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Social Capacity Building for Natural Hazards Toward More Resilient Societies

Participation in Central European Flood Risk Management: Social Capacity Building in Practice

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Preamble

This document is based on the results of the CapHaz-Net Regional Hazard Workshop (RHW): "Participation in Flood Risk Management: Social Capacity Building in the Frame of the European Floods Directive", which took place in Leipzig, Germany in May 2011. This RHW on river floods in Central Europe represents the last of three such workshops which aimed at down-scaling existing (theoretical) knowledge to the local and regional level by bringing together different scientific disciplines and enhancing and fostering communication between researchers, policy-makers and practitioners from across Europe. Moreover, the conceptual knowledge CapHaz-Net collected in the first part of the project (work packages (WP) 1–6) is assessed in comparison with existing practices and legal tools within specific geographic, political and social contexts (WP 7–9). All reports are made available on our website: www.caphaz-net.org.

The aim of this document is to provide an overview of participation processes which are currently taking place within the context of flood risk management (FRM) activities in Central Europe. We aim to draw lessons out of these current practices and discuss what needs to be done to improve, as well as how we can get there. The workshop focused on bringing together professional actors, who work in FRM, from different countries in Europe. The goal was to encourage discussions about participation with particular focus on the implementation of the European Floods Directive (2007/60/EC) (FD). The FD obliges Member States to "encourage" participation within the development of flood risk management plans (FRMPs) (Article 10). However, the exact definitions and guidelines regarding how one should go about participation (i.e. who should be involved and how) are not clearly prescribed by the FD, instead this is a task of each Member State. In order to provide context and focus for the workshop, four case study catchments from Central Europe were chosen: the Elbe, the Vistula, the Odra and the Danube.

The following document has been divided into 7 chapters. The 1st chapter provides an executive summary of the document. The 2nd chapter describes FRM and the concept of participation and why it is important and how it has been discussed in previous work conducted by CapHaz-Net. The 3rd chapter describes the methodology employed in the development of, during and after the workshop. The 4th chapter provides detailed descriptions of the institutional contexts of 4 Central European catchment areas and their respective case study countries: the Elbe (Germany & the Czech Republic), the Vistula and Odra (Poland) and the Danube (Austria). The 5th chapter explores participation activities that are currently taking place in Europe and within the above mentioned. These activities are then discussed (chapter 6) in terms of what needs to be done to improve them and this discussion is in turn linked to previous theoretical work completed in the 1st phase of the CapHaz-Net project. Finally, chapter 7 provides a summary of lessons learnt which aim at informing future participation activities within FRM. The Annex provides a list of participants as well as various materials produced for and used during the workshop

We would like to thank all the participants who took part in the workshop as well as the contributors that were not able to attend. We would also like to thank the facilitators: Jochen Luther, Annett Steinführer, Christian Kuhlicke, Simon McCarthy, and Nathalie Jean-Baptise, as well as the presenters: Ortwin Renn, Martin Cassel-Gintz, Gernot Koboltschnig, Jean-Claude Eude, Klaus Wagner, and Natasa Manojlovic, the minute takers: Chloe Begg, Anne-Katrin Schultz and Anna Kunath, and especially all the people who helped organise the workshop and Anna Gorski for providing her valuable translation skills.

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Structure

1 Executive Summary

River floods are a major hazard effecting European countries and the damages that they cause are not decreasing (EEA, 2010). CapHaz-Net aims at promoting social resilience towards natural hazards through methods of *social* capacity building. By using this term (rather than the more established “capacity building”) we want to emphasise that this process refers to a social endeavour. Social capacity building is understood as a long-term, iterative, and mutual learning process that is based on the cooperation and interaction of a variety of members of society (Kuhlicke and Steinführer, 2010a). In short, capacity building is seen as a social process, which is: aided by risk governance, better understood by assessing social vulnerability and risk perceptions, and realised through methods of risk communication and education.

This document provides a reflection on the discussions that took place during the Leipzig RHW. Three main questions formed the basis of the discussion and moreover the structure of this report:

1. What is the current situation with regard to practices of flood risk management in Central Europe and the role of participatory approaches in them?
2. Which goals do the workshop participants want to achieve by 2020 with regard to participation in flood risk management?
3. What needs to be done to achieve these goals and what needs to be considered?

This document begins with a description of flood risk management and the concept of participation illustrating its importance through a summary of international policy documents (Chapter 2), as well as, previous work completed by CapHaz-Net; both theoretical (literature reviews from WP 1-6) and practical (previous workshops WP 7 and 8). This overview found that changes in governance structures, such as shifts in responsibility and an increasing number of actors, require new forms of collaboration. However, the question is, who to involve in the decision-making process and at what intensity? When thinking about participation in FRM it is important to also involve those who are considered as vulnerable in the definition of the problem as well as the development of solutions if they are to take personal responsibility. Moreover, it is also important to take into account individual risk perceptions and to develop effective risk communication and education which are based on inclusive two-way communication and learning methods.

Chapter 3 provides a description of the methodologies used before, during and after the workshop. Chapter 4 provides a summary of the international agreements and documents relevant to FRM as well as an overview of the Water Framework Directive (WFD), the Floods Directive (FD) and processes such as Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), and follows with a description of the institutional contexts of each catchment. This chapter found that most FRM activities are taking place at the regional level. We see that in general, policies and plans are made at the EU and national level and turned into plans and programmes at the regional level. Projects are then generally taking place at the regional and local levels. The future challenges for each catchment largely point to the need for increased cooperation and communication between actors in order to improve management and raise awareness of the potential of future floods.

Chapter 5 addresses the current status of participation within the catchments. We distinguish two main types of participation in FRM: decision-making that involves the professional /

organised public (inter-organisational: top-down) and decision-making that involves the general public (public participation: bottom-up). It was found that while inter-organisational participation usually takes place at the levels of policy / legislation and plans / programmes, public participation is usually found at the project level. It seems that although there is no one-size-fits-all method, at present most intense participation with multiple actors occurs at the level of structural projects (such as building of new dikes or flood walls). Consultation seems to be a popular mode of participation that exists as information provision and a timeframe within which the public (organised and general) can react in writing.

Chapter 6 focuses on needs for action building on the previous experiences from Chapter 5. The main issues to arise out of the discussion were 1) defining the goal of participation, 2) identifying interested parties, 3) the need for a whole catchment approach, and 4) how to involve interested parties in the three stages of the FD. Furthermore, it was found that, after linking the previous work completed by CapHaz-Net and the findings of the Leipzig RHW, some of the previous findings do not reflect what was found to be currently taking place in practice, within the workshop context. However, these previous findings do largely reflect the discussions that took place regarding needs for action.

Finally, Chapter 7 provides points for reflection about the future of FRM through lessons learned aim to inform future FRM activities.

2 Introduction

The following chapter provides a brief summary of flood risk management (FRM), a definition of participation and illustrates why it is important through highlighting international policy documents. Moreover, a summary of the previous findings from CapHaz-Net in regards to participation and furthermore, reasons for why participation is seen as an important component of social capacity building. This overview will stand as the basis of the logic behind the Leipzig workshop and well as provide a foundation for comparison between previous theoretical findings and practice.

2.1 What is Flood Risk Management (FRM)?

This section discusses what FRM entails. It looks at what a flood risk is and follows with a description of recent changes in the way that the management of floods is perceived.

Flood Risk is defined in Article 2 of the EU Floods Directive:

1. 'Flood' means the temporary covering by water of land not normally covered by water. This shall include floods from rivers, mountain torrents, Mediterranean ephemeral water courses, and floods from the sea in coastal areas, and may exclude floods from sewerage systems.
2. 'Flood risk' means the combination of the probability of a flood event and the potential adverse consequences for human health, the environment, cultural heritage and economic activity associated with a flood event.

The last two decades have seen a shift from flood control and protection towards the more integrated flood risk management which can be observed in many countries across Europe. Management strategies relying exclusively on large-scale engineering based, cost-intensive technical measures and reactive top-down approaches are regarded as out-dated (Samuels et al., 2006; Coninx, 2008). In addition, the construction and maintenance costs of such infrastructure projects are often considerable. Moreover, a complete avoidance of flood damages has proven to be impossible due to the inherent uncertainties and the acceptance that no flood protection measure is ever going to reduce all risks. Therefore, residual risk needs to be acknowledged and a tolerable degree of risk determined with the help of societal agreements. Furthermore, due to the increased awareness of the links between such large-scale interventions, society and the ecosystems, a change has occurred in respect to how flood risk and defence are understood and there is a movement towards viewing FRM through the lens of sustainability (AFPM, 2004; Kundcewicz, 2002). In this way, integrated flood risk management aims to solve conflicting interests and use synergies by making more efficient use of restricted resources (Coninx, 2008).

Increasingly, a more integrative, pro-active and holistic approach is being adopted, including a portfolio of soft-engineering and non-structural measures (EEA, 2010).

- → **Soft engineering** is the use of ecological principles and uses techniques such as, afforestation (planting of trees along a river), managed/ecological flooding (a river is allowed to flow naturally in places, to prevent flooding in other areas), and planning which deters buildings being built in flood prone areas (BBC, 2011).

→ **Non-structural measures**: "*Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education*" (PreventionWeb, 2011). These are to be seen in contrast with so-called structural measures, that is: "*Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems*" (PreventionWeb, 2011; see also Schanze et al. 2008).

In many countries **integrated risk-based approaches** are currently employed. Such approaches not only consider event probabilities and design standards but also try to incorporate the wider economic, ecological and social consequences that a hazard might have for a specific area – its residents, infrastructures, organisations and ecosystems. Integrated risk-based management encourages the identification of how a risk should be reduced and the level of protection with regard to cost efficiency. The process of a risk-based management approaches itself is usually based on the three steps of analysing, evaluating/assessing, and reducing the risk (Kaplan and Garrick 1981, Merz and Emmermann; 2006, Bründl et al., 2009) and ideally followed by appropriate review/monitoring and controlling mechanisms (DEFRA, 2009; PLANAT, 2008):

1. **Analysing risks** investigates the probabilities of flood occurrence (the flood hazard), the potential exposures and vulnerabilities of the elements at risks and the capacities, measures and instruments, etc. already available and in use (Merz, 2006). Historical data, modelling, quantification of uncertainties, scenarios, and the (governance) context need to be considered.
2. This is followed by the **assessment** (or evaluation) **of flood risks.** Assessing risks based on individual and collective perceptions and the weighing of the acceptance / tolerability of certain risks (resulting from a societal behaviour) is a complementary need to the description of the more physical flood processes described in the analysis (e.g. Wachinger and Renn; 2010, Schanze, 2006). Selection of measures according to cascading objectives and different evaluation criteria.
3. If risks have been assessed as not tolerable, **flood risks need to be reduced** by implementing a range of measures and instruments[1] in all management modes:
   a) Prevention before a flood event;
   b) Crisis management during a flood event, and
   c) Post-flood measures directly following a flood event.

While for a long time, flood risk management was considered to be a pure collective good and in many countries it has been the exclusive task of public authorities at different administrative levels (e.g. state or region), there is a recent change observable towards increasingly encouraging or even demanding the involvement of public and private parties. Additionally, a normative idea of how the management process should be governed is emerging and underlines the relevance of communication (e.g. Renn, 2008) and encouraging the consideration of principles of 'good governance' (i.e. openness, participation, accountability, effectiveness and coherence) (McFadden 2009; DEFRA, 2009; PLANAT, 2008).

[1] Instruments are interventions based on mechanisms which lead to measures indirectly or influence human behaviour, e.g. regulatory (e.g. laws, binding plans), financial (e.g. incentives, insurance zoning) or communication instruments (e.g. media, brochures) (Olfert & Schanze 2005).

We are beginning to see a shift in responsibilities which means that there are no longer single authorities, but rather a multiplicity of actors involved in the management of floods. Medd and Marvin (2005) interpret this as a shift to a 'governance of preparedness' in which key players are brought together into 'new configurations' of institutional actors. This means developing and learning from current forms of participation. The following section describes what participation is and in turn further discusses why it is important in the context of disaster risk management.

2.2 What is Participation?

Before explaining why participation is it important to understand what it entails. At first the term seems clear, but a closer look reveals participation as a rich concept that varies with its application and definition. The following provides a summary of a literature review of definitions of participation.

The Oxford English Dictionary defines participation as "*to have a share in*" or "*to take part in*," thereby emphasising the rights of individuals and the choices that they make in order to participate (cited in Mathbor, 2008: 8). However, the review found that there a wide range of different types of participation exist and are modified depending on the given activity (e.g. community participation, citizen participation, public participation, political participation, etc.). There is plenty of literature on participation and it is generally understood as a positive goal to accomplish. For example, Arnstein (1967) compares the idea of citizen participation to eating spinach: "*no one is against it in principle because it is good for you*" (p. 216). However, "*there has been little analysis of the content of citizen participation, its definition, and its relationship to social imperatives such as social structure, social interaction, and the social context where it takes place*" (Mathbor, 2008: 8).

The following provides a short summary of a selection of definitions and highlights the main points found in participation definitions:

1. **Taking part**: Participation can be understood as "*a process of taking part in different spheres of societal life: political, economic, social, cultural and others*" (Sidorenko, 2006: 1).
2. **Influence**: The World Bank's Participation Sourcebook (1996) defines participation as "*a process through which stakeholders influence and share control over development initiatives, and the decisions and resources which affect them*" (ibid., xi).
3. **Responsibility**: Participation occurs when a community organises itself and takes responsibility for managing its problems (Cheetham, 2002). This can be achieved through a process of equitable and active involvement of all stakeholders in identifying problems and developing actions through the formulation of development policies and strategies as well as in the analysis, planning, implementation, monitoring and evaluation of management activities (FOA, n.d.; Cheetham, 2002).
4. **Empowerment**: It has been argued that participation leads to empowerment. Paton (2007) describes empowerment as follows: "*Empowerment describes citizens' capacity to gain mastery over their affairs and confront environmental issues while being supported in this regard by external sources rather than being led by them or having solutions thrust upon them. Empowerment reflects the quality of reciprocal relation-*

ships (social justice) between community members and between community members and societal institutions" (ibid., 376).

2.3 The Importance of Participation in International Policy Documents

The FD encourages participation in regards to decision-making within flood risk management. However, this indicator of the importance of participation did not materialise out of thin air, as well as being highlighted in the literature above, participation also appears in various policy documents. For instance, the Hyogo Framework for Action 2005-2015 contains reference to the need to develop international and regional cooperation and assistance, as well as transfer knowledge, technology and expertise (UN/ISDR, 2006). Moreover, Agenda 21 of the 1992 Rio Conference on Environment and Development recommends that the broadest possible participation should be encouraged and advocates a 'community-driven' approach. Principle 10 states:

> *"Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided"* (UNDP, 1992).

Furthermore, Höppner et al. (2010) created a list of legal requirements at the European level which have relevance to risk communication and participation:

General relevant policy papers:

- European White Paper on Governance 2001 (transparency in decision-making processes)
- IRGC White Paper on Risk Governance; OECD Guidance on Risk Communication for Chemical Risk Management (stakeholder participation, information)
- Seveso II directive (public information, involving the public)

Policy papers relevant to natural hazards (before FD):

- Aarhus Convention (access to environmental information, public participation in decision-making)
- Sustainable Development Strategy (inform citizens and involve them in decision-making)
- Water Framework Directive (participation of stakeholders and the public in the management of resources)

2.4 Findings from Previous Theoretical Work (WP1-6)

Previous theoretical work completed by CapHaz-Net (WP1-6), as well as the first two RHWs on heat-related hazards (Barcelona, October 2010) and Alpine hazards (Gorizia, March 2011) (WP7-8), have already highlighted the importance of participation in risk-related decision-making processes. Participation is seen to be a necessary component of efforts towards social capacity building and therefore, enhanced social resilience. The following sections provide summaries of CapHaz-Net's previous findings in regards to the importance of participation.

2.4.1 Social Capacity Building[2]

Kuhlicke et al. (2010a) state that participation and empowerment are fundamental components of social capacity building, which, in turn, helps build skills and personal responsibility. Social capacity building is understood as a long-term, iterative, and mutual learning process that is based on the cooperation and interaction of a variety of members of society, including actors from local communities. Thus, participation is an important factor of social capacity building, particularly with regard to locally driven and owned activities that aim at increasing the autonomy and agency of community actors. CapHaz-Net understands effective social capacity building as taken place through a mixture of top-down interventionist and bottom-up participatory approaches to risk governance.

2.4.2 Risk Governance[3]

A thorough review of recent governance related discussion both with regards to natural hazards and beyond (Walker et al. 2010) found that a 'new' form of governance has emerged which entails four main features:

1. A shift in the distribution of responsibility from state to local actors:
   - ⟶ Walker et al. (2010) explain that we are seeing a shift in control and responsibilities in the management of natural hazards. Such a shift includes 'hollowing out of the state', which refers to "*the loss of functions upwards to the European Union, downwards to special-purpose bodies and outwards to agencies*" (Rhodes, 1997: 17). This shift of powers towards local actors has resulted in the "privatisation" of risk (Steinführer et al., 2008). Furthermore, the change in the structure of responsibilities as 'societal changes' and furthermore, highlights changes in the way that we understand hazards, threats to safety, health, and well-being, and the challenges that they pose.
   - ⟶ This shift could lead to benefits such as empowerment and more effective action through local decision-making (Walker et al., 2010; Paton, 2007). Furthermore, it has been argued that the inclusion of more actors in policy making is more capable of accounting for the existence of diversity in the 'real' world as a plurality of perspectives can be incorporated into decisions (Marks, 2004). Therefore, what looks like multi-level governance could actually be described as multi-level public participation (Bache, 1999; Guy Peters, 2004; Bache, 2004).
   - ⟶ However, the possible negative outcomes could arise from a lack of clear responsibilities, fragmentation in policy making and implementation and furthermore, marginal groups could run the risk of becoming increasingly vulnerable (Walker et al., 2010).

