



**KNOW4RR**  
Disaster Risk Reduction Knowledge

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# Enabling knowledge for disaster risk reduction in integration to climate change adaptation

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Agreement paper

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## **Content**

<b>1. Introduction .....</b>	<b>5</b>
<b>2. Participating parts .....</b>	<b>6</b>
<b>3. Issues and topics discussed.....</b>	<b>8</b>
<b>4. Agreement and understanding up to now and next steps forward .....</b>	<b>15</b>
<b>Appendix A. Replies of partners to the initial set of questions.....</b>	<b>17</b>
<b>Appendix B: Partners' experiences from knowledge successfully advancing decision-making and implementation - Identified main catalysts for knowledge sharing and exchange .....</b>	<b>55</b>



## 1. Introduction

The project “Enabling knowledge for disaster risk reduction in integration to climate change adaptation” (KNOW-4-DRR) attempts to analyse, assess and understand how knowledge about disaster risk reduction and adaptation to climate change is actually produced, managed, and shared and ultimately made use of – or indeed not used – by scientists, practitioners, decision makers, and by educational and civil society actors. It aims at identifying barriers to knowledge use and sharing as well as potential bridges among experts and professionals with different disciplinary backgrounds and different roles.

The KNOW-4-DRR consortium reflects a wide spectrum of disciplines and roles involved in disaster risk reduction and climate change adaptation. The disciplinary backgrounds span from engineering and geo-informatics to geography and planning all the way to social anthropology and sociology. The project engages research institutions, universities, NGOs and the media. Partners own expertise on various aspects of disaster risk reduction and climate change. They bring into the project different perspectives, understandings and methods and in addition they cover a wide range of fields and networks. Participating scholars and practitioners come from different countries, contexts and cultures.

This offers a unique opportunity to study knowledge production, exchange and sharing between partners within the project and makes the project itself a laboratory for testing how to develop tools and mechanisms to advance knowledge production and sharing for a common goal. In fact, the project calls for a very strong commitment to interdisciplinary work, combining activities that are typical of a “Coordination Action” to test partners’ ideas, whether the latter are well established or debatable. This complex process of sharing and testing is necessary to meet one of the goals set for the project, i.e. the development of a knowledge management framework to facilitate and enhance knowledge production and sharing in the context of disaster risk reduction and climate change adaptation in the future.

As an initial step, an Agreement Paper is outlined to provide tools for framing our own work, and indicate the next steps of the project according to the answers of the all partners to nine questions. The first part of the paper summarizes the answers of the partners and clearly conveys agreements and disagreements of partners on the subject, such as how to achieve interdisciplinary work and how to share knowledge, expertise and experience within the project, with other relative projects and with stakeholders. In addition it attempts to set an understanding as to where KNOW-4-DRR partners stand on key concepts, issues and manners to work together. Last but not least the Agreement Paper is used for getting the partners to know better one another through sharing with other partners their interests, expertise and experiences.

Drafting the Agreement Paper was about finding the way to reach a common understanding on how to progress with the project been aware of the differences and the commonalities of our mindsets; thus it was conceived more as a process than an analytical task.

To proceed with it was decided to invite every partner to provide input by responding to a set of 9 questions. Based on the responses, further dialogue was triggered until the consensus was reached. These nine questions are listed as in the following:

- 1) What in a very condensed way do you see as crucial to share with other partners about your own knowledge and understanding?
- 2) What does it mean for you interdisciplinary work? Do you believe we should do interdisciplinary work in this project and with what objective? Why do you think this is relevant (or not relevant)?

- 3) How do you think your expertise and past experience (research and practice) can be integrated in the project?
- 4) What tools do you think may be more useful for achieving interaction among us and progress of the project (for example, what type of participatory activities in meetings, forum discussions etc.)
- 5) Present some activities that you have experienced and/or you deem relevant to achieve enhanced integration of different types of knowledge?
- 6) Share one of your experiences from knowledge successfully advancing decision making and implementation for DRR. What were the main catalysts for efficient knowledge sharing and exchange?
- 7) How do you perceive “DRR in integration with CCA”?
- 8) How do you appreciate the difference between data, information, knowledge and wisdom?
- 9) List 5 of your favourite publications relating to the topic of the project. It would be useful to explain briefly why you consider these publications essential for the project.

In brief, the set of questions put forward to partners referred to:

- A. their standpoint on interdisciplinary work and their suggestions on how to achieve interaction within the project and with other stakeholders,
- B. their understanding of key concepts and theoretical issues, and
- C. their interests, expertise and experiences that they deemed as most important to share with the other partners

There were no correct or wrong answers; the goal was rather to let partners express concisely, precisely and fully concepts, issues and approaches that are undeniably difficult.

This approach towards drafting the Agreement Paper allowed for partners to reflect at their own pace before sharing answers with the others and at the same time was interactive and synergistic.

All partners took part in a process of offering their input, some even providing input from different persons in their group. Then each set of replies was made known to all so that everyone had the chance to alter his/her replies based on the input of the others. The document with all final replies of partners can be found in Appendix A and Appendix B.

However, it should be stated that at the end the Agreement Paper does not include one to one all issues associated with the original set of questions nor follows the initial order of the questions set. Instead it builds upon the input provided by the partners and without leaving out much, attempts to make a synthesis towards providing building bricks for developing the knowledge framework.

## 2. Participating parts

### **POLIMI (Italy)**

Politecnico di Milano is a large public scientific and technical university. POLIMI hosts the master program Civil Engineering for Risk Mitigation (CERM). The participating group belongs to DASTU (Department of Architecture and Urban Studies) which works, among others, in the field of spatial planning and territorial governance.

<b>UNIV-SAVOIE (France)</b>
Université de Savoie is a public university. The participating group belongs to the EDYTEM laboratory (Environments, Dynamics and Territoires de la Montagne) and are engaged in various research programmes on geography of risks and risk management at a European scale.
<b>HUA (Greece)</b>
Harokopio University of Athens is a public university. Its Geography Department is experienced in hazards and disaster research both from the point of Physical Geography and of Human Geography. HUA hosts a MASTER on Management of Natural disasters.
<b>PLUS (Germany)</b>
PLUS belongs to the Interfaculty Department of Geoinformatics – Z_GIS that is an interdisciplinary department established at Paris-Lodron University Salzburg. As experts for the spatial view Z_GIS focuses on interoperable GIS usage, spatial modelling, satellite remote sensing, image analysis, digital cartography and GI-based communication.
<b>UNU-EHS</b>
The United Nations University (UNU) is the academic arm of the United Nations. The largest institute outside the Center is the Institute for Environment and Human Security (UNU-EHS) in Bonn, Germany. UNU-EHS focuses on risk and vulnerability aspects of human security and the consequences of complex environmental hazards for sustainable development.
<b>CIESAS (Mexico)</b>
Centro de Investigaciones y Estudios Superiores en Antropología Social (CIESAS) is an institution that has extended experience in the field of resilience building and social and cultural issues related to risk management and climate change adaptation. Their investigations are focused on Social Anthropology, Ethnohistory, History and Linguistics.
<b>CSIC (Spain)</b>
The Spanish National Research Council (CSIC) is the largest public research institution in Spain. The group participating in the project has extensive expertise in earthquake hazard modelling, seismic zonation, engineering seismology and seismic risk evaluation; it is also involved in educational projects and public awareness of seismic hazard and risk.
<b>EURAC (Italy)</b>
EURAC is a private non-profit technical institution. The group participating in the project ('Risk, Vulnerability and Climate Change' of the Institute for Applied Remote Sensing) has extensive experience in integrative risk and vulnerability assessments of populations and ecosystems as well as climate change impact assessments, particularly in mountainous terrain.
<b>ADELPHI (Germany)</b>
ADELPHI RESEARCH is a non-profit and independent institution for applied environmental research and policy analysis. Among others, it provides to broad audience knowledge in the field of nature, environment and resource protection, and development cooperation.
<b>DWF (France)</b>
Development Workshop France is registered in France as a not for profit association (NGO) and has been planning and implementing local and sustainable development programmes in Africa, Asia, the Caribbean and Europe in partnership with communities, local and national governments.

### 3. Issues and topics discussed

#### Theme 1

#### What interdisciplinary work means for the partners and whether interdisciplinary work should be pursued in the project

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Interdisciplinary work in the KNOW-4-DRR project is seen as central -as 'obligatory' according to a partner- since partners have diverse disciplinary backgrounds. Interdisciplinary work concerns basic problems therefore it is considered very close to the issues KNOW-4-DRR wants to address. Furthermore, it is regarded as an advantage for the outcome of the project because it allows for considering and building on achievements of different scientific disciplines to develop new solutions and a knowledge management system that is sufficiently specific and thus can be implemented in different societal settings.

#### *Partners' shared points as regards interdisciplinarity*

Interdisciplinary work is perceived by most partners as integration-oriented collaboration between researchers and specialists of different disciplines and backgrounds in order to address common problems and their variables.

It is strongly associated with phrases such as interaction, interconnection, integration, combination, sharing, collaboration, holistic, synergies, while it is discerned from terms such as limitations, segmented, "in-depth results, but short-sighted", fragmentation, discrepancies, limits of one's specialised knowledge, boundaries, borders.

In support of interdisciplinarity, partners mention the multifaceted and complex character of disasters and of climate change that needs to be acknowledged in order to effectively achieve DRR and CCA. It is also noticed that there can be no single privileged perspective for measurement, analysis, and evaluation, where uncertainties are crucial, value-loadings critical, and less information available than desired by decision-makers in policy and practice.

All partners are inclined to work together in an interdisciplinary manner. Most bring up the advantages offered by such a way of work. However some refer also to the requisites for successfully working in an interdisciplinary way.

#### *Achieving interdisciplinarity within the project*

The endeavour to work in an interdisciplinary manner within the project is seen by partners as a case study by itself. Such a mode allows assessing how knowledge input by a range of disciplines is integrated and shared among partners and perhaps suggests novel ways of doing so. It is mentioned that it already has become clear how different teams in the project are collaborating together and contribute to enriching the process and the product.

Additionally, this effort is perceived by the partners as an opportunity for learning from different ways of thinking and approaching different relevant aspects, for broadening horizons of participants as individuals and the project as a whole, and for developing new ideas about the way partners work and the products of their work. According to a partner, the aspects that are visible to a particular discipline but not the others make the interdisciplinary work significant.

Interdisciplinarity takes an upright willingness to understand foreign thoughts, which demands genuine openness and readiness to share. It calls for partners to be open and willing to help each other as the case seems to be already in the project.

### *Concerns and individual points raised by individual partners*

Working in an interdisciplinary manner can add fatigue to the research process. Therefore, there should be an effort to define the limits and goals of interdisciplinary work. It is important to pinpoint what are the issues and limits produced by working in a non-interdisciplinary way and what are the synergies and benefits generated by an interdisciplinary approach with regard to the specific objective the project wants to achieve.

While interdisciplinarity is a concept all partners are familiar with, the concept of transdisciplinarity is raised by some partners. Transdisciplinary (or problem-oriented) research deals with problem fields in such a way that it can: a) grasp the complexity of problems, b) take into account the diversity of life-world and scientific perceptions of problems, c) link abstract and case-specific knowledge, and d) develop knowledge and practices that promote what is perceived to be the common good. It was suggested that transdisciplinary approaches can be very much appreciated in problem-oriented research and that transdisciplinary work approaches in an integral and interdisciplinary view the specific themes or debates.

In addition, the concept of multi-disciplinarity was brought up together with the suggestion to further delineate the concepts “interdisciplinarity”, “transdisciplinarity” and “multidisciplinarity”.

## Theme 2

### **Tools and methods for achieving interaction among partners**

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Partners agree that interaction among them (internally) is crucial for the project and should be targeted by all means. It is suggested that partners should merge their own knowledge and build a knowledge management system within the project group initially, before building it for the world.

Regarding project work flow, an effort should be made to release the participants from the barriers set by their assigned tasks and bring together people who do not already know each other or share the same interests.

Routine interaction internally, should not be undermined. Here the most cited tool is Skype, especially between small groups. Furthermore, a common location to archive and exchange documents and data was suggested. Such a repository would also allow discussing and distributing basic information before meetings and workshops. However, personal communication and interaction are considered essential. The significance of regular exchange and of periodicity was also brought up.

### *Tools and methods for enhancing interaction*

There is a significant agreement on undertaking participatory activities in project meetings, such as the group work during the kick-off meeting in Milan, instead of exclusively relying on presentations.

For enhancing interaction, various participatory activities and methods are suggested, some already experienced by individual partners. Among them are: role playing; a variant of magic stick (groups focusing on future, present, and past with regard to a selected issue); group work during field work; well-prepared and focused workshops; World Café; knowledge café; market place/poster exhibition; scenario building; cross-organisational knowledge sharing; storytelling; the Dahlem concept.

### Theme 3

#### How partners perceive the phrase “DRR in integration with CCA”

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The partners perceive rather similarly the phrase “DRR in integration with CCA” which is included in the title of the project. They all agree that both DRR and CCA have as a common ultimate goal, i.e., the prevention and mitigation of future disasters, and are closely related. Especially at local level, strategies and measures that are referred to as ‘adaptation’ often qualify also as DRR strategies and measures. Important is the fact that DRR and CCA implementation, as well as science and engineering, should be seen within wider socio-economic dynamics. The keystone for enabling knowledge for DRR is people and not technologies. This in turn shows that a deep understanding of society offers relevant ways to identify root causes of vulnerability, risk perception, and social capacities.

DRR and CCA communities are still rather separated from each other; yet integration is occurring in both directions. DRR and CCA should be better linked and form an integrated approach to tackle short-, medium-, and long-term challenges associated with natural hazards.

The DRR community has long-term experience and collective knowledge regarding all disaster phases and a range of hazards, disaster situations, and societal contexts. DRR is a reality of yesterday and today with many practices to cope with disasters. There is much wisdom available in DRR. CCA is more about potential change in the future – combining the potential extension of the intensity of existing hydro-meteorological disasters with new threats, some as yet difficult to evaluate such as sea level rise.

CCA can greatly benefit from the approaches and long-lasting experiences made in DRR. Knowledge and wisdom from DRR must be integrated into CCA, and not re-invented in the climate change discourse and practice. At the same time, DRR can benefit from aspects of CCA like climate proofing. Climate change could be considered as a new global framework, where comprehensive DRR should still be implemented. In general, it can be said that DRR holds the historical/present perspective and CCA a future perspective – which should be short-term and long-term focused.

Despite significant similarities, partners mention several differences between CCA and DRR that need to be further studied and taken into consideration.

