13 - 15 MARCH 2019 **UNIVERSITY OF CERGY-PONTOISE**



EUROPEAN CONFERENCE ON RISK PERCEPTION BEHAVIOUR, MANAGEMENT AND RESPONSE



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European Conference on Risk Perception, Behaviour, Management and Response



Decision-making in during a rare major crisis or disaster situation is difficult even for experts or experienced decision-makers and leaders, even more so for laymen and normal citizens. Disasters are characterised by their unusual and extreme appearance, often coming as a shock or surprise effect, overwhelming resources and previous experiences. The actual behaviour of individuals and government entities before, during, and immediately after a disaster can dramatically affect the impact, vulnerability, recovery time and resilience. Despite decades of research on disaster risk and perception, studies on actual damages and responses after disasters, and even decisionmaking tools, mainly for decision-makers and risk management, predicting the actual behaviour of normal citizens is still a major challenge. Moreover, whilst recent studies have found that exposure and socioeconomic characteristics alone are not sufficient to explain the outcomes of disasters, social vulnerability, evacuation behaviour, coping strategies, recovery time, public involvement, management achievements, as well as resilience, existing risk-assessment methods rarely include risk perception and behaviour. Those critical factors are too often overlooked because linking risk perception and actual behaviour remains a major challenge, as is disentangling the connections of risk perception with the underlying demographic, social environment and place of residence backgrounds. And existing big data analyses are still immature in understanding this major knowledge gap between risk perception and response behaviour. Uncertainty derives from lack of information, lack of trust, alternatives, previous experience, but also segregation, oppression, etc. Innovations in risk, vulnerability, recovery and resilience assessments that integrate perception, segregation and behavioural adaptation dynamics may lead to more accurate characterization of risks and improved evaluation of the effectiveness of risk communication and management strategies and investments. Improved decision-making in uncertainty conditions, especially in extreme crisis situations, may help citizens to better decide about whether to stay or evacuate, while innovations in the prediction of actual behaviour, mapping of evacuation needs and risks might improve risk communication, insurance and management, and this helps to save lives.

This is a field where evacuation planning and exercise, social vulnerability and resilience, residential segregation, civil protection, psychology, the insurance industry, legal and institutional background, sociodemographics, land use and places, risk communication, emergency management, public involvement, decision making, basic research on fear factors, discrimination and human behaviour must be thought together. Such multidisciplinary approaches and comparative surveys can inform decision making under uncertainty, risk and emergency management, as well as policy development.

This conference is addressing that major knowledge gap between risk perception, evacuation, response, and adaptation behaviour. It aims to build a panoramic European view of the ongoing research and to educe the research needs and European wide perspectives.

Labex DynamiTe, Paris, France & University of Cergy-Pontoise, Paris, France

Provisional agenda

Wednesday 13 March 2019

- 08.00 09.00 Welcome and breakfast
- 09.00 09.30 Introduction and overview
- 09.30 10.30 Guest lecture from Ben Wisner, University College London
- 10.30 12.30 Panel 1: Paradigm Shifts and Challenges
- 12.30 14.00 Lunch
- 14.00 16.00 Panel 2: Risk Perception, Preparedness, Warning and Evacuation
- 16.00 16.30 Break
- 16.30 18.00 Panel 3: Risk Perception, Insurance and Housing
- 18.00 18.30 Open discussion: cross-cutting insights
- 18.30 20.00 Collective Dinner

Thursday 14 March 2019

08.00 - 09.00 Welcome and breakfast

- 09.00 10.45 Panel 4: Risk Management, Neglected Groups and Social Vulnerability
- 10.45 11.00 Break
- 11.00 12.45 Panel 5: Risk Management and Institutions: Decision Making
- 12.45 14.00 Lunch
- 14.00 15.45 Panel 6: Risk Communication, Risk Culture and Public Involvement
- 15.45 16.00 Break
- 16.00 17.45 Panel 7: Learning From Experience
- 17.45 18.30 Concluding discussion
- 18.30 20.00 Dinner (to be confirmed)

Friday 15 March 2019

- 09.00 10.30 Workshop 1: Connecting researchers, surveys and research projects across Europe
- 10.30 11.00 Break
- 11.00 12.30 Workshop 2: Building a European consortium on risk perception and management
- 12.30 14.00 Lunch

14.00 – 17.00 Boat field-trip with practitioners: the Oise and Seine up to Paris downtown, lessons learned from the 2016 and 2018 floods in Paris *(to be confirmed)*

Organisers

Samuel Rufat, University of Cergy-Pontoise, Paris, France <u>samuel.rufat@u-cergy.fr</u> Alexander Fekete, University of Applied Sciences, Cologne, Germany, <u>alexander.fekete@th-koeln.de</u> Thomas Hartmann, Wageningen University, Netherlands, <u>thomas.hartmann@wur.nl</u>

European Conference on Risk Perception, Behaviour, Management and Response

1. The Risk Perception and Behavioral Gap in Disaster Risk Reduction *Ben Wisner, University College London (UK)*

Paradigm Shifts and Challenges

- 2. The Role of Knowledge in Disaster Risk Management: Lessons Learned about Lessons Learned *Juergen Weichselgartner*, *Academy for Crisis Management, Emergency Planning and Civil Protection (Germany)*
- 3. Nature-based Solutions and the role of perception in assessing and reducing risk to natural hazards *Carl C. Anderson, Fabrice G. Renaud, University of Glasgow (UK)*
- 4. Mainstreaming climate risk information in adaptation planning Jaroslav Mysiak, Silvia Torresan, Francesco Bosello, Malcolm Mistry, Mattia Amadio, Sepehr Marzi, Elisa Furlan and Anna Sperotto, Centro Euro-Mediterraneo sui Cambiamenti Climatici and Università Ca' Foscari, Venezia Porto Marghera (Italy)
- 5. Facing Europe's climate future EU governance and climate risks at a crossroads *Markus Leitner, Therese Stickler, Environment Agency Umweltbundesamt (Austria)*