2 Finding from: Kuhlicke, C., Steinführer, A. (2010): Social capacity building for natural hazards. A conceptual frame. Cap-Haz-Net WP1 report: Leipzig, Braunschweig, Germany. (Accessed 14.08.11). URL: http://caphaz-net.org/outcomes-results
3 Findings from: Walker, G., Whittle, R., Medd, W., Watson, N. (2010): Risk governance and natural hazards. CapHaz-Net WP2 report. Lancaster. URL: http://caphaz-net.org/outcomes-results

2. Networks of multiple actors beyond the state:
   - ⟶ Although, the management of floods has always involved multiple actors beyond the public sector, a recent shift towards a greater number and diversity of actors and the development of new roles and stronger forms of collaboration has been noted (Christoplos et al., 2001, Walker et al., 2010; Kuhlicke et al., 2011). However, because of this profound transformation of how risk management is understood, *social capacity building for natural hazards* at the levels of individuals, organisations, communities, municipalities and regions is gaining importance (Walker et al., 2010).
   - ⟶ The potential benefits of such a development could lead to different voices being heard, as well as the possibility to draw on different skills, knowledge and capabilities. This could, in turn, improve communication and collaboration.
   - ⟶ The potential negative implications of this development could lead to a lack of accountability, the illusion of involvement/tokenistic inclusion, and the decision process could take a long time therefore solutions could be compromised.

3. An increase in networks of actors at multiple levels:
   - ⟶ We are seeing an increase in international agreements, cooperation between nations, as well as regional and local networks. This has led to greater flexibility, the sharing of skills and resources, as well as more cooperative solutions between levels. However, this has also has the potential negative consequences due to unclear distribution of responsibilities and conflicts between actors (Walker et al. 2010).

However, it needs to be underlined, that these changes in risk governance are not taking place evenly and simultaneously across Europe. It is rather a multiplicity of pathways and development stages that are observable (Walker et al., 2010).

2.4.3 Social Vulnerability[4]

'Social vulnerability' aims at identifying and understanding why certain groups of people, buildings, infrastructures and assets may be more exposed, more sensitive and/or less susceptible to the impacts of natural disasters than other groups. Although many different views on how to define vulnerability exist, there seems to be a general consensus that it is constituted by two different components: 1) an external component: exposure to natural hazards and social structures and processes which are difficult to change, and 2) an internal component, which relates to people's awareness of, as well as knowledge about, natural hazards, their motivation and attitude to act and take responsibility, as well as their ability to access the kinds of financial and other resources needed to prepare for, cope with, recover from and adapt to the negative impacts of natural hazards.

4 Findings from: Tapsell, S., McCarthy, S., Alexander, M. (2010): Social vulnerability to natural hazards. State of the art report from CapHaz-Net's WP4: London, UK. URL: http://caphaz-net.org/outcomes-results

Participation is viewed as positive in regards to reducing social vulnerability and a method of addressing both its external and internal components. The following highlights three key points related to participation which arise from studies on social vulnerability:

1. The importance of networks:
   - ⟶ Tapsell et al. (2010) explain that social capital refers to the role and value of individuals and groups or the potential and actual personal relationships of an individual or group of individuals as well as to the resources which can be mobilised via such networks (Adger, 2000). This concept can further be viewed as a function of trust, social norms and participation (Nakagawa and Shaw, 2004). It is proposed that the cohesiveness of the community (Dynes, 2006), organisations and responses and mechanisms in place to manage a hazard event, collectively contribute to the degree of social vulnerability transferred to the individual or group as a whole.

2. The importance of involving those people who are seen to be vulnerable in defining and developing solutions for their own vulnerability:
   - ⟶ Existing or potentially vulnerable populations are often institutionally and economically invisible but their participation in vulnerability assessments is crucial if these assessments are to be useful for decision-makers as well as the participants feeling some kind of ownership over a decision. Cooperation across society is hindered when disaster schemes and programmes still treat people as 'clients' in disaster management processes, ignoring the experience of those most at risk, and where 'paternalistic' science and technology do things to them and for them, rather than together with them (Weichselgartner, 2003).

2.4.4 Risk Perception[5]

Risk perception studies aim to understand how knowledge, experiences, values and feelings influence people's judgements regarding the seriousness and acceptability of natural hazards and associated risks. It is important to understand whether people see themselves as being vulnerable or whether they believe that they are in the position to act in the face of a disaster event. Wachinger and Renn (2010) found that risk perception changes after a participation process (Stanghellini and Collentine, 2008; Slinger et al., 2007). One of the main outcomes in regards to participation is the importance of trust:

- ⟶ It was found that participation is an important way of developing trust between different actors involved in the decision-making process. Trust becomes even more important, when the individuals' knowledge about the hazard is low. Siegrist and Cvetkovich (2000), working with different, mainly technological risks, were able to prove the hypothesis, that self-knowledge mediates the influence of social trust in authorities. It was found that the more people knew about a risk the more they trusted in their own personal judgment and not in the advice of the authorities and vice versa.

[5] Wachinger, G., Renn, O. (2010): Risk perception and natural hazards. CapHaz-Net WP3 report: Stuttgart, Germany. URL: http://caphaz-net.org/outcomes-results

- Moreover, due to the fundamental affective dimension of trust (which involves items like honesty, integrity, good will or lack of particular interests), people may feel more at risk if their trust in experts is lacking or damaged (Espluga, 2009: 268).
- In some cases however, trust in the authorities was counterproductive in relation to preparedness as people were expecting the authorities to prevent them from flooding. Trust therefore can delay or inhibit residents from taking measures against flooding.

For water resource management it has been shown by a number of studies that social learning processes were induced by multi-party collaboration networks (Pahl-Wostl et al., 2007; Stanghellini and Collentine, 2008). Paton (2008) argues that risk communication concerning natural hazards needs to be based on community engagement. He found that participation made a significant contribution to the overall decision making process. A finding that is consistent with suggestions that peoples' concept of environmental risk is influenced by others' views, as are the choices they make regarding its mitigation. Miceli showed that flood preparedness was positively related with flood perception (Miceli, 2008). The Joint Defra/Environment Agency R&D programme (UK) "Managing the social aspects of flooding" found that it is "encouraging that a community that has been involved in a genuine participatory exercise (either through facilitated historic and/or scientific projects) or a community that has been involved in management decision making will have already begun to 'own' its flood risk environment and will have developed a sense of trust towards the facilitators …" (Twigger-Ross, 2006).

2.4.5 Risk Communication[6]

Risk communication can be broadly defined as exchange of risk-related information between decision-makers, experts, stakeholders and the affected public. Höppner et al. (2010) found that communication is an important aspect of participation:

1. Positives of communication for participation:
   - Communication can enhance trust between governing bodies (Kasperson et al., 1992; Slovic, 1993; Wachinger and Renn, 2010), improve inter-organisational collaboration (Heeb and Hindenland, 2008), improve relationships, achieve wide acceptance or consensus and minimise conflicts (Bouwen and Taillien, 2004; Joseph et al., 2008), enhance local ownership and increase a local sense of responsibility (Butterfoss, 2006; Wachinger and Renn, 2010), activate social and democratic learning processes (Mosert et al., 2008). Moreover, successful participation can lead to a dialogue between the general public and the professional / organised public which encourages sharing and learning (Krasovskaia, 2001; Stanghellini and Collentine, 2008; Slinger et al., 2007) and build social capacities (Abelson et al., 2003; Butterfoss, 2006).

[6] Höppner, C., Buchecker, M., Bründl, M. (2010): Risk communication and natural hazards. CapHaz-Net WP5 report: Birmensdorf, Switzerland. URL: http://caphaz-net.org/outcomes-results

2. Negatives of communication for participation:
   - ⟶ Although, as mentioned in the risk governance section above, it is clear that many believe that participation is of great importance, putting it effectively into practice is a major challenge that decision-makers are presently facing and are going to face in the future. Höppner et al. (2010) and Walker et al. (2010) argue that although more voices might be found contributing to the decision-making process, this does not mean those voices are being listened to.
   - ⟶ It was argued that through participation, there is the possibility of tokenism, limited room for negotiation, interest-based manipulation, the exercise of power or poorly designed and implemented communications tools. If the quality of these tools and procedures are poor and the contextual conditions unfavourable, participation might even have the opposite effect to that originally intended (Cooke and Kothari, 2001). However, Höppner et al. (2010) also argue that communication is a key ingredient in the success of participation, as well as providing useful information.

3. Possible improvements:
   - ⟶ Communication takes place at different levels and scales and can be categorised by different aims and priorities. There is a clear need for distribution of responsibilities among actors. This encourages one stream of information both among responsible bodies and towards the population in order to avoid repetition and contradictory information and to encourage effective message delivery. Höppner et al. (2010) found that little is known about the effect of risk communication with regard to natural hazards. There is some evidence that one-way methods raise awareness, while two-way, dialogue-based communication methods are more effective at gaining trust and mutual understandings.

2.4.6 Risk Education[7]

Risk education refers to the transfer of generalised (thematic, organisational and technical) knowledge of and skills to better cope with natural hazards. This transmission occurs from professionals in teaching institutions (schools, providers of courses) to students. Risk education is a crucial component of social capacity building and, as such, a life-long process. Risk education, through participative learning, can be an effective substitution and supplement for direct experience with a natural hazard (Komac et al., 2010).

- ⟶ **Participative learning** is an effective way to provide information about natural hazards to people who do not have any previous and/or direct experience with such an event. Furthermore, they argue that skills should be developed through dialogue. The Brazilian educator Paulo Freire highlighted: "*Learners and their own experience and knowledge are of crucial importance; second, that awareness, learning, self-esteem, and the capacity for political action are mutually reinforcing. And third, that poor and marginalized people have the right, and the capacity, to organize and challenge au-*

[7] Komac, B., Ciglič, R., Gašperič, P., Orožen Adamič, M., Pavšek, M., Pipan, P., Zorn, M. (2010): Risk education and natural hazards. CapHaz-Net WP6 report. Ljubljana. URL: http://caphaznet.org/outcomes-results

thority in order to create a society that is not based on exploitation and oppression" (summarised by Eade, 2005: 11).

→ **Locally based forms of participatory learning** focus on a specific locality, concrete events, environments and relations. They are driven by the demand of the students and pupils to learn more about their immediate environment and its stressors. It includes other actors familiar with the concrete locality (e.g. NGOs, local authorities, scientists etc.) and their specific expertise. Such learning thus stimulates engagement with the local environmental situation as well as with personal histories of relatives and the wider civil society (Kuhlicke et al., 2011).

2.4.7 Summary of the Theoretical Findings

In sum, due to the fact that damages and losses from natural hazards in Europe are not decreasing, it is important to assess the current disaster risk management practices in order to address and improve future activities. Changes in the distribution of responsibility from the state to local governments / actors require and encourage more actors and therefore complexity in terms of decision-making. Purely top-down approaches to governance are neither feasible nor desirable. For example, the transference of responsibilities to different administrative levels of society is creating a stage where more actors are becoming involved. Therefore, it is important that these actors are, at least to some degree, involved in the decision making process if they are to be responsible. Therefore, questions such as whom to involve when and at what intensity need to be addressed in order to encourage effective participation. However, it is also important to take into account individual risk perceptions, inclusive social vulnerability assessments and to develop effective risk communication and education which are based on inclusive two-way communication and learning methods. A successful measure of all the above is believed to contribute to effective future FRM practices.

2.5 Findings from Previous "Practical Work": The Regional Hazard Workshops (RHWs)

The following section provides a short summary of the findings from the two previous RHWs. Although the focus of the workshop was not specifically on participation as such, it proved to be a subject that heavily discussed throughout the workshops, as well as in the recommendations. The following chapters will show in more detail the relevance of these findings to the findings of the Leipzig workshop.

2.5.1 Regional Hazard Workshop on Heat-related Hazards, Barcelona

The Barcelona RHW (October 2010) focused on heat related hazards (droughts, heat waves and forest fires). The following findings have been adapted from Supramaniam and Di Masso (2011). Participants were made up of members of different government bodies, NGOs, academics and pensioners. The workshop brought together people who normally work on separate hazards.

The following points are of importance to participation:

1. Improvements to hazard management should be handled at the institutional level.

2. These improvements require a clear division of responsibilities, more effective communication activities between administrative actors within and between different levels.
3. It was argued that current disaster reduction policies are largely reactionary. Alternative risk management should put the emphasis on the initial stages of the causality chain, as well as a movement away from ideas of risk mitigation, prevention or management to a philosophy of risk governance. Both these aims entail improved institutional coordination and the involvement of stakeholders.

2.5.2 Regional Hazard Workshop on Alpine Hazards, Gorizia

The Gorizia RHW (March 2011) focused on current practices and challenges with respect to Alpine hazards in Italy, Slovenia, Switzerland and Austria. The following findings have been adapted from Bianchizza et al. (2011). While the initial planning of the workshop was meant to cover all natural hazards occurring in the Alps (rock avalanches, floods, landslides etc.), the preparatory research and work and the feedback from experts and key-note speakers proved that the interest and work of stakeholders involved concerned mainly hydro-geological events, especially floods. The following findings from the workshop are of relevance for participation:

1. Although the theme of public participation in decision making processes regarding risk was not meant initially to be the main topic of discussion, in fact the debate during the workshop lead repeatedly to it as a still unresolved issue and a field full of potential for the enhancement of social capacities for Alpine hazards.
2. The workshop highlighted a need for improved communication and participation in decision-making between experts/management and the public, as well as among other actors involved in natural hazard management (authorities, operators, volunteers, etc.). A lack of this cooperation was underlined as a concrete barrier for the formation of a ‘culture of civil protection’. The flow of information should be multi-directional and knowledge, coming from different sources, should be made use of in the right context.
3. Additionally, communication and the local understanding of disaster reduction management actions can be improved by utilising local knowledge. It was suggested that this could bridge the gap between experts (historians, operators of natural hazard managements, planners, etc.) and residents, speaking a language understandable to both and taking into account both side's expectations and needs. This point of view suggests using more historical knowledge as a tool that can provide a valid understanding of past experiences, successes and failures and can help reinforce the memory of the past to strengthen present awareness.
4. This workshop also highlighted the importance of volunteers and the potential benefit of employing local mediators as a point of communication between local communities and FRM experts.

2.5.3 Summary

The findings of the workshops generally appear to reflect the theoretical knowledge collected from previous CapHaz-Net literature reviews (WP1-6). Participation has proven to be an important part of the decision-making process. However, previous work shows that it is still unclear as to how participation can be successfully implemented at each level (international, national, re-

gional, and local) and stages of a planning process. These workshops provide examples of natural hazard management in practice and therefore provide an overview of the current practices regarding participation during these activities. In turn, these lessons can be taken into account when planning future natural hazard management activities.

This chapter has summarised the current status of flood risk management, as well as highlighted the main findings of CapHaz-Net in regards to the importance participation in disaster risk management. The following chapters will take the reader through a journey of participation within the context of flood risk management (FRM) in Central Europe. In doing so we will refer back to these above findings and reflect of the importance of new governance and participation approaches and how they deal with social vulnerability and risk perception, as well as how they employ risk communication and education. In doing so, examples of current practices and challenges, as well as recommendations are provided by this document in the hope of contributing to the success of future FRM activities. Later chapters will refer to the above findings in attempts to draw comparisons between previous findings and findings from the Leipzig workshop.

3 Methodology and Approach

This chapter describes the processes involved in developing, conducting and describing the workshop. It provides explanations as to why the case study countries were chosen, discusses pre-workshop activities, as well as the materials that were developed and used in order to achieve the workshop goals.

The rationale of the workshop was established by the Floods Directive that requires "interested parties" to be involved in the development of flood risk management plans (for a detailed description of the Floods Directive, see Chapter 4). Thus, the focus of the workshop was particularly relevant for practitioners because the FRMPs need to be completed by 2015. Therefore, the discussion was quite timely and helped stimulate ideas for issues that are going to need to be addressed in the near future.

3.1 Case Study Catchments

The countries chosen to be of focus for the workshop were the Central European countries of Austria, the Czech Republic, Germany and Poland. They were selected because of their geographical relationships. Some river basins are trans-boundary and were thought to be of interest due to their different political histories and governance structures. Therefore, it was agreed upon that the respective countries would be able to provide interesting comparisons in regards to how flood risk management is organised and the role that participation does and can play in the future. The workshop also involved participants from Switzerland and France as well as contributions from consortium members representing the UK, Spain, Italy and Slovenia as so-called "satellites". All of these countries have experienced disastrous floods in the past fifteen years or so.

The workshop focused specifically on the Elbe River Catchment (German and Czech sections), the Odra[8] and Vistula River Catchments (Poland) as well as on the Danube River Catchment (Austria). However, a few extra examples were provided with respect to experiences from France, the UK and Switzerland, as well as additional areas of Germany outside of the Elbe region.

3.2 Pre-workshop Activities

Prior to the workshop, the participants were divided into four groups according to country and catchment: Group A: the German Elbe, Group B: the Czech Elbe, Group C: The Odra and Vistula (Poland), Group D: the Danube (Austria) and Group E: the Satellites. The aim to the group work was to answer the following three questions:

1. **What is the current situation with regard to practices of flood risk management in Central Europe and the role of participatory approaches in them?**
2. **Which goals do the workshop participants want to achieve by 2020 with regard to participation in flood risk management?**
3. **What needs to be done to achieve these goals and what needs to be considered?**

[8] During the document we use the Polish name of the Oder River.