#### *Points raised by individual partners as regards differences between CCA and DRR*

**Regarding hazards:** Climate change is not only a hazard per se but may significantly influence several other natural hazards, such as hydro-geological and forest fire hazards. DRR has sought to strengthen populations, institutions, and ecosystems resilience to cope with different risks and hazards, including those generated by climate change. The boundary between DRR and CCA is fuzzy, particularly when addressing slow onset hazards and creeping disasters.

**Regarding timeframes:** Disaster impacts are rather immediate and concentrated, whereas the consequences of climate change may evolve, along with social change, over a longer time scale. However, this position can be held true only by limiting the focus on the emergency phase. The cataclysmic character of many natural disasters should not overshadow the latent conditions creating vulnerability to the physical stressors, as well as in the form of systemic consequences to losses and damages. Vulnerability must be viewed in a historic perspective.

**Regarding scales:** DRR involves mainly local and regional scales, while CCA experience generally stems from global policy agendas. Yet the interplay between different scales is vital

for understanding the interaction of nature and society both in phenomena caused by climate change and by natural hazards.

**Regarding uncertainty:** Climate change and CCA are fields with many uncertainties. However, uncertainty is also an issue in well documented hazards such as floods.

#### *Concerns expressed by individual partners*

Some partners suggest that present publicity surrounding CCA overshadows other significant long-term human-caused environmental processes (e.g., soil degradation, groundwater drawdown), as well as past DRR policies, strategies and efforts. The climate change debate is influencing the way in which development is conceptualised, negotiated, and implemented, and it is ultimately shifting research interests and perspectives, from vulnerability studies to resilience thinking – with highly specific definitions of ‘vulnerability’ and ‘resilience’. Some other find it surprising that power, governance, and social capital are still absent in many DRR/CCA thinking and actions.

### Theme 4

#### How partners appreciate the distinction between data, information, knowledge, wisdom

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Most partners make an effort to distinguish between data, information, knowledge, and wisdom; some refer to the approach and categorisation presented at the kick-off meeting of the project (see the kick-off meeting material).

Each notion can be outlined through putting together the replies of different partners.

**Data** is: a set of discrete, objective facts about events / objective facts / facts (and ideas) / raw material / neutral / core empirical evidence serving as a basis of information / building blocks for information.

**Information** is: a shaped version of data / structured data / structured data within a certain context / based on data that are processed for a purpose / processed data into a usable format / produced through interpreting and organising data / obtained after some kind of tailored processing / the building blocks of knowledge /

**Knowledge**: is information that has been culturally understood such that it explains the how and the why about something or provides insight and understanding into something / is the capacity to act or the capacity to take action / leads to action / expresses itself through human action / is a theoretical or practical understanding that can lead to action (or not to act) / is classified and useful information from experience and lessons learnt and works as a guideline for decision-making in many arenas / would allow elaborating answers (including estimating uncertainties) / is a complex term but in general has two components, one which is based mainly on information and experience (instrumental , factual knowledge) and one which refers to how things could or should be (orientation knowledge)

Wisdom is seen as a less clear notion. Borders between knowledge and wisdom are not clear and wisdom cannot always be seen as a step following the achievement of knowledge.

Partners perceive wisdom in different ways and touch upon various aspects.

**Wisdom**: is socially accepted or experience validated explication of purpose / leads to a change of attitude and culture / is a compendium of cumulative knowledge shared by experiences and gives sense to collective practices /refers mainly to wise decision-making, which means that decisions produce good results (beneficial, positive in nature) / is the

outcome of knowledge put in good use / being the possession of experience and knowledge together giving the power to apply these or not.

As knowledge and wisdom connect with the capacity to act or take action, the issue of power is raised. Even when data-information-knowledge and wisdom exist, people – especially in less developed countries – may not have the power to act.

#### *Concerns raised by individual partners*

While most partners make an effort to distinguish between data, information, knowledge, and wisdom, some remain sceptical concerning the attempt to make a clear distinction since this implies segmentation and a linear approach that does not serve the main goals of the project. For these partners, the project is more about identifying and studying the side-effects of a linear, clear-cut approach and exploring feedback loops.

### Theme 5

#### **Ways of interacting with stakeholders in the project**

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Interaction between partners and stakeholders and exchange with other projects (externally) should be pursued. However, there should be an effort to balance internal and external interactions.

A variety of ways to achieve interaction with stakeholders are suggested most already taken into account in KNOW4DRR proposal. Partners proposed also innovative ways to enhance interaction drawing from their positive experiences from other projects and events that involved integrating different types of knowledge and interacting with different stakeholders as regards a diversity of hazards, fields, roles, situations, and contexts.

#### *Ways for enhancing interaction with stakeholders*

##### Face-to-face interaction:

Studies and experience demonstrate that face-to-face interaction with stakeholders is vital for understanding the actual situation rather than the normative one that are written down in reports; it also provides a different perspective which is not included in reports. Reports provide information; yet being in the field and having a direct interaction with different stakeholders add to knowledge.

##### Involvement and integration of non-academic experts:

Co-designing knowledge together with decision makers from policy and practice is a feasible way to bridge gaps between scientists, policy makers and practitioners; openness and attention to diversity may inspire more democratic ways to organise the science-society nexus.

##### Organisation of activities and events:

Activities and events (workshops, seminars, meetings, living labs etc.) allow for an active participation in and interaction with stakeholders.

##### Knowledge and experience sharing with the use of living labs:

The living labs are cited as a good basis for experience and knowledge sharing. For example, experience gained from the Lorca earthquake and the subsequent flood disaster is considered of great value for the project's living labs and for testing concepts on transferring usable information and knowledge. Additionally, work undertaken in locations differing from the European context will form the base of the Vietnam living lab.

### The milieu of current economic crisis:

The present economic crisis pushes experts, social groups and other stakeholders out of their “comfort zone” and potentially, opens a window of opportunity for communication and interaction with the aim to solve real problems.

### Working on a common platform

Technology offers tools for interaction between partners and stakeholders

#### *Experiences from successful interaction with stakeholders*

- *UNISDR lead event in Geneva, 2013:* Trying to find common or similar answers to basic questions in workshops during an event as for example during the
- *RISKAT project:* Limited size multidisciplinary groups addressing specific problems (problem-focused approach)
- *Project Klimawandel South Tyrol:* A transdisciplinary approach to bridge the contributions from different areas and stakeholders was developed. A participatory process was requested from the scientific community and the local and regional administrations and technical services, with the common goal of writing a final documentation that could be used in educational programmes on climate change. Participants reported that the final workshop can be useful for bringing together people from different sectors of the same administration bureau.
- *Community mapping in Mozambique* was a collaborative effort to integrate different stakeholders
- *MOVE project:* The process of weighting and identification of different indicators
- *The large Dutch research programme ‘Knowledge for Climate’:* Co-funding (matching) from governmental institutions or the private sector substantially helps to establish a collaborative partnership between the two communities (types of knowledge) and ensures that research questions are commonly developed and knowledge is co-produced.
- *Workshop in Yucatan (Mexico) to identify people’s needs related to disaster risk:* people have exposed what they know about the disaster risks, UNDP (stakeholders) collected the information to write a report on DRR requirements, and an anthropologist (academics) observed the situation and wrote a paper on how dialogues are tools to produce knowledge and then share it among different sectors
- *Studying indigenous knowledge about DRR in Vietnam (and elsewhere) over many years:* Use of popular media in communication, using local actors (adult and child) in theatre plays and puppetry on DRR and prevention; creating memorable events that trigger DRR response much later.
- *Current work in Vietnam project:* Families make interesting choices and appropriate responses - Local and spatial risk mapping - based on house-to-house surveys combined with GIS and flood modelling.

## Theme 6

### List of publications that partners consider essential for the project

Sharing publications that are considered as essential for the project was a way to indirectly delineate each partner’s philosophy and approach. All suggested publications were

uploaded to a shared folder on line and now serve as a common background knowledge base.

Partners consider essential for the project publications falling into several, different thematic areas, such as: *knowledge* (systems, types, management, sharing, communication, transfer, transdisciplinarity, interdisciplinarity), *disaster policy* (socio-ecological approach, anthropology of disasters, risk and architecture, management policies, risk governance, policy limitations of disaster risk reduction, natural disasters and economic crises, crisis management), *key concepts* (mapping vulnerability, resilience engineering, resilience in socio-ecological systems and in built environment), *phases of disaster cycle* (risk assessment, environmental and disaster loss assessment, earthquake safety, response, emergency management), *disaster risk reduction, climate change adaptation, climate change and food security*.

The publications that are mentioned most are:

(1) Thomalla, F., Downing, T., Spanger-Siegfried, E. & Han, G. R., 2006, "*Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation*". The paper focuses on the process of development of a common approach between climate change and disaster risk reduction.

(2) White, G.F., Kates, R.W., Burton, I, 2001, "*Knowing better and losing even more: the use of knowledge in hazard management*". The paper discusses why disaster losses rise although knowledge increases.

(3) Weichselgartner, J. & Kasperson, R.E., 2010, "*Barriers in the science-policy-practice interface: Toward a knowledge-action-system in global environmental change research*". The paper offers insight regarding barriers in knowledge systems and converses the importance of collaborative production of knowledge.

Other publications among the proposed are: (1) "Freud and Scherlock Holmes: Clues and Scientific Method" by Ginzburg C. Morelli, in which the writer discusses how people see the world, how knowledge is acquired and organised while he examines the relationship between formal and informal knowledge and looks at knowledge in relation to power, (2) "Working Knowledge: How Organizations Manage What they Know" by Davenport T.H., Prusak L. 2000, that establishes the enduring vocabulary and concepts in the field of knowledge management, so to know what we talk about when we talk about knowledge, (3) " Re-visiting the knowledge Pyramid" by Jennex M.E., 2009, a paper that presents a revised knowledge pyramid since posits that the knowledge pyramid is too basic and fails to represent reality, (4) "Knowledge systems for sustainable development", by Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jäger, J. & Mitchell, R.B., 2003, a paper that gives a decent insight into knowledge systems, (5) "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change", by IPCC, 2012, that is a useful summary of the state of the art regarding DRR and CCA.

All publications proposed by the partners are presented in Appendix B.

## Theme 7

### **Partners' experiences from knowledge successfully advancing decision-making and implementation - Identified main catalysts for knowledge sharing and exchange.**

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There is a wealth of experiences demonstrating knowledge successfully advancing decision-making and implementation that stemmed out of what case each partner considered

important to share with the other partners. Because of the choice each partners made these experiences served in a way for introducing partners to one another. These experiences form a deposit of case studies for future use in the project. All experiences are presented in Appendix B.

#### **4. Agreement and understanding up to now and next steps forward**

Partners' answers (Appendix A and Appendix B) build up an interesting reading material. At the same time the response of partners to the demanding and timeconsuming process for exploring agreement on issues that are considered core for the project demonstrates openness, readiness to share knowledge and experiences and willingness to interact and to try new ways and tools of interaction. The input they provided feeds the project with ideas and proposals on how to proceed with promoting interdisciplinary in the project and how to enhance interaction with stakeholders. Ultimately the Agreement Paper comprises the basics for building the knowledge system.

Last but not least, given the range of disciplines, expertise, roles and interests of partners, this Agreement Paper displays the realistic prospect for bridging the gap between different communities of scientists and practitioners working on various aspects of CC and DRR.



## **Appendix A. Replies of partners to the initial set of questions**



<b>Q1 : What in a very condensed way do you see as crucial to share with other partners about your own knowledge and understanding?</b>
<b>POLIMI and Prof. J.Weichselgartner</b>
In the internal group meeting of Politecnico di Milano, as Ouejdane Mejri highlighted that we shall be able to merge our own knowledge and build knowledge management system within the project group, before building it for the world. Therefore, we would have a pilot study within the group to see what works, what does not, and so, we could have time to improve the parts which do not work.
<b>UNIV-SAVOIE</b>
<ul style="list-style-type: none"> <li>* The reasons why turning to knowledge management system (such as ONRN) while managing DRR policies limitations, has been found relevant in France.</li> <li>* Written differently, how French disaster risk reduction policies shortcomings and barriers are being assessed in France.</li> <li>* And which are the main stakeholders involved in DRR policies limitations in France?</li> </ul>
<b>HUA</b>
M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management
<p>POINT 1. For DRR and CCA to actually take place political and social agendas should be developed within the wider socioeconomic dynamics. Science and engineering are also subjects of these dynamics.</p> <p>POINT 2. The keystone for enabling knowledge for DRR is people and not technologies. Knowledge sharing takes places mainly through networking, participatory activities, interaction, collaboration, common experiences. Persons who have experienced different roles (for example, scientist, emergency manager, decision maker and administrator) and have dealt with different phases of a disaster can become catalysts for a better integration of knowledge into decision making and implementation.</p>
Th.Karymbalis, Geologist, Prof.of Geomorphology
<p>We want to share with the other partners of the project that:</p> <ul style="list-style-type: none"> <li>• It is possible for a region to cope with a disaster even with an intense and extensive one (regarding economic and environmental losses) if integration of knowledge is achieved.</li> <li>• Usually a whole community -with the meaning of all sectors' stakeholders- shows willingness to act after but rarely before a disastrous event.</li> <li>• In Greece extensive research is performed regarding risk assessment and climate change impacts but unfortunately it is not accompanied by actions towards DRR.</li> <li>• We would like to see information obtained from research studies to be transferred as knowledge to decision makers .</li> </ul>
Sophia Skordili, economist, Industrial geography
My expertise is on food safety and security issues. These a issues that are both influencing and influenced by climate change.

