist among policy makers between different ministries and



departments as most ministries and departments are solely focused on their sector and office. Especially, at the country level, a lack of communication among ministries results in losing basic information and missing opportunities for synergies across departments and office.

There is a greater lack of communication and collaboration between policy makers and researchers. This is caused by the difference in perspectives and understanding between the two groups. Networking and increased communication between researchers and policy makers will help bridge this divide as each party will have a greater understanding of the other's requirements and constraints, be informed of current policies and research projects that can support the other's work, and work together to develop scientifically supported policies and programmes. Also important that these two groups interact and build team efforts with other relevant sectors such as NGOs, private sector and the media.

*Recommendations:*

1. UNISDR shall further promote its visibility as “broker” of contacts and information in Europe among relevant regional and national institutions working in areas related to CCA and DRR. Regional organisations such as EUR-OPA, the EC or platforms such as the European Forum for DRR and national actors (HFA Focal Points, National Platform Coordinators, EUR-OPA Permanent Correspondents, etc.) need to further enhance the use of tools provided by UNISDR for information sharing such as PreventionWeb and channel the knowledge and material they produced on climate risk assessments through the UNISDR Europe, which can in turn boost the dissemination of information through its network of contacts and monthly information bulletin.

National actors such as the HFA Focal Points and NP Coordinators partners should in collaboration with international and regional partners host focused workshops around specific topics where policy makers and researcher can interact and discuss needs. Workshops need to be specific enough to give participants the guidance, which is relevant to the context (national and local) in which they operate.

2. Projects should include relevant policy makers from the beginning. For major EC projects such as FP7, the EC science adviser plays a valuable role in directing research so that it is relevant to policy. It is important to make sure that the EC science adviser is engaged.
3. Hold an annual meeting for the major European donors and funders in which they present their current and next year's funding and project initiatives. This would enable opportunities for joint funding and collaboration, and help develop stronger networks.
4. Increase and create opportunities for researchers and policymakers to exchange information.

**Suggested steps forward:**

1. Use existing IOs events and tools to link CCA and DRR.
2. Reinforce policy evaluation of projects by science adviser.
3. Focused workshops with researchers and policy makers.

**3.2 Capacity Building**

Increased networking between policy makers and researchers will not be sufficient to bridge the policy science gap if researchers and policy makers do not have the required skill set and understanding to effectively communicate with one another. Often when researchers and policy makers interact they struggle to find common ground in which to develop ideas of common interest and benefit. Capacity building which focuses on increasing policy makers' understanding of the scientific issues, increasing researcher's ability to effectively communicate in a concise non-technical style and a substantive increase in leadership and management skill is needed to improve communication and effective team work between policy makers and researchers.

It is important for policy makers to increase their understanding of the scientific issues that affect their sector/area of work so that they can further incorporate research results into policies and programmes. Policy makers do not need to be experts on technical details but increase their understanding of

the limits and key issues/barriers that researchers face, particularly in terms of modelling and uncertainty. Equally, more policy-oriented research is needed from the scientific and research community developed and communicated in an accessible way that directly informs policymaking. Researchers need to understand policy and public awareness needs as well.

Several interviewees suggested that there is a need for a stronger focus on communication within the research community. This includes looking at different languages and communication styles, techniques and ways for effective written and verbal communication. Scientists, particularly physical scientists, often do not have the required skills and experience to communicate effectively with policy makers.

Most major European projects include a dissemination and communication component but often this part of the project lacks financial resources and consequently, receives little focus. Project budgets and documents are more focused on the beginning and middle of a project during the tendering/contracting and research stages and less on the dissemination and follow up stage. Whether this is due to the large-scale nature and time constraints of performing the research or that lack of focus on communication from researchers, the results of these projects often get overlooked and are not relevant to policy. There needs to be a greater focus on communication to make research projects more applicable to policy makers. Increasing researchers' ability for effective communication enables them to better communicate and disseminate their work to a non-technical audience.

#### *Recommendations:*

1. International institutions such as UNISDR, EC, Council of Europe and regional platforms such as the European Forum for DRR and their national actors (HFA Focal points, National Platform Coordinators, Permanent Correspondents, etc.) should be involved in hosting workshops focusing on specific aspects of CCA and DRR, on a central topic of science/policy interface. They should limit the participants to a certain sector/area topic within

a certain region. This will enable participants to find common ground on which they can discuss the overarching issue of science/policy interfacing. A part of each workshop can centre on increasing policy makers' understanding of science issues and improving researchers' communication skills.

2. Governments and policy makers should be more involved in preparing educational curricula for universities and post-graduates, as well as being invited to speak at lectures. This will help develop a foundation for interaction between researchers and governments, and help create stronger interaction through exposing young professional to both perspectives.
3. EU/UN level should fund projects which look at facilitating good communication practices as well as potentially trying to quantify the cost of communication both in terms of benefits achieved and costs of achievement.
4. The promotion of the use of the existing UNISDR terminology in CCA and DRR<sup>65</sup> is an important starting point to build a common correct understanding of the concepts attached to CCA and DRR and improve communication among different stakeholders and communities.

#### **Suggested steps forward:**

1. Organisation of capacity building workshops.
2. Adequate educational curricula for universities.
3. Include specific communication goals in projects.
4. Use existing UNISDR terminology when referring to CCA and DRR.

### **3.3 Joint Projects and Programmes**

Particularly in the current financial climate where resources are declining, joint projects and programmes become increasingly important. If managed and implemented correctly, joint projects and programmes are made more cost effective by sharing resources and helping to further facilitate networking. Given the complexities of CCA and DRR, joint research projects

<sup>65</sup> <http://www.unisdr.org/we/inform/publications/7817>

that are multi-disciplinary and address multiple sectors and levels give a more accurate representation of reality and the key issues. Policy makers with a better understanding of the full range of implications are able to make more informed and relevant decisions.

*Recommendations:*

1. Have international organisations host joint capacity building workshops, which will increase resource efficiency and enhance networks. Joint training includes a wide array of topics from communication to on the ground technical capacity building. Joint training across borders helps to create trust, good will and the development of a foundation for future cooperation.
2. At the EC level, have the topic evaluators of major EC projects (FP7, FP6, etc.) identify selected projects where there is either an overlap or potential links and synergies for working together. Topic evaluators would need to communicate and work with other topic evaluators to identify any opportunities for joint projects. This would undoubtedly increase the work and effort required by the evaluators and consequently increase the time required to get to project contracting, but it offers potential for developing more effective, relevant projects that share resources. In the long-term these joint projects would help to further develop multi-sector approaches using shared resources and knowledge.

**Suggested steps forward:**

1. Coordination between evaluators of related projects.
2. Joint review of Cancun Adaptation Framework and HFA.
3. Donors based identification of critical issues.