Risk Perception, Preparedness, Warning and Evacuation

6. "What do we need to know before we act?" Analysis of risk perception, risk awareness & individual risk preparedness to support risk management

Lydia Pedoth, Stefan Schneiderbauer, Eurac Research, Bolzano (Italy)

- 7. Macro-perspective in risk perception and adaptation behaviour Piotr Matczak, Piotr Jabkowski, Piotr Cichocki, Institute of Sociology, Adam Mickiewicz University, Poznan (Poland)
- 8. Factors influencing the (flood)risk perception in Hungary Zoltan Ferencz, Research Centre for Social Sciences at Hungarian Academy of Sciences, Institute of Sociology; Budapest (Hungary)
- 9. Linking local predictors of risk perception and evacuation behavior in Paris, France *Samuel Rufat, Institut Universitaire de France (France)*

Risk Perception, Insurance and Housing

- 10. Flood resilience of private properties: addressing homeowners in existing built-up areas *Thomas Hartmann, Willemijn Doorn-Hoekveld, Marleen van Rijswick, Tejo Spit, Wageningen University & Research (Netherlands)*
- 11. Estimating the impacts of French flood risk prevention regulation on property values located in flood prone areas: the case of the region around Paris

Edwige Dubos-Paillard, Emmanuelle Lavaine, Katrin Millock, Université Paris 1 Panthéon-Sorbonne, Université de Montpellier & Paris School of Economics (France)

12. Risk culture, insurance and evacuation during the recent floods of the Seine *Frédéric Gache, Grand Lacs de Seine (France)*

Risk Management, Neglected Groups and Social Vulnerability

13. Demographic change and hydro-metrological hazards: flood risk management in Alpine areas facing population decline and demographic ageing

Thomas Thaler, University of Natural Resources and Life Sciences (Austria)

14. Social vulnerability of mobile groups. Neglected groups in spatial vulnerability assessments such as commuters, pedestrians, visitors of events

Alexander Fekete, TH Köln - University of Applied Sciences Cologne, (Germany)

- 15. Social cohesion as a basic ingredient in public behaviour before, during and after disaster *Timothy Prior, Center for Security Studies, ETH Zurich (Switzerland)*
- 16. Making Cologne more resilient against urban flash floods learning from river flood risk management

Marc Daniel Heintz, Municipal Drainage Operations Cologne (Germany)

Risk Management and Institutions: Decision Making

- 17. Influencing public and professional decision making: impactful flood warnings Simon McCarthy, Flood Hazard Research Centre, Middlesex University London, Neil Blazey, Jacobs London, Jacqui Cotton, Environment Agency, Paul Cobbing, National Flood Forum (UK)
- 18. Institutional vulnerability to natural hazards in the European Alps *Sven Fuchs, University of Natural Resources and Life Sciences (Austria)*
- 19. Social vulnerability of the decision-makers? A "gapminder" on assumptions who turns up to manage or help in a disaster

Alexander Fekete, TH Köln - University of Applied Sciences Cologne, (Germany)

20. Flood risk management plans in Czechia: it's business, as usual Monika Stehlíková, Pavel Raška, Lenka Slavíková, Martin Dolejš, J. E. Purkyně University in Ústí and Label (Czechia)

Risk Communication, Risk Culture and Public Involvement

- 21. LittoSIM: A simulation-game for enhancing stakeholder's risk culture of marine submersion *Brice Anselme, Nicolas Becu, Sorbonne University, Paris (France)*
- 22. Are citizen really outreached through social media in risk communication? *Victor Santoni, Université de Cergy-Pontoise, Paris (France)*
- 23. Risk perception in Romania: a participative GIS approach *Iuliana Armas, University of Bucharest (Romania)*

24. The added value of crisis communication networks in a challenging international and digital landscape: staying active and sharing

Elpida-Melpomeni Chlimintza, Tarik Meziani, Council of the European Union, Civil Protection Unit (Belgium)

Learning From Experience

- 25. Flood risk misperceptions with and without recent flood experience *Jantsje Mol, Wouter Botzen, Institute for Environmental Studies, Vrije Universiteit Amsterdam (Netherlands)*
- 26. Refugee crisis management during the Great East Japan earthquake *Aurélie Noël, Université Paris 1 Panthéon-Sorbonne - CNRS (France)*
- 27. Improving societal resilience and information sharing after the 2015 Nepal earthquake *Tina Comes, TU Delft (Netherlands)*
- 28. Multiple flood experience: Erosion or accumulation of social resilience? Christian Kuhlicke, Helmholtz-Centre for Environmental Research – UFZ, Department Urban and Environmental Sociology, Leipzig (Germany)

1. The Risk Perception and Behavioral Gap in Disaster Risk Reduction

Ben Wisner, University College London (UK)

PARADIGM SHIFTS AND CHALLENGES

2. The Role of Knowledge in Disaster Risk Management: Lessons Learned about Lessons Learned

Juergen Weichselgartner, Academy for Crisis Management, Emergency Planning and Civil Protection (Germany)