3.2.1 Document Analysis

In order to develop an overview of the chosen catchments a document analysis was conducted which focused on the background of the FD as well as the institutional context and legal requirements of each selected catchment within the context of their respective countries.

3.2.2 Pre-workshop Interviews

Six pre-workshop interviews were conducted with confirmed participants prior to the workshop. These were carried out in order to check, clarify and add to the information that we had already collected during our document analysis. The conversations included questions which referred to the current state of FRM in the interviewee's respective country, as well as problems, visions and examples of existing participation practices.

3.2.3 Workshop Material Preparation

Workshop materials were produced prior to the workshop in order to stimulate conversation and set the scene of the workshop.

Therefore, we produced four Catchment Profiles (German and Czech Elbe, Odra/Vistula, Danube) containing a description of the catchment, history of floods in the area, and an overview of flood risk management (FRM) in the river basin and examples of actors and participation in FRM. The information for the posters was collected by conducting a survey of information available on the Internet, a literature and document review as well as with the help of the six telephone interviews conducted with representatives of the catchments. The posters did not aim to be comprehensive, instead they were to be considered as a tool to stimulate discussion and through this discussion, develop a comprehensive overview of the status quo of participation activities in the catchment in question (see Annex 3).

Furthermore, a definitions poster (Defining important terms: Flood Risk Management – EU Floods Directive – Interested Parties), aimed to provide definitions for key terms in order to make sure that the participants were able to speak the same language by developing a common understanding of often used terms (see Annex 3). The definitions were important in regards to completing the Participation Chart. This chart aimed to provoke discussion and help the participants to think about how participation occurs, to what degree and at what level, in their catchment area (see Annex 3).

3.3 Workshop Activities

The workshop included a mixture of keynote presentations, plenaries and working group sessions. The aim of the keynote presentations[9] was to introduce the themes of the workshop as well as simulate discussion. The aim of the plenary sessions was to give participants the opportunity to openly express their opinions and report the findings of the working groups to the entire group. Finally, the working group sessions aimed to provide a space for in-depth discussions focusing on answering the three guidance questions prepared before the workshop and mentioned above.

[9] For a copy of the presentations see Annex 4.

The first day of the workshop commenced with welcoming speeches from the Helmholtz Centre for Environmental Research (UFZ) and a brief overview of the CapHaz-Net project. Two keynote speakers set the frame of the workshop. Firstly, Ortwin Renn (Stuttgart University, Germany) presented “Inclusive Governance: Participation and Stakeholder Involvement” where he provided an overview of participation and how actors should be involved. In this presentation participation was discussed in terms of who should be included, what type of decision-making should be employed, and within what scope and scale? Following Renn was a presentation by Martin Cassel-Gintz (Kaiserlautern University, Germany) entitled “Principles of Flood Risk Management” which focused on the FD and the development of flood resilience (for all workshop presentations see Annex 4).

The first working group session aimed at addressing the current situation with regard to practices of flood risk management in Central Europe and the role of participatory approaches in them. The groups were asked to describe the status quo of participation within FRM in each of the catchments with the help of the pre-developed materials (for the catchment profile, the participation chart and the definitions poster see Annex 3). Afterwards, the groups came together and presented their findings to the rest of the plenary. Later in the day, the working groups reformed and discussed what needs to be done in the future in regards to participation within FRM by focusing on the question: Which goals do the workshop participants want to achieve by 2020 with regard to participation in flood risk management?

The second day began with a presentation from Gernot Koboltschnig (Government of Carinthia, Austria) who was able to provide an insight into how the FD is being implemented in Austria. This presentation was followed by three short summaries of examples of pilot projects related to participation within FRM from three of the members of the satellites (Group E). Later on in the day the final working group session took place were the participants aimed at developing concrete goals and describe how to get there. They did this by focusing on the question what needs to be done to achieve these goals and what needs to be considered. The workshop then closed with a summary of each group’s findings.

3.4 Post-workshop Activities

Since the workshop the documentation of the workshop’s recorded discussions and activities (the Minutes) has been completed and sent via email to all of the participants for comments. Further interviews have been conducted in order to validate the content of the Minutes and fill in the gaps that arose as part of the documentation process. Additionally, participants provided us with further materials and with this new information we were able to commence an in-depth analysis of certain issues which appear as the main focus of this document. As a result of this in-depth analysis, reflections, lessons learnt and recommendations have been developed and can be found in the following chapters.

4 Institutional Contexts in Different Catchments in Central Europe

4.1 The Governance of Floods in Central Europe

Recent changes have been observed in the way natural hazards are managed in Europe. Thus, governments are no longer the only authorities in decision-making of democratic regimes (Walker et al., 2010; Jílková and Slavíková, 2010). In the light of these changes, questions arise, such as whether or not these changes (e.g. increased involvement of non-state actors and changes in the way of understanding and therefore, handling natural hazards) are having positive impacts on the way natural hazards are dealt with (Walker et al., 2010; Jílková and Slavíková, 2010).

Keeping in mind the findings from CapHaz-Net's previous literature reviews, this chapter provides a brief description of how CapHaz-Net understands the different levels at which participation takes place. It then continues with a short summary of water management (in the context of floods) at the international and European level, followed by a regional, geographical and historical description of each catchment and the institutional structures (in regards to which actors are involved at what level of society: in the development of policies and legislation, plans and programmes, and projects) that the case study countries (Austria, the Czech Republic, Germany and Poland) have developed in order to manage flood risks. The Elbe River is described as a whole, including both Germany and the Czech Republic, followed with the institutional contexts of each country. The Odra and Vistula are described separately but the institutional contexts are described together because both catchments largely reside in Poland. Finally, the focus of the institutional context of the Danube is Austria.

4.2 Levels of Participation

This section describes CapHaz-Net's understanding of **levels of participation**. These levels were predefined prior to the workshop and include: policies and legislation, plans and programmes, and projects which all comprise of structural and non-structural measures.

- In regards to levels of participation, **policies and legislation** (also based on Arbter et al., 2007) describe an overarching level where goals and general directions of development are defined. These policies and legislations include long-term strategic decisions made on the levels of parliaments, governments or high-level administrative bodies. They are usually expressed in a rather abstract way and outline the general framework for flood risk management. Examples of this level are the Floods Directive and Water and Planning Acts.
- **Plans and programmes** include specific measures and instruments, which aim to reach a given goal (Arbter et al., 2007). An example of this level is the "Action Plan for Flood Protection in the Elbe River Basin" by the International Commission for the Protection of the Elbe River (ICPER, 2009) or the Saxon flood protection concepts (Gerber, 2011).
- At the **project** level specific measures are planned, described in detail and implemented (Arbter et al., 2007; EIB, 2007; Gerber, 2011). For example, a flood protection wall may be constructed in a specific community or a local warning system may be installed. Such measures in flood risk management are defined and distinguished as structural or non-structural measures (see Section 2.1 for definitions).

The following Figure 4.1 provides a visualisation of participation levels[10] as conceptualised by CapHaz-Net.

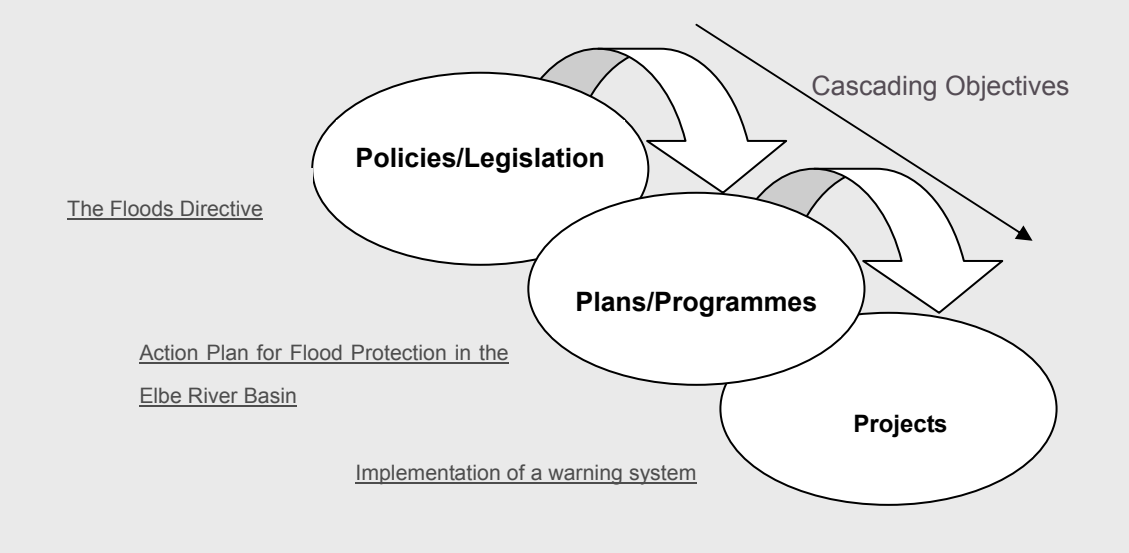


Figure 4.1: Visualisation of participation levels with examples on the left (adapted from: EIB Flood Review: Stage 2. Guide for preparation of flood risk management schemes, EIB, 2007)

Following a discussion of institutions, initiatives and documents that exist at the international and European levels, polices and legislation, plans and programmes and projects will be discussed within the context of the case study catchments and countries, respectively.

4.3 International Institutions, Initiatives and Documents

The following list based on Friesecke (2004) and the Council of Europe and ISDR (2011) provide a selection of institutions and initiatives that are related to disaster risk reduction and/or research (including flood risk management) at global level:

- United Nations International Strategy for Disaster Reduction (UNISDR)
- United Nations International Strategy for Disaster Reduction (ISDR), including the International Flood Network (IFN)
- United Nations Development Programme (UNDP)
- the United Nations University Institute for Environment and Human Security (UNUEHS), created on the 1st December 2003 in Bonn, Germany
- the UNESCO Centre for Water Hazard and Risk Management in Tsukuba, Japan
- Centre for Research on Epidemiology of Disasters (CRED)
- Global Facility for Disaster Reduction and Recovery (GFDRR)
- International Institute for Applied Systems Analysis (IIASA)
- Organisation for Economic Co-operation and Development (OECD)
- SwissRe Reinsurance and MunichRe
- World Meteorological Organisation (WMO)

[10] Each policy or law, plan or programme, and project is subject to RIA, SIA and EIA, respectively that each has their own requirements for (public) participation.

Additionally, the development of comprehensive guidelines that could be used by governments, international (partly non-governmental) organisations and society to help avert losses from water-related disasters has also been encouraged. The following selection of documents is also based on Friesecke (2004):

- the United Nations and Economic Commission for Europe "Guidelines on Sustainable Flood Protection" (UN/ECE, 2000)
- the UN/ECE document "Best practices on flood prevention, protection and mitigation" (UN/ECE, 2003)
- the UN Department of Economic and Social Affairs, Inter-Agency Secretariat of the International Strategy for Disaster Reduction
- the UN Economic and Social Commission for Asia and the Pacific "Guidelines for Reducing Flood Losses" (DESA, UN/ISDR, UNESCAP, 2004).

4.4 EU legislation related to Flood Risk Management

The following section outlines existing policies and approaches that have been implemented at the European level in regards to FRM, starting with the Water Framework Directive (WFD) and the consecutive Floods Directive (FD).

The WFD is a far reaching and comprehensive piece of legislation which provides the basis for achieving the sustainable management of water in the Member States. It needs to be considered during the implementation of the FD and its approaches and synergies with it should be used wherever appropriate and possible.

4.4.1 The Water Framework Directive (WFD)

The WFD (Directive 2000/60/EC) was put in place in order to encourage the effective management of European water sources. The Directive came about after the recognition of water pollution as one of the environmental issues that Europeans are most concerned about. Therefore, measures have been put in place, which aim to increase the quality of water sources in Europe. Furthermore, it has been argued that "*the best model for a single system of water management is management by river basin - the natural geographical and hydrological unit - instead of according to administrative or political boundaries*" (EC, 2011a). Moreover, River Basin Management Plans are required to be developed and a large emphasise has been put on participation as a way of encouraging successful management.

The European Commission provides two reasons as to why participation is important. Firstly,

> "*the decisions on the most appropriate measures to achieve the objectives in the river basin management plan will involve balancing the interests of various groups. The economic analysis requirement is intended to provide a rational basis for this, but it is essential that the process is open to the scrutiny of those who will be affected. The second reason concerns enforceability. The greater the transparency in the establishment of objectives, the imposition of measures, and the reporting of standards, the greater the care Member States will take to implement the legislation in good faith, and the greater the power of the citizens to influence the direction of environmental protection, whether through consultation or, if disagreement persists, through the complaints procedures and the courts*" (EC, 2011a).

Article 14 of the WFD focuses on public information and consultation. It is stated that "*the success of this Directive relies on close cooperation and coherent action at Community, Member State and local level as well as on information, consultation and involvement of the public, including users*" (WFD, 2000). Member States shall encourage the active involvement, which is defined in the Guidance Document no. 8 (EC, 2003) as a higher level than consultation (considered as making documents available for written comments). Active involvement implies that stakeholders / "interested parties" are "*invited to contribute actively to the planning process by discussing issues*" (p. 11). This includes implementation of the WFD, in particular in the production, review and updating of the river basin management plans. Member States shall ensure that, for each river basin district, they publish and make available for comments to the public. These documents include a timesheet, the interim overview of significant water management issues, and the drafts of the river basin management plans at least one year before the beginning of the period to which the plan refers.

It has been hypothesised that active involvement gives stronger participation rights to various groups of stakeholders (such as different groups of water users, land owners, mayors, NGOs, etc.) (Jílková and Slavíková, 2010). Importantly, guidelines as to who should be involved and how is not specified within the WFD text. This is expected to be determined by national legislation or by a strategy developed by competent authorities.

As mentioned above, one of the points to come out of the WFD is the concept of managing water bodies as **catchments** rather than by country. Positive examples of such initiatives can be found taking place across Member State borders, in regards to the management of the Maas, Scheldt and the Rhine (which even goes beyond EU territory) catchments. In spite of these examples, this is not the case everywhere. As a result of the WFD, river basin management plans are required to be developed for each river basin district, of which some will traverse national frontiers. These plans will need to be updated every six year and will provide the context for coordination (EC, 2011a).

The main principle in trans-boundary river and flood risk management should be that no country takes any action which could compromise the ability of other countries to provide flood risk management unless the action is agreed between all parties involved. In dealing with trans-boundary rivers, it is advisable to have agreements covering all countries within a river basin, or alternatively at least bilateral agreements between adjoining countries. In 1992 the Helsinki UN-ECE Convention on the protection and use of trans-boundary water courses and international lakes was formulated. This is directed primarily at water quality issues but it also includes references to floods. This was used as a basis for agreements between countries that share a river basin, such as the International River Commissions (UNECE, 2009).

4.4.2 The European Floods Directive (FD)

The FD (Directive 2007/60/EC) should be implemented in line with the WFD and requires Member States to approach FRM in a three stage process:

1. Carry out preliminary flood risk assessment (PFRA) by 2011 for "*those areas for which they conclude that potential significant flood risks exist or might be considered likely to occur*" (Article 5 (1) FD).
2. Preparation of flood hazard maps (FHMs) and flood risk maps (FRMs) by 2013. These maps should identify areas with a medium likelihood of flooding (at least a 1 in 100

year event) as well as extreme or low likelihood events, water depths should also be indicated. In areas identified as being at high risk, the number of inhabitants potentially at risk, the economic activity and the environmental damage potential must be indicated.

3. Establishment of flood risk management plans (FRMPs) for areas / catchments with a significant risk are to include measures to reduce the probability of flooding and its potential consequences by focusing on the flood risk management cycle (prevention, protection, and preparedness) by 2015 (Freissinet, 2009; Unnerstall, 2010).

These steps need to be reviewed every 6 years in a cycle coordinated and synchronised with the Water Framework Directive (WFD) implementation cycle (EC, 2011b). The FD stipulates that so-called "interested parties" should be encouraged to participate in the development of Flood Risk Management Plans (FRMPs) (Article 10). Therefore, like the WFD, although participation is a mandatory requirement, it is the decision of each member state as to how it is implemented.

4.4.3 Regulatory Impact Assessments (RIA), Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA)

The Regulatory Impact Assessment (RIA, 2007) is a tool to support decision-making. The RIA aims to determine the best "*option to achieve the objective of a rulemaking activity while minimising potential negative impacts*" (EASA, 2010: 4). It consists of a series of five logical steps that structure the analysis: "*problem identification, objective definition, option development, impact analysis and option comparison*" (EASA, 2010: 4). The goal is to provide transparent and evidence-based analyses of the advantages and disadvantages with regard to defined objectives. This provides a solid framework for discussion and decision-making (EASA, 2010).

In relation to public participation and because many flood risk management measures are actually physical structures, the Strategic Environmental Assessment (SEA, 2004) and Environmental Impact Assessment (EIA, 1985) Directives affect flood risk management.

SEA and EIA follow a similar process, but SEA is carried out at a more strategic and higher planning level than EIA. Although EIA is a well-established and an important tool for decision making on individual projects, many of the important decisions will have already been made for example about the type of development that might be appropriate, its location and outline design (EC, 2011c).