<b>CIESAS</b>
The analyses of risk and vulnerability could be done in different scales and with different methodologies. A deep understanding of society offers relevant ways to identify root causes of vulnerability, risk perception and social capacities. In our experience, societies are proactive and crucial actors in the vulnerability- resilience dichotomy. We want to share our experiences identifying social vulnerability at local level but also resilience.
<b>CSIC</b>
CSIC's group background is scientific earthquake research oriented to earthquake hazard and earthquake risk. We have been involved not only in purely scientific research projects (National and International funding agencies) but also in capacity building initiatives both in the Mediterranean and in South America (e.g. UNESCO, FUNDACYT, COLCIENCIAS). We have assisted and advised in the elaboration of earthquake hazard and risk models at different scales and in the updating of a number of national seismic codes. We have also contributed to a pioneering analysis in Spain of the capacities to face Natural Hazards for a Catalan regional governmental agency. Our most recent experience on the Lorca earthquake on March 11th 2011 and the very close monitoring of the situation since the occurrence of the earthquake, the subsequent flooding one year later (28.09.2012) and the local links established with different stakeholders has given us a much wider overview and information on different aspects of which are key to K4DRR. There are two aspects we find very relevant: <ul style="list-style-type: none"> <li>- A real shock in society with the occurrence of a damaging earthquake in moderate earthquake activity country which rises many concerns about pre-preparedness and pre-mitigation and the subsequent measures lacking a real culture and tradition on facing earthquake related hazards.</li> <li>- A second emergency situation (flooding) only one year later which allows to monitor on a short term if real situation training shortly before helped to better manage the subsequent situation involving the different phases of the cycle.</li> </ul>
<b>EURAC</b>
Our experience with communicating the results of scientific work to decision makers in order to influence policies, focusing on the topic of interrelations between DRR and CCA
<b>PLUS</b>
<ul style="list-style-type: none"> <li>• Understanding of how CCA and DRR can be integrated</li> <li>• The good work/best practices by various stakeholders in the Salzach case study to reduce disaster risk and adapt to climate change as well as past and current challenges</li> <li>• Experiences on recent events (floods 2002, 2013 and heat waves/droughts 2003, 2013)</li> <li>• The main barriers to knowledge that cause fragmentation of knowledge in the Salzach case study</li> <li>• Geoinformation as a way of bridging information and knowledge gaps by identifying, mapping, analyzing and explaining risk, including the hazards, susceptibility and vulnerability to the hazards and the capacity to cope with potential disaster events. In general how Geoinformation can be used in the different phases of the disaster management cycle.</li> </ul>

<b>UNU-EHS</b>
UNU-EHS, as part of the academic arm of the United Nations addresses the risk and vulnerability aspects of human security and the consequences of environmental hazards for sustainable development routinely. This work helps to improve the in-depth understanding of the cause-effect relationships between development and disasters and to find ways to reduce risks and vulnerabilities. In our research projects we apply science-based approaches and methodologies to assess risk, vulnerability and resilience of systems exposed to environmental hazards, while at the same time, working closely with affected communities.
<b>ADELPHI</b>
Bridging the science-policy-gap needs a sound understanding of the different scientific disciplines and the nature of their findings on the one hand, and the needs of policy- and decision-makers on the other hand. Revealing mutual benefits can help to create a strong interest in exchange (scientific community: visibility, practical application – policy makers: sound information as basis for decisions).
<b>DWF</b>
DWF comes to the project with 40 years' experience of DRR and sustainable development in poor communities in less developed countries, actions in which communication and the development of capacity and awareness has played a very large and practical part., from government to family level. We closely follow and contribute to thinking about DRR and adaptation to Climate change, but we also have a wealth of experience of testing ideas in practice and of contributing this to a bigger forum of thinking. We have a strong community based approach we believe important in DRR in line with emerging thinking.

<b>Q2 : What does it mean for you interdisciplinary work? Do you believe we should do interdisciplinary work in this project and with what objective? Why do you think this is relevant (or not relevant)</b>
<b>POLIMI</b>
The article by Carlo Ginzburg “Morelli, Freud and Sherlock Holmes: Clues and Scientific Method” is constructed to reveal how people from different disciplines see the world, and how they observe the current information and transform it into knowledge. Even when we are all looking at the same object, different parts of the object capture our attention, we collect some particular observations and construct our knowledge accordingly. The whole is constructed from the parts and every discipline is specialized in one of the parts. The aspects which are visible to a particular discipline but not the others make the interdisciplinary work significant.
Prof. J.Weichselgartner, geographer
Interdisciplinary research refers to a form of coordinated and integration-oriented collaboration between researchers from different disciplines (Pohl & Hirsch Hadorn, 2007). Where uncertainties are crucial, value-loadings critical, and less information available than desired by decision-makers in policy and practice, there can be no single privileged perspective for measurement, analysis, and evaluation. Thus, invoking ‘truth’ as the goal of science is a distraction from real tasks. It is argued that quality is a more relevant and robust guiding principle – understood as a contextual property of scientific information (Wichselgartner & Truffer, forthcoming). By bringing ‘facts’ and ‘values’ into a unified conception of problem-solving in these areas, and by replacing ‘truth’ with ‘quality’ as its core evaluative concept, transdisciplinary (or problem-oriented) research deals with problem fields in such a way that it can: a) grasp the complexity of problems, b) take into account the diversity of life-world and scientific perceptions of problems, c) link abstract and case-specific knowledge, and d) develop knowledge and practices that promote what is perceived to be the common good (Pohl & Hirsch Hadorn, 2007).
<b>UNIV-SAVOIE</b>
Interdisciplinary work means addressing similar issues (such as DRR policies limitations) while using different academic approaches AND comparing the results obtained in order to identify ground, common points, such as basic trends. It targets reducing limitations found while turning to purely academic, segmented approaches of a problem (in-depth results, but short-sighted). The wish to reduce discrepancies between institutions trying to prevent disasters while building knowledge management systems looks very similar, on the management side of the issue. Experience returns reveal how preventing disasters while not taking institutions culture discrepancies may prove counterproductive. As methods and concepts still do vary depending on academic fields implied, It could be dangerous (and time consuming) hoping to reach common definitions of basic concepts (such as resilience, disaster....), and/or a common method. Yet, it’s considered possible (and useful) to reduce discrepancies between academic understanding of the issues while turning to a more holistic approach (the same as far as management issues are being concerned). Searchers on complexity do work in that direction. Resilience alliance

<p>searchers contributed very recently to make the point while working on socio-ecological systems, a means to bridge the gap between “nature” and human centered approach of DRR policies.</p> <p>Therefore, interdisciplinary work is very close to the issues we’ll have to address during this FP7 programme, because it concerns basic problems, very similar to those knowledge management systems try to manage.</p>
<p><b>HUA</b></p>
<p>M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management</p> <p>Interdisciplinarity has to do with having in mind an overall picture of the reality where specialized knowledge is produced and used and with understanding the limits of one’s specialized knowledge within this reality. It then becomes significant to create bridges with other fields and disciplines and work in tune with them in order to increase the influence / effect / potential of the knowledge produced.</p> <p>Interdisciplinarity is fundamental for the project because it enables knowledge. If knowledge is produced without an interdisciplinary approach then it becomes a task for policy makers and practitioners to integrate knowledge from various fields of knowledge that support DRR and CCA. They are not the right group to do so though; this should be a task for scholars of various knowledge fields and disciplines working together in an interdisciplinary manner.</p>
<p>Th.Karymbalis, Geologist, Prof.of Geomorphology</p> <p>Interdisciplinary literally means integration (to make it whole), which is a process by which ideas, data and information, methods, tools, concepts, and/or theories from two or more disciplines are synthesized, connected, or blended (Repko, 2012). Today we all understand that to address or resolve complex problems as well as to gain coherent understanding of complex issues such as DRR and CCA which are beyond the ability of any single discipline, interdisciplinary collaboration is necessary. But we also think that these two issues (or one since they are integrated) that we deal with are fields that cross traditional disciplinary boundaries and involve a wide variety of interactions. Since the main challenge or objective in/of this project - according to us - is the integration of many different types of information, knowledge and experiences, and finally the development of a collaborative project, dialog and interaction between various disciplines is required which means that interdisciplinary work is relevant. Issues like Disasters or Climate Change demand Interdisciplinary collaboration between earth scientists (included us), engineers, sociologists, economists etc.</p>
<p>Sophia Skordili, economist, Industrial geography</p> <p>Climate change risks crisis cross several fields. The scale and kind of the impacts, the intensity and the associated uncertainty of climate risks (emerging risks) call for interdisciplinary scientific teams. In the case of food security, economists, agriculturists, sociologists, ecologists, geographers, political scientists are only a few of the specialties involved.</p>

**CIESAS**

Interdisciplinary work is the combination of different scientific backgrounds in order to develop a better understanding of a problem and their variables. However, it is important to recognize some main differences between disciplines: Theories, concepts and methodologies are different between social and natural sciences. Languages may be not a common point either. Researching priorities and applicability of results may be different as well. The time scale analyses may also diverse to one discipline to another; for example, from a societal perspective long-term processes are crucial to understand present contexts. Interdisciplinary work may be a great opportunity to have a larger view of a research subject and it could offer an outstanding way to reduce gaps.

Interdisciplinary work means interaction and interconnection of specialists coming from different disciplines and backgrounds. Transdisciplinary work, which is increasingly been accepted as a key concept, approaches to an integral and interdisciplinary view of specific themes or problematic. This work could be definitely done (is already happen actually) in this project; nevertheless it will be useful to define the limits and goals.

**CSIC**

We see Interdisciplinary work as that considering “the problem to solve” as central to the work. Interdisciplinary should mean that the different disciplines contribute to the solution in a way that the traditional distinguishable borders between them are if possible completely smoothed or at least not limiting information flows. We strongly believe that our approach to KNOW4DRR should be interdisciplinary: We agree with John that the project kick-off meeting and also this initial tasks we are all working on at the moment (within the project and outside the project either meeting personally or contacting external people) are already giving us the chances to interact and learn from different ways of thinking and approaching the very many different relevant aspects to KNOW4DRR.

**EURAC**

Important is to mention the difference between multidisciplinary and interdisciplinary. In both cases one works towards a common goal. In a multidisciplinary environment, one works within ones own discipline and the disciplines remain separate. In an interdisciplinary case the knowledge of the various disciplines is integrated, the borders between the disciplines are crossed.

An interdisciplinary approach is particularly important in the field of CCA, because the effectiveness of a CCA strategy depends on the richness and diversity of contributions and interactions.

It is also important to pinpoint what are the issues and limits produced by working in a non-interdisciplinary way and what are the synergies, therefore the benefits, generated by an interdisciplinary approach, with regards to the specific objective we want to achieve. To work with an interdisciplinary approach can add fatigue to the research process, therefore the question to be evaluated is: is it worth of it and useful or not?

**PLUS**

- Interdisciplinary work within the project can be seen as a case study in itself, as knowledge input by a range of disciplines has to be integrated and shared among the partners. To a certain extent, this is the process that is being analyzed by KNOW4DRR and perhaps it would be interesting to assess how we achieve this and perhaps suggest novel ways of doing so.
- As we all have a diverse background in different disciplines it is 'obligatory' to do interdisciplinary work in KNOW4DRR. A more important question would be if we would like to work in a transdisciplinary manner? <http://xserve02.mpiwg-berlin.mpg.de/ringberg/Talks/mittels%20-%20CHECKOUT/Mittelstrass.html>
- Interdisciplinary work should lead to broadening horizons of us as individuals, but also of the project as a whole. Common issues should be addressed by integrating and sharing differing perspectives, understandings, methods and knowledge from a wide range of backgrounds. This approach can only be beneficial if an upright willingness to understand foreign thoughts is given, which demands genuine openness.

**UNU-EHS**

DRR and CCA related fragmentation of knowledge is complex to grasp, analyze and subsequently to implement. It seems advantageous to consider and build on achievements of several different realms of scientific disciplines in order to develop new solutions and a knowledge management system which is sufficiently specific to allow for implementation in complex societal settings – as it is expected from the outcome of this project. It is clear that the partners in the project bring different perspectives, not only in terms of disciplines covered but also in terms of approaches and networks covered. We will most likely find that our approaches, although sometimes different, are complementary and this should be further emphasized in our interactions.

**ADELPHI**

Interdisciplinary work (research) means that perspectives, theories and methods of different disciplines are used in an integrated way to address a common problem. In my view, the Know-4-DRR project is (and should be) interdisciplinary, because disasters are multifaceted problems that need to be addressed by combining the knowledge from various disciplines and stakeholder groups. Only if the multifaceted nature of disasters is acknowledged and taken into account, effective risk mitigation and adaptation solutions can be developed.

**DWF**

We feel that interdisciplinary work is an opportunity both to learn and develop new ideas about the way we work and the products of our work. We think that it is fundamental to the success of the project and we are already seeing how different teams in the project are collaborating together and contributing to enriching the process and the product.

DWF came away from the kick off meeting encouraged by the interdisciplinary feel of the project partners and the readiness to share and be open and to help each other. There would be no interest having a quite large group of people if interdisciplinary work was not taking place nor drawing on our different experience and backgrounds.

**Q3 : How do you think your expertise and past experience (research and practice) can be integrated in the project?**

**POLIMI**

The interviews conducted by Funda Atun in London regarding to the flood risk management system showed that there is a gap between what is written in the reports prepared by the related organizations and actual situation in the field. Face to face interaction with stakeholders is vital for understanding the actual situation rather than the normative one written in the reports, and provide a different perspective which is not included in the reports. If the reports provide information, being in the field and direct interaction with different stakeholders help to construct knowledge.

Prof. J.Weichselgartner, geographer

Through the involvement and integration of non-academic experts, i.e., decision makers from policy and practice. Co-designing knowledge is a feasible way to bridge gaps between marine scientists, policy makers and practitioners; openness and attention to diversity may inspire more democratic ways to organise the science-society nexus (Weichselgartner & Marandino, 2012).

**UNIV-SAVOIE**

French DRR policies limitations have been studied in France since the end of the 1980's. The French case gives an opportunity to check how scientific knowledge has been taken into account or not while building and implementing these policies. Especially, what has been learnt from past disasters experience returns, by whom, and why?

**HUA**

M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management

- By working together with other partners and within HUA group on case studies
- Through active participation in activities and events (workshops, seminars, living labs)
- Through interaction with other partners in meetings

E. Karymbalis, Geologist, Prof.of Geomorphology

The project by its own gives to all participants this opportunity- to integrate their experience- through scientific and technical analysis and development of dissemination activities. The knowledge system that we want to develop through this project will embody- as DoW suggests- what has been achieved in different arenas and by different groups in all the phases of the disaster cycle. For this purpose we selected to present and analyze the role of various sectors' stakeholders by giving two completely different case studies: the first involves our experience from a short term wild fire event that Greece will remember because of failures, while the second includes scientific input on what really happens in Greece on another long term issue (the anticipated sea-level rise due to climate change).