About 20 years ago, the observation that losses caused by natural hazards have been continuously increasing despite the concurrently growing volume of risk research prompted White et al. (2001) to highlight the gap between what is known about natural hazards and disaster mitigation, on the one hand, and how research findings are translated into disaster risk reduction policies and programmes, on the other hand. In their statement "knowing better and losing even more", they raised important questions about the trend towards higher disaster losses: Is nature getting more hazardous or is society becoming more vulnerable? Is under¬standing of the causes of the losses inadequate despite increasing research efforts? Or is existing knowledge not applied or not used effectively? Given the current amount of losses, there continues to be considerable gaps in translating knowledge into action and, therefore, it seems appropriate to recall relevant research findings and highlight the critical role of knowledge in disaster risk management. The Sendai Framework for Disaster Risk Reduction 2015-2030 addresses knowledge-related issues and provides the opportunity to systematically address knowledge production and implementation processes in DRR and the connections between risk, knowledge, and learning.

3. Nature-based Solutions and the role of perception in assessing and reducing risk to natural hazards

Carl C. Anderson, Fabrice G. Renaud, University of Glasgow (UK)

Scientific risk assessments should incorporate or be coupled with an understanding of the perceptions of relevant citizens and stakeholders. Although risk may exist independent of perceptions and values, assessments cannot be translated into effective risk reduction measures without their consideration. Depending on context and implementation, Nature-based Solutions (NbS) can directly reduce risk from natural hazards as well as deliver a range of related co-benefits such as biodiversity conservation and climate change adaptation. However, because the benefits of ecosystem services provided by NbS in terms of risk reduction are both spatially and temporally diffuse, the associated lack of salience could be contributing to their systematic undervaluation. Salience is one of many contextual qualitative factors (Slovic 1987) that dictate risk perception. However, these factors are a) not systematically considered in relation to risk assessments and b) currently lack the empirical basis to be directly linked to perceptions of risk reduction measures. Identifying divergence in perception and scientific assessment of risk should only be considered a first step, useful for developing strategies to better inform public and policy makers. Perception, rather than evidence, can exert more influence on human decision-making. Empirical evidence for NbS in the form of e.g. cost-benefit analyses that assume 'rational' decision-making may therefore be inadequate. Applying insights from the cognitive sciences as well as behavioural economics has the potential to both help identify underlying drivers of perceptions of risk and risk reduction measures as well as strengthen the systematic consideration and uptake of NbS.

4. Mainstreaming climate risk information in adaptation planning

Jaroslav Mysiak, Silvia Torresan, Francesco Bosello, Malcolm Mistry, Mattia Amadio, Sepehr Marzi,Elisa Furlan and Anna Sperotto, Centro Euro-Mediterraneo sui Cambiamenti Climatici and Università Ca' Foscari, Venezia Porto Marghera (Italy)

We describe a climate risk index developed to inform the national climate adaptation planning in Italy. The index supports national authorities in designing adaptation policies and plans, guides the initial problem formulation phase, and identifies administrative areas with higher propensity to be adversely affected by climate change. The index combines (i) climate change amplified hazards; (ii) high-resolution indicators of exposure of chosen economic, social, natural and built- or manufactured capital assets; and (iii) vulnerability which comprises both present-time sensitivity to climate induced hazards and adaptive capacity. We use standardised anomalies of selected extreme climate indices derived from high resolution regional climate models' simulations of the EURO-CORDEX initiative as proxies of climate change-altered weather and climate-related hazards. The exposure and sensitivity assessment is based on indicators of manufactured, natural, social and economic capital assets exposed to and adversely affected by climate-related hazards. The Manufactured Capital (MC) refers to material goods or fixed assets which support the production process (e.g. industrial machines and buildings); the Natural Capital (NC) comprises natural resources and processes (renewable and non-renewable) producing goods and services for the wellbeing; the Social Capital (SC) addressed factors at individual (people's health, knowledge, skills) and collective (institutional) level (e.g. families, communities, organizations, schools); and the Economic Capital (EC) includes owned and traded goods and services. The results of the climate risk analysis are used to rank the subnational administrative and statistical units according to the climate risk challenges, and possibly for financial resource allocation for climate adaptation.

5. Facing Europe's climate future – EU governance and climate risks at a crossroads

Markus Leitner, Therese Stickler, Environment Agency Umweltbundesamt (Austria)

The H2020 PLACARD project explored how foresight methods can be used for designing integrated climate change adaptation (CCA) and disaster risk reduction (DRR) responses in a changing climate. In the project's foresight activities, new narratives were designed in a process involving scientists, policy makers and practitioners, taking EU president Juncker's "5 futures of Europe" as a basis for assessing climate actions and for designing and characterizing effective strategies to mitigate climate risks. The presentation will first report on the discussions in the PLACARD project so far, focusing on the question what different EU futures may imply for CCA and DRR action, which response actions can be implemented now to increase resilience, and how we can use foresight methods to reduce the risks stemming from future climate-related extreme weather. A special focus will be on the key challenges of connecting time scales (short- to long-term actions) and administrative levels (from European to local). The objective is not only to generate new relevant knowledge about CCA and DRR integration in research, policy and practice, but also to explore opportunities for sustained usage of foresight methods beyond the PLACARD project's lifetime in support of CCA and DRR policy and practice.