Flood risk management plans require a SEA since this directive was transposed into national legislation in 2004. It should be noted that for some Member States, national legislation or administrative processes may have already identified flood risk management plans (similar to the ones required by the FD) as formal plans, making them eligible for SEA or they may have SEA legislation that is more inclusive than required by the SEA Directive. Certain plans and programmes (e.g. for national defence, civil emergency plans following major flood events, finance and budgets) are excluded from the SEA Directive (EC, 2010; BMU, 2010).

Moreover, the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Trans-boundary Context (the SEA Protocol) (UN, 2003), highlights the importance of public participation; Article 8 (1) states that, "*each Party shall ensure early, timely and effective opportunities for public participation, when all options are open, in the strategic environmental assessment of plans and programmes*" (UN, 2003: 5). Additionally, the

Directive 2003/35/EC[11] as an amendment of the Environmental Impact Assessment (EIA) Directive 85/337/EEC of 1985 supports for public participation in respect of the drawing up of certain plans and programmes relating to the environment and access to justice gives updated and clarified requirements for both the SEA and EIA directives that are in line with the Aarhus Convention.

4.5 Selected Central European River Catchments – Geography, Main Actors and Institutional Contexts

The following section provides a brief description of each of the four selected river catchments - its geographical characteristics and the flood history of the area of interest, as well as the institutional contexts of flood risk management in each country.

4.5.1 The Elbe Catchment

The Elbe River (Czech: Labe, German: Elbe) originates in the Northern Czech Republic, traverses the Eastern Part of Germany in north-westerly direction and flows into the German Bight of the North Sea, with a length of 1,094 km (727 km in Germany). Its catchment area covers 148,000 km² delivering an average discharge of 860 km³/s. The discharge regime is largely influenced by rainfall and snowmelt in the Krkonoše, Bohemian Forest and Ore Mountains and therefore peaks usually in spring and then decreases continuously until October/November. This regime is often interrupted by the effects of strong convectional summer rains. In the past, ice jams have also caused severe floods (UNEP/DEWA, 2004). There are approximately 25 million inhabitants who live in the catchment, 23% of the German population and 58% of the Czech population (UNEP/DEWA, 2004). The Czech part of the Elbe contains many weirs and barrages, whereas the German part is almost free of these constructions (with the exception of the Geesthacht weir, near Hamburg, constructed in order to generate electricity and to prevent influx of salt water during storm surges/tides) (Raadgever, 2005).

Many flood-prone areas within the Elbe River Catchment are characterised by different types of land use, including settlements, agriculture and industrial zones. Additionally, many smaller settlements and parts of larger cities (e.g. in the Czech Republic: Hradec Králové, Pardubice, Kolin, Prague on the Moldau (the Elbe's most important left tributary), Ústí nad Labem and Děčín, and in Germany: Dresden, Dessau-Rosslau, Magdeburg and many smaller cities) are exposed to flood waters during extreme events which could lead to significant damage (information from the participants).

The 2002 flood which occurred along the Elbe and its tributaries and effected parts of Germany, the Czech Republic and Austria, caused immense damage. Over 110 causalities were recorded, over 10,000 people had to be evacuated and thousands became homeless. The overall damage was over €10 billion for Germany, €7 billion of that total effected Saxony, largely Dresden (RMS, 2003; Friesecke, 2004). The Czech Republic received over €3 billion in damages, of which a third was concentrated in Prague (RMS, 2003).

[11] Directive 2003/35/EC: was seeking to align the provisions on public participation with the Aarhus Convention on public participation in decision-making and the drawing up and amending of certain plans and programmes relating to the environment as well as access to justice in environmental matters.

Although this flood generated the highest damages so far, its magnitude in terms of discharge was not the only one of its kind. Before 2002, important flood events occurred in 1845, 1890, 1940 and even after 2002 flood peaks almost as high as in 2002 were reached in smaller tributaries and in the lower stretches (due to better protection of the upper stretches) of the Elbe in 2006 and 2010 (ICPER, 2007).

Trans-boundary Management and Issues (ICPE)

Trans-boundary management is important in regards to supporting the catchment approach demanded by the WFD. In regard to the Elbe River catchment, at the level of international law, the Agreement on the International Commission for the Protection of the Elbe River (ICPER) (since 2007 also coordinating the implementation of the EU Floods Directive), and a number of other bilateral agreements and treaties between Germany and the Czech Republic, such as the treaty between the Czech Republic and the Federal Republic of Germany on Cooperation on Trans-boundary Waters, as well as the Neighbourhood Agreement, the Environmental Protection Agreement and the Frontier Waters Agreement are of relevance.

The ICPER Agreement was signed in 1990 by Germany, the Czech Republic, Poland, Austria, the European Commission, the river basin Commissions for the Danube, Rhine and Odra as well as several Non-Governmental Organisations (NGOs). The Commission maintains a network of international monitoring stations (UNEP/DEWA, 2004; UNECE, 2009). The Action Plan for the Flood Protection in the Elbe River Basin was prepared within the ICPER framework and was based on Mapping of the Existing Level of Flood Protection in the Elbe River Basin of January 31, 2001, and on the evaluation of September 2001. The Action Plan plays an important role in connection with a transnational approach of coordinated flood protection measures. Although it does not constitute a legal instrument, it represents a binding political commitment (ELLA, 2006). The Action Plan entails the following measures:

1. Measures for increasing water retention capacity in the drainage basin, including water bodies and polders;
2. Precaution measures in flood prone areas: their delineation, declaration and proper utilization;
3. Technical flood protection measures; and
4. Non-structural flood protection measures: flood warning, information and education (Krysanová et al., 2009: 7).

As mentioned above, in response to these events, both the International Commission for the Protection of the Elbe River and the Czech-German Trans-boundary Water Commission include floods in their water resources management agenda. Most interaction between Germany and the Czech Republic takes place within the framework of the ICPER. An example of international cooperation of formal actors is the ELLA (Elbe-Labe) project. This Interreg project was initiated after the flood of 2002 by 22 national, regional and local public partners in Germany and the Czech Republic (Raadgever, 2005).

Institutional Context of the Elbe River Basin: Germany

Main actors in FRM

In regards to formal actors involved in the management of the Elbe catchment in Germany, LAWA (Federal Working Group on Water Issues), ARGE Elbe (The Working Group for Pollution Control for the Elbe - *Arbeitsgemeinschaft für die Reinhaltung der Elbe)* and FGG Elbe (Elbe River Area Committee - *Flussgebietsgemeinschaft Elbe)* Provide platforms for cooperation in regards to water management issue between German States (Länder) (Raadgever, 2005). In regards to the Free State of Saxony, the main actors are: (1) the Government of the Free State of Saxony (Ministries), (2) its subordinated State Office for the Environment, Agriculture and Geology (LfULG) with the Saxon Flood Centre (LHWZ), (3) the State Dam Administration of the Free State of Saxony (LTV), (4) the State Directories, (5) the Districts and (6) the Cities and Municipalities. The flood information and alert service of the Free State of Saxony is headed by the Saxon Flood Centre.

Policies and legislation

Policies and legislation develop and define overarching goals and general directions. In regards to the German context, the national flood protection law (Act to Improve Preventive Flood Control (2005) is a complex law affecting a wide range of different legal areas. As a result of increasing flood frequency, various new legislative regulations at federal and state level (e.g. Federal Regional Planning Act, Water Act, Town and Country Planning Code, Federal Building Code) and subordinate guidelines (principles, objectives and guidelines of land-use planning and regional development) the general conditions for flood control measures have improved (Friesecke, 2004).

The three primary levels of competence in German water management are the Federal Government, the Federal States (*Länder*) / Region and the municipalities (Kommunen).

Federal Level:

→ According to Raadgever (2005, 8), the most important ministries are "*the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety [BMU], which is responsible for water resources management as a part of environmental policy, and the Federal Ministry for Transport, Building and Urban Development [BMVBS], which is responsible for the administration of federal waterways, navigation and sea pollution and supervises the Federal Institute of Hydrology [BfG]*". Other ministries involved are the Ministry of the Interior (for Civil Protection / Technisches Hilfswerk - THW), the Ministry of Defence (for the Armed Forces / Bundeswehr), the Germany Committee for Disaster Protection (DKKV), and The German Association for Water, Sewage and Waste (DWA).

Länder / Regional level:

→ The competencies of flood and water policy in Germany lie mostly with the individual German federal States (Länder), whereas, the central government is entitled to frame the legislation. As a consequence, and given the different geographical circumstances, different levels of flood protection, different approaches to flood risk reduction and to flood hazard / risk mapping exist in each of the federal states (ELLA, 2006). Policy and legislation is coordinated and harmonised within the Federal Working Group on Water Issues (LAWA).

→ Most Länder water management tasks have been distributed over three administrative levels: the Supreme Water Authority (responsible for strategic decisions – mostly the Länder Ministries), the Upper Water Authority (responsible for regional management – mostly subordinate official authorities) and Lower Water Authority (responsible for local implementation – at the regional level at state directorate districts or government districts (Regierungsbezirke), or where these do not exist, at the level of rural and urban districts) (see e.g. Lünenbürger 2006).

Municipal level:

→ Important additional actors at the regional and local levels are Water Associations, which are self-governing institutions. Formed for a wide variety of functions, ranging from small neighbourhood schemes to large territories on regional level, they are based on the principles of user participation and local autonomy and can consist of land owners, private enterprises and local public parties. Examples of such associations are the regional flood associations (e.g. Hochwassernotgemeinschaft Rhein e.V. in Rhineland-Palatinate or flood partnerships in Baden-Wurttemberg), which have been established to focus on the local and regional needs and to improve coordination and management of flood mitigation (Raadgever, 2005).

The following Table 4.1 provides a selection of instruments aimed at increasing flood protection in Germany along with their legal foundations and how they are translated at the regional level.

Table 4.1: Selective instruments of flood protection in Germany (Adapted from Friesecke, 2004; ELLA, 2006).

Fields of Action	Legal Foundations	Supra-regional and regional instruments
Spatial Planning	Federal Regional Planning Act (ROG) (state level)	• Declaration of flood risk areas as priority areas • Declaration of flood risk areas as reserve areas
	Building Code (BauGB) (local level)	• Communal development planning
Water Management	Water Act (WHG)	• Determination of flood areas • Installation of flood action plans • Installation of regional flood concepts
Risk Management		• Flood forecasting • Implementation of early-warning systems • Development of flood hazard maps

Spatial planning is of crucial importance for effective preventive flood protection. The concerns of flood protection and risk management are referred to in various pieces of legislation, (e.g. nature and soil protection laws, legislation on agricultural land use and forestry, building law and water acts) (ELLA, 2006). The following Table 4.2 explains the role of spatial planning at each level of society:

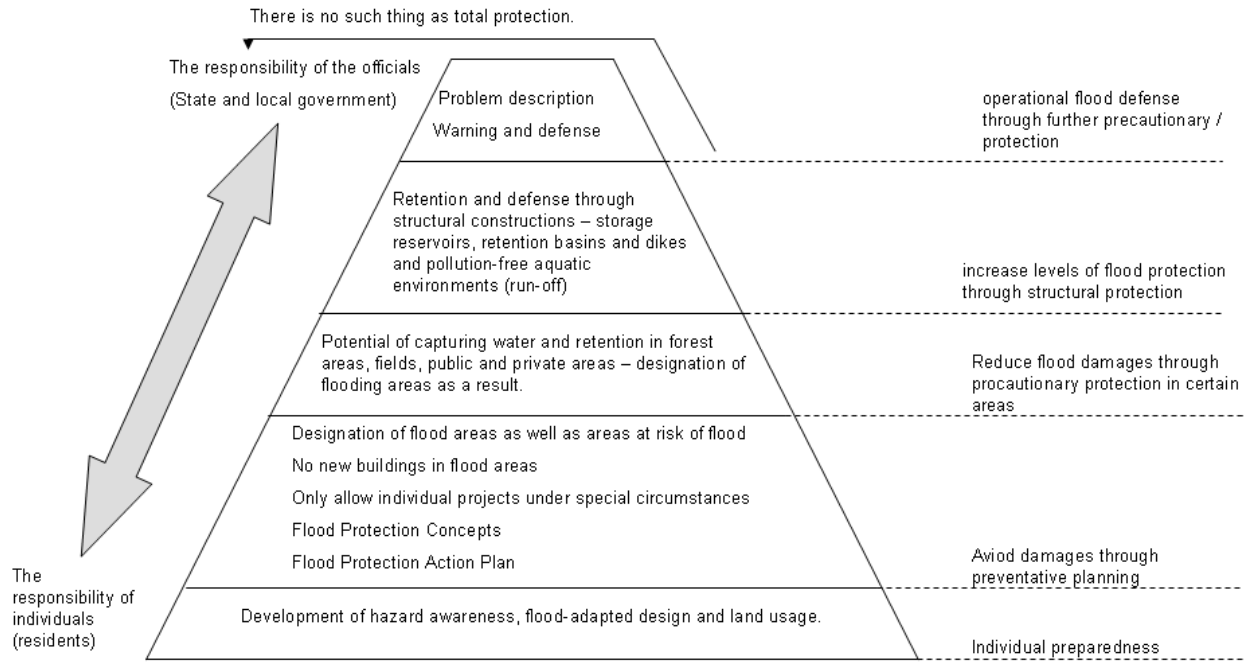
Table 4.2: Spatial Planning System in Germany (adapted from Friesecke, 2004)

State Structure	Level of Planning	Legal Foundation	Planning Instruments	Scale
Federal	Spatial planning at Federal Level	Federal Regional Planning Act (ROG)		
Länder	State Planning	State Planning Law (e.g., Spatial Planning Law of Saxony)	Regional Plan (for the territory of a land)	1:500,000 – 1:200,000
Region	Regional Planning (for parts of the Länder)		Sub-regional Plan	1:50,000 – 1:5,000
Municipalities	Local Planning (Urban land-use planning, area development planning)	Federal Building Code	Preparatory Land-Use Plan	1:10,000 – 1:5,000
			Legally Binding Land-Use Plan	1:2,500 – 1:1,000

Planning issues concerning water rights are regulated by the Federal Water Act (*Wasserhaushaltgesetz* – WHG) and the State Water Acts of the various federal states. The following legal instruments are in force: The benchmark of a flood with a statistical return rate of 1/100 years is based on the flood protection plans according to Article 31d of the WHG and the plans drawn up in accordance with WFD, such as the schedule of measures (§ 36 WHG) and the water resource plan (§ 36b WHG) (ELLA, 2006). Müller (2009) explains that the basis of the WHG is:

- ⟶ improvement of retention areas,
- ⟶ improvement of natural areas which serve as absorbers of flood waters,
- ⟶ the encouragement of personal responsibility for all parties living in areas of risk,
- ⟶ the development of flood protection concepts (Hochwasserschutzkonzepte) and risk maps for all flood categories, and
- ⟶ the development of improved strategies to better deal with flooded areas.

These improvements serve as the basis of the Saxon Flood Protection Strategy (Sächsische Hochwasserschutzstrategie) (Müller, 2009).



Source: adapted and translated from Müller (2009:10)

Figure 4.2: The Saxon Flood Protection Strategy

This figure shows a step-by-step breakdown of the processes involved in the Saxon Flood Protection Strategy. It is important to note here that there are responsibilities highlighted for different members of the public. In this diagram, the description and assessment of the problem is the task of the officials, whereas, as the process moves to implementation so too does the need to involve the general public. Notably, the terms 'participation' or 'involvement' are not used here but the concept rather draws on the aforementioned ascription of responsibility to a wide range of actors, that is, to a concept of multi-level and multi-actor governance.

An example of other legislation is civil protection. Civil protection in case of natural catastrophes is part of the responsibility of the states (Bundesländer) which adopted civil protection acts. In case of a disaster and according to the subsidiary principle, the federal level can help the states with its civil defence resources if regional and local resources are not large enough. Superordinate authorities can overtake responsibility in case of very large events. Civil protection authorities rely on resources from communal fire departments, rescue services (e.g. DRK), the German Federal Agency for Technical Relief (Technisches Hilfswerk – THW), and non-governmental organisations and, thus, to a large degree on volunteers (Lünenbürger, 2006; DKKV, 2003).

Plans and Programmes

As flood protection is primarily the responsibility of the Länder, they have developed a number of strategies and concepts. Plans and programmes include specific measures and instruments, which aim to reach a given goal. The following list of plans and programmes are based on Friesecke (2004) and ELLA (2006):

- Länder Working Group on Water: Guidelines for Forward-Looking Integrated Flood Protection (LAWA, 1995)
- Recommendations "Preventive Flood Protection by Spatial Planning" (MKRO, 2000)
- 5-Point Programme of the Federal Government (2002)

- Action Plan for the Flood Protection along the Elbe River by the International Commission for the Protection of the Elbe River (ICPER) (2003)
- Saxon Flood Protection Concepts (also for the Elbe River) (2002)
- Flood Protection Concepts for Saxony-Anhalt until 2010 (2003) and until 2020 (2010)

The 5-Point Programme, for example, that was formulated in the immediate aftermath of the 2002 flood can be regarded as the basis of the "Law on Improvement of Preventive Flood Protection". In this draft the key objective is to leave more room for rivers, particularly their natural flood plains, or to give the space back to them (Friesecke, 2004).

After the flood of August 2002, the state government of Saxony decided to develop an overall concept for all the first order water courses and for the Elbe River, which formed the basis of the subsequent reconstruction of the water management infrastructure and for the implementation of preventive flood protection measures. Between 2003 and 2005, a total of 47 flood protection concepts were developed and the auspices of the State Ministry for the Environment and Agriculture and adopted as the basis for future water management measures. They provide guidelines for the actions of public bodies and land use planning (ELLA, 2006; Bielitz, 2006).