### 3.4 Increasing the effectiveness of and number of National Platforms for DRR

National Platforms for DRR were created to fill a gap in the way in which disasters were addressed. They are a primary component of the Hyogo Framework for Action and offer potential for promoting collaboration across ministries and sectors as well as various

stakeholders in society. National Platforms need to be set up with enough influence and links to the highest levels of authority and leadership in order to enable change. They need to continue to focus on increasing public awareness, investigating technical solutions and developing and serving as a platform for the exchange of knowledge. National Platforms must play a greater coordination role and help facilitate further cooperation among governments and non-government organisations.

National Platforms sit in a strategic location within the research and policy community on both the national and regional level. They have the potential to help coordinate and increase cooperation among the various government sectors around DRR as well as provide links to the research community. They also have links to the international community through their relationships/connections to the HFA, the UNISDR and other international organisations. In addition to their governmental links, National Platforms need to have strong links with NGOs, private sector, academic institutions, the media and community institutions. They are in a unique position to help direct research and influence policy.

*Recommendations:*

1. National Platforms need to serve as an intermediate body between policy and researchers, playing an active role in research by joining the steering committees of their country's major research projects as well as becoming more involved with the relevant European research projects. They also need to increase interaction between researchers and policy makers and help broker contacts and information regarding CCA and DRR.
2. National Platforms can create partnerships among research communities, governments and the private sector. They have an important role to play building the capacities of their DRR policy makers in assimilating the research findings and improving the interface between policy and research assuring that academia and research institutions are represented in the platform.
3. National Platforms need to extend beyond their countries' borders. Twinning among European National Platforms is a cost-efficient tool to share best practice and techniques on practical issues.

This can be done as part of, or in parallel to, EU Exchange of Expert in civil protection programme.

**Suggested steps forward:**

1. National Platforms interface between policy makers and researchers.
2. Increase National Platforms involvement in national research projects.
3. Increase National Platforms participation in thematic group of EFDDR.

### 3.5 Improve flow of information

There are several issues around the flow of information from researchers to policy makers and to the general public. The accessibility and usability of data is a major barrier to the flow of information, and often causes delays and unplanned expenses for many research projects. Different European data providers use different data formats, which increase the expected workload when researchers spend disproportionate amounts of time reformatting data. Data providers often require detailed procedures for receiving and buying data, which creates institutional barriers and causes further delays. The purchasing of data and any reformatting is often excluded from project budgets, causing additional unexpected expense.

In addition to issues with data, project results must be synthesised in a concise manner and translated so that policy makers can quickly understand the critical issues and recommendations. Most policy makers, particularly at the local, sub-national and national level, do not have English as their first language and struggle to translate documents in a foreign language. Some of the major European documents are translated into multiple languages but a majority of research documents are either only in English or the native language of the report's producer. Problems with knowledge flow and data are a barrier to future work. Knowledge and information need to be accessible in a format easily understandable by all levels and sectors of government and researchers across multiple languages.

In addition to making information accessible to policy makers and researchers, it needs to be disseminated to the public. This is an important component for increasing accountability, as public opinion is one of the factors for influencing policy makers. Increasing public awareness may create some healthy pressure on public officials who will then be more willing to interact with researchers and increase their involvement. A major component of advocacy and awareness raising is through the education system. However, to make information accessible on the local level there needs to be greater effort in translating and sharing of information.

*Recommendations:*

1. The EU clearinghouse and PreventionWeb can build specific synergy to assure that the data and information that will be published in the EU clearinghouse website (expected to go live in 2012) are well disseminated among the CCA and DRR community reached by PreventionWeb and its mailing list.
2. Given the importance of local knowledge in addressing CCA and DRR, it is imperative to record local disaster data, particularly damage and loss at the local level. This data will be useful for local governments to build an economic argument for investment in CCA and DRR. Most damages from disasters are small scale in nature and are often not recorded. Recording these disasters would help change the focus towards CCA and DRR as most of this damage could have been prevented. Additionally, recording data at the local level and incorporating it into future climate models will provide a more detailed understanding of the potential climate futures and greatly increase the accuracy of the models. The UNISDR World Disaster Reduction Campaign "Making Cities Resilient: My City is Getting Ready!" can be a vehicle for increasing public awareness on issues related to the importance of investing in adapting to climate change through community based DRR interventions.
3. Develop entities responsible for English translation either as part of National Platforms, regional or international organisations and incorporate translation to main European languages as part of a project or institution's budget.

**Suggested steps forward:**

1. Disseminate already existing survey reports.
2. Support community based DRR interventions.
3. Develop linguistic versions of key documents.

**End Note**

There are several barriers and challenges in the governance of climate-risks and DRR in Europe, especially regarding the flow of information from researchers to policy makers and the decision-making process. CCA and DRR are complex and involve multiple actors across multiple levels of government and non-government organisations they also entail long-term processes. In order to address these complexities and effectively integrate DRR strategies and practices into CCA, organisations must find ways to network and increase communication across all sectors. Policy makers need to increase their understanding of the key issues and limitations of science. Researchers need to improve their communication skills in order to better communicate their research results. There needs to be a greater focus on joint projects and programmes which offer cost savings, networking opportunities and more accurate results. National Platforms need to be enhanced and strengthened to better coordinate and facilitate communication between researchers and policy makers. Finally, there needs to be an improvement in the flow of information both in regards to accessibility and usability.



## **Appendix 1**

### **Major institutions involved in CCA and DRR**





## *Global and Regional Institutions – Advisory/Intermediary role*

**Organisation Name:** Centre for Research on Epidemiology of Disasters (CRED)

**Mandate:**

CRED has been active for over 30 years in the international disaster and conflict health studies community, promoting research, training and technical expertise on humanitarian emergencies. The Centre provides an evidence base on disease and health issues arising from disasters and conflicts.

**Activities:**

CRED has the following major activities:

Promote research and providing information to the international community to improve preparedness and response to disasters

Increase capacity by training “field managers, relief officers, doctors and health professionals in the management of short and long-term disaster situations”

Introduce emergency preparedness and response in development programmes disaster-prone countries

Increase autonomy of developing countries to improve their own preparedness and response capacities for emergencies and critical situations

website: <http://www.cred.be/>

**Organisation Name:** Global Facility for Disaster Reduction and Recovery (GFDRR)

**Mandate:**

“Established in 2006, the Global Facility for Disaster Reduction and Recovery (GFDRR) is a partnership of 36 countries and 6 international organisations committed to helping developing countries reduce their vulnerability to natural hazards and adapt to climate change. The partnership’s mission is to mainstream disaster risk reduction (DRR) and climate change adaptation (CCA) in country development strategies by supporting a country-led and managed implementation of the Hyogo Framework for Action (HFA).”

**Activities**

GFDRR have three main activities : capacity building, enhancing tools and methodologies, and sharing and generating knowledge. They do this through three different tracks and four different initiatives that complement these tracks.