RISK PERCEPTION, PREPAREDNESS, WARNING AND EVACUATION

6. "What do we need to know before we act?" Analysis of risk perception, risk awareness & individual risk preparedness to support risk management

Lydia Pedoth, Stefan Schneiderbauer, Eurac Research, Bolzano (Italy)

Researchers and practitioners active in the management of natural and technical risks invest substantial efforts in mapping information and generating knowledge about hazardous processes as

well as related exposure and vulnerabilities. To what extent these 'facts' have an influence on the perception and the awareness of risks among the general public is not yet fully understood. Even less clear is the relation between knowledge, risk perception or risk awareness and the willingness of individuals to take precautionary actions and to undertake self-protection measures to reduce risks of loss and damage. This presentation will show examples from Eurac research studies tackling these aspects in various test regions in the Alps. The respective results will be discussed against the background of their relevance for different parts of the risk cycle. Beyond that, challenges and opportunities will be named that are emerging due to recent changes in society and new technologies. Those challenges are related to issues such as migration processes and demographic changes as well as the influence of new information technologies and social media on risk perception and their importance for risk management.

7. Macro-perspective in risk perception and adaptation behaviour

Piotr Matczak, Piotr Jabkowski, Piotr Cichocki, Institute of Sociology, Adam Mickiewicz University, Poznan (Poland)

Adaptation to risks is an issue of high importance and high complexity. While numerous conceptual and empirical approaches have been employed to investigate this topic, three principal paths of study can be distinguished within social sciences: a) micro perspective, focusing on individual decision making (e.g. Kreibich et al. 2011); b) mezo perspective focusing on institutional/ community perspective; c) macro-perspective, looking comparatively at attitudes of large segments of a society or - societies. Within the third perspective, studies show significant differences between the EU countries in terms of risk perception and attitudes concerning risks (Matczak et al., 2015). In this paper we aim at a typology of the EU countries with respect to the perception of risks measured in major cross-country surveys, such as the Eurobarometer, European Social Survey or European Value Study. On top of a macro-level account based on comparisons of different surveybased approaches, an exploratory investigation will be put forwards into 1) the relationship between risk perceptions and broader societal values (ESS, EVS) and 2) the interaction between the occurrence of specific risks-events (www.emdat.be) and the response-patterns within survey waves whose fieldwork execution was concurrent with such events. The implications of the macro-the perspective analysis for risk governance will be discussed on the basis of results of two FP7 research projects: Star Flood (STrengthening And Redesigning European FLOOD risk practices: Towards appropriate and resilient flood risk governance arrangements) and ANVIL (Analysis of Civil Security Systems in Europe).

8. Factors influencing the (flood)risk perception in Hungary

Zoltan Ferencz, Research Centre for Social Sciences at Hungarian Academy of Sciences, Institute of Sociology; Budapest (Hungary)

However, climate-related extremes already put a heavy burden on Europeans at different scales, from households, businesses and governments to the European Union. They differentially affect society depending on geography, as well as the economic, social and cultural context of those exposed, including age, health status, education, income, indebtedness, to name but a few factors contributing to vulnerability. Hence, a better understanding of the complex relationships of these factors will also help to decrease vulnerability against extremes more effectively not only for today but also in the future. The Institute of Sociology at Hungarian Academy of Sciences carried out empirical researches concerning the social problems of floods since 1998. On the basis of the above mentioned researches I want to highlight the opportunity of the resilience of the Hungarian society and the role of the army in different disaster situations. It was developed indicators of social vulnerability related to flood impacts on the regional and local level. Impacts are seen here as a function of the exposure as well as the vulnerability dimensions. Because key vulnerability factors include several variables that cannot be found in statistical databases, such as preparedness to the

hazard, mental coping capacity, social relations, and trust, an approach based on questionnaire surveys instead of only using statistical data from institutions was chosen. I want the highlight those results with the help of analysis based on an empirical survey conducted in the Tisza river flood basins. We found that while the most important variables influencing impacts were the exposure level and the geographic location, the most important factors of vulnerability were found to be the following: health, education, savings, opportunities of taking loans, trust in the members of the community and in institutions, and perception of preparedness of institutions against floods. Based on the results we give some policy recommendations with regard to increasing the resilience of the exposed communities. These include, increasing public spending on education, strengthening social cohesion, introducing contingency loans so that borrowing is feasible also for the poorer communities and improving flood preparedness by providing relevant information for inhabitants.

9. Linking local predictors of risk perception and evacuation behavior in Paris, France

Samuel Rufat, Institut Universitaire de France (France)

Whilst the behavior of individuals before, during, and after a disaster can dramatically affect impact and recovery time, human behavior and risk perception are inherently difficult to quantify and even harder to connect. Emerging statistical techniques can provide tools for understanding how perceptions and behaviors vary geographically and among social and demographic profiles. This is an opportunity to integrate them to social vulnerability geospatial modeling by detecting at different scales the local social and demographic predictors of risk perception and individual behavior before, during, and after a disaster. This paper aims to explore the opportunities to overcome the current impediments to the integration of populations, their behaviors, mobilities, needs and representations in the assessments of vulnerability and resilience of metropolitan regions. It is based on a large stratified survey (n = 3000) of risk perception and individual behavior after the 2016 flood in the Paris metropolitan area in France. It allows to understand the geographic variation in perceptions and behaviors and to detect their local predictors at various urban and metropolitan scales.