Sophia Skordili, economist, Industrial geography
As an economic geographer with a focus in Agro-food Economic Geography I can contribute to case studies and seminars by bringing in information and knowledge linking disasters risk with risks relating to food supply and safety issues. Moreover, during the last 4 years I have made systematic research on the effect of economic crisis on lower income households mainly in urban centres. This can provide useful input for the seminar on crisis and DRR.
<b>CIESAS</b>
Expertise and experiences, besides methodologies and concepts, are synthesized in case studies. To take advance of this common resource we could integrate case studies in different outputs; papers, conferences and workshops. The combination of historical and socio-anthropological perspectives that allow to view and understand processes and not only events.
<b>CSIC</b>
Our background as academic earthquake scientists having long worked on earthquake related research together with our advising and capacity building experience and our participation as experts in several evaluation related projects both for official institutions in the administration (at different levels: international, national, regional) or companies in the private sector can contribute to the project sharing our experience in different the different sectors where we have worked. Also our experience in Lorca referred to in answer 1 of this questionnaire can be of great value to the development of the project living labs and the testing of K4DRR concepts on transferring usable information and knowledge.
<b>EURAC</b>
With examples of good practices but also with examples that clearly show gaps between scientific knowledge and practical work. For instance with our experience in bridging the scientific community and the local administrations, where we used our experience in organizing and implementing 'participatory' workshops with stakeholders; another important experience to share might be the ongoing effort in building a knowledge inventory for CCA issues for the Alpine Space in the context of an international project consortium.
<b>PLUS</b>
<ul style="list-style-type: none"> <li>• Having worked intensively with stakeholders on issues closely related to disaster risks and climate change (in particular vulnerability), both in the Salzburg region as well as in Mozambique and other areas (see the projects MOVE, CLISP, CONHAZ, e_SPIDER, Healthy Futures, C3-Alps, DRR-SA), the experience base is substantial.</li> <li>• This experience will be integrated by drawing on case studies where problems were faced, because of overlapping competences, lack of coordination and partnerships, and information and knowledge sharing. These issues will be systematically analyzed to identify the root causes and ways of improving knowledge management.</li> </ul>

**UNU-EHS**

Besides to the assigned tasks, UNU-EHS will contribute to the KNOW-4-DRR project with non-European case materials with special focus on risk management for tsunamis in Indonesia and development planning in the context of sea-level rise in Vietnam. Moreover, the experience of the UNU-EHS team in the field of early warning systems, disaster management, intercultural training, and education concepts should be of interest for several tasks of the project.

**ADELPHI**

Adelphi has a broad experience in (FP7) project dissemination and communication activities and will provide this expertise to the project by developing, amongst others, the dissemination strategy document and policy briefs. Moreover, adelphi will integrate its experience of working at the science policy interface and on a broad range of topics related to CCA and DRR. For instance, adelphi research is working with 16 federal German institutions to establish a 'Vulnerability Network' in a project funded by the Federal Ministry for the Environment, Nature Conversation and Nuclear Safety.

**DWF**

Our work covers quite a number of areas of interest to the KNOW4DRR project; it is well documented, and it is quite different from the European context. We have undertaken research in the places we work, for World Bank and others, and so our practice is backed by serious study and data. Part of this will form the base of the Vietnam living lab, and will contribute to the project. We have a lot of experience of working in the informal sector and this too is of interest to our subject under the current economic and social environment of Europe.

**Q4 : What tools do you think may be more useful for achieving interaction among us and progress of the project (for example, what type of participatory activities in meetings, forum discussions, etc.)**

**POLIMI**

We suggest three kind of participatory activities:

- a) Exchange roles: This is a role play. Everyone in the group will represent a stakeholder. There will be a coordinator of the play which indicates the problem. Then all the stakeholders will come together and start talking about the problem. We, as representative of each stakeholders, will discuss the problem according to the understanding and perception of the stakeholder that we are representing.
- b) A variant of magic stick: We will describe the perfect solution to indicated problems. At the end when we combine all the perfect solutions to previously indicated problems, we will see how unrealistic and impossible of having a “perfect solution”.
- c) The third example would be useful in the field works. The stakeholders could be divided into three groups. After choosing a subject for discussion. The group that consists of the younger population will describe how they see the future. The second group will describe the past situation and the third will describe the present situation. After each group’s presentation, a general discussion will be held all together.

Prof. J.Weichselgartner, geographer

I agree with partner DWF that we need a common cloud/virtual location where we can place data. Beside group works as we did in Milano, I suggest to use the Dahlem concept (see Comments) for one of our workshops. Again: it is crucial that the project tries to: a) encompass co-operation among disciplines and non-academic knowledge holders, b) place emphasis on mutual learning among different societal actors, and c), enable the integration of different kinds of knowledge. Furthermore, it is crucial to involve local knowledge also in the interpretation and validation of the project activities to move beyond the usual data-mining toward comprehensive partnerships between researchers, decision makers, and the targeted communities.

**UNIV-SAVOIE**

I think that trying to find common or similar answers to basic questions during workshops may help us finding our way out. This method has been used during the session UNISDR lead in Geneva this year, and I found it more productive (at least in this case) than turning to the “traditional” row of presentations.

**HUA**

M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management

There are number of useful technical means that facilitate communication such as skype but in person communication is difficult to replace. A website or a virtual location would facilitate information exchange. What is essential though is the interaction between partners and between partners and other relevant actors during participatory activities (workshops, work groups, focus groups, role playing, brainstorming, snowball and other techniques mainly used in adult learning). According to my experience, for the sucessful application of these techniques it is significant to involve an experienced and knowledgeable facilitator.

<b>E. Karymbalis, Geologist, Prof.of Geomorphology</b>
First the separation of work packages into tasks helps in creating conditions for interaction among us. Very important is also the fact that outlines of deliverables will be checked by all task leaders, which mean that all will input their way of thinking on several issues. This can be implemented though mails, dropbox or other ways of sharing files. Additionally, the meetings (especially discussions and exchanging ideas into groups), the skype conferences but also the seminars and other proposed by the programme activities will significantly help. Very important is the exchange of literature since we all search in different fields.
<b>Sophia Skordili, economist, Industrial geography</b>
We should use more face-to face interaction and less virtual communication. If necessary, skype meetings should not include more than 3 partners.
<b>CIESAS</b>
The significant number of participants in the project may difficult the interaction between us. In some cases people interact with those members who already know or where some interest are clearly shared. In order to promote the exchange with different members and share different research perspectives, it will important to mix participants out of their work packages and already designed tasks. Workshops, common readings and discussion in periodic seminars, (which seems pretty hard living so far away from each other) using Videoconferences or such. Periodicity is crucial.
<b>CSIC</b>
We also find Skype good, especially for quick updates and/or sharing, discussing, and exchanging on ongoing work. Our experience (as for DWF) on online forums was not very positive to interact effectively (we agree with John). A common virtual location, for document/data exchange and archive, would be very useful in our opinion as well. We also found very useful the meeting in Milano. If possible we should meet periodically. Maybe best are smaller dedicated workshops with a similar structure as in Milano having time enough for team discussing and exchanging; i.e., limiting standard presentations. The virtual location could be also used as a repository where basic information for discussion could be already distributed before a dedicated workshop.
<b>EURAC</b>
Proposal would be to avoid discussions in large groups but to work in small groups with partners from different organizations and backgrounds. Some tools to be potentially used: - Knowledge café - Marketplace / Poster exhibition - Scenario building - Pairing of researchers and policy makers / cross organisational knowledge sharing - Story telling - World Café

<b>PLUS</b>
<ul style="list-style-type: none"> <li>• It is important to have a regular exchange; this can be facilitated through skype talks, but also well-prepared and dedicated workshops.</li> <li>• Interaction should be as simple as possible and not too technical. Online forum discussions have often proved to be superficial as not everyone follows and participates the same way.</li> </ul>
<b>UNU-EHS</b>
<p>Personal meetings of smaller groups of people that work on the same or interrelated tasks, skype group calls, possibility to share documents on a common platform/ cloud. It might also be useful to put in place an Adobe Connect platform or something similar so we can have meetings while also being able to follow e.g. slide presentations.</p> <p>Seek for exchange with other international projects that currently address or have addressed the issue of knowledge fragmentation and ways of mitigating it. Exchange with relevant stakeholders for feedback and “reality-check” of products of the project.</p>
<b>ADELPHI</b>
<p>Internally: In my opinion, exchange by mail and the use of the (internal) website as a mean to share information and documents related to the project and common activities is sufficient. Externally: During another FP7 coordination action (CONHAZ), I experienced the World Cafe Method as a very useful tool to collect information from workshops participants in a structured and efficient way. It was experienced in a positive way by both the project consortium and the workshop participants. Generally, we should strive to reduce the amount of presentations during workshops and to reserve sufficient time for discussions and participation.</p>
<b>DWF</b>
<p>We are already using Skype and that is good but maybe a bit limited for larger groups; I think we should have a common cloud/virtual location where we can place data we develop and all the case studies etc.; could Polimi host this (or have you?); on line forums are in our experience difficult to manage usefully; but the meeting in Milan was very useful and should be repeated if we can.</p> <p>We have to strike a balance between meeting ourselves and meeting with outside experience so that we can be more interdisciplinary.</p>

<b>Q5 : Present some activities that you have experienced and/or you deem relevant to achieve enhanced integration of different types of knowledge?</b>
<b>POLIMI</b>
Working on a common platform.
Prof. J.Weichselgartner, geographer
The case study I did (see Weichselgartner & Kasperson, 2010) provided empirical evidence of existing different types of barriers at the science-policy-practice interface. These barriers should be tackled in our project.
<b>UNIV-SAVOIE</b>
I think that trying to find common or similar answers to basic questions during workshops may help us finding our way out. This method has been used during the session UNISDR lead in Geneva this year, and I found it more productive (at least in this case) than turning to the “traditional” row of presentations.
<b>HUA</b>
M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management
My experience from working for more than 10 years in a public institution responsible for earthquake protection in Greece has demonstrated that different disciplines (seismologists, geologists, engineers, psychologists, disaster medicine doctors and others) must and can understand each other and collaborate smoothly in order to successfully respond to emergency demands in an earthquake disaster. What makes easier for people from different disciplines to work together in emergency mode and harsh conditions is having collaborated before either in a previous disaster situation or in everyday practice. Collaboration in joint projects, committees, studies and everyday matters little by little generates a common understanding, trust and good communication that enhance integration of knowledge. Gradually there seemed to be less segregation of scientific communities and more effort for a more comprehensive approach towards earthquake protection. Working on research projects and studies together with engineers, geoscientists and planners also proved to be thought provoking and useful, gradually leading to a more interdisciplinary approach and to a better understanding between the different groups. It should be noticed that in many cases the road towards a more interdisciplinary approach proved time consuming, there was friction between partners and needed skillful coordination.

<b>E. Karymbalis, Geologist, Prof.of Geomorphology</b>
Starting from this project the work with scientists from various fields that carry different knowledge helps the requested integration achievement. Many other National and/or EU projects also gave us in the past the same opportunity. University activities can also lead to integration of different types of knowledge. This is obvious in our Department of Geography where both Physical and Human Geographers collaborate and exchange knowledge. Writing a scientific paper many times required the collaboration with other disciplines, to evaluate the findings, to add information or knowledge that would help the audience understand the topic in a more comprehensive or integrated way. Here we can also add the reviewers of several multidisciplinary journals that usually give our research a different direction with their suggestions and corrections. Then during the educational process, when we need to give our students a more complete frame of a problem we invite guests, from other Departments or from other countries, to share and integrate their knowledge and experiences. Finally, the collaboration with our PhD students, which are usually of various backgrounds, can also lead to the achievement of integration of different types of knowledge.
<b>Sophia Skordili, economist, Industrial geography</b>
My experience from various research projects involving experts on a range of fields, usually planners, economists, geographers, sociologists, architects, cartographers, geologists, environmentalists etc., has shown that efficient interaction has been a challenge and at the same time very positive. Working with the same partners for a number of projects is very helpful as common understanding takes time and effort to develop.
<b>CIESAS</b>
<ul style="list-style-type: none"> <li>-Seminars between social and natural scientist.</li> <li>-Common field research and rapport or paper writing between scientists of different backgrounds.</li> <li>-Workshops and seminars with private and public sector.</li> </ul>
<b>CSIC</b>
<p>RISKCAT project (see details in answer to 6.)</p> <p>We consider very important: limited size multidisciplinary WG's addressing specific problems (problem focused approach).</p>

<b>EURAC</b>
<p>In our activities within different projects we developed concepts for workshops with the aim of integrating different type of knowledge, for instance:</p> <ul style="list-style-type: none"> <li>- The project Klimawandel South Tyrol used a trans-disciplinary approach in order to bridge the contributions from different areas and stakeholders. The effort for a common knowledge production required a participatory process between the scientific community and the local and regional administrations and technical services, with the common goal of writing a final documentation that could be then transferred and used also in educational programs on CC.</li> </ul> <p>The final workshop has been reported by the participants as also very useful in order to bring together people from different sectors of the same administration bureau.</p> <ul style="list-style-type: none"> <li>- Within the project AdaptAlp an interdisciplinary workshop brought together researchers from different areas and disciplines and requested (but also allowed) them to sit together and reach a shared unanimous agreement on a limited number of key messages on the topic of CCA and risk management in the Alps.</li> <li>- Finally, the project C3-Alps is an Interreg project of the Alpine Space programme, which aims to capitalize the knowledge produced in previous research context and to build up a knowledge inventory for CC adaptation issues in the Alps. Many different sectors are to be covered (among which natural hazard issues) by the inventory and the subsequent analysis: the research will put a particular attention to cross-sectorial approaches as they are able to provide integrated and more complete and effective solutions for adaptation to climate change.</li> </ul>
<b>PLUS</b>
<ul style="list-style-type: none"> <li>• Collaborative efforts to integrate different stakeholders (community mapping in Mozambique) or through the weighting/identification of different indicators (e.g. MOVE project).</li> <li>• Institutional structures/regulations must be in place which facilitate the exchange of data, information and knowledge.</li> <li>• Willingness to cooperate – to have interest in such an endeavor ('awareness') – is very important.</li> <li>• The availability of resources (human and financial) is a further requirement that is necessary to achieve integration of different types of knowledge.</li> </ul>
<b>UNU-EHS</b>
<p>In many of our projects, we have engaged in stakeholder workshops (including e.g. focus group discussions) and questionnaires, as well as the integration of experts and stakeholders out of different cultural contexts and settings.</p>

**ADELPHI**

In order to bridge the science-policy-practice gap, research questions, which are relevant for both 'knowledge groups', need to be commonly developed. In order to arrive at applicable findings, knowledge itself should also be co-produced.

A practical example of how the science-policy-practice gap can be addressed is, in my view, provided by the large Dutch research program 'Knowledge for Climate' (<http://knowledgeforclimate.climateresearchnetherlands.nl/>). In this program, co-funding (matching) from governmental institutions or the private sector is required in order to obtain subsidies for research. Only if, e.g. a ministry, environmental agency or private company is willing to provide own funding for the project, subsidies are available from the program.