**Tracks:**

Track-I: Global and Regional Partnerships

Track-II: Mainstreaming Disaster Risk Reduction (DRR) in Development

Track-III: Standby Recovery Financing Facility (SRFF) for Accelerated Disaster Recovery

Initiatives:

South-South Cooperation Program for Disaster Risk Reduction  
The Economics of Disaster Risk Reduction  
The GFDRR Labs  
Disaster Risk Financing & Insurance

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website: <http://www.gfdr.org>

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**Organisation Name: International Institute for Applied Systems Analysis (IIASA)**

Mandate:

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IIASA is an international research organisation that conducts policy-oriented research and investigates the critical issues of global environmental, economic, technological, and social change that we face in the twenty-first century.

Activities:

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Main activities including developing assessment and decision-support methodologies, global databases, and analytical tools to study IIASA's core research themes of Energy and Climate Change, Food and Water, and Poverty and Equity.

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website: <http://www.iiasa.ac.at/>

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**Organisation Name: Organisation for Economic Co-operation and Development (OECD)**

Mandate:

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"To promote policies that will improve the economic and social well-being of people around the world."

Activities:

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"The OECD provides a forum in which governments can work together to share experiences and seek solutions to common problems. [They] work with governments to understand what drives economic, social and environmental change. [They] measure productivity and global flows of trade and investment. [They] analyse and compare data to predict future trends. [They] set international standards on all sorts of things, from the safety of chemicals and nuclear power plants to the quality of cucumbers."

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website: <http://www.oecd.org>

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**Organisation Name: SwissRe Reinsurance and MunichRe**

Mandate:

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The Mission of both organisations is to be the leading player in the re/insurance industry.

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Activities:

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Both organisations perform similar tasks and activities in the re/insurance industry. In regards to climate change adaptation and disaster risk reduction, they both operate huge databases on disaster events and damages and run insurance models to predict future impacts in order to get a better understanding of risk and calculate premiums. Additionally, insurance is an important component of CCA and DRR.

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website: <http://www.swissre.com/>

website: <http://www.munichre.com/>

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**Organization Name: United Nations Development Programme (UNDP)**

Mandate:

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UNDP is the United Nations' global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. We are on the ground in 176 countries, working with them on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and our wide range of partners.

As part of UNDP there is the Bureau for Crisis Prevention and Recovery (BCPR) whose mandate is to achieve a sustainable reduction in disaster risk and sustainable recovery from disaster in programme countries, by strengthening national and regional capacities

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Activities:

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UNDP BCPR has the following major activities:

Increasing capacity for risk reduction by improving and developing knowledge networks and increasing national and regional risk management personnel development.

Integrating risk reduction into development by developing risk reduction policies/strategies and legislation, applying risk reduction tools at all levels and factoring risk reduction into recovery practices.

Increasing investment in risk reduction by increasing support for risk reduction among donors and governments, and by establishing/strengthening partnerships.

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Website: [www.undp.org/cpr/](http://www.undp.org/cpr/)

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**Organisation Name: United Nations International Strategy for Disaster Reduction (UNISDR)**

Mandate:

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The mandate of UNISDR is to act as the focal point in the United Nations system for the coordination of disaster reduction and to ensure that disaster risk reduction becomes integral to sound and equitable development, environmental protection and humanitarian action.

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Activities:

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The mission of UNISDR is to be an effective coordinator and guide for all the ISDR partners, globally and regionally, and to:

- Mobilise political and financial commitments to disaster risk reduction and Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters;
- Develop and sustain a robust, multi stakeholder system;
- Provide relevant knowledge and guidance

UNISDR has regional offices covering Asia – Pacific, Latin America and Caribbean, Arab States, Africa and Europe and Central Asia.

Concerning Climate change adaptation and disaster risk reduction, UNISDR supports the Inter-Governmental Panel on Climate Change Special Report “Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation”. In Europe the three main focus areas of UNISDR in relation to climate change adaptation are: 1) coordination and capacity building for effective use of resources among European actors involved in climate change adaptation and DRR; 2) production of knowledge on weather hazards and coping mechanisms which can be adopted at all levels to enhance communities and households resilience; and 3) advocacy for enhanced financial and political commitment towards investments in climate change adaptation and DRR.

website: <http://www.unisdr.org/>

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**Organization Name: World Meteorological Organization (WMO)**

**Mandate:**

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It is the UN system’s authoritative voice on the state and behaviour of the Earth’s atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources.

The vision of WMO is to provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources and related environmental issues and thereby contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations

The mission of WMO is to:

- Facilitate worldwide cooperation in the establishment of networks of stations for the making of meteorological observations as well as hydrological and other geophysical observations related to meteorology, and to promote the establishment and maintenance of centres charged with the provision of meteorological and related services;
- Promote the establishment and maintenance of systems for the rapid exchange of meteorological and related information;
- Promote standardization of meteorological and related observations and to ensure the uniform publication of observations and statistics;
- Further the application of meteorology to aviation, shipping, water problems, agriculture and other human activities;
- Promote activities in operational hydrology and to further close cooperation between Meteorological and Hydrological Services;
- Encourage research and training in meteorology and, as appropriate, in related fields, and to assist in coordinating the international aspects of such research and training.

**Activities:**

Fifteenth World Meteorological Congress (Geneva, May 2007) approved the WMO Strategic Plan (WMO-No. 1028 available at: [http://www.wmo.int/pages/about/documents/WMO\\_1028\\_web\\_E.pdf](http://www.wmo.int/pages/about/documents/WMO_1028_web_E.pdf)), to replace the Sixth WMO Long-term Plan (2004-2011) as from January 2008. The Strategic Plan is the result of a planning process driven by the needs and priorities identified by WMO Members. It is a living document that, within a continuous planning process, further evolves through periodic planning, execution, evaluation and updating phases.

The Strategic Plan will help all Members by enhancing their policy-related strategies for meeting society's needs. Such strategies would be focused on how weather, climate, water and related environmental information and services could be harnessed to manage nature's risks and enhance social and economic development. The Plan will indeed enhance strategies for the effective application of weather, climate and water information and related services within the framework of improving the safety and well-being of peoples, reducing poverty, increasing prosperity and protecting the environment for future generations. It is also expected to motivate, guide and coordinate the activities of Members, primarily through their National Meteorological and Hydrological Services, the Executive Council, regional associations, technical commissions and the WMO Secretariat. In summary, successful use of the Plan will contribute to the following desired societal outcomes:

- Improved protection of life, livelihoods and property
- Improved health and well-being of citizens
- Increased safety on land, at sea and in the air
- Sustained economic growth in both developed and developing countries
- Protection of other natural resources and improved environmental quality
- Mitigation of natural disasters.

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Website: [www.wmo.int](http://www.wmo.int)

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## *European Policy Institutions*

**Organisation Name: Directorate General for Climate Action (DG CLIMATE)**

Mandate:

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Established in February 2010, DG Climate leads international negotiations on climate change, helps the EU to deal with the consequences of climate change and to meet its targets for 2020, as well as developing and implementing the EU Emissions Trading System.

Activities:

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DG CLIMA develops and implements cost-effective international and domestic climate change policies and strategies in order for the EU to meet its targets for 2020 and beyond, especially with regard to reducing its greenhouse gas emissions. Its policies also aim at protecting the ozone layer and at ensuring that the climate dimension is appropriately present in all Community policies and that adaptation measures will reduce the European Union's vulnerability to the impacts of climate change.