RISK PERCEPTION, INSURANCE AND HOUSING

10. Flood resilience of private properties: addressing homeowners in existing built-up areas

Thomas Hartmann, Willemijn Doorn-Hoekveld, Marleen van Rijswick, Tejo Spit, Wageningen University & Research (Netherlands)

Since the 1990s, a paradigm shift from infrastructural flood protection to spatial flood risk management is ongoing. Water should no longer be excluded; rather, it should be accommodated in the resilient city. Despite considerable efforts over the last few decades, the implementation of resilience is – in particular in built-up areas still in its infancy. Research to date on reducing floods' impacts have focused largely on improved planning of future development and on adapting publicly owned structures and land. Scholars and practitioners have given less attention to existing privately owned residential houses, which constitute the large majority of buildings, in particular in urban areas. Private owners may not be aware of flooding risk or of the means to reduce vulnerability. They may also face insufficient incentives to undertake property level mitigation measures. Innovative policies at the nexus of spatial planning and water management may be able to overcome such barriers to action. In light of the above, the roles and responsibilities of private actors such as insurance companies in incentivizing property-level risk reduction measures, but essentially also the role and responsibilities of homeowners need to be discussed. This contribution therefore discusses the contemporary state of the discussion on how to address homeowners to better stimulate property-level flood protection measures on their homes. The paper builds on contributions to a special issue on this topic and it will present the preliminary outcome of this research.

11. Estimating the impacts of French flood risk prevention regulation on property values located in flood prone areas: the case of the region around Paris

Edwige Dubos-Paillard, Emmanuelle Lavaine, Katrin Millock, Université Paris 1 Panthéon-Sorbonne, Université de Montpellier & Paris School of Economics (France)

This paper examines the effect of flood risk regulation on property prices in the region around Paris, France, over the period 2002 to 2012. We use unique data on property transactions proposed by notaries (BIEN database). Two methods are used to assess the consideration of flood risk in residential strategies. The hedonic price method is used to check whether properties located in flood prone areas have a discount compared to similar ones in safe areas (taking into account the properties' characteristics and environmental amenities). The spatial difference-in-differences method quantifies the effects of the implementation of the flood risk regulation on property values. The results indicate that property prices for similar real estate are 3 to 7% lower when located in a flood risk zone, depending on the sub market (flats or houses), and that the discount increases the higher is the flood risk designated by the regulation. The effect seems attenuated for buyers coming from locations with previous flood events.

12. Risk culture, insurance and evacuation during the recent floods of the Seine

Frédéric Gache, Grand Lacs de Seine (France)

RISK MANAGEMENT, NEGLECTED GROUPS AND SOCIAL VULNERABILITY

13. Demographic change and hydro-metrological hazards: flood risk management in Alpine areas facing population decline and demographic ageing

Thomas Thaler, University of Natural Resources and Life Sciences (Austria)

Despite a broadened perspective and a stronger consideration of the spatio-temporal dynamics of natural risks, both scholarly and policy attention focuses on urban areas that exhibit socio-economic growth. Structurally weak (rural) regions facing population decline and demographic ageing are largely unaccounted for, although demographic trends across Europe indicate that many regions face sustained population loss or stagnation due to ageing and out-migration. As many of these areas are prone to natural hazards and are repeatedly affected by damaging events, this contribution explores the linkages between demographic change and natural hazard risk management. The paper assesses and evaluates how demographic change impacts the individual and societal capacities to protect against hazards, to mitigate and prevent future risks, as well as to prepare for and to cope with damaging events. Based on an online survey among Austrian federal and state policy makers in water management, spatial planning and civil protection (N=108) and a systematic review of the corresponding sectoral policy documents, the study investigates to which extent demographic change is a relevant factor in Austria's flood risk management and is reflected in regionally-attuned flood risk management strategies. Findings from the policy analysis show that demographic change currently does not play a significant role in natural hazard risk management. However, the expert survey highlights that in particular demographic ageing and population decline, but also ongoing changes in household structure (i.e. increasing share of one-person households and second homes) will become increasingly relevant at different stages of the risk management cycle. For instance, population decline is expected to reduce the efficiency of technical defence and increasingly calls into question the readiness to finance and maintain costly defence infrastructure. Population decline moreover influences the operational capacities of emergency services, many of which are already struggling to recruit volunteers. Demographic ageing, on the other hand, is considered to reduce the individual and societal capacities to cope with damaging events, while the changing household structures is a relevant factor for post-disaster reconstruction as the capacities for inner-family selfhelp diminishes and second home owners are often not available to support communal reconstruction efforts.

14. Social vulnerability of mobile groups. Neglected groups in spatial vulnerability assessments such as commuters, pedestrians, visitors of events

Alexander Fekete, TH Köln - University of Applied Sciences Cologne, (Germany)

Existing semi-quantitative social vulnerability assessments but also frameworks and agendas of Disaster Risk Reduction as well as Damage and Loss Assessments largely focus on residents, households – static populations. Integration of full daily activity cycles are one aspect lacking in many assessments. Another is mobile groups. While the focus is on migrants mainly, other segments of population are often not integrated into assessments related to natural hazards or climate change, even within certain man-made hazard assessments. Crowd safety, terrorism threat and workplace safety often target certain groups. However, people meeting regularly or irregularly in places such as buses, trans or train stations, tourist sites, at festivals, work meetings or in many other constellations are often not analysed, especially not along assessments including residential populations. Not only "the homeless do not count" – many other mobile groups deserve more research. Disaster preparation and management needs to account for those groups as well when planning or deploying resources. Social cohesion as a basic ingredient in public behaviour before, during and after disaster

15. Social cohesion as a basic ingredient in public behaviour before, during and after disaster

Timothy Prior, Center for Security Studies, ETH Zurich (Switzerland)