According to my experience, this requirement substantially helps to establish a collaborative partnership between the two communities (types of knowledge) and to close the science-policy-practice gap. It makes sure that research questions are commonly developed and that knowledge is co-produced.

**DWF**

DWF has been studying indigenous knowledge about disaster risk reduction in Vietnam (and elsewhere) over many years. This knowledge relates to many aspects of DRR (techniques, early warning signs, seasons, building shape, etc.) and also points to reasons why some technically good ideas are not socially appropriated. But as well indigenous knowledge is changing.

Many years' experience of the use of popular media in communication, using local actors (adult and child) in theatre plays and puppetry on DRR and prevention. Creating memorable events that trigger DRR response much later.

DWF backs using local practice to inform government approaches and policy: in current work in VN project families make interesting choices & appropriate responses: they prioritize safety of their livestock, and build upper floor stables with ramps so that livestock is safe above expected flooding levels, and these examples help inform Provincial Departments of Construction about their housing strategies.

Local and spatial risk mapping - based on house to house surveys combined with GIS and flood modeling

The big value of having a simple message – for example 'take preventive action against storms'

<b>Q6 : Share one of your experiences from knowledge successfully advancing decision making and implementation for DRR. What were the main catalysts for efficient knowledge sharing and exchange?</b>
<b>POLIMI</b>
<p>After finalizing the ENSURE project we have been invited by the civil protection presidency in Italy to show and explain the results of the Ensure project in the meetings of their project which include several countries of the Mediterranean region. With the MATRIX project group invited to the meeting we had chance to compare these two projects and discuss the results with the decision makers coming from different countries.</p> <p>Discussing the final products of ENSURE with them all together and also in the group exercises provided us the wisdom, because when it combined with the ideas of people coming from different cultures and civil protection systems, we have discussed the results and see the well prepared and also the missing parts in the final product.</p>
Prof. J.Weichselgartner, geographer
See my papers, but also Kasperson and Berberian (2011) edited several case studies that focused on barriers and bridges. Another source, focusing on Hurricane Katrina, is the edited volume published by Dowty & Allen (2011). Although not regarding DRR, a valuable analysis of knowledge integration in problem-oriented research is provided by Zierhofer & Burger (2007).
<b>UNIV-SAVOIE</b>
<p>Some of River Arve municipalities display examples of “good practices” concerning flood-related disaster prevention policies, at least at the end of the 1990’s and 2000’s. In these cases, agreements have been found between the main actors implied, at various scales: they allowed not building anymore on wide tracts of flood-prone areas. As time goes along, these areas will be devoted to a new flood expansion plain, and they are considered a means to protect cities downstreams, such as Geneva. In turn, and in this case, municipalities downstreams accepted to pay for corrective works on Magland municipality. Indeed, a new generation of dikes was supposed to protect parts of Magland municipality already built-on, but to a certain extent only (the areas were officially recognized as still prone to floods, but with a lesser intensity).</p> <p>This solution is not without limitations or flaws. Among them, we find a clear reluctance of landowners to adapt their buildings to floods that will happen sooner or later here, especially when they consider themselves protected by dikes. The present municipality of Magland does not wish to hear from flood disaster prevention policies anymore (it considers having already done what has been asked during the 1990’s).</p> <p>But the situation in Magland could be ranked more flood disaster prevention oriented than what can be found in other municipalities, where we still experience building densification behind dikes (as with Scionzier municipality).</p> <p>Among the main drivers “for efficient knowledge sharing and exchange”, we find a wide range of factors helping (or not) to find an agreement about this policy which, in the end, reduces strongly the building capacity of this municipality (and/or reduces land values for some of the landowners the PPR land-use zonings and regulations imply). Such as the size of the municipality and its building capacities left, the existence of monetary compensations for the areas given back to the river flood expansion, the socio-economic level of the population implied...</p>

## HUA

M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management

On July 26, 1996 at 21:55 an earthquake of M=5.2 hit Konitsa town (S.Greece) causing extensive damage. On August 6 at 01:46 the main earthquake of M=5,6 occurred increasing the damage and building collapses. Konitsa is a remote rural mountainous area far from the Prefecture centre. Konitsa town had a population of around 2.000 at the time.

Many public organizations and the Prefecture which was responsible for emergency management, send teams in the disaster area. It was clear though that the Municipality was the only one that knew the local conditions and affairs, therefore had to play a central role. Yet, the Municipality was acutely understaffed, had no previous disaster experience and no formal responsibility in emergency management, this seriously hampering emergency management the first days.

In day two, locals (mainly teachers and respected seniors) voluntarily staffed teams to assist the Municipality in emergency management. Four teams of 3-4 people each were formed to manage and assist in: a. engineering interventions such as usability assessment of buildings, b. emergency shelter, c. social support and aid provision, and. Information and communication. Experienced staff from Earthquake Planning and Protection Organisation (EPPO) took up the task to support the volunteers in their works.

Initially the volunteers were very unsure of their capacity to deal with something they know nothing about (or at least that was what they believed). They did nothing without asking EPPO's staff and took no initiative.

With the constant presence of knowledgeable EPPO staff who realized that they were there to help volunteers to become self-sufficient, the volunteers little by little realized their capabilities and the worth of their knowledge on local issues and took up practically all management of the situation on behalf of the Municipality. They stood by the Municipality till September and they efficiently administrated all interventions. Among many other of their tasks: They set the criteria and prepared the priority lists for households to get emergency shelter and –later- temporary housing units. They were assigning locals to accompany and guide interventions teams (engineers, psychologists, social care teams, medical staff etc.). They were identifying and register households in need for food and they were managing all the procedures with restaurants. They prepared announcements and information bulletins regarding the situation to be broadcasted by the local radio station.

In my opinion there are here a number of issues relating with the project: There are different kinds of knowledge and all they can be of some use depending on the situation; Expertise can and should enable people to utilize their own knowledge when dealing with disaster situations; Trust and mutual respect are important in facilitating knowledge and experience transfer.

<p>E. Karymbalis, Geologist, Prof.of Geomorphology</p>
<p>Recently we were invited by a Mayor of a municipality in a Greek island to give our opinion and advices about the selection of a location in order to construct a waste landfill since the staff of the technical department of the municipality didn't have the required knowledge and experience. The fact that they were open-minded and they recognized that their knowledge was limited was really crucial for the effective decision making and implementation for DRR. When we visited the site, those who already knew the region well, informed us about the existing boreholes, the environmentally protected areas of the island and provided us with data regarding human activities that we were not able to find easily on our own. They gave us also an idea about how citizens were thinking about the project and helped our investigation by giving us information. Our suggestions were taken into account by the local authorities of the municipality and were transmitted to the employees and then to the constructor. Thus a river which is located close to the construction could remain environmentally safe and protected and the citizens felt in this way more secure. This case shows that sharing and exchange of knowledge is really important and can be very helpful in decision making. It is almost sure that the constructor would choose the waste landfill location based on the lowest construction cost, but the Mayor, who cared about citizens' health and landscape protection, asked from the university in order to obtain the appropriate knowledge. University on the other hand accepted immediately the invitation and the collaboration of different disciplines scientists (like geologists, topographers, water resources management specialists) prepared the study and the final report. So among the main catalysts for efficient knowledge sharing is first of all the willingness to hear the truth, then the cognition of what you know and the willing to cooperate and do research, and of course the ability to make decision and implement according to the scientific findings of the investigation. If there are conflicts during the collaboration in addition to other barriers there don't exist bridges to knowledge. Our case has shown that bridges existed initially between the member of each of the two sides (Municipality and University), and then the two sides collaborated fruitfully and exchanged efficiently their knowledge.</p>
<p>Sophia Skordili, economist, Industrial geography</p>
<p>My experience from regional developing projects shows that an efficient local development agency and adequate financial resources can be the main catalysts to successfully knowledge sharing and exchange between universities and central government and local authorities.</p>
<p><b>CIESAS</b></p>
<p>In the Peninsula de Yucatan we developed a workshop where three actors were involved: UNDP (stakeholders), inhabitants (citizens) and an anthropologist (academics). The workshop was organized by the UNDP in order to find out the needs of the inhabitants related to the risk of disaster and be supported by the authorities. This workshop is an example of sharing knowledge because there the citizens have exposed what they know about the disaster risks because of their own experiences, so they know what they need. On the other hand, the UNDP took notes about everything in order to write a document showing their particular DRR requirements and then send it to the local and regional authorities. In the same way the anthropologist observed situation and wrote an analyzing paper showing how dialogues are tools to produce knowledge and then share it among different sectors.</p>

<b>CSIC</b>
<p>RISKCAT project (2008) in which we participated intended to analyze the capacity of Catalonia to face natural hazards. It was promoted and launched by an agency (CADS/Advisory Council for Sustainable Development) of the regional government of Catalonia (CADS). The first stages of the planned schedule (analysis of capacities, strengths, weaknesses) were successfully developed and teams of different experts covering the main relevant aspects on geological hazards in Catalonia worked together with periodical interaction with the institutions and decision makers involved in risk management. Even aspects such as legislation (lawyers were involved in the expert teams) were as well analyzed. A number of products were elaborated in the form of evaluation reports and a database platform containing the results of the analysis and all the gathered information (georeferenced materials, scientific articles, reports, etc) was created incorporating a user friendly interface. The later stages of the initially planned project were not continued so in the end it only partially succeeded. The catalysts were 1) the direct involvement in such initiative of the Advisory Council (a government agency) promoting, launching and financing the project and 2) the strong involvement of some members of the Advisory Council together with the coordinator of the project. Reference: RiskCat. Els riscos naturals a Catalunya. Informe executiu / Los riesgos naturales en Cataluña / Natural Risks in Catalonia (Informes del CADS), J.M. Vilaplana (dir.), Payás, B. (coord.)</p>
<b>EURAC</b>
<p>For what concerns the question, please, refer to our contribution in the “Analysis of main fragmentation issues within different stakeholder groups: considerations about the issues in the field of Climate Change Adaptation” (Know-4-DRR Del 1.2)</p>
<b>PLUS</b>
<ul style="list-style-type: none"> <li>• Using participatory approaches to map vulnerability, knowledge was coproduced with stakeholder involvement and integrating their perspective at community level. In this way, awareness for DRR-related was raised among public and private decision-makers. For further information, please refer to the following publications (which can be delivered on demand):</li> <li>• Kienberger, S., 2012. Spatial modelling of social and economic vulnerability to floods at the district level in Búzi, Mozambique. <i>Natural Hazards</i> 64(3), 2001-2019. <a href="http://dx.doi.org/10.1007/s11069-012-0174-9">http://dx.doi.org/10.1007/s11069-012-0174-9</a> and the following manual <a href="http://projects.stefankienberger.at/vulmoz/?page_id=54">http://projects.stefankienberger.at/vulmoz/?page_id=54</a></li> <li>• Hutton, C. W., Kienberger, S., Amoako Johnson, F., Allan, A., Giannini, V., Allen, R., 2011. Vulnerability to climate change: people, place and exposure to hazard, <i>Adv. Sci. Res.</i>, 7, 37-45, doi:10.5194/asr-7-37-2011. <a href="http://www.adv-sci-res.net/7/11/2011/asr-7-37-2011.html">http://www.adv-sci-res.net/7/11/2011/asr-7-37-2011.html</a></li> </ul>
<b>UNU-EHS</b>
<p>As an academic institution, this is difficult to answer. Two examples come to mind: the first is to do with the development of vulnerability maps for the entire of Germany at a district level resolution which was posted on the DRR information NaDine website in Germany. The second is the set up of the Partnership for Environment and Disaster Risk Reduction which advocates for the role of ecosystems in DRR. This is a group of 15 UN and INGO organizations which bring their collective (and varied) knowledge together to promote the eco-DRR theme. This group interacts regularly with a much wider group of diverse stakeholders called “friends of PEDRR). The approach is flexible with contributions on a voluntary basis but involves research (e.g. RiVAMP</p>

project of UNEP in Jamaica), publications (peer-reviewed but also e.g. policy briefs), and education (e.g. modules for MSc programmes). One of the outcomes of this partnership and approaches is that many people and organizations have been made aware of the role of ecosystems for DRR, have been thought the advantages and limitations of the concept, and PEDRR has been able to highlight the role of ecosystems in DRR in the final statements of the last two Global Platforms and (hopefully) in the post-HFA discussions currently taking place.

#### **ADELPHI**

- 1) Generally, defining a clear, concrete and common goal for the knowledge sharing and exchange is important. Moreover, benefits of that process should be mutual and there needs to be a high motivation among participants to benefit and learn from each other.
- 2) Local communities often possess a rich knowledge / experience on how to reduce the impact of natural disasters and how to adapt to a changing environment. However, this knowledge is usually not (properly) documented. Moreover, little is known about the effectiveness of measures taken at the local level, because these are rarely evaluated. As a consequence, this valuable source of knowledge is not often integrated in regional or national (top-down) decision-making and the implementation of risk mitigation and adaptation measures. The scientific community can play an important role closing this gap by documenting and evaluating risk mitigation and adaptation measures at the local level in such a way, that it can be used in the decision making process.
- 3) To be able to influence the decision-making process, also the timing of activities plays a crucial role. Usually, there is only a limited time span (window) when input to decision making is possible at all. One option to better link knowledge production and decision making is to ensure that knowledge is co-produced by science and policy (see Question 5).
- 4) In different workshops and trainings with rural communities and local NGOs on the coast of southern India, adelphi managed to integrate different types of knowledge (i.e. knowledge from the realms of agriculture, rural development, DRR and climate change adaptation) that participants had brought to the sessions. Key in achieving this was (a) providing a clear understanding that we were facing a problem – present and future impacts of climate change – that in itself is very complex and touches on many fields or sectors, and (b) demonstrating the overlap among the topics (e.g. between DRR and adaptation) to show that different types of knowledge are already very much connected and further integration can provide valuable perspectives for the different types of knowledge.

#### **DWF**

Since 2000 DWF in Vietnam has promoted (training/awareness campaigns/credit etc.) the preventive strengthening of homes by poor families in the face of typhoons; many hundreds of safer houses have been tested by typhoons; after Typhoon Xangsane (2006) the success of this approach led the People's Committee of Thua Thien Hué province to issue an edict for the population and authorities to apply the key principles of storm resistant construction promoted by DWF. The catalyst: the typhoon, sustained awareness campaigns and having many houses of the poor resist the impact of a major typhoon. Since then, national government has bought in (2012) (Ministry of Construction) (Catalyst = DWF “Atlas of House Vulnerability and Strengthening”, Vietnam) After Cyclone Nargis (2008) knowledge about the methods and example of the Vietnam work were successfully transferred to the Irrawaddy Delta region of Burma and implemented over the ensuing three years. (UN South South transfer award)

**Q7 : How you perceive “DRR in integration with CCA”?**

**POLIMI**

Some advancement into stronger integration between CC and DR communities can be foreseen on the basis of research that has been carried out particularly during the last years.