Projects

Projects are specific measures planned, described in detail and implemented. Whereas current management strategies tend to favour structural large-scale defence measures, such as dikes, dams, etc. It has been argued that one can notice a change of paradigm towards non-structural flood protection measures, such as flood plain management, flood forecasting and warning systems as well as preventative risk reduction through spatial planning (Friesecke, 2004).

As a result of the 5-Point Programme and the resulting "Law on Improvement of Preventive Flood Protection" measures for moving dikes further away from river banks and conservation or restoration of flood plains have to be included in the flood protection strategies.

As of 2006, in the German Länder, new potential locations for retention polders and dike relocation for the reactivation of former flood plains along the Elbe and its tributaries have been examined and mapped. The State Dams Administration assessed a total of about 1,600 proposals for flood protection measures aimed at meeting the flood protection objectives with regard to their priority, thus identifying the measures that should be scheduled and implemented first. The priority was based on the criteria of expected damage, cost/benefit ratio, water management effects and vulnerability, which were all weighed equally. 268 measures were assigned high priority, while 780 were of medium and 548 of low priority (ELLA, 2006).

Institutional Context of the Elbe River Basin: The Czech Republic

Main actors in FRM

In the Czech Republic the formal actors include: (1) the Ministry of Agriculture, (2) the Ministry of the Environment, (3) River Basin Authorities, (4) the Czech Hydrometeorological Institute, (5) and flood committees (Raadgever, 2005).

Policies and Legislation

In the Czech Republic traditionally three levels of administration are responsible for water related decisions: central authorities (the Ministries of Agriculture and the Environment), 14 re-

gional offices and 76 district offices. At state level, the Ministry of Agriculture is responsible for the management of water bodies, artificial canals and irrigation systems, public water supplies and sewerage. At regional and district level, Departments for the Environment contain Offices for Water Issues. The Ministry of the Environment is in charge of the protection of water resources and the related ecosystems. Both Ministries are jointly responsible for the development and implementation of water management policy (Raadgever, 2005).

Besides these three administrative layers, five *povodí* (Water boards – for the Labe / Elbe, Vltava, Ohře, Morava and Odra Rivers) were established in 1966. Since then they gradually evolved to 'River Basin Authorities', state enterprises responsible for control, monitoring and evaluation of water flow of the main river basins. Long-term flood management is organised via the River Basin Authorities and led by the Ministry of Agriculture. Early warning for floods is organised by the Ministry of the Environment in cooperation with the Ministry of Agriculture. Flood warning systems are operated by the Czech Hydrometeorological Institute, in cooperation with the River Basin Authorities and regional and local administrations (Raadgever, 2005; Sovjáková, 2009). For the purpose of the WFD, the Czech Republic is divided into 10 river basin districts. Some of the river boards are in charge of more than one district (e.g. the Povodí Vltavy has 4 of them) whereas some others are in charge of only one of them.

According to the Water Act (254/2001) Flood committees (*povodňové komise*) have been established for flood protection purposes and actions on all administrative levels: local, regional and national. The head of a local flood committee is always the Mayor. They have existed since 1973 (Information from workshop participants). Each community has nominated members of a flood committee and this flood committee has two roles: obligatory tasks during times of no flooding and additional tasks when flooding occurs. They co-operate with the Integrated Rescue System (Fire Rescue Service of the Czech Republic, Medical Rescue Service, Police, etc.). During times in between flood events the flood committee observes the flood zone, upgrades flood planning, monitors the status of the flood zones/currents/dangerous materials. The Convention on the International Commission for the Protection of the Elbe River (ICPER) provides a platform for co-operation (information from workshop participants).

Mapping:

The floods of 1997 and 2002 encouraged the standardisation of flood mapping methods several years prior to the approval of the European Flood Directive. Transferring information from the local to the regional level is achieved through geographic information and the designation of flood areas which is the Fundamental Base of Geographic Data of the Czech Republic (ZABAGED). The main actors involved in maintenance of ZABAGED are: the Czech Office for Surveying, Mapping and Cadastre and the Czech Hydrometeorological Institute. These maps are available to the public through T. G. Masaryk's Water Research Institute's website[12] (Sovjáková, 2009). The National Hydrometeorological Service (responsible for meteorological and hydrological forecasting and the warning service) run by the Czech Hydrometeorological Institute and the Military Meteorological Service (the central forecasting office) are responsible for the Czech Republic's warning system. Czech insurance companies have developed a 4 zone rating scheme according to the level of flood risk in a particular area. The Czech Flood Protection Association

[12] See: http://mapy.vuv.cz/website/isp

organises workshops, conferences and trade fairs focusing on flood control measures (Friedmannova et al., 2010).

Planning:

The Czech Republic has two levels of planning: the 10 river basin districts (with river basin boards that are not authorities in the strict sense as they do not grant permits or impose bans, but rather provide decision support to local/regional authorities) and the national level (national river management plan). These are the main bodies according to the Water Act. The Water Act 2010 defined the Ministry of the Environment and the Ministry of Agriculture as the main bodies responsible for these plans. Moreover, the participation was mentioned in the Water Act (254/2001) as "person who participate" in flood management activities. The public is only referred to in regards to the planning / EIA process where they are given 30 days to comment on a plan in writing. This is also reflected in the Decree on Water Planning (142/2005) (discussed in detail in Chapter 5).

Spatial planning is regulated by the Building Act (183/2006). The issue of flood protection is integrated into the spatial planning by means of the instrument of limiting the right to develop (§ 159) in areas in order to encourage the reduction of "danger caused by floods and other natural disasters in the area, [and] increase of the retention capacity of the area". This is also reinforced by the Water Act (§ 1 and § 67). In the Czech Republic, *"protected areas include defined flood plains, whereby the use of the land is normally only restricted by law in the 'Active Zones' of the flooded areas. The 'Active Zones' in the flood plains are identified by the water protection body on the basis of a proposal by the river authority, which in turn is based on the high water flow rate. Both developed and undeveloped sites set aside for development according to the spatial plan, as well as other areas (e.g. recreational facilities, camping sites, etc.) might be designated as 'Active Zones'"* (ELLA, 2006:9).

In order to provide a comparison between the planning system in Germany and the Czech Republic, the following Figure 4.3 shows the planning systems for both countries highlighting what actions take place at what level of society.

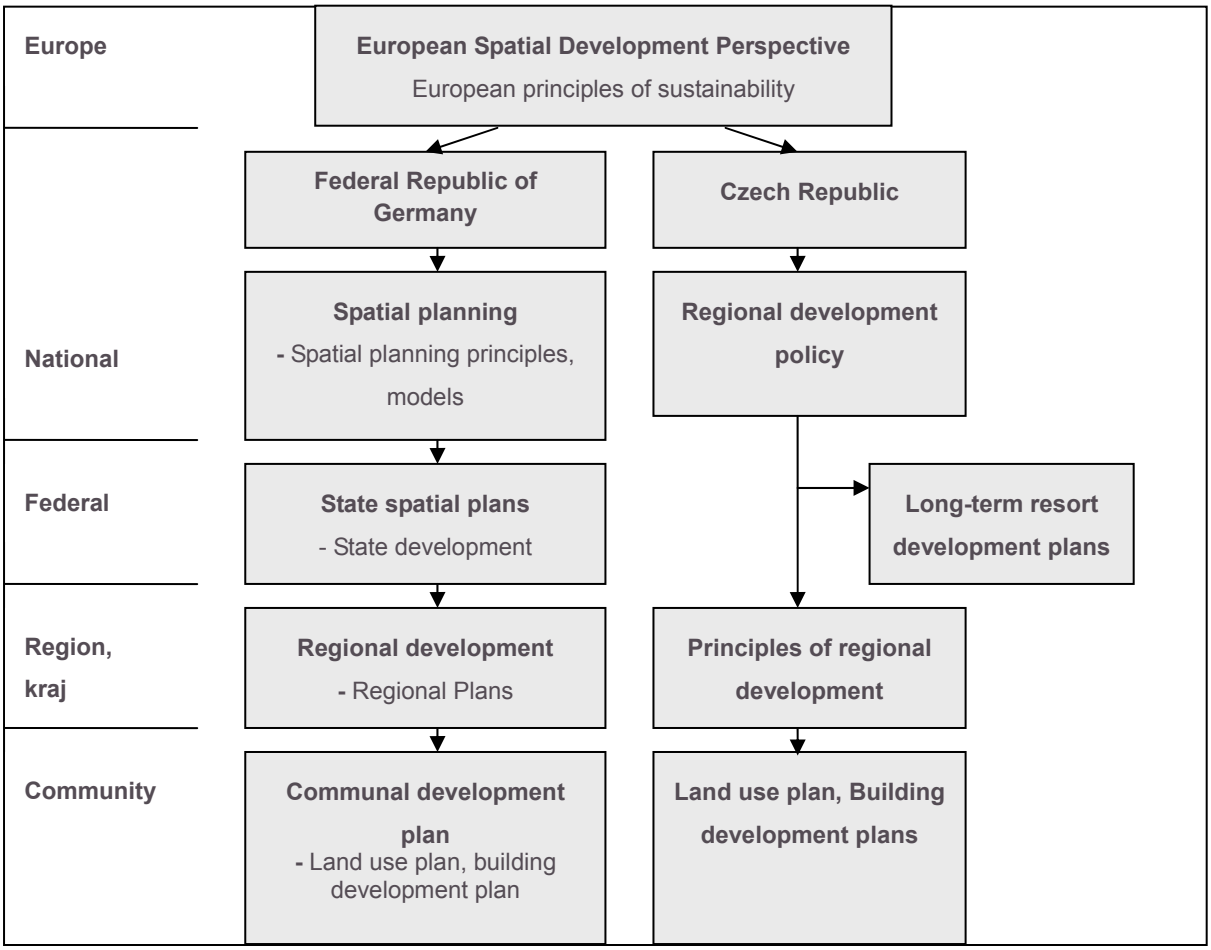


Figure 4.3: Planning systems in Germany and the Czech Republic (adapted from ELLA, 2006)

Plans and Programmes

The following plans and programmes are of relevance for FRM in the Czech Republic:

- Plan of the Main River Basins of the Czech Republic (2004-2010)
- Strategy against Floods on the Territory of the Czech Republic (2000)
- Program for the Determination of Flood Areas along Watercourses
- Program of Assessment of Run-Off Conditions in the Watersheds
- Guidelines for the Integration of Flood Protection Concerns in the Zone Plans of Communities (2003)

As a result of the implementation of the WFD, the Czech Ministry of Agriculture developed the Conception of Water Management Policy (2004-2010) which aims to provide a guiding principle for state water policy: the 'Plan of the Main River Basins of the Czech Republic' in accordance with the Water Act (Ministry of Agriculture of the Czech Republic, 2004). The responsibilities are divided between the Ministry of the Environment and the Ministry of Agriculture (Information from workshop participants). The main watercourse administrators are the River Basin Boards and the national Forest Administration (*Lesy České republiky*), which report directly to the Ministry of Agriculture. Together they are responsible for about 95% of the watercourses. Flood protection is based on the Czech Program for Flood Protection (Prevention) (2007-13) which aims to increase protection of people and key infrastructures. This is achieved through a wide range of prevention measures that are integrated at river basin level and coordinated between the State,

Regions, and Municipal Authorities in close association with the River Boards. These authorities also prepare flood-event management plans (Information from workshop participants).

In April 2000 the Czech government approved the 'Strategy against Floods on the Territory of the Czech Republic'. This strategy focuses on the formulation of activities which support the improvement of flood management. The Ministry of Agriculture is in charge of implementing the strategy and has since published a document on the objectives and structure of the programme for preventive flood protection. This document contains suggestions for practical preventive flood protection programmes to be implemented by selected authorities. It further provides a draft outline for structures and objects, and specifies the technical content of the individual programmes, including cost estimates (ELLA, 2006; Ministry of the Environment of the Czech Republic, 2011). Four main programmes are recommended for implementation:

1. Programme for preventive flood protection, to be implemented by the Ministry of Agriculture
2. Programme for erosion control of agricultural soils, to be implemented by the Ministry of Agriculture
3. Grant scheme for precautionary measures in areas affected by unfavourable weather conditions, to be implemented by the Ministry of the Environment
4. Programme for the protection of the traffic infrastructure, to be implemented by the Ministry of Transport (ELLA, 2006).

Additionally, the Ministry of Agriculture initiated the 'Program of Prevention against Floods', which focused on the increase of protection of areas most at risk from flooding in the Czech Republic. The River Boards in collaboration with the Agricultural Water Management Authority are responsible for the realisation of the program, the first phase of which was scheduled for 2002 - 2005. Furthermore, the 'Program for Determination of Flood Areas along the Watercourses' and the 'Program of Assessment of Run-Off Conditions in the Watersheds' were developed, in order to serve as an appropriate background for proposals of protection measures, territory planning and regional development (Raadgever, 2005).

Finally, the last example proves a description of the 'Guidelines for the Integration of Flood Protection Concerns in the Zone Plans of Communities which were published in April 2003 by the Ministry for Regional Development. The document summarises the statutory bases and principles, and it sets the rules as to what must be considered in regards to preventive flood protection in the spatial planning. The guidelines also provide a list of the legal instruments for flood prevention and the associated measures. Moreover, they regulate the cooperation of the water management authorities in the spatial planning, and in particular in the land use planning at community level. Additionally, they define the measures to be taken to improve retention capacities, and regulate the planning process for buildings and other land uses in flood plains. The guidelines also contain considerations that should be taken into account in regard to specialist publications and sectoral plans in the spatial planning process (ELLA, 2006: 16).

Projects

FRM projects in the Czech Republic are largely focused on both non-structural and structural measures. For example, as a result of the Plan of the Main River Basins of the Czech Republic the "*installation of new devices to improve the flood forecast and realisation of additional measuring stations for precipitation and discharge have encouraged. Simultaneously, concrete meas-*

ures for slowing down the discharge of storm water as well as technical protection of towns and villages were developed. The proposed measures were based on two international modelling projects: 'Flood Management in the Czech Republic I. and II', supported by Denmark, and 'Flood Protection in the Czech Republic', supported by the Netherlands" (Raadgever, 2005).

4.5.2 The Odra and Vistula Catchments

The following section discusses the geographical, and historical contexts of the Odra and Vistula catchments, as well as the institutional context with a specific focus on Poland.

The Odra Catchment

From the Carpathian Mountains in the Eastern Czech Republic, the Odra (German: Oder) River flows northward, towards the Baltic Sea, to form (together with its left tributary, the Neisse / Nisa / Nysa River) the border between Poland and Germany. It is an economically important transport route, navigable for more than 700 km of its 903 km length, and connected by canals with the Vistula River and with Western European waterways. The Odra valley, "*with its old riverbeds, floodplain forests and wet meadows, constitutes one of the most vital ecological corridors in Central Europe*" (UNEP/DEWA 2004: 61). 32 million inhabitants live in the Odra River catchment and the bordering regions. Most of the densely populated river basin is lowland less than 200m above sea level (Böhm et al., 2006).

Catastrophic floods occurred within the Odra River Basin in 1997 and affected much of southern Poland (Stronska, et al. 1999). This event highlighted the importance of effective flood protection of the Odra River and tributaries as natural floodplains. However, UNEP/DEWA (2004) see the "*lack of traditional ecological methods of flood prevention is one of the most important problems hindering the realisation of effective and permanent flood control in Poland*" (ibid.: 61).

The Vistula Catchment

Considered the "*spiritual monument*" of Poland, many refer to the Vistula (Polish: Wisła, German: Weichsel) as the "*Queen*". Forming a giant letter 'S', it flows eastward and then northward from the Carpathian Mountains of southern Poland to its delta near Gdansk on the Baltic Sea. The Vistula drains a basin of about 194,000 km^2. The middle and lower sections of this river are exceptional areas of natural and landscape value which is threatened by a plan to build new dams on the river's lower reaches (UNEP/DEWA 2004). Flowing through the cities of Krakow and Warsaw, the population of the Vistula Basin is approximately 23 million (2005 figures) (Buszewski et al., 2005).

The floods that affected the Odra in 1997 also had an impact on the Vistula. More recently, however, the floods of 2010 caused large damage in southern Poland and were considered to be the worst flood in 160 years, much worse than the 1997 floods (RTE News, 2010).

Trans-boundary Management and Issues (ICPO)

Due to the fact that the Odra River flows internationally, the International Commission for the Protection of the Odra River (ICPO) was founded in 1999 through an agreement between the

Czech Republic, Germany, Poland and the European Commission. Amongst other objectives, the ICPO is responsible for the coordination of the WDF in the Odra River Basin as well as providing precautions against the risk of flood damage and achieve a sustained reduction thereof. For the purpose of achieving specific objectives, its working parties draw up action programs which are submitted to the Contracting Parties as proposals and recommendations (MKOO/IKSO, 2011).

Additionally, the Vistula shares its catchment between Poland, Belarus, Ukraine, the Czech Republic and Slovakia. However, the largest share of the catchment resides in Poland. Although efforts have been made to involve various interested parties in FRM within Poland (e.g., the 'Programme for the Vistula River and its Catchment Area by 2020';KZGW, 2009), an overarching commission for the Vistula does not appear to exist, Poland does, however, take part in water management discussions with Ukraine, the Czech Republic and Slovakia. For instance, a joint commission between Poland and the Ukraine has existed since 1996 and focuses on cooperation in the field of water management, specifically with regard to irrigation, regulation and water supply (Oregon State University, n.d.; KZGW, 2010). Furthermore, the Ministry of the Environment of Slovakia ensures Slovakian co-operation within the international Vistula River Basin through the Agreement between the Government of the Slovak Republic and the Government of the Republic of Poland on water management in boundary waters (VUVH, 2011; KZGW, 2010).