Individual and household preparedness for natural hazards is a fraught discussion in the context of European disaster risk management policy. This presentation will discuss the importance of social cohesion in the context of disaster management and disaster risk reduction. It also positions the issue of social cohesion building as a central strategic policy tenet in the future of disaster risk management. Research illustrates that cohesive communities – those characterized by strong sense of community – often suffer less during disasters than communities where social cohesion is lacking. This presentation demonstrates the ways in which people exposed to natural hazards can draw on a supportive community to build their individual adaptive capacities and translate these into community-wide adaptations that mitigate natural hazard consequences. Using case studies from wildfire, flooding and tsunami threat, the presentation illustrates how social cohesion plays a strong role in individual hazard preparedness decision making. Sharing knowledge, support and advice are valuable community activities that allow people to contextualise irregular and uncertain threats in their daily lives. This information provides some vicarious familiarity to the uncertain decision-making context.

16. Making Cologne more resilient against urban flash floods – learning from river flood risk management

Marc Daniel Heintz, Municipal Drainage Operations Cologne (Germany)

Cologne, at the banks of the river Rhine, is one of the most flood-prone cities in Europe. After the 1993 and 1995 flood events with thousands of habitants being affected, StEB Köln and the City of Cologne have made enormous efforts in order to strengthen the cities resilience – with measures such as mobile flood protection devices, retention areas, flood hazards maps, a flood warning centre and measures to raise public awareness. Currently, Cologne and other cities are confronted with a new, increasing risk: flooding in case of urban flash floods after thunderstorms in the summer. Convinced of the need for action and inspired by positive experience in flood risk management, StEB Köln and the City of Cologne have developed a strategy on dealing with the risk of urban

flash floods. Some of the experience from river floods could be adapted to flash floods. There are also differences, though. Urban flash flood management in Cologne includes measures such as flash flood hazard maps, multifunctional spaces and information of the public. First experience with the implementation highlights that, even more than river flood management, urban flash flood management is an interdisciplinary task.

RISK MANAGEMENT AND INSTITUTIONS: DECISION MAKING

17. Influencing public and professional decision making: impactful flood warnings

Simon McCarthy, Flood Hazard Research Centre, Middlesex University London, Neil Blazey, Jacobs London, Jacqui Cotton, Environment Agency, Paul Cobbing, National Flood Forum (UK)

Achieving the full benefits of flood warnings depends upon effective warning response. This research project focused upon the value of providing flood impact information within flood warnings and improving the capacity of the UK Environment Agency and Natural Resources Wales to provide such information so that future flood impacts may be mitigated. Flood warnings refers to the formal Environment Agency alert system. A review of existing literature and research revealed that, although internationally flood warning delivery has received much attention, little is known about impactful information inclusion. Employing a sequential methodology during 2017/18, an evidence base of past research and stakeholder gualitative views was created to develop new warning message content. Stakeholders included members of the public at-risk of flooding (3 focus groups) and key UK professional emergency responder organisations and warning operational decision-makers (17 telephone interviews). The new message content was subsequently refined and tested with the public (3 workshops). More impactful messaging is not considered essential to professional decision-makers due to the presence of other bespoke communication processes. Impactful content is valued by the at-risk public as a way of enhancing their decision making and response. Impactful content is most meaningful when developed and delivered at a local scale as different publics were revealed with differing content requirements. Locally specific information is key. However, currently, technical and data constraints and warning officers abilities must be overcome to provide the at-risk public with impactful warning messages in all areas. Other findings concern message structure, content, tone and uncertainty.

18. Institutional vulnerability to natural hazards in the European Alps

Sven Fuchs, University of Natural Resources and Life Sciences (Austria)

Negative consequences resulting from natural hazards, such as damaged buildings or injuries not only depend on the hazard magnitude but also on the vulnerability of societies and the built environment. Resulting losses, being expressed monetarily, depend not only on obvious drawbacks such as poor quality housing or missing damage compensation mechanisms. Other factors, such as existing legislation frameworks supporting preparedness, response, or reconstruction efforts and their implementation are often on a hidden agenda, and embedded in fundamental socioeconomic, cultural, and political structures. These structures constitute an institutional vulnerability, which can be seen as umbrella for physical or social vulnerability. The presentation centers on institutional vulnerability to natural hazards in the European Alps, and how better incentives and regulatory frameworks may be used to increase resilience in affected communities.

19. Social vulnerability of the decision-makers? A "gapminder" on assumptions who turns up to manage or help in a disaster

Alexander Fekete, TH Köln - University of Applied Sciences Cologne, (Germany)

Much focus in research is on societal resilience or social vulnerability of poor or marginalised

groups. However, less regarded are the decision-makers themselves and their vulnerabilities and dependencies. For instance, their decisions in a crisis to act are assumably related to their social environments and ties – including family back home but also colleagues at their work. Decision making under stress by ,gut-feeling', the need for ,wiggle-room' and other traditional decision making factors are one part helping to explain how ,rational' decisions can be based on information about risks. However, social ties and emotions related to family members still exposed to hazards back home are known, but research on ratios and factors influencing ,work abandonment' of emergency and disaster management staff is still wanting. Hidden assumptions within contingency planning and neglected social dependencies of emergency staff needs to be assessed, including aspects such as disaster scenario, societal environment and organisational culture.