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website: [http://ec.europa.eu/dgs/clima/mission/index\\_en.htm](http://ec.europa.eu/dgs/clima/mission/index_en.htm)

Adaptation: <http://ec.europa.eu/clima/sites/change/>

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**Organisation Name: Directorate General for Development and Cooperation (DG DEVCO)**

Mandate:

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DG DEVCO is responsible for designing EU development policies and delivering aid through programmes and projects across the world.

Activities:

Monitors, evaluates and delivers aid throughout the world towards governance and human rights, human development, food and natural resources, and economy and trade. Additional activities include designing EU development policy.

website: [http://ec.europa.eu/europeaid/what/index\\_en.htm](http://ec.europa.eu/europeaid/what/index_en.htm)

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**Organisation Name: Directorate General for Environment (DG Environment)**

Mandate:

Mandate to protect, preserve and improve the environment for present and future generations.

Activities:

To achieve its objectives DG Environment proposes policies that ensure a high level of environmental protection in the European Union and that preserve the quality of life of EU citizens.

website: [http://ec.europa.eu/dgs/environment/index\\_en.htm](http://ec.europa.eu/dgs/environment/index_en.htm)

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**Organisation Name: Directorate General for Humanitarian Aid and Civil Protection (ECHO)**

Mandate:

Mandate is to provide emergency assistance and relief to the victims of disaster caused by the impact of natural hazards or armed conflict outside the European Union.

Activities:

Major ECHO activities:

- Providing Humanitarian Aid
- Carrying out feasibility studies for its humanitarian operations
- Monitoring humanitarian projects and setting up coordination arrangements
- Promoting and coordinating disaster prevention measures
- Providing technical assistance to its partners
- Promoting public awareness
- Financing network and training study initiatives in the humanitarian field (NOHA)

website: [http://ec.europa.eu/echo/index\\_en.htm](http://ec.europa.eu/echo/index_en.htm)

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**Organization Name: Disaster Preparedness and Prevention Initiative (DPPI)**

Mandate:

In November 2000, the Stability Pact for South Eastern Europe launched the "Disaster Preparedness and Prevention Initiative" (DPPI) in an effort to contribute to the development of a cohesive regional strategy for disaster preparedness and prevention for its 12 member States (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Greece, Moldova, Romania, Serbia and Montenegro, Slovenia and Turkey). The DPPI has been conceived as an activity that seeks to provide a framework for South Eastern European

nations to develop programs and projects leading to strengthened capabilities in preventing and responding to natural and man-made disasters. It also brings together donor countries and international governmental and non-governmental organizations to coordinate ongoing activities and identify unmet needs in order to improve the efficiency of national disaster management systems within the regional cooperation framework.

The overarching goal of the DPPI is to foster regional cooperation and coordination in disaster preparedness and prevention for natural and man-made disasters in South Eastern Europe, without creating new structures or layers of bureaucracy.

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Activities:

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The DPPI attempts to:

- Strengthen good neighbourly relations and stability through the exchange of information, lessons learnt and best practices in the field of disaster management
- Enhance cooperation between DPPI partners in view of EU enlargement and the process of Euro – Atlantic integration for SEE countries
- Support and encourage countries in the region to develop, adopt and/or enforce state-of-the-art disaster emergency legislation, environmental regulations and codes designed to prevent and mitigate disasters in line with guidelines and common practices accepted in the international community.
- Assist and encourage countries in the region to implement the Hyogo Framework for Action 2005 – 2015

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Website: <http://www.dppi.info>

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**Organisation Name: European Environment Agency (EEA)**

Mandate:

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EEA's mandate is:

“To help the Community and member countries make informed decisions about improving the environment, integrating environmental considerations into economic policies and moving towards sustainability

To coordinate the European environment information and observation network (Eionet)”

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Activities:

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Main clients are the European Union institutions — the European Commission, the European Parliament, the Council — and our member countries.

EEA has the three major activities under four main areas.

Activities:

Support the information needs set down in EU and international environmental legislation and especially the sixth Environment Action Programme

Provide timely assessments on how and why the environment is changing and whether environmental policies have been effective  
Improve the coordination and dissemination of environmental data and knowledge across Europe.

Areas:

Environmental themes  
Cross-cutting themes  
Integrated environmental assessment;  
Information services and communications.

The EEA provides a comprehensive public environmental information service on the internet through reports, short briefings and articles, press material and online products and services. The material covers the state of the environment, current trends and pressures, economic and social driving forces, policy effectiveness, and identification of future trends, outlooks and problems, using scenarios and other techniques.

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website: <http://www.eea.europa.eu/>

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**Organisation Name: European and Mediterranean Major Hazards Agreement (EUR-OPA)**

Mandate:

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EUR-OPA Major Hazards Agreement mandate is to reinforce and promote co-operation between Member States in a multi-disciplinary context to ensure better prevention, protection against risks and better preparation in the event of major natural or technological disasters.

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Activities:

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At the political level, it holds a Ministerial Meeting every four years (or in special circumstances) at which to make decisions regarding natural and technological major hazards.

The Ministerial Meeting is assisted by the Committee of Permanent Correspondents who meets twice a year. Each of the 26 Member States is represented by a Permanent Correspondent who is responsible for relaying between the national authorities and EUR-OPA. Throughout the year, the Permanent Correspondents and their experts have the following tasks:

- Develop and prepare the Ministerial Meetings
- Gather materials necessary for the elaboration and publication of background documents and adopted resolutions;
- Exchange and share information on relevant events which have occurred in the participating countries.

At the scientific and technical level, through its permanent network of 27 Specialized Centres, it develops projects, both at the national and regional level, which aim to improve the awareness and resilience to major risks within the population.

Once per year, the Meeting of the Directors of Specialised Centres facilitates the implementation of European expertise and research, training and information programmes through contributions from its various partners.

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website: [http://www.coe.int/t/dg4/majorhazards/default\\_en.asp](http://www.coe.int/t/dg4/majorhazards/default_en.asp)

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**Organization Name: Regional Cooperation Council (RCC)**

Mandate:

The Regional Cooperation Council (RCC) was officially launched at the meeting of the Ministers of Foreign Affairs of the South-East European Cooperation Process (SEEC) in Sofia, on 27 February 2008, as the successor of the Stability Pact for South Eastern Europe. Through a regionally owned and led framework, the RCC focuses on promotion and enhancement of regional cooperation in South East Europe (SEE) and supports European and Euro-Atlantic integration of the aspiring countries. The RCC provides operational capacities to and works under the political guidance of the SEEC.

In line with its Statute and guided by the principles of all-inclusiveness, the main tasks of the RCC are to represent the region, assist the SEEC, monitor regional activities, exert leadership in regional cooperation, provide a regional perspective in donor assistance – notably the EU's Instrument for Pre-accession Assistance (IPA) programme – and support increased involvement of civil society in regional activities.