It can be said that:

- climate change policy deals exclusively with climate-related hazards and their impacts; nevertheless, climate change is not only a hazard per se but may significantly influence several other natural hazards, like hydrogeological and forest fire, therefore a mixed approach is needed here.
- The time frames for reactive adaptations to climate change and disasters are distinct; disaster impacts are relatively immediate and concentrated, whereas the consequences of climate change may evolve, along with social change, over a longer time scale. This position can be held true only limiting the focus on the impact and emergency phases. As demonstrated by decades of research, also the time before the impact as well as reconstruction and rehabilitation have to be considered. Vulnerability development or reduction must be viewed in a historic perspective, as several decisions, processes of different duration are implied. The dynamic character of many natural disasters should not overshadow the latent conditions creating vulnerability to the physical stressors as well as in the form of systemic consequences to losses and damages.
- The scale addressed by disasters studies on the one hand and by climate change research on the other are rather diverse: the first generally focus on the local and regional scales, while climate change analysis has privileged assessment of root causes of human vulnerability emanating from the global political economy. This view can be challenged though, as the interplay between different scales is vital to understand the interaction of nature and society both in phenomena caused by climate change and by natural hazards. A rather local event may entail global consequences through the ripple effects across interconnected economic, social and territorial systems.

Prof. J.Weichselgartner, geographer

In my opinion, the present publicity surrounding CCA overshadows other significant long-term human-caused environmental processes (e.g., soil degradation, groundwater drawdown), as well as past DRR policies, strategies and efforts. Not without reason, Mercer (2010) was asking: are we reinventing the wheel? In her description, CCA experience generally stems from global policy agendas, rather than practical implementation, and CCA strategies at the community level are similar to, if not the same as, DRR strategies. Cannon & Müller-Mahn (2010) illustrate how the climate change debate is influencing the way in which development is conceptualised, negotiated and implemented, and ultimately shifting research interests and perspectives, from vulnerability studies to resilience thinking – with highly specific definitions of ‘vulnerability’ and ‘resilience’. Last but not least, it is surprising to see that power, governance, and social capital are still absent in many DRR/CCA thinking and actions.

<b>UNIV-SAVOIE</b>
The issues addressed are very close, because the main topic behind CCA is preventing future disasters (I don't know of a book or a paper on CCA not acknowledging it...). More interesting is the recognition that a long statistical record concerning floods does not help escaping uncertainties and the contribution of uncertainties to DRR policies acceptance limitations. Therefore, CCA and "traditional" DRR have to deal with very similar problems.
<b>HUA</b>
M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management
CCA takes on board hazards that traditionally were dealt within DRR such as floods and forest fires and this is one interface between DRR and CCA. In addition, the DRR community has long experience and accumulated knowledge in all phases of disaster risk reduction (prevention and mitigation, preparedness and early warning, response and aid provision, recovery and reconstruction) concerning a wide spectrum of hazards, disaster situations and contexts. This experience must be shared with the CCA community which has been more focused on hazard and more science oriented. To my opinion, "DRR in integration with CCA" refers to knowledge sharing between DRR and CCA communities as regards disaster risk reduction.
E. Karymbalis, Geologist, Prof.of Geomorphology
DRR in integration with CCA means "the whole" - from the type or scale of hazard to those that are involved with (stakeholders or actors) - there must be a holistic approach to this type of management and a strong collaboration between those isolated communities: <ul style="list-style-type: none"> <li>• the type of disaster must include also climate change related extreme events,</li> <li>• impacts must include also potential long term impacts that are difficult to be perceived,</li> <li>• knowledge must include changes in extreme conditions but also adaptation measures</li> <li>• and those who are traditionally involved must now integrate with a more interdisciplinary group of people who study climate change and adaptation.</li> </ul>
Sophia Skordili, economist, Industrial geography
CCA also deals with known and long established hazards (floods, forest fires etc) that were tackled by DRR since many decades. "DRR in integration with CCA" means that CCA can profit by knowledge accumulated and lessons learnt in the framework of DRR.
<b>CIESAS</b>
In Mexico's context DRR main goal is to protect population from hazards. Progressively a preventive approach has been taking over the policy arena. It has sought to strengthen populations, institutions and ecosystems resilience to cope with different risks and hazards, including those generated by climate change. The National Strategy on Climate Change integrates flood and drought risk reduction as an important objective and the Inter-ministerial Commission on Climate Change, led by the Ministry of Environment and Natural Resources at national level, has been trying to mainstream climate change adaptation into different sectors such as environment and natural resources, civil protection and social development, among others. However, up to now, the DRM decentralization process has been slow and weak, so it will have to become a speedy and stronger policy process for enabling state and local governments to integrate DRM with CCA.

<b>CSIC</b>
<p>Even that processes and origins of many of the hazards (e.g. earthquake, volcanoes, etc.) dealt with by DRR are not directly related to CC, some of its physical effects can be exacerbated by global CC. Mitigation should be key to both DRR and CC, since actions are needed to mitigate the impact of hazards but also actions are needed to prevent (or reduce) the possible causes related to human activities in CC. In case of a natural hazard, given that the event will occur with certain intensity the appropriate measures and policies will minimize its impact. While for CC, seems that mitigation but also adaptation is needed. We agree that CC and CCA has been included in all agendas and that there are dedicated national CC agencies and CCA offices in most countries that have been created at least in part because of the impact on the society and public opinion of targeted campaigns. At least in Spain very little attention has been paid hitherto to the known impact -greater in many cases- of other activities causing environmental degradation or near-medium- or long future-risks in agreement with Jürgen. Global CC potential impacts, which are still not quantified completely, have been and are considered to affect all activities and aspects, i.e. transversal, for society while Disasters and DRR maybe have been considered as of a lesser dimension, regionally more concentrated and thus of lesser impact than CC or at least of lesser global impact. CC could be considered as a new global framework where comprehensive DRR should still be implemented. The scales (both in space and time) and impacts on both sides need maybe to be further analyzed to allow for integration.</p>
<b>EURAC</b>
<p>For what concerns DRR in integration to CCA please, refer to our contribution in the “Analysis of main fragmentation issues within different stakeholder groups: considerations about the issues in the field of Climate Change Adaptation” (Know-4-DRR Del 1.2)</p>
<b>PLUS</b>
<ul style="list-style-type: none"> <li>• The integration is occurring in both directions, the final aim in both cases however is disaster risk reduction.</li> <li>• Regarding the integration of climate change adaptation, climate change should be a component of all of the disaster risk management stages where required and should therefore integrate climate change adaptation into a disaster risk management system.</li> <li>• On the other hand, “traditional” disaster risk issues, such as natural hazard protection, disaster management, land-use and urban planning, are currently being integrated into the CCA strategies of EU member countries (at least in Austria, Switzerland and Germany it is the case). CCA is however more focused on reducing vulnerability. Generally, DRR can be said to include the historical/present perspective, CCA a future perspective – which should be short-term and long-term focused.</li> </ul>
<b>UNU-EHS</b>
<p>UNU-EHS researchers have been and continue to try to bridge the artificial gaps between DRR and CCA, through contributing scientific publications on the topic (see the work of Birkmann in particular) and engagement in the IPCC SREX report which is a first serious attempt to merge the two streams. Most of the research of UNU-EHS operates at the boundaries between DRR and CCA, particularly when addressing slow onset or creeping disasters where the boundary between the two concepts is the fuzziest. Vulnerability and risk assessment frameworks to which UNU-EHS contributes (e.g. the MOVE</p>

framework) integrate both DRR and CCA concepts.

**ADELPHI**

Disaster risk reduction and climate change adaptation are closely related topics. This is especially true when it comes to specific measures: many measures / activities that are referred to as ‘adaptation’ also qualify as DRR measure. Despite the large similarities, the DRR and CCA community are still rather separated from each other. Already the different use of terminology (e.g. the term mitigation) impedes a common understanding. Both concepts should be better linked (integrating DRR and CCA) to form an integrated approach to tackle both, short-term and medium- to long-term challenges of natural hazards. CCA can benefit a lot from the approaches and long-lasting experiences made in DRR. At the same, DRR time can benefit from aspects of CCA (like climate proofing) to ensure that DRR strategies are robust in the face of projected increases in frequency and intensity of hydro-meteorological disasters in many regions.

**DWF**

DRR is a reality of yesterday & today with many practices to cope with disasters. There is much wisdom available in DRR. We need to see that knowledge and wisdom for DRR is integrated into CCA and not reinvented by CC lobbies.

CCA is more about potential change in future – combining the potential extension of the intensity of existing hydro-meteorological disasters with new threats, some as yet difficult to evaluate such as sea level rise. A negative aspect is that CCA now seems to replace CC mitigation, because of no agreement between nations. In both cases insufficient funds go to poor and most vulnerable for “adaptation” at this significant level.

**Q8 : How do you appreciate the difference between data, information, knowledge and wisdom?**

**POLIMI**

Wisdom derives from knowledge, knowledge derives from information and information derives from data. (Davenport & Prusak, 2000)  
*Data:* Data is a set of discrete, objective facts about events and says nothing about its own importance or irrelevance. (Davenport & Prusak, 2000, p.2)  
*Information:*  
information needs to have sender and receiver and it is the shaped version of data. (Davenport & Prusak, 2000, p.3)  
*Knowledge:* “Information that has been culturally understood such that it explains the how and the why about something or provides insight and understanding into something” (Jennex, 2009, p.2)  
“Knowledge is rooted in each individual’s action, behavior and experiences ... There can be too much information but there can never be too much knowledge.” Zeleny, 2004, p.24)  
“Knowledge contains judgment” (Davenport & Prusak, 2000, p.8)  
*Wisdom:* “Placing knowledge into a framework or monological net that allows the knowledge to be applied to different and not necessarily intuitive situations.” (Jennex, 2009, p.2)  
“Wisdom is socially accepted or experience validated explication of purpose” (Zeleny, 2004, p. 25)

Prof. J.Weichselgartner, geographer

I think that there are differences and that the terms should be distinguished. To my understanding, data is raw material; information is structured data. Moreover, I support the notion of knowledge as „the capacity to act” or “the capability to take action” (Stehr, 2009). Here, the factor “power” plays an important role since – even with available data and information, and existing knowledge and wisdom – many people (in particular, in less developed countries) do not have the capacity the act (e.g., because they are too poor to leave the flood plains in Manila or the landslide-prone favelas in Rio).

**UNIV-SAVOIE**

Data look like raw material and give the delusive impression that they come out of nothing (ignoring methods and objectives necessary for collecting data). The difference tries to depict a (linear) process towards producing wisdom which looks like a dead end (as if there were nothing after “wisdom”, in spite of the fact that we are working on wisdom limitations...).

For sure, it’s possible to justify distinguishing between data, information, knowledge and wisdom, but, if I’m not wrong, we are working on side-effects this type of segmented and linear approach contributes to produce. This is why I would argue to take feedback loops more into consideration. How to understand experience returns, and experience returns acceptance limitations, lived during DRR policies evolutions, with such an approach which remains highly analytical and linear?

<b>HUA</b>
M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management
Wisdom leads to a change of culture and attitude, while knowledge if assimilated leads to acting differently. Information is based on data that are processed for a purpose (for example in order to answer questions set by different stakeholders, to identify trends and patterns, to feed records, to allow exchange). Data are neutral and serve as a basis for information. However collecting data on disasters is very important because they disappear fast.
E. Karymbalis, Geologist, Prof.of Geomorphology
According to us you can't get information without data, knowledge without information and for sure wisdom without knowledge. This is like a process that could finally lead to the desirable wisdom. Facts that are coming from everywhere can be considered as data. When those data are organized, through deleting useless or unreliable data, or keeping for more study useful material, then this is information. Studying and trying to understand information can lead to knowledge. If this knowledge is used by somebody or it results from an event or an experience which means that we own this, then maybe we can talk about wisdom.
Sophia Skordili, economist, Industrial geography
The relevant presentation during the kick-off meeting in Milan was very useful and helped me clarify these vague and overlapping concepts.
<b>CIESAS</b>
Data is the core of empirical evidence, is a base to be classified before to interpret and measure. Interpreted and organize data to produce information, but information by itself is not always trustable. Knowledge is classified and useful information from experience and lessons learned. Knowledge may works as guideline for decision-making process in may arenas: it could be cultural, institutional o scientific. Wisdom is a compendium of cumulative knowledge shared by experiences and gives sense to collective practices.
<b>CSIC</b>
We agree that: data is the raw materials of all kinds, information is obtained after some kind of tailored processing and knowledge would allow elaborating answers (including estimated uncertainties). We are not completely sure on the precise border between knowledge and wisdom or whether these borders are commonly soft and not very clearly delimited.
<b>EURAC</b>
The first 3 terms (data, information, knowledge) are clearly understood and they build on knowledge development and value adding. The fourth term – wisdom - is in our opinion less clear and cannot always be seen as a step following the achievement of knowledge.