Institutional Context of the Odra and Vistula Catchments: Poland

Main actors in FRM

The following Figure 4.4 expresses the organisational structure of and thus the main formal actors in water management in Poland. The Figure shows the structure of water management in Poland. However, it is important to take crisis management into account when thinking about flood risk management. Crisis management takes place at all levels of administration (national, provincial and local) for the preparation of crisis management plans and coordination crisis response and recovery (just after flood). Additionally mayors are obliged to prepare flood protection plans. However, there are no indications what such plans should cover.

Figure 4.4: Organisational structure of water management in Poland (KZGW n.d.)

Information provided from the participants of the workshop broke the administrative tasks down into main actors: 1) The Ministries, 2) The Institute of Meteorology and Water Management, 3) The National Water Authority (KZGW), 4) The Regional Water Boards (RZWG), 5) the Voivode and 6) the Marshal (Voivodship) (see Fig. 4.4).

In regards to informal actors, Böhm et al. (2006) have provided some suggestions which interest groups could be involved in relation to the Odra catchment: residents, stakeholders from agriculture and forestry, infrastructure, municipal economy and nature conservation, the building supervisory board, architects/engineers, representatives of insurance companies, rescue services, fire departments and the Police. Additionally, participants of the workshop reported that NGOs, representatives of the private sector (industries and services), and sometimes the municipalities, play an important role in the decision-making process.

Policies and Legislation

The following describes the different actors and the roles in FRM:

The Ministries:

→ The Minister of Agriculture supervises provincial flood prevention, melioration, etc. The Minister of the Interior and Administration supervises the structures of flood response, while crisis management actions are located on each level of (national and self-governmental) administration.

The Institute of Meteorology and Water Management (IMGW):

- IMGW is the research-and-development unit which runs the national hydrology and meteorology service. It realises tasks in the areas of hydrology, meteorology, water management and dam safety control. The Institute gathers and processes hydro-meteorological data, on the basis of which it also prepares warnings concerning threatening natural events, in the form of information, communications and hydrological and meteorological prediction. The scientific groups of the Institute represent an essential methodological, conceptual and developmental support for realisation of national service tasks. In case of flood danger the Institute of Meteorology and Water Management is obliged by law to warn the national and provincial levels of administration.
- After 1997 flood board of directors of IMGW established in the IMGW structure small unit for collaboration with local government (Office for Local Government Collaboration) to analyse their needs and support their activity on area of flood mitigation, especially in improvement of local flood warning system.

The National Water Management Authority (KZGW):

- Established in 2006, the KZGW is a central administrative body responsible for water conservation, and especially for water management and use. The National Water Authority (KZGW) is subject to Article 90(4) of the Water Act (2001). The Act states that the Minister responsible for water management (currently the Minister of Environment) is responsible for tasks such as: supervision of the President of the KZGW, development of draft River Basin Management Plans, preliminary flood risk assessment and a plan for flood risk management; and supervision of the activities of the Directors of the 7 Regional Water Management Boards (RZGWs), which have existed since 1991.

The Regional Water Management Boards (RZGWs):

- The RZGWs, are seen as the most important institutions in water management at the regional level (participants from the workshop) and are responsible for the implementation of the WDF/FD in regards to water management plans and programmes (defined in the Act) and manage reservoirs. The Directors of the RZGW are supervised by the President of the KZGW.

The Voivode:

- Additionally, The Voivode provide their opinion regarding provincial flood risk assessment; prepare assessments of the condition of provincial flood protection, as well as an operational flood protection plan. Furthermore, the Voivode assesses the effectiveness of the flood warning system and supervises the state fire service.

The Marshals (Voivodship):

- Finally, The Marshals develop the regional spatial management plan, supervise the provincial melioration and the water installations boards, as well as provide comments regarding preliminary flood risk assessment. Additionally, 94% of all Polish dykes are the responsibility of the Marshals (Information from the participants).

The Planning and Land Use Act (PRwG) distinguishes between the national level (land use policy of the state), the level of the voivodeship (regional administrative district) and the communal level (framework and perspectives for the land use in the community, local land use plan). The concerns in relation to flood protection are taken into account in the spatial plans at intercommunal level, as well as at local level (see § 39, paragraph 3, no. 6, § 15 paragraph 2, no. 7 PRwG). With regard to protection areas, until 18th march 2011 Polish law distinguished between areas that are at imminent risk of flooding (§ 82 WG) and areas with potential risk of flooding (§ 83 WG). "*While the first are areas located in general between the river bank and the dike, the latter are outside these designated flood plains and are only flooded when the design flood level of the protection works is exceeded or if dikes break*" (ELLA, 2006:9). These areas were designated in the Flood protection study and in general defined probability 1%, 2%, 0,5% and based on mathematical and hydraulic modelling. After preparation this documents the municipality gave the opinion on and should take Flood protection study into consideration by planning and land use policy.

Since 18th march 2011 (act was changed on January 2011) the Flood protection study was substituted for flood risk maps and flood hazard maps. Voivode and marshal provide their opinions in relation to preliminary flood risk assessment project (article 88c paragraph 3 of Water Act). General public consultation in regards to flood risk management plans are obligatory in regards on article 88h paragraph 6 of Water act.

Plans and Programmes

- ⟶ Programme for Vistula River and its catchment area by 2020
- ⟶ Emergency Flood Recovery Project
- ⟶ Odra Flood Programme 2006
- ⟶ Flood Protection Programme for the Upper Vistula River
- ⟶ Concept of the state spatial development policy (supra-regional level)
- ⟶ Spatial development plans of the Voivodship (regional level)
- ⟶ Study of local conditions affecting local planning for spatial development (regulation of land use)
- ⟶ Municipal plans (regulation of building development)

Preparation of the 'Programme for the Vistula River and Its Catchment Area by 2020' emerged as an initiative undertaken by the Non-Governmental Organisations, the statutory activity profile of which concerns the protection of the Vistula River. A meeting was held in April 1999 and the Signatories of the 'Warsaw Declaration' (1998) adopted a memorial addressed to the Prime Minister and to the Speakers of the Parliament and Senate of the Republic of Poland, on the further management methods of the Vistula River. The idea of the memorial was to raise concern of the Vistula River riparian towns and municipalities about the future of the river which has to be the source of their development. The memorial concluded with message calling for approval of the 'Programme for the Vistula River' as a constituent part of the 'Strategy for Economic Development of Poland'. In January 2000, upon initiative launched by the Association of the Vistula Riparian Towns, the Memorandum of Understanding on the Programme for the Vistula River and Its Catchment Area for 2000 – 2020 was signed. The Signatories of Memorandum were: Minister of the Environment, Head of the Prime Minister's Chancellery, the Voivodes, Speakers of the Voivodship Parliaments, and the NGOs representatives, including: Marine and Riverine League,

the “WISŁA” Vistula River Association, Foundation of the Lower Vistula River Cascade, Society of Engineers and Technicians of Hydrotechnics and Land Reclamation, Council of Water Engineering and Management Institute of the Cracow University of Technology, and Association of the Vistula Riparian Towns. The latter organisation established Bureau of the Programme for the Vistula River and Its Catchment Area that took over the initiative to develop the Programme (KZGW, 2007).

Emergency Flood Recovery Project commenced after the biggest flood in the century in Poland in 1997. The Emergency Flood Recovery Project with a Word Bank loan of US$200 million and co-financed by European Investment Bank and other donors focused on the rehabilitation of the damaged municipal and rural infrastructure. The Bank loan also provided funds for the upgrading of the flood forecasting, monitoring and warning system, which is now one of the most modern systems in the world, and for improving flood management at the local level. World Bank experts found that because Poland has a highly reliable flood forecasting system, the flood protection system is weak and needs additional investments to bring it to the required standards in order to eliminate loss of life and damage to property due to recurrent floods. The main components of the Project were:

- improving flood monitoring and forecasting system,
- develop flood protection and mitigation plans for Vistula and Oder river basins, and
- improvement and activation of local activity by preparation 12 local flood mitigation plans, printing guidebooks for local self-government and analysing the possibility of improvement of flood insurance system in Poland.

The main development objective of the Odra Flood Programme 2006 is to protect the population in the Odra River Basin against loss of life and damage to property caused by severe flooding. This would be achieved by:

- reducing the extreme flood peaks through storage of flood water in a dry polder on the Odra River just upstream of the town of Raciborz, enabling a reduction of the flood peak downstream of the reservoir and allowing better control of the operation of the river system; and
- by increasing the flood carrying capacity of the Odra River channels through and around Wroclaw.

The Project would protect more than 2.5 million people against flooding in several towns such as Raciborz, Kedzierzyn, Kozle, Krapkowice, Opole, Brzeg, Olawa and Wroclaw, and settlements in the three vovoidships of Slaskie, Opolskie and Dolnoslaskie.

Projects

At present flood risk management focuses on structural measures rather than behavioural changes. But there are many examples of the small projects carried out by NGO’s, local governments and other bodies which focus on non-structural solutions. Some of them are described below.

Atlas of Oder Floodplain

In 2000 WWF- Institute for Floodplains Ecology (Germany) and WWF Poland publish the 12" by 16" atlas, which contains 52 colour map plates at 1:50,000 each with transparent overlays, some

additional maps at smaller scales, and supporting text and illustrations. These maps present the land cover and wetlands in the floodplain of an 800 kilometre reach of the Odra River in Poland.

More space for water – natural retention

In cooperation with local self-governments and state administration WWF Poland has also been running a project which involves setting back some 7.5 km of embankments several score meters from the Odra to help obtain an additional area of around 700 ha where the river could flood without causing damage This should help improve flood safety of two localities which were affected by the 1997 flood and, at the same time, restore the good status of areas valuable for nature.

Safe communities by the Oder River

In 2007 WWF-Poland, in cooperation with the Regional Board for Water Management in Wroclaw, developed and passed on to the commune authorities on the Odra information material and maps showing areas at risk from flooding in the Odra valley in the Lower Silesian voivodship. The majority of these communes declare that they have been using these maps while issuing decisions on development and hold back building construction and project investments from entering areas most threatened by flooding.

Local Flood Warning Systems

On a wave of criticism aimed at official institutions responsible for flood damage mitigation, many local governments in Poland took actions meant to lead to better preparedness for future floods. One interesting example is a local precipitation and water-level monitoring system in the Klodzko Valley, built by the local government. The Klodzko Valley is a compact area surrounded by mountains, which makes flood wave concentration times very short—for the lower portion of the valley, they do not exceed 8 hours. In 1997 flooding in this area caused 13 causalities and 8 in 1998. The measurement network built is comprised of 40 stations, of which half measure water levels, and the other half, precipitation. IMGW, as part of the European OSIRIS project (Fifth Framework Program), was involved in the expansion of this system with the following elements:

- a module for integration of measurement data from the nationwide and local measurement networks
- a module for analysis of these data based on a simple precipitation-runoff model (HEC), which permits local crisis intervention forces to predict events in their area; and
- a module for effective warning of inhabitants, based on land-line telephone service, permitting about 1000 inhabitants at risk to be warned in the space of an hour.

The IMGW team participates actively in preparation of concepts for similar systems in other parts of Poland. Such collaboration is very much needed, because local systems built by local governments display many flaws, which could cause them to be ineffective during a flood.

Programme of flood education

The institution which systematically promotes non-structural measures is the IMGW Office for Local Government Collaboration. Together with National Water Management Board the Office prepared and implemented in Poland in many places flood education program (book guide for teachers, brochures for local organisers of such activities and families were prepared). This edu-

cational program is not implemented at a national level but is some bottom-up initiatives (e.g. a book made for teachers which advise them what to do when flood occurs; based on consultation and even co-deciding of teachers of pilot areas). Educational materials (brochures, leaflets, CDs, etc.) are partly co-financed by National Water Management Authority (KZGW), Institute of Meteorology and Water Management and some international programmes. IMGW promote also local flood mitigation plans and implemented such plans together with local authorities in few places in Poland.

Future Challenges

The participants of the workshop suggested that shifting more power from the Ministry to the local authorities could encourage more effective FRM. It was argued that methods and approaches of participation in decision-making need to be improved in order to ensure successful policies. At this stage, the participants of the workshop have witnessed attempts at participation that have failed to be able to take into account all of the interests in the room. Therefore, it was suggested that participants be selected more carefully and / or communication techniques developed in order that everyone can be heard.

4.5.3 The Danube Catchment

The Danube River Basin is 2,857 km in length and has an area of 817,000 km². It is the second largest river in Europe. With 18 countries sharing its catchment it is the most international river basin in the world (ICPDR, 2011). The basin extends from Central and Southern Europe westerly to the Black Sea. The river emerges from the Black Forest in Baden-Wuerttemberg at the confluence of the Brigach and Breg Rivers. The countries which share the most significant parts of the catchment are: Moldova, Ukraine, Romania, Bulgaria, Republic of Yugoslavia, Montenegro, Bosnia and Herzegovina, Croatia, Slovenia, Hungary, Slovakia, the Czech Republic, Austria and Germany. The population of the catchment is approx. 82 million (ICPDR, 2011a). 80% of the Danube is "*regulated for flood protection, while approximately 30% of its length is additionally impounded for hydropower generation. Stretches of flood protection and hydropower generation also co-exist*" (ICPDR, 2010a). Approximately half of the catchment is used to generate hydropower and comprises of more than 700 dams and weirs built along the main tributaries (ICPDR, 2010a). In Austria, the Danube represents an economic, geographical and cultural force. Draining over 96% of the country's territory, it is home to almost 8 million inhabitants. The Austrian territory accounts for 10% of the total area of the Danube Basin (ICPDR, 2006).

Large floods in 2002 affected the entire basin and impacted areas in Germany, Austria and the Czech Republic. With infrastructural and housing (over 10,000 homes reported damaged) costs estimated around €232 million, Lower and Upper Austria and Salzburg have been severely affected by the floods. Total damage estimation amount €3.1 billion (ICPDR, 2010b). The floods of 2006 affected Germany, Austria and the Czech Republic.

Trans-boundary Management and Issues

The International Commission for the Protection of the Danube River (ICPDR) and other agreements with neighbouring countries provide a platform for international cooperation in flood risk management. Within this framework and through different research projects (such as Danube

FloodRisk), many participation activities take place, with the Ministry of Agriculture, Forestry, the Environment and Water Management (BMLFUW) playing a crucial role.

The ICPDR commenced in 1998 and is currently an international organisation consisting of 13 cooperating states (Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Italy, Moldova, Poland, Romania, Slovakia, Slovenia, Switzerland, Ukraine, Yugoslavia (Serbia and Montenegro)), and the European Union, implementing the Danube River Protection Convention: "*It is the institutional frame not only for pollution control and the protection of water bodies but it sets also a common platform for sustainable use of ecological resources and coherent and integrated river basin management. The ICPDR is the body charged to implement the Convention on the Protection and Sustainable Use of the Danube River*" (Danube River Protection Convention, DRPC) (Oregon State University, n.d.).

The Institutional Context of the Danube River Catchment: Austria

Main actors in FRM

The national management structure of flood protection in Austrian is divided into three parts. This is due to the legal requirements, the natural diversity, and the regionally differing tasks: (1) management of water bodies; (2) torrent and avalanche control; and (3) maintenance and development of waterways (Lebensministerium, 2006). The Federal Water Engineering Administration (BWV) is responsible for all water bodies, except for the torrents and waterways which are defined by ordinances which fall under the responsibility of the Forest Engineering Service for Torrent and Avalanche Control (WLV). The BMV and the WLV are agencies of the Ministry of Agriculture, Forestry, the Environment and Water Management (BMLFUW) and the provincial governments. The rivers Danube, March (Morava) and Thaya (Dyje) are managed by the Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Federal Waterways Administration, respectively. It is interesting to note that this coordination is quite recent (2003). Additionally, the Federal Hydraulic Engineering Administration is in charge of developing retention measures and the construction of basins outside of zones that are defined as "intensively used" (BMLFUW, 2006).

The National Crisis and Disaster Protection Management (*Staatliches Krisen- und Katastrophenschutzmanagement*) (SKKM) consists of the Rescue Service, Fire and Hazard Police, and the Disaster Support. The Rescue Service and the Fire Brigades are managed by the Federal Provinces, with the municipalities mostly utilising the services of voluntary rescue organisations and fire fighters (Lebensministerium, 2006). The SKKM has only been around since 2003. Beforehand there was no federal involvement/coverage. Furthermore, disaster management is presently largely in the hands of the regional governments (information from workshop participants). Additionally, civil protection on the provincial level is also largely based upon volunteers. Furthermore, municipalities, Provinces or the Federal Government can request support from the Federal Armed Forces. In case of an emergency, usually either the regional or the provincial governments are in charge. It is at this level that disaster protection plans are established. Only transboundary issues and emergencies affecting several regions or provinces are directly a matter of the SKKM. Since 2004, the coordination committee for the SKKM includes all Federal Ministries, Provinces, public safety (police), relief organisations and media. The Federal Warning Office is a permanent contact point and works together with the provincial warning offices. Flood

warning is then organised by the individual provinces and the municipalities (information from workshop participants).