Activities:

The RCC functions as a focal point for regional cooperation in SEE and its key role is to generate and coordinate developmental projects of a wider, regional character, to the benefit of each individual member, and create an appropriate political climate susceptible to their implementation.

The work of the RCC focuses on the priority areas of economic and social development, energy and infrastructure, justice and home affairs, security cooperation, building human capital, and parliamentary cooperation as an overarching theme. The organization develops and maintains close working relationships with all relevant actors and stakeholders in these areas, such as governments, international organizations, international financial institutions, regional organizations, civil society and the private sector.

In addition, media development activities of RCC, overarching by nature, seek to foster development of free and professional media in SEE, given their role in shaping democratic, pluralistic and inclusive societies in the region.

The RCC also develops close relationships with and receives substantive input from relevant regional task forces and initiatives active in specific thematic areas of regional cooperation.

Website: <http://www.rcc.int>

## *European Research Institutions*

**Organisation Name: Directorate General for Research and Innovation (DG Research and Innovation)**

Mandate:

DG Research and Innovation's mission is to develop and implement the European research and innovation policy with a view to achieving the goals of Europe 2020 and the Innovation Union.

Activities:

DG Research and Innovation supports research and innovation through European Framework Programmes, coordinates and supports national and regional research and innovation programmes, contributes to the creation of the European Research Area by developing

the conditions for researchers and knowledge to circulate freely, and supports European organisations and researchers in their cooperation at international level.

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website: <http://ec.europa.eu/research/index.cfm?pg=dg>

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**Organisation Name: International Centre for Climate Governance (ICCG)**

Mandate:

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The ICCG is a joint initiative of the Fondazione Eni Enrico Mattei (FEEM) and the Fondazione Giorgio Cini (FGC), which focuses its research activities on the design of climate policy and related governing institutions. ICCG gathers researchers in economics and political sciences who explore the interdependencies between the economic, social, cultural, religious and political aspects of climate governance.

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Activities:

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ICCG focuses on:

- the long-term impacts of climate change on socio-economic systems and their institutions;
- the sectoral and geographical distribution of these impacts and the global repercussions of the consequent structural changes;
- the international negotiations on climate policy and the definition of models of governance for the control of climate change.

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website: <http://www.iccgov.org/>

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**Organisation Name: Joint Research Centre (JRC)**

Mandate:

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“The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.”

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Activities:

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Multi-disciplinary Research:

- Towards an open and competitive economy
- Development of a low carbon society
- Sustainable management of natural resources
- Safety of food and consumer products
- Nuclear safety and security
- Security and crisis management
- Reference materials and measurements

Non-research activities:

- Participation in Framework Programme Indirect Actions

Support to European Commission services

Third Party Work – contracts for research and supply of services from third parties groups

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website: <http://ec.europa.eu/dgs/jrc/index.cfm?id=10>

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**Organisation Name: South East European Virtual Climate Change Center (SEEVCCC)**

Mandate:

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- Fulfilling the needs of SEE countries for information on subregional climate change on permanent basis;
  - Providing permanent support for capacity building of national hydrometeorological services in terms of human resources and improvement of products and services in the area of climate change in the subregion;
  - Linking science and adaptation planning policy planning, as well as management of climate change risk, and
  - Serving as a model partnership between national hydrometeorological services in the region and other interested institutions dealing with climate change, as well as with relevant international organizations, regional climate centers, donors, etc.

Activities:

Operation Functions:

- collecting climate data, monitoring and detecting climate change in SEE
- development of seasonal and long range forecast
- climate watch and issuing warnings on the occurrence of climate anomalies and extremes
- climate database management and exchange of data and information

Research and Development

- development and implementation of regional climate models for climate projections
- development and implementation of regional climate models for seasonal climate forecasts
- use of regional climate models for downscaling and/or regional reanalyses

Capacity Building

- providing education and training/capacity building in the region
- facilitating exchange of experiences and best practices in the field of climate change through climate forums, seminars, conferences, exchange of experts, drafting instructions
- transfer of technology in the field of numerical modeling of climate change
- development and implementation of training programs
- informing general public and others

Coordination Functions

- coordinating the development and implementation of the Framework Action Plan for Southeastern Europe in the field of climate change (SEE/CCFAP) and programs and projects in this field

Functions in the WMO's Regional Climate Center Network

- SEEVCCC participates in all three nodes of WMO RA VI RCC Network:
- RA VI RCC node for climate data (lead: KNMI, Netherlands)
- RA VI RCC node for climate monitoring (lead: DWD, Germany)
- RA VI RCC node for long range forecast (lead: Meteo France, France and ROSHYDROMET, Russia)

with binding operational functions, functions of capacity building, coordination functions and highly recommended research and development functions.

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website: <http://www.seevccc.rs>

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*Additional information on the portfolio of services and programmes of the United Nations and the World Bank in support of disaster risk reduction can be found in the following UNISDR (2009) publication “Disaster risk reduction in the United Nations – Roles, mandates and areas of work of key United Nations entities” Available at:  
<http://www.preventionweb.net/english/professional/publications/v.php?id=9866>*

## **Appendix 2**

### **Major European frameworks and directives**



## Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters

### *Objective:*

- to monitor progress on achievements, build resilience to disasters, and identify gaps and necessary resources related to programmes and initiatives;
- to foster closer collaboration and cooperation among national actors and among/with regional organisations;
- to stimulate exchanges and activities with international entities;
- to enhance visibility of countries within the global arena;
- to share good practice/lessons learned among national actors and with other countries that might be undertaking similar initiatives; and
- to access the 'rolling' possibility of the HFA Monitor on-line reporting tool.

### *Strategic Goals:*

1. The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.
2. The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.
3. The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

### *Priorities for Action*

1. Minor progress with few signs of forward action in plans or policy.
2. Some progress but without systematic policy and/or institutional commitment.
3. Institutional commitment attained but achievements are neither comprehensive nor substantial.
4. Substantial achievement attained but with recognised limitations in capacities and resources.
5. Comprehensive achievement with sustained commitment and capacities at all levels

## The EU's White Paper 'Adapting to Climate Change: Towards a European framework for action'

The objective of the EU's Adaptation Framework is improve the EU's resilience to deal with the impact of climate change. The framework will respect the principle of subsidiarity and support overarching EU objectives on sustainable development. The EU's framework adopts a phased approach. Phase 1 (2009-2012) will lay the ground work for preparing a comprehensive EU adaptation strategy to be implemented during phase 2, commencing in 2013.

Phase 1 will focus on four pillars of action:

1. building a solid knowledge base on the impact and consequences of climate change for the EU;
2. integrating adaptation into EU key policy areas;
3. employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) to ensure effective delivery of adaptation; and
4. stepping up international cooperation on adaptation.

For phase 1 to be a success, the EU, national, regional and local authorities must cooperate closely.

The proposals set out in the White Paper cover actions to be taken in the first phase and are without prejudice to the future structure of the EU budget and to the current and future multi-annual financial framework.