<b>PLUS</b>
<ul style="list-style-type: none"> <li>• Data is raw material (e.g. observations, measurements by human sensors or other e.g. technological sensors).</li> <li>• Information structures the data to provide a summary of data in a certain context. This could also be referred to as potential knowledge.</li> <li>• Knowledge is a very complex term, as it may involve many differing types of knowledge, but in general knowledge has two components: that which is mainly based on information and experience (instrumental, factual knowledge), and orientation knowledge, which refers to understanding of how things should or could be (aims and purposes and includes values and beliefs). Knowledge expresses itself through human action.</li> <li>• Wisdom refers mainly to wise decision-making, which means that decisions produce good results (useful or beneficial, positive in nature) and therefore indirectly refers to (makes a judgement on) the knowledge used for decision-making. Table 1 from Zeleny offers a good explanation.</li> </ul>
<b>UNU-EHS</b>
All these dimensions are interlinked. Data (both quantitative and qualitative) is the basis for information, which (in agreement with what other colleagues have already stated) are the building blocks for knowledge. Knowledge then enables you to “dig further” and seek new data to generate new information, leading to new knowledge. Wisdom would be the outcome of knowledge put to good use.
<b>ADELPHI</b>
I agree with the distinction discussed and presented during the kick-off meeting, which is also presented in the draft version of deliverable 1.2.
<b>DWF</b>
<p>A circular process: gathering the facts (and ideas) on which information is built; information processing this material into a useable format; knowledge, a theoretical or practical understanding that can lead to action (or not to act); Wisdom being the possession of experience and knowledge together giving the power to apply these or not. Seeing whether the knowledge and consequent action had been useful or not; whether it reduced risk or did not reduce it. Learning from the experience to generate better data/information...</p> <p>Seen another way, information should be leading to understanding and to social appropriation &amp; action; diffusion of this experience and knowledge to inform future better practice.</p>

**Q9 : List 5 of your favorite publications relating to the topic of the project. It would be useful to explain briefly why you consider these publications essential for the project.**

**POLIMI**

- Davenport T.H., Prusak L. 2000. . Working Knowledge: How Organizations Manage What they Know. [http://wang.ist.psu.edu/course/05/IST597/papers/Davenport\\_know.pdf](http://wang.ist.psu.edu/course/05/IST597/papers/Davenport_know.pdf)
  - Resilience Engineering: Concepts and Precepts Edited by Erik Hollnagel, MINES ParisTech, France, and Linköping University, Sweden, David D. Woods, Ohio State University, USA and Nancy Leveson, Massachusetts Institute of Technology, USA
  - Ginzburg C. Morelli, Freud and Scherlock Holmes: Clues and Scientific Method <http://www.clas.ufl.edu/users/burt/GinzburgMorelliFreudHolmes.pdf>
  - Pielke Jr, R. "The role of models in prediction for decision", in Canham, C., Cole, J. and Lauenroth, W. K. (eds), Models in ecosystem science. Princeton Univ. Press, 2003, pp. 111-135.
- References:
- Davenport T.H., Prusak L. 2000. Working Knowledge: How Organizations Manage What they Know. [http://wang.ist.psu.edu/course/05/IST597/papers/Davenport\\_know.pdf](http://wang.ist.psu.edu/course/05/IST597/papers/Davenport_know.pdf)
  - Ginzburg C. Morelli, Freud and Scherlock Holmes: Clues and Scientific Method <http://www.clas.ufl.edu/users/burt/GinzburgMorelliFreudHolmes.pdf>
  - Jennex M.E., Re-visiting the knowledge Pyramid, Proceedings of the 42nd Hawaii International Conference on System Sceinces, 2009.
  - Zeleny M., Knowledge – Information Circulation Through the Enterprise: Forward to the roots of knowledge management, in Y.Shi, W. Xu, and Z. Chen (Eds.): CASDMKM 2004, LNAI 3327, pp.22-33, 2004.

Prof. J.Weichselgartner, geographer

- I listed more papers on knowledge production since I assume that more papers with regard to DRR and CCA will be proposed by other project partners. I can send all papers on request.
- Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jäger, J. & Mitchell, R.B. (2003): Knowledge systems for sustainable development. PNAS (100): 8086-8091. (Old but good paper giving a decent insight into knowledge systems. For those with more time: Mitchell, R.B., Clark, W.C., Cash, D.W. & Dickson, N.M. (eds.) (2006): Global environmental assessments: Information and influence. Cambridge, MIT Press.)
  - Jasanoff, S. (2004): States of knowledge: The co-production of science and social order. London, Routledge.
  - Hessels, L.K. & van Lente, H. (2008). Re-thinking new knowledge production: A literature review and a research agenda. Research Policy (37): 740-760. (The paper offers a systematic reflection on the Gibbons-Nowotny (1994) notion of 'Mode 2 knowledge production')
  - Jahn, T., Bergmann, M. & Keil, F. (2012): Transdisciplinarity: Between mainstreaming and marginalization. Ecological Economics (79): 1-10. (The authors present and discuss what can be considered the main features of an emerging shared framework of transdisciplinarity)
  - IPCC (2012): Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge, University Press. (A useful summary of the state-of-the-art regarding DRR and CCA)

## UNIV-SAVOIE

- Eiser, J.R. et alii. 2012. Risk interpretation and action: a conceptual framework for responses to natural hazards. *International journal of disaster risk reduction*, 1 : 5-16.
- Dynamic approach of the problems we have to manage.  
“Understanding the historical and political processes that create and maintain such vulnerabilities is absolutely central to an explanation of disasters”.
- Gérin, S, 2011. Une démarche évaluative des Plans de Prévention des Risques dans le contexte de l’assurance des catastrophes naturelles. Thèse Univ. Paris VII, 350 p.  
An outstanding assessment and interpretation of French DRR policies limitations.
- Gunderson L.H., Holling C.S., Peterson G.D. 2002. Surprises and sustainability: cycles of renewal in the Everglades, In : Gunderson L.H., Holling C.S., Panarchy. *Understanding transformations in human and natural systems*, Island Press, Washington.  
Because of the socio-ecological approach of disasters, which takes complexity into account. Such is also the case with:
- Cumming, G.S. 2011. *Spatial resilience in social-ecological systems*, Dordrecht, Springer.
- Lopez, J and Pigeon, P. 2011. Co-evolution between structural mitigation measures and urbanization in France and Colombia: a comparative analysis of disaster risk management policies based on disaster databases. *Habitat international*, 35(4): 573-581.  
Contains a figure describing how disasters are being prepared while not taking into account “protective” structural measures limitations in France.

## HUA

M.Dandoulaki, Civil engineering-Urban and regional planning-Disaster management

(I did not include any publication by partners)

- Mc Entire, D. 2007. *Disciplines, Disasters and Emergency Management: The Convergence and Divergence of Concepts, Issues and Trends from the Research Literature*, Charles C Thomas Publisher.
- Lagatec, P., 2007. Crisis management in the 21 century: unthinkable events in unconceivable contexts. *Handbook in disaster research*, pp 489-507. NY: Springer.
- Thomalla, F., Downing, T., Spanger., Siegfried, E., Han, G., & Rockström, J. (2006). Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation. *Disasters*, 30(1), 39-48.
- Renn, o. 2005. Risk governance: Towards an integrative research. White paper No 1. IRGC series.
- Hadmer, J. 2002. The chimera of precision: Inherent uncertainties in disaster loss assessment. *International Journal of Mass Emergencies and Disasters*, 2(3), 325-346.

E. Karymbalis, Geologist, Prof.of Geomorphology

- Shows clearly the way that DRR and CCA can be integrated:Thomalla, F., Downing, T., Spanger-Siegfried, E. & Han, G. R., 2006. Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation. *Disasters*, 30(I), pp. 39-48.
- It's a contemporary topic, very analytically presented, that is needed to be taken into account according the economic phase that we experience now days and the issue that we study : ESCAP, United Nations, 2013. *Building Resilience to Natural Disasters and Major Economic Crises* (Publication concept and design by Marie Ange Sylvain - Holmgren)
- We think it is well presented the knowledge transfer process :Marincioni, F., 2007. Information Technologies and the sharing of disaster knowledge :the critical role of professional culture. *Disasters*, 31(4), pp. 459-476.
- Shows in an interesting way how the interdisciplinary work can be done :Repko, A. F., 2012. *Interdisciplinary Research, Process and theory*. s.l.:Sage Publications Inc.
- It is well presented the way that knowledge of two different sectors is integrated to reduce vulnerability: Mercer, J., Kelman, I., Taranis, L. & Sucet-Pearson, S., 2010. Framework for integrating indigenous and scientific knowledge for disaster risk reduction. *Disasters*, 34(I), pp. 214-239.

Sophia Skordili, economist, Industrial geography

- Foresight The Future of Food and Farming (2011) Final Project Report, The Government Office for Science, London.
- Garnett, T. (2008) "Cooking up a storm: Food, greenhouse gas emissions and our changing climate", Research Report, Food Climate Research Network Centre for Environmental Strategy University of Surrey, 09/08
- McMichael, A., Powles, J., Butler, C. and Uauy, R. (2007) "Food, livestock production, energy, climate change, and health", *Lancet* (370): 1253-1263.
- Mooney, P. and Hunt, S. (2009) "Food Security: The Elaboration of contested Claims to a Consensus Frame", *Rural Sociology* 74 (4): 469-497.

#### CIESAS

- BANKOFF, G.; FRERKS, G.; HILHORST, D. (Eds.), *Mapping Vulnerability: Disasters, Development and People*. Earthscan, London, 2004.
- MASKREY, Andrew, *Los Desastres No son Naturales*. [Comp.] LA RED-ITDG-Tercer Mundo Editores, Colombia. 1996.
- HOFFMAN, Susanna M., OLIVER-SMITH, Anthony, Eds. *Catastrophe and Culture. The Anthropology of Disaster*. School of American Research Press, Santa Fe, 2002.
- WHITE, G.F., KATES, R.W., BURTON, I. Knowing better and losing even more: the use of knowledge in hazard management. *Global Environmental Change Part B: Environmental Hazards* 3 (3-4), 81-92. 2001.
- WISNER, B.; BLAIKIE, P.; CANNON, T.; DAVIS, I. Eds. *At risk: natural hazards, people's vulnerability and disasters*. 2004.

#### CSIC

Related to the project:

- Roux DJ, Rogers KH, Biggs HC, Ashton PJ, Sergeant A. Bridging the science-management divide: Moving from unidirectional knowledge transfer to knowledge interfacing and sharing. *Ecol Soc*. 2006;11(1):4.
  - Godfrey, L, Funke, N and Mbizvo, C. 2010. Bridging the science policy interface: A new era for South African research and the role of knowledge brokering. *South African Journal of Science*, Vol. 106(5-6), pp 1-8
  - Boaz A, Hayden C. Pro-Active Evaluators: Enabling Research to be Useful, Usable and Used. *Evaluation*, 2002; 8(4):440-453
- These two give a good general overview on knowledge communication and sharing.
- Climate Change Adaptation and Disaster Risk Reduction in Europe. A Review of Risk Governance. COE, UNISDR-EUR, EUR-OPA. June 2011, 73 pp.

It is a useful summary on CCA and DRR in Europe.

Some of our favorite regarding earthquakes:

- Bilham, R., 2013. Societal and observational problems in earthquake risk assessments and their delivery to those most at risk, *Tectonophysics*, 584: 166-173
- Bilham, R., 2009. The seismic future of cities. The Twelfth Mallet-Milne Lecture. *Bulletin of Earthquake Engineering*, 7: 839-887.
- Lomnitz, C., 1999. The road to total earthquake safety. The Seventh Mallet-Milne Lecture. A.A. Balkema, Rotterdam, 89 pp.

**EURAC**

1. AdaptAlp Common Strategic Paper - Meeting the risk of climate change and natural hazards in the Alps – [www.adaptalp.org](http://www.adaptalp.org)  
This paper is the final product of the AdaptAlp project and in particular of the workshop organized by EURAC within the same project (see question n.5) in which researchers from different disciplines had to face the common effort of communicating the synthesis of their findings in a simple but effective way.
2. Climate change adaptation and governance Country report South Tyrol – C3-Alps Interreg project report (WP4) – EURAC.  
The objective of this study was to draw a picture of the status of climate change adaptation governance and policies in South Tyrol. The aim was to understand the importance and the process of climate change adaptation (CCA) in the region looking at existing adaptation activities, trying to identify possible barriers and strengths and analyzing the science-policy interface.

**PLUS**

- Godfrey, L., Funke, N., and Mbizvo, C. (2010): Bridging the science–policy interface: A new era for South African research and the role of knowledge brokering. *S Afr J Sci.*, 106, 8.  
This publication is highly interesting as it has to do with barriers in the science-policy interface and the use of evidence-based decision-making. It also discusses the concept of knowledge-brokering, which includes both a push and pull from scientists and decision-makers respectively.
- Weichselgartner, J., and Kasperson, R. (2010): Barriers in the science-policy-practice interface: toward a knowledge-action-system in global environmental change research. *Global Environmental Change*, 20, 266-277.  
This paper also offers insight regarding barriers in knowledge systems and is based on case study work and an analysis of scientific assessments. Three types of barriers are suggested: functional, structural and social. Furthermore, saliency, credibility and legitimacy of scientific work are shown to be pre-requisites in order to have a significant impact and the importance of collaborative production of knowledge is discussed.
- Mercer, J. (2010): Disaster risk reduction or climate change adaptation: Are we reinventing the wheel? *Journal of International Development*, 22, 247-264.  
Mercer includes a discussion on the differences and similarities between DRR and CCA in a development context.

**UNU-EHS**

1. Renaud, FG, Sudmeier-Rieux, K, Estrella, M (eds.) (2013) *The role of ecosystems in disaster risk reduction*. UNU-Press, Tokyo. This book is of interest as some chapters highlight the uptake (or not) of the eco-DRR concept in various case studies/countries
2. Birkmann, J, Tetzlaff, G, Zentel, K-O (2009). *Addressing the Challenge: Recommendations and Quality Criteria for Linking Disaster Risk Reduction and Adaptation to Climate Change*. In: Birkmann, Joern, Tetzlaff, Gerd, Zentel, Karl-Otto (eds.) *DKKV Publication Series 38*, Bonn
3. Birkmann, J, von Teichman, V (2010) *Integrating disaster risk reduction and climate change adaptation: key challenges—scales, knowledge, and norms*. *Sustainability Science*, DOI 10.1007/s11625-010-0108-y  
More will follow

**ADELPHI**

- IPCC (2012): *Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)*. Cambridge, University Press.
- Thomalla, F., Downing, T., Spanger., Siegfried, E., Han, G., & Rockström, J. (2006). *Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation*. *Disasters*, 30(1), 39-48. (Addresses the problem of the two separate communities CCA and DRR and suggests a way forward)
- Weichselgartner, J. & Kasperson, R.E. (2010): *Barriers in the science-policy-practice interface:*

Toward a knowledge-action-system in global environmental change research. *Global Environmental Change* 20 (2): 266-277. (Good analysis of the science policy gap and reasons for it on an empirical basis)

- White, G. F., Kates, R. W., & Burton, I. (2001). Knowing better and losing even more: the use of knowledge in hazards management. *Environmental Hazards*, 3(3), 81-92.

#### **DWF**

- Ed M.J. Aquilino "Beyond Shelter – architecture & human dignity" Metropolis Books USA 2011  
Excellent collection of examples related to architecture and risk, to help shape principles that respond to the growing threat of disasters;
- Ed Lee Boshier "Hazards & the built environment – attaining built in resilience" Routledge, UK/USA 2008. A wide ranging collection about achieving resilience in the built environment with experience about bridges and barriers to sharing and appropriation of knowledge.