Policies and Legislation

There is only one water law in Austria: a federal law but implementation is carried out by the 9 regional governments. If a disaster occurs in only one province then it is only an issue for that area. When it crosses borders, however, then it becomes an issue for the (governor of the) regional governments (information from workshop participants). Due to several flood events in the 19th century the state took control by organising the Torrent and Avalanche Control (WLV) and the Federal Hydraulic Engineering Administration (BWV). Nevertheless, the Austrian water legislation states that people who are affected by floods are responsible for their own protection. After WWII the Austrian government tried to expand agricultural areas by draining wetlands close to rivers ('to build the 10th federal province'). These measures have been realised in combination with flood protection. However, this funding system allowed people to believe that the state is generally responsible for flood protection even though the law remained the same. Hence, the level of self-responsibility decreased (information from workshop participants).

The principle instrument for preventive flood protection is the hazard zone plan (§ 11 Forestry Act). All areas at danger of erosion from mountain streams and avalanches, the nature and level of danger are identified. Additionally, specific land use is prescribed, as well as sites that must be kept clear for protective measures. The plan is based on the water levels of flood with e statistical return period of 1 in 150 years. Overall spatial planning for flood protection is the responsibility of the federal state. Protection of settlements and important infrastructure, however, is the responsibility of the regions. Moreover, spatial planning at the local level includes all restrictions regarding land use. The identification of flood plains based on a flood with a return period of 1 in 30 year are, in accordance with §§ 3 and 48 of the Austrian Water Rights Act, the responsibility of the local authorities who are required to ensure that retention area sites at risk are not developed upon (ELLA, 2006).

Plans and Programmes

The following provides a selection of examples of current plans and programmes in Austria:

- Flood Programme 2016
- Programme for flood-safe development in settlement areas
- Action Programme for Sustainable Flood Protection in the Danube Basin
- The Environmental Programme for the Danube River Basin – Strategic Action Plan for the Danube River Basin (1995-2005)[13]
- Flood Action Plans[14]

The main goals of the "Flood Programme 2016" were to "improve existing measures or create new flood protection measures, both structural as well as non-structural, and to accelerate the preparation of flood hazards maps. Based on this programme Austria invests about €400 million per year into flood protection measures" (ICPDR, 2011b). Moreover, an Austria-wide internet

[13] See: http://iwhw.boku.ac.at/Donau/Environmental_Programme_Danube.pdf
[14] See: http://www.icpdr.org/icpdr-pages/flood_action_plans.htm

platform for natural hazards has also been developed.[15] This platform allows anyone to access and view maps which show all areas potentially affected by floods.

The Action Programme for Sustainable Flood Protection in the Danube Basin is based on existing networks, programmes and structures developed in the various Danube riparian countries. The overall goal of the Action Programme is "*to achieve a long term and sustainable approach for managing the risks of floods to protect human life and property, while encouraging conservation and improvement of water related ecosystems*" (ICPDR, 2004:5). The programme is developed in a way which is consistent with the areas defined in Water Framework Directive. The programme should employ a bottom-up approach "*where appropriate built on previously prepared sub-basin plans integrated from national long-term master plans*" (ibid.: 16).

There are four major basin-wide targets:

1. Improvement of flood forecasting and early flood warning systems; interlinking national or regional systems.
2. Support for the preparation of and coordination between sub-basin-wide flood action plans.
3. Creating forums for exchange of expert knowledge.
4. Recommendation for a common approach in the assessment of flood-prone areas and evaluation of flood risk.

Projects

One project that has recently taken place in Austria is the reclaiming space for rivers (retention basins). The intention of such projects is to divert flood waters away from settlements to rural areas in order to minimise damages. Steiermank (n.d.) notes that the government of Styria invests a substantial amount of public funds into largely structural flood protection measures:

- ⟶ Project Grimmingbach brook: €1,700,000 to protect approx. 53 hectares against a flood with a statistical return period of 1 in 100 years
- ⟶ Project Gradnerbach brook: €910,000 to protect approx. 3.3 hectares against a flood with a statistical return period of 1 in 100 years

Another example of a project appeared as a result of an assessment of the Carinthian government's communication activities. It was found that these communication methods were ineffective. Therefore, the government decided to create information posters with text in the local dialect and showing historical pictures of local landmarks in order to encourage residents to relate to past hazard events and at the same time see the potential of future events (information from workshop participants).

4.6 Summary

A general summary of this chapter shows that FRM in the Central European countries under consideration is highly fragmented among many different institutional actors (mostly from the public sphere) and across different levels. Most concrete FRM activities are taking place at the regional level. We see that in general, policies and plans are made at the EU and national level and turned into plans and programmes at the regional level (e.g. federal states or catchments of

[15] See: www.hochwasserrisiko.at

larger rivers). Concrete projects such as dike relocations are then mostly implemented on the local level.

5 Social Capacity Building in Practice: Current Examples of Participation in Flood Risk Management in Different Catchments

This chapter describes what is currently being done in regards to participation in practice. As we can see from Chapter 4, participation, as reflected in water and risk management policies, is not a new notion. Therefore, it is important to learn and build upon the work that is already being done. This chapter begins a description of what CapHaz-Net understands participation to consist of and continues with detailed descriptions of current participation approaches from each catchment, as well as a few examples of pilot studies and initiatives from across Europe. Finally, a summary of the main findings regarding participation within flood risk management is discussed.

5.1 Definition of Terms

Chapter 4.2 introduced and defined three levels of participation, that is policies and legislation, plans and programmes, and projects which all comprise of structural and non-structural measures. While this distinction was crucial throughout the workshop, further terms needed to be clarified. The following aims at summarising and creating a list of definitions for often used terms in an attempt to create a consistent and clear understanding of the usage of the following terms.

- **Top-down:** (national/regional/local) governments retain power to make decisions and pass those decisions down onto the general public.
- **Bottom-up:** the general public develops initiatives that lead to changes in government or local policies.
- **Horizontal governance:** A horizontal initiative includes the relevant actors in decision-making processes within a defined geographical or functional segment (Renn, 2008). It may take place across "*levels of government, across boundaries between units of a single department or agency or among multiple departments or agencies, or across public, private and voluntary sectors. It replaces hierarchical leadership with collaboration, coordination, shared responsibility for decisions and outcomes, and a willingness to work through consensus*" (Ferguson, 2009: 1).
- **Vertical governance:** describes the links between segments (such as the institutional arrangements between the local, regional and state levels) (Renn, 2008).
- **Interventionist approach:** CapHaz-Net understands an interventionist approach as being particularly focused on the policy dimension as well as legal and regulatory systems. It aims at stimulating and supporting capacity building in specific localities or regions by providing measures, strategies and entire policy frameworks by intervening and initiating one-way and two-way risk communication processes (Kuhlicke et al. 2011: 807).
- **Participatory approach:** CapHaz-Net understands a participatory approach as focusing on individual actors and different kinds of communities. Such an approach aims at empowering actors by increasing their autonomy and agency to ''*develop their own self-confidence and skills to challenge prevailing local and wider structures of domination*'' (Pelling, 2007: 375). The focus is on locally driven and owned capacity development processes.

One issue that arose from all of the groups was the difficulty in defining “interested party”. CapHaz-Net’s understanding of interested parties in regards to flood risk management includes communes (districts, cities, municipalities, and their lower authorities), businesses (engineering firms, insurance companies, etc.), associations, organised and non-organised public (neighbourhood groups, NGOs, etc.), science, and sectoral / higher authorities/agencies (water, nature, conservation, waste, civil protection, culture, spatial planning). However, these were only posed as suggestions. No guidance was previously provided regarding how to find / identify these groups and when they should be invited to participate in a project or programme and when not. These discussions ensued during the workshop.

→ The European Commission (2003) defines **interested party (or "stakeholder")** as: *“Any person, group or organisation with an interest or "stake" in an issue, either because they will be directly affected or because they may have some influence on its outcome. ‘Interested party’ also includes members of the public who are not yet aware that they will be affected (in practice most individual citizens and many small NGOs and companies)”* (ibid.: 11).

→ A similar term is, then, the **general public** which needs to be distinguished from the **professional public** and the **organised public**. In contrast with the general public these two are institutionalised (be it as a formal authority or an NGO) and, thus, pursue certain organisational aims.

The following provides the main points from the workshop group discussions:

1. Each working group had slightly different definitions of “interested parties”. In regards to who could be considered an interested party, each group mentioned NGOs, and the broad public. Most mentioned organised groups in general. For example, the German Elbe Group (Group A) explained that groups that are usually involved are: the state sector (municipalities, higher authorities), the intermediary sector (associations, NGOs and science), and the private sector (different organisations). The Czech Elbe Group (Group B) created categories for interested parties (broad public, officials and professional public). They were able to express which party plays which role at which level and to what degree. Moreover, the Czech Elbe Group (Group B) explained that, for example, on the local municipal level, participation is considered to involve the organized public (e.g. NGOs) and the general public. Interested parties, then, include the Mayor and people that have knowledge about floods, private sector, NGOs, universities, experts, specialists, and the organised public.
2. Throughout all the discussions it was argued that context plays a large role in defining an interested party. Each context will require a different set of actors and processes and this should be taken into account because there is no rule that can apply for each participation exercise.
3. Finally, the Czech Elbe Group (Group B) argued that the topic of interested parties seems to be of more relevance for the scientists than the practitioners.

Some groups also proposed **methods of defining** who to include and when. There were a few suggestions given as to how to define interested parties.

1. The German Group (Group A) suggested defining interested parties according to A, B, C levels (A = the whole catchment and C = local / small catchment) (see Section 6.1.5).
2. The Polish Group (Group C) also developed a matrix which can help to define who to involve and who to inform. Another suggestion of how to find stakeholders was through a snowball approach, namely by asking one person to participate and then ask them who they know who would be a good candidate for a participant (for both see Section 6.2.1).

The following definitions are a summary of the above discussion:

- **Interested party:** are members of professional/organised public and/or the general public.
- **Professional public:** experts (including scientists), government representatives and practitioners (e.g. engineers, consultants, insurers, etc.)
- **Organised public:** NGOs and interest groups (e.g., fishing associations, nature conservationists, citizen initiatives etc.)
- **General public:** residents and other individuals

The following Figure 5.1 explains how the above interested parties are involved in participation by breaking participation down into inter-organisational and public.

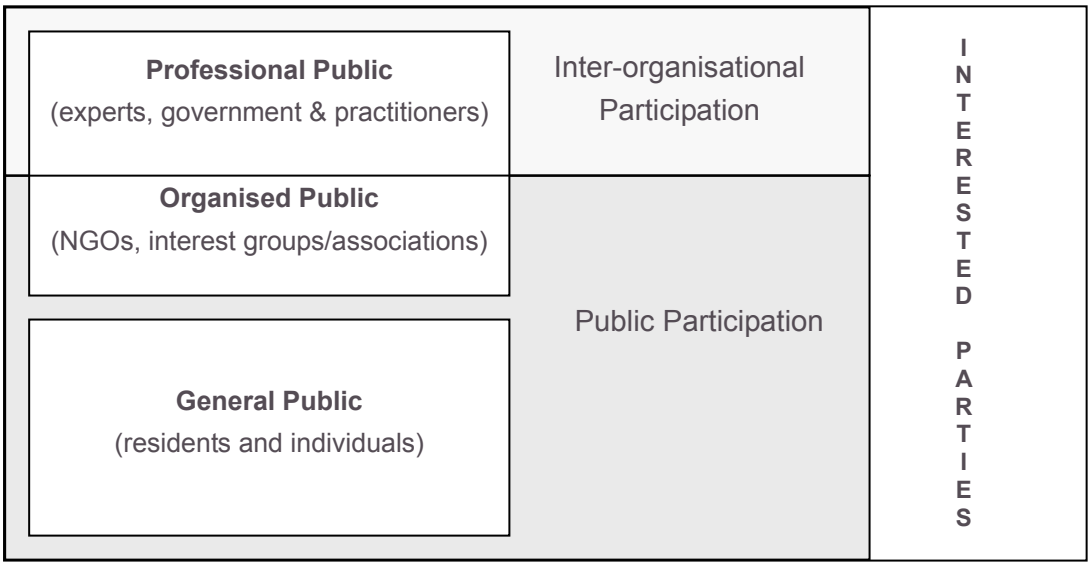


Figure 5.1: Interested parties involved in inter-organisational and public participation.

5.2 CapHaz-Net's Understanding of Participation

The workshop intended to encourage the participants to share their experiences with participation in their respective catchment areas depending on the level and degree of participation. These levels were discussed in the previous chapter. The following section describes the degrees of participation. Four **degrees of participation** were defined prior to the workshop. While the first three categories focus on different intensities of interaction between decision-makers and the interested parties at risk, the fourth category relates exclusively to interactions between different authorities: 1) information provision, 2) consultation, 3) decision-influencing and 4) inter-organisational exchange:

- **Information provision** relies on indirect, one-way communication with (almost) no feedback mechanisms (e.g. notice-boards, mailing lists, public meetings to inform residents or other actors, making documents and plans publicly accessible). The purposes of such communication are: informing about projects, plans and policies, raising awareness, encouraging protective behaviour, or warning residents at risk (e.g. by means of flood risk maps) (Arbter et al., 2007).
- **Consultation** is a form of two-way communication which actively seeks information from or discussions with different actors through dialogue. It aims to receive some kind of feedback, for instance, that previously provided information is understood and adapted. It also aims to allow different actors to express their opinions and views on a planned project. Examples of this participant strategy are: public meetings with discussions, opinion surveys, citizen panels, or a request for comments (Arbter et al., 2007). However, decision-makers may or may not take the feedback of the interested parties into account.
- **Decision-influencing** aims at creating open and mutual exchange while allowing the identification of different or similar opinions, worldviews and values among and between different actors; on the other hand, it also aims at the participants to actively influence the final decision-making process. Examples are study-groups, round tables, citizen juries, mediation procedures etc. (Arbter et al., 2007; Kenyon et al., 2001).
- **Inter-organisational exchange** aims at coordinating actors from different organisations or sectoral decision-making structures to be aware of each other's programmes and initiatives and not to duplicate efforts or to interfere (Holg, 2002).

The following Figure 5.2 represents a visual concept that was developed in order to reflect the previously provided definitions of levels and degrees of participation. The Participation Chart was developed as a workshop material in order to focus the discussions around previously discussed levels and degrees of participation. Overall, the Participation Chart provided to be a somewhat useful way to understand different levels of participation. However, although developed as a tool to enhance discussion and simplify examples into a generic structure, this chart proved to be too simplistic for some groups and provided confusion rather than a smooth discussion. Criticisms of the chart were namely, that it was too dense and that a chart should have been produced for each level of participation. Additionally, the term 'construction' was removed as a factor of non-structural measures[16] as we adjusted our definition of structural and non-structural measures. The term inter-sectoral was also exchanged for "inter-organisational".

[16] See Annex 3 for the original chart.

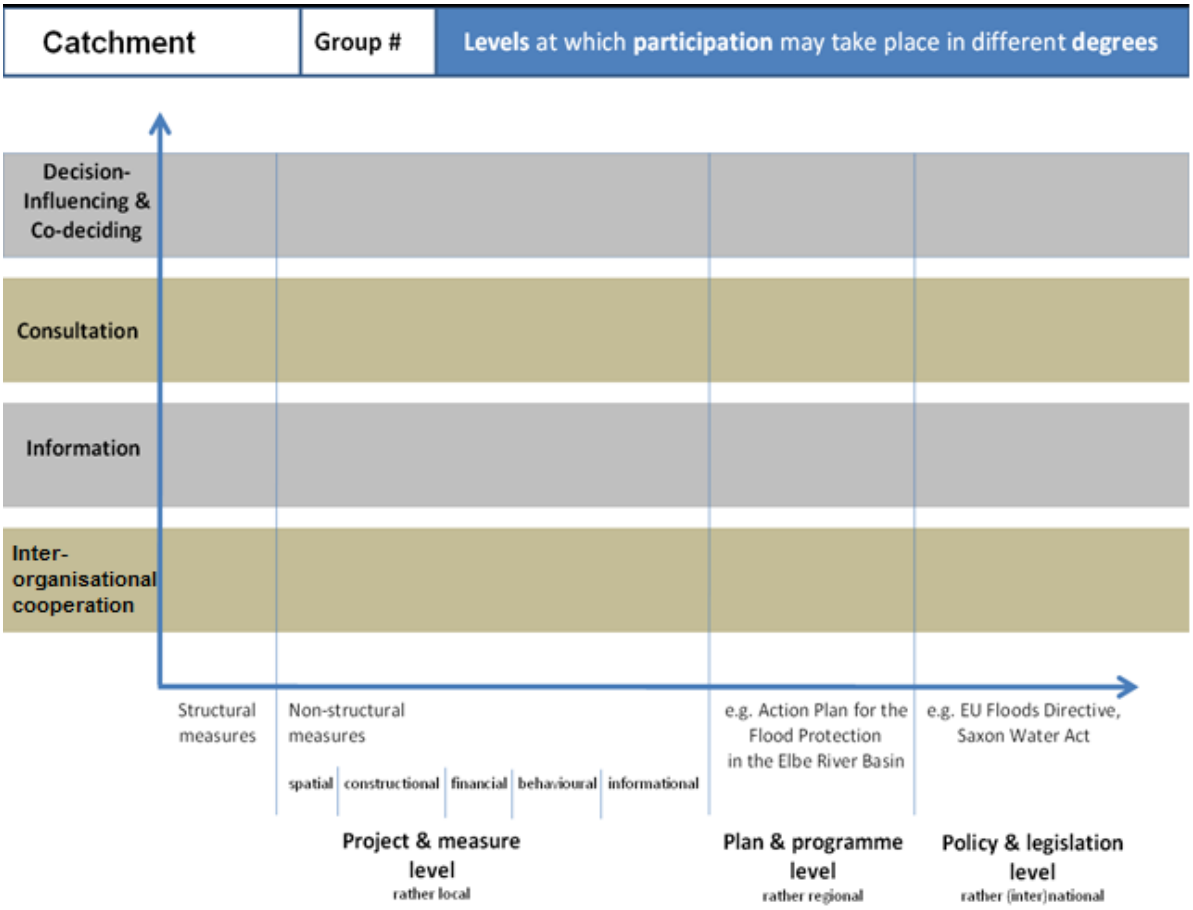


Figure 5.2: Workshop material: Participation Chart.