### **The EU Water Framework Directive on establishing a framework for Community action in the field of water policy (DIRECTIVE 2000/60/EC)**

The purpose of the Water Framework Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

- prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
- promotes sustainable water use based on a long-term protection of available water resources;
- aims at enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- ensures the progressive reduction of pollution of groundwater and prevents its further pollution; and
- contributes to mitigating the effects of floods and droughts

and thereby contributes to:

- the provision of the sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use,
- a significant reduction in pollution of groundwater,
- the protection of territorial and marine waters, and
- achieving the objectives of relevant international agreements, including those which aim to prevent and eliminate pollution of the marine environment, by Community action under Article 16(3) to cease or phase out discharges, emissions and losses of priority hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

### **Cancun Adaptation Framework, Part of the Cancun Agreements at the 2010 Climate Change Conference in Cancun, Mexico (COP 16), Paras 11-35**

“The objective of the Cancun Adaptation Framework (paras 11-35) is to enhance action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention. Ultimately enhanced action on adaptation seeks to reduce vulnerability and build resilience in developing country Parties, taking into account the urgent and immediate needs of those developing countries that are particularly vulnerable.

The Cancun Adaptation Framework includes the following five clusters:

#### 1. Implementation

- All Parties to plan, prioritise and implement adaptation actions and to use existing channels to provide information on support provided and received for adaptation actions and on activities undertaken;
- A process to enable LDC Parties – building upon their experience with the NAPAs – to formulate and implement national adaptation plans and an invitation to other developing country Parties to employ the modalities formulated to support those plans;
- A 2-year work programme to consider approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.



## 2. Support

- Developed country Parties to provide developing country Parties, taking into account the needs of those that are particularly vulnerable, with long-term, scaled-up, predictable, new and additional finance, technology, and capacity-building (paras 95-137) to implement adaptation actions, plans, programmes and projects at local, national, subregional and regional levels, including activities under the Cancun Adaptation Framework.

## 3. Institutions

- At the global level: establishment of an Adaptation Committee to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention;
- At the regional level: strengthening and, where necessary, establishing regional centres and networks, in particular in developing countries; and
- At the national level: strengthening and, where necessary, establishing and/or designation of national-level institutional arrangements.

## 4. Principles

- Be undertaken in accordance with the Convention;
- Follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems;
- Be based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge;
- Be undertaken with a view to integrating adaptation into relevant social, economic and environmental policies and actions.

## 5. Stakeholder engagement

- Relevant multilateral, international, regional and national organisations, the public and private sectors, civil society and other relevant stakeholders are invited to undertake and support enhanced action on adaptation at all levels.” (UNFCCC, 2011)



## **Appendix 3**

### **Extended Information of Sample Research Projects**



## *Policy Assessment*

**Adaptation and Mitigation – an Integrated Climate Policy Approach (AMICA)** Funding: INTERREG IIIC – project – part financed by the EU

Countries/Institutions Participating: Germany, Austria Italy, France, the Netherlands

Objective: The objective of the AMICA Project is to motivate local governments to include climate protection and adaptation in their planning practices.

**European Responses to Climate Change: Deep Emissions Reductions and Mainstreaming of Mitigation and Adaptation (RESPONSES)** Funding: FP7

Countries/Institutions Participating: IVM – Institute for Environmental Studies, UEA – University of East Anglia, IIASA – International Institute for Applied Systems Analysis, PBL – Planbureau voor de Leefomgeving, ISI – Fraunhofer Institute for Systems and Innovation Research, CSIC – Consejo Superior de Investigaciones Cientificas, CAS-IPM – Institute of Policy and Management, Chinese Academy of Sciences, TERI – The Energy and Resources Institute, JRC – Joint Research Centre, European Commission and DG Research and Innovation

Objective: To identify and assess integrated EU climate-change policy responses that achieve ambitious mitigation and environmental targets and, at the same time, reduce the Union's vulnerability to inevitable climate-change impacts.

## *Science Assessment*

**Noah's Ark Project – Global Climate Change Impact on Built Heritage and Cultural Landscapes.** Funding: FP6

Countries/Institutions Participating: Italy, United Kingdom, Sweden, Poland, Czech Republic, Spain, Norway

Objective: to estimate and assess the effects of climate change on Europe's built cultural heritage providing maps showing future scenarios for the 21st century.

**Assessing Climate Impacts on the Quantity and quality of WATER (ACQWA)** Funding: FP7

Countries/Institutions Participating: 35 partners

Objective: To assess the impacts of a changing climate, focusing on the quantity and quality of water originating in mountain regions, particularly where snow- and ice-melt represent a large, sometimes the largest, streamflow component. The goal of the project is to use advanced modelling techniques to quantify the influence of climatic change on the major determinants of river discharge at various time and space scales, and analyse their impact on society and economy, also accounting for feedback mechanisms.

**Climate Induced Changes on the Hydrology of Mediterranean Basins (CLIMB) Funding: FP7**

Countries/Institutions Participating: 19 partners

Objective: To analyse ongoing and future climate induced changes in hydrological budgets and extremes across the Mediterranean and neighbouring regions. The work plan is targeted to selected river or aquifer catchments, where a combination of novel field monitoring and remote sensing concepts, data assimilation, integrated hydrologic modelling and socioeconomic factor analyses is employed to reduce existing uncertainties in climate change impact analysis.

**Extreme weather impacts on European networks of transport (EWENT) Funding: FP7**

Countries/Institutions Participating: Switzerland, Germany, Finland, Austria, Norway, Cyprus

Objective: To estimate and monetise the disruptive effects of extreme weather events on the operation and performance of the EU transportation system.

**Integrated Assessment of Health Risks of environmental stressors in Europe (INTARESE) Funding: FP6**

Countries/Institutions Participating: 33 research institutes across Europe

Objective: To develop and apply new, integrated approaches to the assessment of environmental health risks and consequences, and to provide methods and tools that are essential to enable integrated assessment of environment and health risks

**Integrated Climate Policy Assessment: Scenarios and Economic Impacts Institute for Prospective Technological Studies (ICPA-SEI) Funding: JRC**

Objective: To provide updated and reliable projections on carbon and other GHG emissions, under alternative hypothesis and to address the corresponding impact in terms of environmental performance and costs.

**Projection of Economic impacts of climate change in Sectors of the European Union based on bottom-up Analysis (PESETA) Funding: FP7**

Countries/Institutions Participating: Spain, United Kingdom, Netherlands

Objective: To make a multi-sectoral assessment of the impacts of climate change in Europe for the 2011-2040 and 2071-2100 time horizons.

**Sea Level Change Affecting The Spatial Development In Baltic Sea Region (SEAREG) Funding: INTERREG IIIB – project-part financed by the EU**

Countries/Institutions Participating: Finland, Sweden, Germany

Objective: To assess impacts of future sea level rise in several case study areas in the Baltic Sea Region.