Comments
<b>POLIMI</b>
<p><b>Dahlem Workshop Model</b></p> <p>For five days 40 participants meet in four interdisciplinary discussion groups, in which the selected theme is examined from different fields and perspectives. Background papers presenting an overview of the current state of research as well as indicating research gaps serve as a basis for the discussions. The background papers are written by selected participants in view of the questions of the respective working groups.</p> <p>The participants, who receive these background papers three months prior to the workshop, submit ex ante questions and commentaries. Through these intensive preparations the workshop can begin where regular conferences usually end: with discussions, the debate of questions, and collective thinking.</p> <p>At the beginning of the workshop, each working group decides on its program for the week. In order to avoid overlapping or gaps, in a second step, the working groups align their programs. Afterwards the first and the second groups meet simultaneously. Depending on their individual interests, the participants of the other groups join those two groups. After the first round of discussion the third and the fourth working groups meet and the participants of the first and second groups participate as guests in their discussions. This structure characterizes the workflow of the workshop and ensures that the main themes of each group are dealt with in light of a central topic. At the same time it enables the discussions in the individual working groups to stimulate the discussions in the other groups.</p> <p>During the week each group prepares a group report documenting its discussion. At the end of the workshop, the results are brought together in the plenary sessions and presented. The Dahlem Workshop Model, initiated in 1974, has proven to be such an effective format for interdisciplinary communication and cooperation between scholars that by now it is being copied elsewhere.</p>
<b>EURAC</b>
<p>It would be good to achieve a common understanding considering the difference between multi-disciplinary and interdisciplinary work</p>



## **Appendix B: Partners' experiences from knowledge successfully advancing decision-making and implementation - Identified main catalysts for knowledge sharing and exchange**

### ***POLIMI***

After finalising the ENSURE project, we have been invited by the civil protection presidency in Italy to show and explain the results of the Ensure project in the meetings of their project, which include several countries of the Mediterranean region. With the MATRIX project group invited to the meeting we had the chance to compare these two projects and discuss the results with the decision-makers coming from different countries.

Discussing the final products of ENSURE with them all together and also in the group exercises provided us the wisdom, because when it combined with the ideas of people coming from different cultures and civil protection systems, we have discussed the results and see the well-prepared and also the missing parts in the final product.

Kasperson and Berberian (2011) edited several case studies that focused on barriers and bridges between science and policy. Another source, focusing on Hurricane Katrina, is the edited volume published by Dowty & Allen (2011). Although not regarding DRR, a valuable analysis of knowledge integration in problem-oriented research is provided by Zierhofer & Burger (2007).

### ***UNIV-SAVOIE***

Some of River Arve municipalities display examples of “good practices” concerning flood-related disaster prevention policies, at least at the end of the 1990’s and 2000’s. In these cases, agreements have been found between the main actors implied at various scales: they allowed not building anymore on wide tracts of flood-prone areas. As time goes along, these areas will be devoted to a new flood expansion plain, and they are considered a means to protect cities downstreams, such as Geneva. In turn, municipalities downstream accepted to pay for corrective works on Magland municipality. Indeed, a new generation of dikes was supposed to protect parts of Magland municipality already built-on, but to a certain extent only (the areas were officially recognised as still prone to floods, but with a lesser intensity).

This solution is not without limitations or flaws. Among them, we find a clear reluctance of landowners to adapt their buildings to floods that will happen sooner or later here, especially when they consider themselves protected by dikes. The present municipality of Magland does not wish to hear from flood disaster prevention policies anymore (it considers having already done what has been asked during the 1990’s).

But the situation in Magland could be ranked more flood disaster prevention oriented than what can be found in other municipalities, where we still experience building densification behind dikes (as with Scionzier municipality).

Among the main drivers “for efficient knowledge sharing and exchange”, we find a wide range of factors helping (or not) to find an agreement about this policy which, in the end, reduces strongly the building capacity of this municipality (and/or reduces land values for some of the landowners the PPR land-use zonings and regulations imply). Such as the size of the municipality and its building capacities left, the existence of monetary compensations for the areas given back to the river flood expansion, the socio-economic level of the population implied...

## **HUA**

### *M.Dandoulaki (disaster management)*

On July 26, 1996 at 21:55 an earthquake of M=5.2 hit Konitsa town (S.Greece) causing extensive damage. On August 6 at 01:46 the main earthquake of M= 5,6 occurred increasing the damage and building collapses. Konitsa is a remote rural mountainous area far from the Prefecture centre. Konitsa town had a population of around 2.000 at the time.

Many public organisations and the Prefecture which was responsible for emergency management, send teams in the disaster area. It was clear though that the Municipality was the only one that knew the local conditions and affairs, therefore had to play a central role. Yet, the Municipality was acutely understaffed, had no previous disaster experience and no formal responsibility in emergency management, this seriously hampering emergency management the first days.

In day two, locals (mainly teachers and respected seniors) voluntarily staffed teams to assist the Municipality in emergency management. Four teams of 3-4 people each were formed to manage and assist in: a) engineering interventions, such as usability assessment of buildings; b.) emergency shelter; and c) social support and provision of aid, information, and communication. Experienced staff from Earthquake Planning and Protection Organisation (EPPO) took up the task to support the volunteers in their works.

Initially, the volunteers were very unsure of their capacity to deal with something they know nothing about (or at least that was what they believed). They did nothing without asking EPPO's staff and took no initiative.

With the constant presence of knowledgeable EPPO staff who realised that they were there to help volunteers to become self-sufficient, the volunteers little by little realised their capabilities and the worth of their knowledge on local issues and took up practically all management of the situation on behalf of the Municipality. They stood by the Municipality until September and they efficiently administrated all interventions. Among many other of their tasks: They set the criteria and prepared the priority lists for households to get emergency shelter and –later- temporary housing units. They were assigning locals to accompany and guide interventions teams (engineers, psychologists, social care teams, medical staff etc.). They were identifying and register households in need for food and they were managing all the procedures with restaurants. They prepared announcements and information bulletins regarding the situation to be broadcasted by the local radio station.

In my opinion, there are a number of issues related to the project: There are different kinds of knowledge and all they can be of some use depending on the situation; Expertise can and should enable people to utilise their own knowledge when dealing with disaster situations; Trust and mutual respect are important in facilitating knowledge and experience transfer.

### *Prof. Th. Karymbalis (geologist/geomorphologist)*

Recently, we were invited by a Mayor of a municipality in a Greek island to give our opinion and advices about the selection of a location in order to construct a waste landfill since the staff of the technical department of the municipality did not have the required knowledge and experience. The fact that they were open-minded and they recognised that their knowledge was limited was really crucial for the effective decision-making and implementation for DRR. When we visited the site, those who already knew the region well, informed us about the existing boreholes, the environmentally protected areas of the island and provided us with data regarding human activities that we were not able to find easily on our own. They gave us also an idea about how citizens were thinking about the project and helped our investigation by giving us information. Our suggestions were taken into account

by the local authorities of the municipality and were transmitted to the employees and then to the constructor. Thus a river which is located close to the construction could remain environmentally safe and protected and the citizens felt in this way more secure. This case shows that sharing and exchange of knowledge is really important and can be very helpful in decision making. It is almost sure that the constructor would choose the waste landfill location based on the lowest construction cost, but the Mayor, who cared about citizens' health and landscape protection, asked from the university in order to obtain the appropriate knowledge. University on the other hand accepted immediately the invitation and the collaboration of different disciplines scientists (like geologists, topographers, water resources management specialists) prepared the study and the final report. So among the main catalysts for efficient knowledge sharing is first of all the willingness to hear the truth, then the cognition of what you know and the willing to cooperate and do research, and of course the ability to make decision and implement according to the scientific findings of the investigation. If there are conflicts during the collaboration in addition to other barriers there do not exist bridges to knowledge. Our case has shown that bridges existed initially between the member of each of the two sides (Municipality and University), and then the two sides collaborated fruitfully and exchanged efficiently their knowledge.

*Prof. Sophia Skordili (economic geography / agri-food systems)*

My experience from regional developing projects shows that an efficient local development agency and adequate financial resources can be the main catalysts to successfully knowledge sharing and exchange between universities and central government and local authorities.

### **CIESAS**

In the Peninsula de Yucatan, we developed a workshop where three actors were involved: UNDP representatives (stakeholders), inhabitants (general public), and anthropologists (academia). The workshop was organised by UNDP in order to find out the needs of the inhabitants related to the risk of disaster and be supported by the authorities. This workshop is an example of sharing knowledge because there the citizens have exposed what they know about disaster risks because of their own experiences, so they know what they need. On the other hand, participants from UNDP took notes about everything in order to write a document showing their particular DRR requirements and then send it to the local and regional authorities. In the same way the anthropologist observed situation and wrote an analysing paper showing how dialogues are tools to produce knowledge and then share it among different sectors.

### **CSIC**

RISKCAT project (2008) in which we participated intended to analyse the capacity of Catalonia to face natural hazards. It was promoted and launched by an agency (CADS/Advisory Council for Sustainable Development) of the regional government of Catalonia (CADS). The first stages of the planned schedule (analysis of capacities, strengths, weaknesses) were successfully developed and teams of different experts covering the main relevant aspects on geological hazards in Catalonia worked together with periodical interaction with the institutions and decision-makers involved in risk management. Aspects such as legislation (lawyers were involved in the expert teams) were as well analysed. A number of products were elaborated in the form of evaluation reports and a database platform containing the results of the analysis and all the gathered information (geo-referenced materials, scientific articles, reports etc) was created incorporating a user friendly interface.

The later stages of the initially planned project were not continued so in the end it only partially succeeded.

The catalysts were 1) the direct involvement in such initiative of the Advisory Council (a government agency) promoting, launching and financing the project; and 2) the strong involvement of some members of the Advisory Council together with the coordinator of the project.

Reference: RiskCat. Els riscos naturals a Catalunya. Informe executiu / Los riesgos naturales en Cataluña / Natural Risks in Catalonia (Informes del CADS), J.M. Vilaplana (dir.), Payás, B. (coord.)

### **EURAC**

For what concerns question n.6 and 7 please, refer to our contribution in the “Analysis of main fragmentation issues within different stakeholder groups: considerations about the issues in the field of Climate Change Adaptation” (Know-4-DRR Del 1.2)

### **PLUS**

- Using participatory approaches to map vulnerability, knowledge was coproduced with stakeholder involvement and integrating their perspective at community level. In this way, awareness for DRR-related was raised among public and private decision-makers. For further information, please refer to the following publications (which can be delivered on demand):

- Kienberger, S., 2012. Spatial modelling of social and economic vulnerability to floods at the district level in Búzi, Mozambique. *Natural Hazards* 64(3), 2001-2019. <http://dx.doi.org/10.1007/s11069-012-0174-9> and the following manual [http://projects.stefankienberger.at/vulmoz/?page\\_id=54](http://projects.stefankienberger.at/vulmoz/?page_id=54)

- Hutton, C. W., Kienberger, S., Amoako Johnson, F., Allan, A., Giannini, V., Allen, R., 2011. Vulnerability to climate change: people, place and exposure to hazard, *Adv. Sci. Res.*, 7, 37-45, doi:10.5194/asr-7-37-2011. <http://www.adv-sci-res.net/7/11/2011/asr-7-37-2011.html>

### **UNU-EHS**

As an academic institution, this is difficult to answer. Two examples come to mind: the first is to do with the development of vulnerability maps for the entire of Germany at a district level resolution which was posted on the DRR information NaDine website in Germany. The second is the set up of the Partnership for Environment and Disaster Risk Reduction which advocates for the role of ecosystems in DRR. This is a group of 15 UN and INGO organisations which bring their collective (and varied) knowledge together to promote the eco-DRR theme. This group interacts regularly with a much wider group of diverse stakeholders called “friends of PEDRR). The approach is flexible with contributions on a voluntary basis but involves research (e.g. RiVAMP project of UNEP in Jamaica), publications (peer-reviewed but also e.g. policy briefs), and education (e.g., modules for MSC programmes). One of the outcomes of this partnership and approaches is that many people and organisations have been made aware of the role of ecosystems for DRR, have been thought the advantages and limitations of the concept, and PEDRR has been able to highlight the role of ecosystems in DRR in the final statements of the last two Global Platforms and (hopefully) in the post-HFA discussions currently taking place.

## **ADELPHI**

1) Generally, defining a clear, concrete and common goal for the knowledge sharing and exchange is important. Moreover, benefits of that process should be mutual and there needs to be a high motivation among participants to benefit and learn from each other.

2) Local communities often possess a rich knowledge / experience on how to reduce the impact of natural disasters and how to adapt to a changing environment. However, this knowledge is usually not (properly) documented. Moreover, little is known about the effectiveness of measures taken at the local level, because these are rarely evaluated. As a consequence, this valuable source of knowledge is not often integrated in regional or national (top-down) decision-making and the implementation of risk mitigation and adaptation measures. The scientific community can play an important role closing this gap by documenting and evaluating risk mitigation and adaptation measures at the local level in such a way, that it can be used in the decision making process.

3) To be able to influence the decision-making process, also the timing of activities plays a crucial role. Usually, there is only a limited time span (window) when input to decision making is possible at all. One option to better link knowledge production and decision making is to ensure that knowledge is co-produced by science and policy (see Question 5).

4) In different workshops and trainings with rural communities and local NGOs on the coast of southern India, adelphi managed to integrate different types of knowledge (i.e., knowledge from the realms of agriculture, rural development, DRR and climate change adaptation) that participants had brought to the sessions. Key in achieving this was (a) providing a clear understanding that we were facing a problem – present and future impacts of climate change – that in itself is very complex and touches on many fields or sectors; and (b) demonstrating the overlap among the topics (e.g., between DRR and adaptation) to show that different types of knowledge are already very much connected and further integration can provide valuable perspectives for the different types of knowledge.

## **DWF**

Since 2000, DWF in Vietnam has promoted (training/awareness campaigns/credit etc.) the preventive strengthening of homes by poor families in the face of typhoons; many hundreds of safer houses have been tested by typhoons; after Typhoon Xangsane (2006) the success of this approach led the People's Committee of Thua Thien Hué province to issue an edict for the population and authorities to apply the key principles of storm resistant construction promoted by DWF. The catalyst: the typhoon, sustained awareness campaigns and having many houses of the poor resist the impact of a major typhoon. Since then, national government has bought in (2012) (Ministry of Construction) (Catalyst = DWF “Atlas of House Vulnerability and Strengthening”, Vietnam)

After Cyclone Nargis (2008) knowledge about the methods and example of the Vietnam work were successfully transferred to the Irrawaddy Delta region of Burma and implemented over the ensuing three years. (UN South-South transfer award)