20. Flood risk management plans in Czechia: it's business, as usual

Monika Stehlíková, Pavel Raška, Lenka Slavíková, Martin Dolejš, J. E. Purkyně University in Ústí and Label (Czechia)

Following the disastrous floods in 1990s and 2000s, the European Union and its member states have strengthened its concerns in setting the integrative, yet decentralized flood risk management (FRM) approaches and measures. These concerns were finally postulated in EU Floods Directive (2007/60/EC) that, among other tasks, sets the obligation to prepare flood hazard and flood risk plans, and finally flood risk management plans (FRMP) in EU member's states. In this paper, we use the Czech case to argue that implementing these requirements and designing FRMPs at a municipal level – originally perceived as window of opportunity for better FRM – may come short in reaching its goals due to its legally-binding nature and generally weak involvement of municipal governments. Based on the analysis of municipal FRMPs in Czechia it will be shown that a new business field has emerged with only a few major companies able to satisfy demand for high quantity of FRMPs, while the quality and usability of the resulting FRMPs remains questionable. At the same time, the insights from the qualitative survey among mayors of Czech municipalities show their limited interest in the use of the FRMPs, the design of which is often perceived only as a legally-binding obligation.

RISK COMMUNICATION, RISK CULTURE AND PUBLIC INVOLVEMENT

21. LittoSIM: A simulation-game for enhancing stakeholder's risk culture of marine submersion

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Climate change makes flood risk management increasingly crucial, and poor risk culture among stakeholders jeopardizes the implementation of adequate land planning in France. In that context, the question of education to alternative risk measures arises. How can decision-makers embrace the different and contrasted options for risk management in order to adapt to coastal flooding and sealevel rise? While the implementation of the Flood Directive in France leads to GEMAPI rules, promoting risk management at the inter-municipal level, what are the main problems facing elected officials and technicians? Can they consider alternatives to building or raising dikes? This paper presents an innovative tool for stakeholders: a serious game on land use planning and coastal flood management. LittoSIM allows participants to explore territorial development and coastal defence strategies (hard/soft engineering strategies, managed realignment) and their consequences on housing vulnerability, territorial attractiveness and municipal finances. For a few hours, decision-makers play on tablets supplemented by a tabletop screen, then face the consequences of a major storm, simulated by a precise hydrological model. Nearly 10 workshops were held in 2017 and 2018, more than 50 people played the game, including 4 workshops that were part of the implementation of GEMAPI at the local level (Ile d'Oléron, France). The communication will

present two main results. (1) The effects of such a game and awareness of stakeholders to alternative risk management measures. (2) Social learning enabled by the game process (knowing each other, sharing points of view). At the same time, the game reveals risk representations, proving that climate change is not well known and that cooperation is highly requested by stakeholders.

22. Are citizen really outreached through social media in risk communication?

Victor Santoni, Université de Cergy-Pontoise, Paris (France)

During November 2015 Paris' attacks, citizens were not officially involved in any kind of emergency management but were using their social media devices to provide field information. Likewise, during the March 2016 Brussels' attack, citizen's inputs through social media were also instrumental. Since 2014 in France, the law considers citizens as the main actor of their own safety. This statement seems to have never been concretely applied on the field: citizens are still referring to a victim status. Nevertheless, emergency manager started using social media for spreading risk communication as well as monitoring social media's flow during emergency situation but no official process has been established so far. This paper follows two main hypotheses: on one hand, the citizen is not aware of its position into the emergency management system and the system is not deploying enough means to include the citizen. On the other hand, the use of the social media in emergency management (SMEM) could be a potential way to include the citizen in crisis and emergency management. The results are based on a survey on a wide range of hazards from floods to terrorist attacks spread between Paris' (France, n = 300) and Brussels' (Belgium, n = 300) region.

23. Risk perception in Romania: a participative GIS approach

Iuliana Armas, University of Bucharest (Romania)

The Center for Risk Studies, Space Modelling and Dynamics of terrestrial and costal systems (CRMD – http://www.geodinamic.ro) was established in 2006 and is accredited by the University of Bucharest (UB). The centre currently operates within the Faculty of Geography and brings together specialists from varied but connected fields, as well as Masters Students, PhD candidates and Postdoc researchers. The overall objective is to develop internationally competitive research activities on disaster coping strategies and risk perception in understanding of response to potential disasters by applying psychometric and qualitative tools in GIS. Psychometric assessments on the way communities relate to natural risks is a relatively new topic in the Romanian geographical research, which was started in 1997 by prof Armas with research focused, initially, on seismic risk perception in Bucharest, and then expanding to different hazards and areas: in the Subcarpathians, as well as along the Danube Valley and Delta. Since 2013 this research topic has gained depth in research conducted by CRMD team, via qualitative approaches, ethnographies based on indepth interviewing, participative GIS, and participative research.

24. The added value of crisis communication networks in a challenging international and digital landscape: staying active and sharing

Elpida-Melpomeni Chlimintza, Tarik Meziani, Council of the European Union, Civil Protection Unit (Belgium)

Crisis is, nowadays, widely considered as a period of discontinuity and it is usually attributed a nonroutine, unstable, less understood and urgent character. These disruptions instigate the need for equanimity. The overcoming of these breaking points and the attaining of stability is where crisis communication applies. Towards this end, it becomes a platform for shared cognitive meanings to be introduced and shared value commitments to be shaped so as to appease the tensions deriving from the disruptions and introduce incentives to overcome them. The Integrated Political Crisis Response arrangements (IPCR) was put in place to provide the means to facilitate the informationsharing, the decision-making process and the coordination of the response (within the EU) to major natural or man-made, cross-sectorial, disasters at a strategic, political level. However, the best initiatives come often bottom–up. How to raise the awareness among the public, how to engage the society? and do the efforts pay back? The informal Crisis Communication Network (CCN) was introduced within the IPCR: a network of crisis communicators is instrumental as crisis need not only be operationally well responded to but also well managed when communicating pertinent information to all stakeholders involved as well as the public.