## *Policy and Science Assessment*

### **Adaptation and Mitigation (ADAM)**

**Funding: FP6**

Countries/Institutions Participating: 120 researchers in 25 research institutions

Objective: 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. Will look to identify the associated costs and effectiveness of an unchecked 5°C mitigation scenario and to develop and appraise a portfolio of longer term strategic policy options.

### **Climate change – terrestrial adaption and mitigation in Europe (CCTAME)**

**Funding: FP7**

Countries/Institutions Participating: UK, Austria, Spain, Slovakia, Germany, France, Italy, Finland, Denmark, Estonia, Japan

Objective: To assess the efficiency of current and future land use adaptation and mitigation processes and to identify and quantify the adaptation induced by policies

### **Costs of Natural Hazards (CONHAZ)**

**Funding: FP7**

Countries/Institutions Participating: France, Germany, Austria, Spain, Italy, Netherlands

Objective: To provide insights into the methods and terminology used in European case studies in assessing the costs of natural hazards, taking a comprehensive perspective on the costs of natural hazards that includes droughts, floods, storms, and alpine hazards. Then to evaluate these methods and to synthesise the results and give recommendations according to current best practice.

### **Developing Policies & Adaptation Strategies to Climate Change in the Baltic Sea Region (ASTRA)**

**Funding: INTERREG IIIC – project-part financed by the EU**

Countries/Institutions Participating: Finland, Germany Latvia, Estonia, Lithuania, Poland

Objective: To assess regional impacts of climate change and develop strategies and policies for adaptation.

### **Full cost of climate change (CLIMATECOST)**

**Funding: FP7**

Countries/Institutions Participating: France, UK, Czech Republic, Greece, Denmark, Belgium, Germany, Ireland, Austria, Italy, Spain, India, China

Objective: To advance knowledge in the full economic costs of climate change in the following three areas: long-term targets and mitigation policies, costs of inaction (the economic effects of climate change) and costs and benefits of adaptation.

## Cooperation and Networks

**Climate change integrated assessment methodology for cross-sectoral adaptation and vulnerability in Europe (CLIMSAVE)**

**Funding: FP7**

Countries/Institutions Participating: UK, Romania, Belgium, Hungary, Spain, Germany, Czech Republic, Greece, Austria, Sweden, Netherlands, China, Australia

Objective: To develop and apply an integrated methodology for climate change impact and vulnerability assessment that explicitly evaluates regional and continental scale adaptation options, and cross-sectoral interactions between the key sectors driving landscape change in Europe.

**Climate Proof Areas (CPA)**

**Funding: INTERREG IVB North Sea Region 2007-2013 – financed by European Regional Development Fund**

Countries/Institutions Participating: Sweden, Netherlands, Belgium, UK, Germany

Objective: To accelerate the climate change adaptation process in the NSR by means of the joint development and testing of innovative adaptation measures in pilot locations for a variety of areas representative for the NSR as a whole, and use the results to give recommendations for regional, national and NSR wide adaptation strategies and create a toolkit for adaptation in the NSR, thus preparing these regions, countries and the NSR for anticipated changes in the climate.

**Regional cooperation towards adaptation to climate change (RegioClima)**

**Funding: INTERREG IVC 2007-2013 – financed by European Union's Regional Development Fund**

Countries/Institutions Participating: Cyprus, Italy, Spain, Estonia, Bulgaria, France, Greece, Slovakia

Objective: To enhance cooperation among selected EU regions towards avoiding risk and reaping the benefits from a changing climate by assist societies to adapt to the new climate conditions.

## Knowledge Sharing

**Adaptive and Sustainable Water Management and Protection of Society and Nature in an Extreme Climate (CLIWAT)**

**Funding: INTERREG IVB North Sea Region 2007-2013**

Countries/Institutions Participating: Denmark, Germany, Netherlands, Belgium

Objective: To initiate trans-boundary cooperation and evaluation of the effect of different climate scenarios focusing on different hydrological models for adaptive and sustainable water management in extreme climates in the EU North Sea region.



**FLOODS – Institute for environment and sustainability**

**Funding: JRC**

Countries/Institutions Participating: Throughout Europe

Objective: To complement Member States' activities towards flood hazard and risk by developing harmonised EU-wide methodologies and information systems towards the prevention and prediction of floods.

**Risk Prevention and Safety in Construction – Institute for the Protection and the Security of the Citizen (SAFECONSTRUCT)**

**Funding: JRC**

Objective: To make available the information and knowledge undertaken at the European level in regards to engineering, construction, seismic performance of buildings, etc.

**Integrated Climate Policy Assessment: Emissions and Environmental Impacts – Institute for environment and sustainability (ICPA – EEI)**

**Funding: JRC**

Objective: To integrate knowledge and tools from different scientific disciplines to assess impacts and benefits of climate policy on the European and global climate and environment

**Methodology for Effective Decision-making on Impacts and AdaptATION (MEDIATION)**

**Funding: FP7**

Countries/Institutions Participating: Netherlands, Austria, Germany, EU, Hungary, United Kingdom, Finland, Italy, Spain

Objective: To integrate, consolidate and enhance access to the existing knowledge in the proper context of local, regional and sectoral application, methods and data by further developing and improving methods in selected priority areas, by increasing availability of knowledge, by applying a systematic approach to developing a common methodological framework that integrates policy needs and the diversity in assessment approaches, and by increasing the understanding, management and communication of uncertainties to allow for more harmonised approaches in European research to support robust decision-making.

**Sustainable flood management strategies for cross border river basins (FLOOD-WISE)**

**Funding: INTERREG IVC 2007-2013 – financed by European Union's Regional Development Fund**

Countries/Institutions Participating: Netherlands, Belgium, Germany, Slovenia, Croatia, Ukraine, Poland, Republic of Belarus, Hungary, Romania

Objective: To identify, share and transfer good practices on sustainable cross-border flood management in European river basins, using the instruments of the Flood Risk Management Directive (FRMD).

## *Water, Floods and Sea-level Rise*

### **Adaptive Land use for Flood Alleviation (ALFA)**

**Funding: INTERREG IVB North West Europe – financed by EU**

Countries/Institutions Participating: Netherlands, Belgium, Germany, France and UK

Objective: To protect the North West Europe region against the effects of (the risk of) flooding due to climate changes by developing and implementing innovative technical solutions for increased capacity for water storage or discharge in the project areas, raising awareness amount citizens about river catchments, and to optimise social, economic and ecological benefits by preserving the current land use function.

### **Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region (BaltCICA)**

**Funding: INTERREG Baltic Sea Region**

Countries/Institutions Participating: Finland, Estonia, Latvia, Lithuania, Denmark, Sweden, Norway, Germany

Objective: To focus on changes in the occurrence of floods (river floods as well as storm surges) and sea level rise, as well as impacts on water availability and quality in the Baltic Sea Region.

### **Combined functions in Coastal defence zones (COMCOAST)**

**Funding: INTERREG IIIB – project-part financed by the EU**

Countries/Institutions Participating: The Netherlands, Germany, UK, Belgium, Denmark

Objective: To explore coastal defence strategies in the North Sea, plus new methods to evaluate flood defence zones; to develop new flood defence solutions.