LEARNING FROM EXPERIENCE

25. Flood risk misperceptions with and without recent flood experience

Jantsje Mol, Wouter Botzen, Institute for Environmental Studies, Vrije Universiteit Amsterdam (Netherlands)

We study the flood risk misperceptions of floodplain residents in New York City and the Netherlands. NYC is an interesting case study as it was recently affected by flooding from Hurricane Irene and Hurricane Sandy in 2011-2012. In contrast, the most recent large flood that affected the Netherlands dates back to 1953. We examine how respondents' perceptions of flood probability and damage relate to objective risk information, such as expert estimates, dike-ring standards (NL) and FEMA maps (NYC). Other important behavioral variables such as coping responses, worry and trust are also available from our surveys. In NYC we find that individuals overestimate the probability of floods, while underestimating potential damage. The Netherlands data is currently being analyzed. The differences in recent flood experience on flood risk perceptions are discussed. We conclude with policy recommendations about flood risk information provision to homeowners in floodplain areas.

26. Refugee crisis management during the Great East Japan earthquake

Aurélie Noël, Université Paris 1 Panthéon-Sorbonne - CNRS (France)

The purpose of this study is to shed light on the refugee crisis management led by the city of Iwaki, following the Great East Japan earthquake in March 2011. Partially located within the 30 km radius of the Fukushima Dai-ichi power plant and with 60km of coastline facing the Pacific Ocean, Iwaki city was confronted with a cascade effect of consequences from the disaster. In the context of crisis and post-disaster management, this research aims to understand the municipal decision making in Iwaki city regarding the integration of the refugee population, coming from the vicinity of the nuclear power plant facility, into its own disaster affected urban fabric. The study will also address the concurrent and opposing migratory movements observed in the city during the disaster aftermath characterized by the mass evacuation of Iwaki residents due to fear of radioactive contamination and/or the destruction of city infrastructure during the disaster. Official communication strategies and actions, along with testimonies from the local population are analyzed through the authors viewpoint as a French woman who formerly worked as a Japanese prefectural government foreign employee in a neighboring prefecture during the March 2011 disaster.

27. Improving societal resilience and information sharing after the 2015 Nepal earthquake

Tina Comes, TU Delft (Netherlands)

The international community has committed to the UN Sustainable Development Goals (SDGs) to end poverty, protect the planet and ensure prosperity for all. The challenges to achieve the SDGs and to improve societal resilience against the many threats and stresses is increasingly a concern for decision-makers and governments worldwide. At the same time, the increasing connectedness of smart societies and their dependence on critical infrastructures has made modern societies more complex and more vulnerable. Fuelled by growing environmental, societal and economic instability, our societies will be confronted with more shocks and complex challenges, calling for rapid and resilient interventions. However, the response to such urgent and ill-structured problems time and again reveals critical shortcomings in information sharing, coordination, and integrated decision-making among citizens and governments. In my presentation, I will discuss resilience frameworks and approaches that are tailored to address the aforementioned challenges, drawing from examples from field research such as the 2015 Nepal earthquake, and I will discuss several research avenues at the interface between response and risk reduction.

28. Multiple flood experience: Erosion or accumulation of social resilience?

Christian Kuhlicke, Helmholtz-Centre for Environmental Research – UFZ, Department Urban and Environmental Sociology, Leipzig (Germany)

Many studies explored the consequences of flood events for exposed households by focusing on single flood events. This presentation puts the potentially chronic nature of flood risks (i.e. exposed communities are undergoing repeated flood events within a relatively short time-span), how it interacts with the resilience of exposed households (understood here as the ability to withstand and recover) as well their trust in their own efficacy at the forefront of its analysis. It explores whether the experience of multiple flood events results in an increasing uptake of adaptive and emergency measures. At the same time, it also scrutinizes whether the experience of multiple flood events may also undermine the resilience of exposed households and their trust in their individual coping and adaptive efficacy. By pursuing this perspective, this paper tries to advance the discussion on flood experience, perception and behaviour: While factors shaping the individual motivation to take up adaptive and emergency measures are well documented, there are hardly any studies conducted addressing the consequences of chronic flood risks, let alone how such risks interact with households' resilience. Empirically, the study will focus on Germany, which has undergone a series of devastating flood events since 2002.



Venue: University of Cergy-Pontoise, Paris, France

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If you come by plane

- From Roissy Charles-de-Gaulle airport

Direct Bus 95-18 goes swiftly from Terminal 3 / Roissypole to the Cergy Prefecture station every hour: <u>http://www.transdev-idf.com/horaire-ligne-9518-express_9518_cergy_roissy_212</u>

Train (longer) from Terminal 2: take the RER B (blue) in the direction Robinson or Saint-Remy-les-Chevreuses, change at Châtelet-les-Halles to RER A (red) in the direction Cergy-le-Haut, get off at Cergy-Préfecture.

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ORLYVAL shuttle to Antony RER station. At Antony, take the RER B (blue) towards Mitry-Claye, change at Châtelet-les-Halles station to the RER A (red) towards Cergy-le-Haut, get off at Cergy-Préfecture.

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