### **Improved integration of increased urban development and flood risks in major cities (FloodResilienCity)**

**Funding: INTERREG IVB North West Europe**

Countries/Institutions Participating: The Netherlands, Belgium, France, Germany, Ireland and UK

Objective: To adapt the Scottish Sustainable Flood (risk) Management framework as a basis for the joint FloodResilienCity strategy in order to integrate the increasing demand for more houses and other buildings with the increasing need for more and better flood risk management measures in North West European cities along rivers.

**IMproving Preparedness and Risk maNagement for flash floods and debriS (IMPRINTS)**

**Funding: FP7**

Countries/Institutions Participating: 19 partners including Centre de Recerca Aplicada en Hidrometeorologia – Universitat Politècnica de Catalunya, Grupo de Investigación en Transporte de Sedimentos – Universitat Politècnica de Catalunya, Bundesamt für Meteorologie und Klimatologie MeteoSchweiz, Directorate General Joint Research Centre, Lancaster University, Eidgenoessische Forschungsanstalt WSL, Wageningen Universiteit, Centro Tecnológico del Agua, Consorzio inter-Universitario per la previsione e prevenzione dei Grandi RIschi, University of KwaZulu-Natal, Servei Meteorològic de Catalunya, Hydrometeorological Innovative Solutions, Service Central d’Hydrométéorologie et d’Appui à la Prévision des Inondations, Agència Catalana de l’Aigua, Departement Bau und Umwelt – Kanton Glarus, Verzasca SA, Azienda Elettrica Ticinese, Autorità di Bacino in Destra Sele – Right side Sele River Basin Authority, Empresa de Gestión Medioambiental S. A. and McGill University

Objective: To contribute to the reduction of loss of life and economic damage through the improvement of the preparedness and the operational risk management of flash flood and debris flow (from now on FF & DF) generating events, as well as contributing to sustainable development through reducing damages to the environment. To achieve this ultimate objective, the project is oriented to produce methods and tools to be used by practitioners of the emergency agencies and utility companies responsible for the management of FF & DF risks and associated effects.

**Water Adaptation is Valuable for Everyone (WAVE)**

**Funding: INTERREG IVB North West Europe**

Countries/Institutions Participating: Belgium, Germany, Ireland, France, Luxembourg, the Netherlands and the UK

Objective: To prepare for future changes in regional water systems brought about by climate change. and continue to develop more climate-proof water systems by developing policies that prevent damage and address opportunities, making stakeholders and nature less vulnerable, and introducing the importance of water, creation of awareness.

*Miscellaneous*

**Future Cities Urban Networks to Face Climate Change (Future Cities)**

**Funding: INTERREG IVB North West Europe – funded by the European Regional Development Fund (ERDF)**

Countries/Institutions Participating: Germany, the Netherlands, UK, France and Belgium

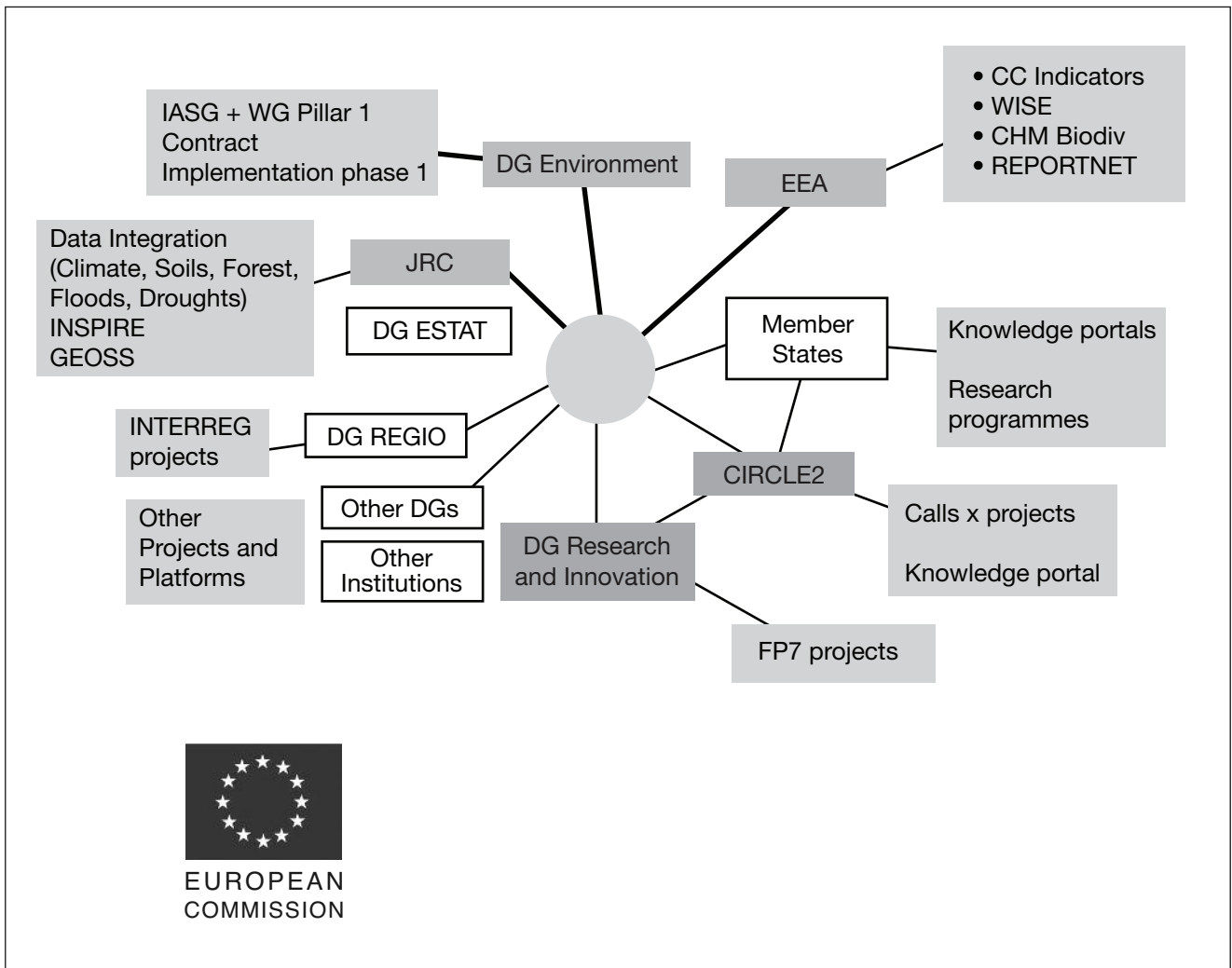
Objective: To cope with the predicted climate change impacts by proactive transformation of urban structures in city regions in Northwest Europe by developing concepts and implementation strategies which are innovative and save from greater financial loss.



## **Appendix 4**

### **EU Clearinghouse Partnership and Synergies**





Source: Jol, A., 2010





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