The following sections provide a summary of the discussions that occurred within the working group session. The aim of the session was to provide examples for how participation is currently taking place within each catchment. The participation charts were used as visual representations of these practices. This chapter also provides examples of potential future participation practices in Europe and finally, highlights a problem faced by each group: how to define an "interested party" in the context of the implementation of the EU FD.

5.3 The Elbe River Catchment (Germany and the Czech Republic)

The following section describes current participation practices taking place within the Elbe River catchment. The section begins with examples from Germany, followed by examples from the Czech Republic.

5.3.1 Germany

The following figure shows examples of policies, plans and projects and how they relate to the different degrees of participation.

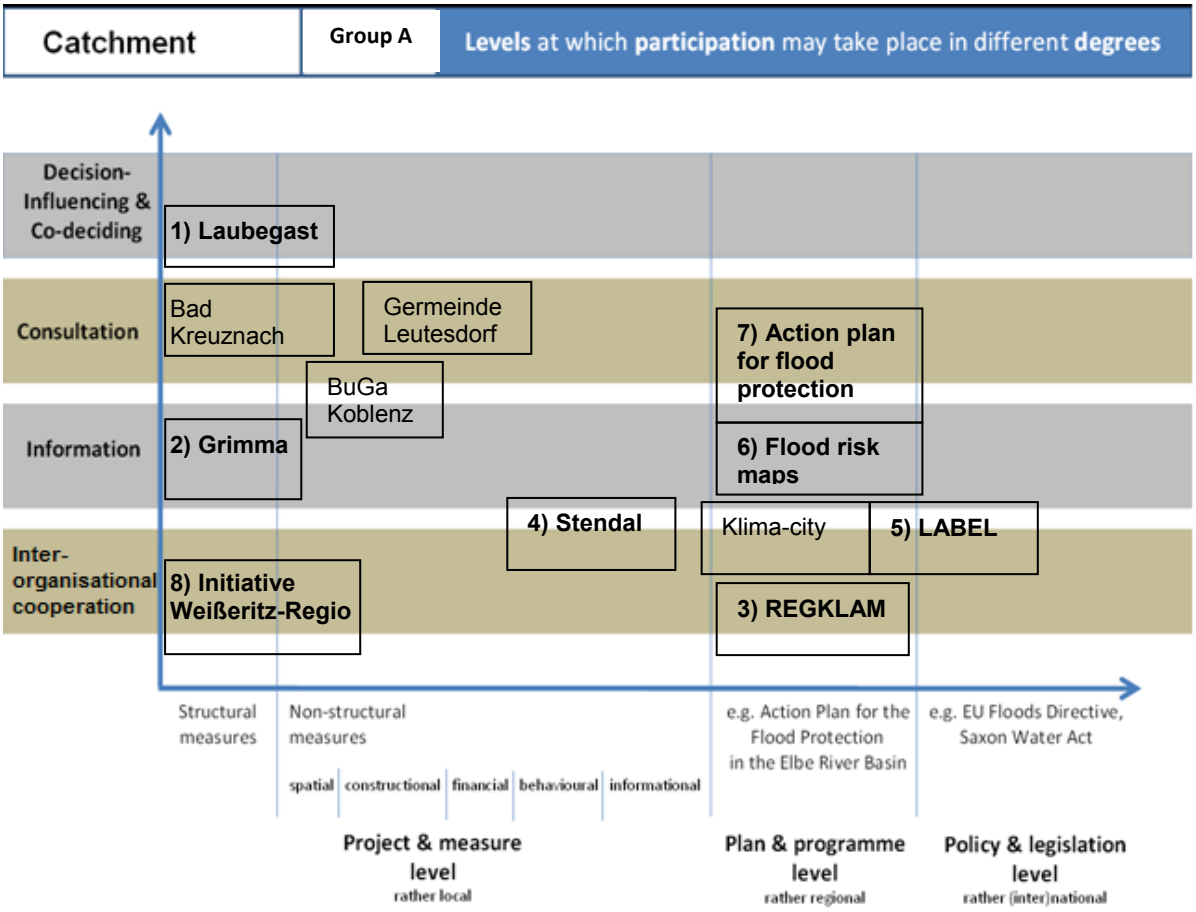


Figure 5.3: Participation chart from the German Group

The following section provides detailed explanations of a selection of the examples (with numbers) above.

1) Dresden Laubegast (Elbe catchment)[17]

Located directly at the Elbe River in an area at high risk from flooding within the City of Dresden, the foundation of an action group (Bürgerinitiative) took place because there is a strong need for flood protection and Laubegast was not on the top of their priority list of the Saxon State Dam Authority (LTV) established after the 2002 flood. The City of Dresden (namely the municipal Office for the Environment) became aware of this dynamic and tried to bring forward flood protection on the agenda. The public (organised and general) was from the beginning strongly involved (this is seen to be rather unusual) and participation was very intensive. This process is being facilitated by an external planning office from Leipzig. During an expert workshop, the public had an opportunity to discuss with the experts together and were able to generate concrete proposals in terms of structural and non-structural measures (by September 2011, this is still currently at the planning stage).

2) Grimma (Elbe catchment)

The severe flood in August 2002 caused over €200 million damage in this small Saxon city alone. Since then, the focus lies on structural measures (a flood wall) and is a strong top-down process. In the beginning the public (organised and general) was not involved at all. Only tech-

[17] Personal communications after the workshop with Uwe Höhne (LfULG).

nical draft planning (*Vorplanung*) existed which produced a rigid technical solution by the State Dam Authority (LTV), which, in the end, could not be implemented in the way it was proposed; the regulatory authority did not accept the draft planning. Thereafter, participation was employed (due to the failure of the draft in the preservation of historical monuments), urban planning and other experts have been involved (e.g. landscape architects, the Technical University in Dresden) and, information was also provided to the public (e.g. via the website of the town[18]) (Stadt Grimma, 2011). Furthermore, Grimma has – and this is rather uncommon – its own warning system (see: Hörmann GmbH, 2009; Siedschlag 2010) in addition to the state warning system.

3) REGKLAM[19]

This project within the framework of the German research programme 'KLIMZUG - Managing climate change in the regions for the future' does not include the general public but science and many associations are involved (questions that arose in this context were: Are these parties sectoral? Do the decision-influencing and consultation levels necessarily include the organised and general public?). There is a lot of inter organisational cooperation within the region of Dresden, and parties meet regularly in so-called regional fora. Flooding is considered but not in the focus. At this stage it was suggested that it would be very helpful for the purposes of the workshop to distinguish inter organisational cooperation by different intensities.

4) Stendal County (Elbe catchment)

The development of a municipal flood (risk) management system (instruments which support municipal decision makers in preventive flood protection as well as emergency management by providing helpful information) took place because of the 2002 experiences (but it is not an official action plan). Inter-organisational cooperation exists between the fire brigade, the THW (Federal Agency for Disaster Relief), police, German Armed Forces (Bundeswehr), which were involved in the preparation of flood risk maps. The organised and general public were informed.

5) LABEL project

Core elements of the project LABEL, a follow-up of the ELLA project, are the cooperation of spatial planning and water management authorities in flood risk management issues, the development of strategies and measures for adaptation to flood risk and a comprehensive communication strategy for raising public awareness. The joint transnational actions will avoid erroneous developments and aim at supporting long-term risk precautions and improving the flood risk management in general. One specific pilot action, among others in the project, is the integration of municipalities in flood risk management. In a pilot project, all three steps required for the implementation of the EU FD will be carried out along the Weiße Elster River. The Weiße Elster has its source in the Czech Republic and flows through Saxony and Thuringia to Saxony-Anhalt towards the Saale River which in turn feeds the Elbe River. A collaboration of the named countries is therefore obligated to meet the requirements of the EU FD. In addition to an intensive exchange of experience, tailored risk maps, hazard maps and a flood risk management plan prepared for the entire German catchment area of the Weiße Elster River will be the result. The knowledge gained in the project findings will be incorporated into the LABEL recommendations

[18] See: http://www.grimma.de/02_rathaus/hochwasser.php

[19] For more information see: http://www.regklam.de.

for the creation of risk maps and management plans. It will also contribute to the transnational coordination of the procedure for implementing the EU FD[20].

6) Flood hazard maps and flood hazard indication maps (Free State of Saxony)

These maps have been largely prepared by the State Dam Administration of the Free State of Saxony (LTV) under the responsibility of the Saxon State Office of the Environment, Agriculture and Geology (LfULG), a subordinate agency of the Saxon State Ministry of the Environment and Agriculture. During the preparation of the maps there was hardly a participation process, only the information that these maps are now available is given. It would be very important to ask for a feedback after the maps are prepared; but during the preparation process was seen as not being necessary.

7) Flood protection concepts (Saxony/partly Saxony-Anhalt) & Action Plans for Flood Protection (by ICPER)

As a result of the 2002 flood event, flood protection concepts are water management framework plans that were subsequently created for all primary water bodies (and at present also for some sub-ordinate water bodies, see Gerber 2011). They include an analysis of past flood events, hydrologic and hydraulic modelling results, proposed measures and the above mentioned flood hazard maps. The organised and general public may view these concepts in the respective agencies. During the design of these concepts, different sectors worked together and the measures were planned (and some eventually realised) by engineering companies. Such structural measures are subject to SEA which includes specific requirements how to include the public (see Section 4.4.3).

8) Regional Flood Risk Reduction Measures in the Catchment of the Weißeritz River in and near Dresden (Elbe catchment, "Initiative Weißeritz-Regio"[21])

An example for inter-organisational cooperation on the project level is the "Initiative Weißeritz-Regio". This initiative was founded following the disastrous flash flood event of August 2002 at this small left tributary of the Elbe River in Saxony. Its 24 member organisations include communes along the river (also the City of Dresden), the Saxon State Dam Association, the Saxon State Office of the Environment, Agriculture and Geology, an number of forest offices, farmers, landscape and nature conservation associations and a scientific institute. It is meant to be an informal cooperation respecting the responsibilities of all involved parties but with the aim to come to a common and harmonised (technical) flood protection concept for the Weißeritz River. Different working groups meet irregularly to discuss questions of data storage, information of the public, land use or technical measures. The public was informed with the help of brochure for self-protection and online discussion forums and maps.

5.3.2 The Czech Republic

The following Figure 5.4 provides a general overview of which actors are involved in FRM in the Czech Republic.

[20] For more information see: http://www.label-eu.eu and http://www.ella-interreg.org/index.php?id=404.
[21] http://www.ioer.de/weisseritz/html/fr_ueberblick.htm

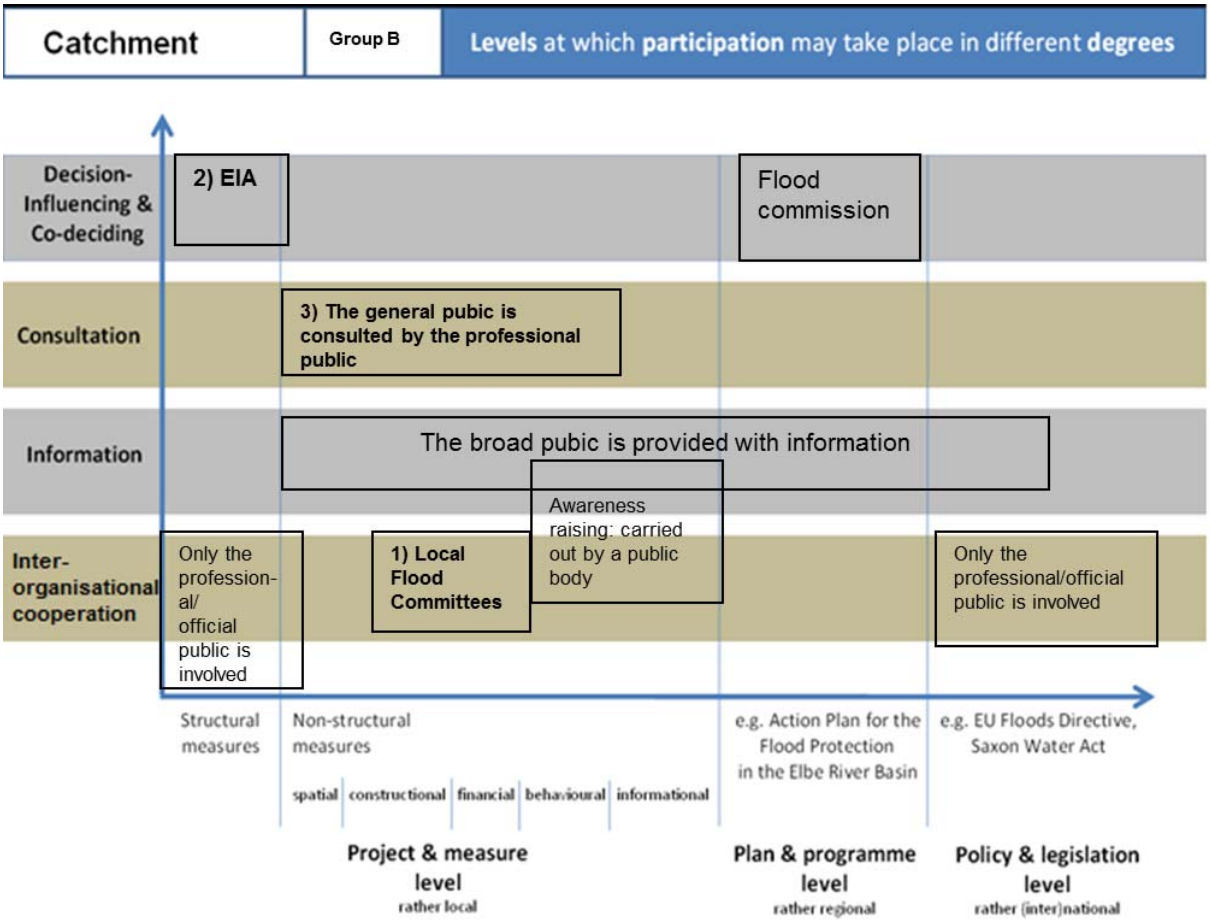


Figure 5.4: Participation Chart from the Czech Republic Group

In regards to the participation chart, the Czech Republic group aimed at providing general examples of who is involved (e.g. professional, organised and general public) and where they sit within the chart. Two concrete examples were provided (EIA and local flood committees), which will be discussed below. Generally, the professional public is seen as the main players in the decision-making process. The general public is involved only as a result of being provided with information.

The public participation principle was implemented by the Water Act (254/2001) and the subsequent Decree on Water Planning (142/2005). In accordance with Article 14 of the WFD, it states which documents have to be commented on by the general public. In Czech legislation, the difference between the roles of the general public and the professional / public is not emphasised. Therefore, the formalised public participation only contains the provision of information to the public and the opportunity to participate in official consultation practices (Slavíková, 2010).

As discussed in Chapter 3, responsibilities for FRM are shared between the Ministry of Agriculture and the Ministry of the Environment. Additionally, River Boards (*povodí*) and Flood Committees (*povodňové komise*) on all three administrative levels (state, region, community), play an important role during and between flood events. The following provides a detailed description of three topics: the local flood committees, planning and involving interested parties.

1) Flood Committees

Flood Committees work across all administrative levels. Every community is obligated to establish a local Committee with the mayor acting as Head of the committee. Tasks are also carried

out by the council who take on these tasks as additional tasks. However, membership is not exclusive to council members as it is the choice of the mayor who is involved. Members of the fire brigade and health services might be involved but only during a flood event. Members of the flood committee usually have the connections and networks which enable them access to the information that is required. All this information should be recorded either on paper or digitally because there is a connection between up-stream and down-stream. After a flood it is important to report the actions that were taken and evaluate them.

2) Planning

Additionally, the Ministries of Agriculture and of the Environment conduct campaigns (information provision) and invite comments by municipalities (consultation). They publish documents and make information available on their website and provide a 6 month period to comment on the plans (e.g. EIA). However, although the organised and general public have a say on how the EU FD should be implemented in the end it is the decision of the Ministries.

3) Involving interested parties

Although not part of the Elbe catchment, an interesting participation practice is reported from the Morava (March) and Dyje (Thaya) River catchment areas. There the competent authorities map groups of interested parties (water users, mayors, NGOs, etc.). They are invited to help develop single planning steps, such as to identifying the main water management problems or to assemble a list of potential revitalisation measures. However, the selected representatives of the public do not have any decision-making power and do not become members of the river basin planning committees (Slavíková, 2010).

5.4 The Odra and Vistula River Catchment (Poland)

Participation was carried out as part of the implementation of the WDF at national and regional levels in the form of questionnaires. Additionally, every citizen could send in their opinion to the drafts documents available on the home page of KZGW.[22] The following Figure 5.5 provides a few examples of participation at different levels and degrees which are taking place in Poland. The arrows next to the degrees of participation represent the movement of participation from top-down to bottom-up or vice versa. For example, decision-influencing is seen as a two-way decision-making process, consultation is seen as a two-way process in that there is the opportunity to comment on the decision-making process, but the decision is still made in a top-down manner, passed on to the public. Finally, information is seen as a one-way communication process.

[22] See: www.kzgw.org.pl.

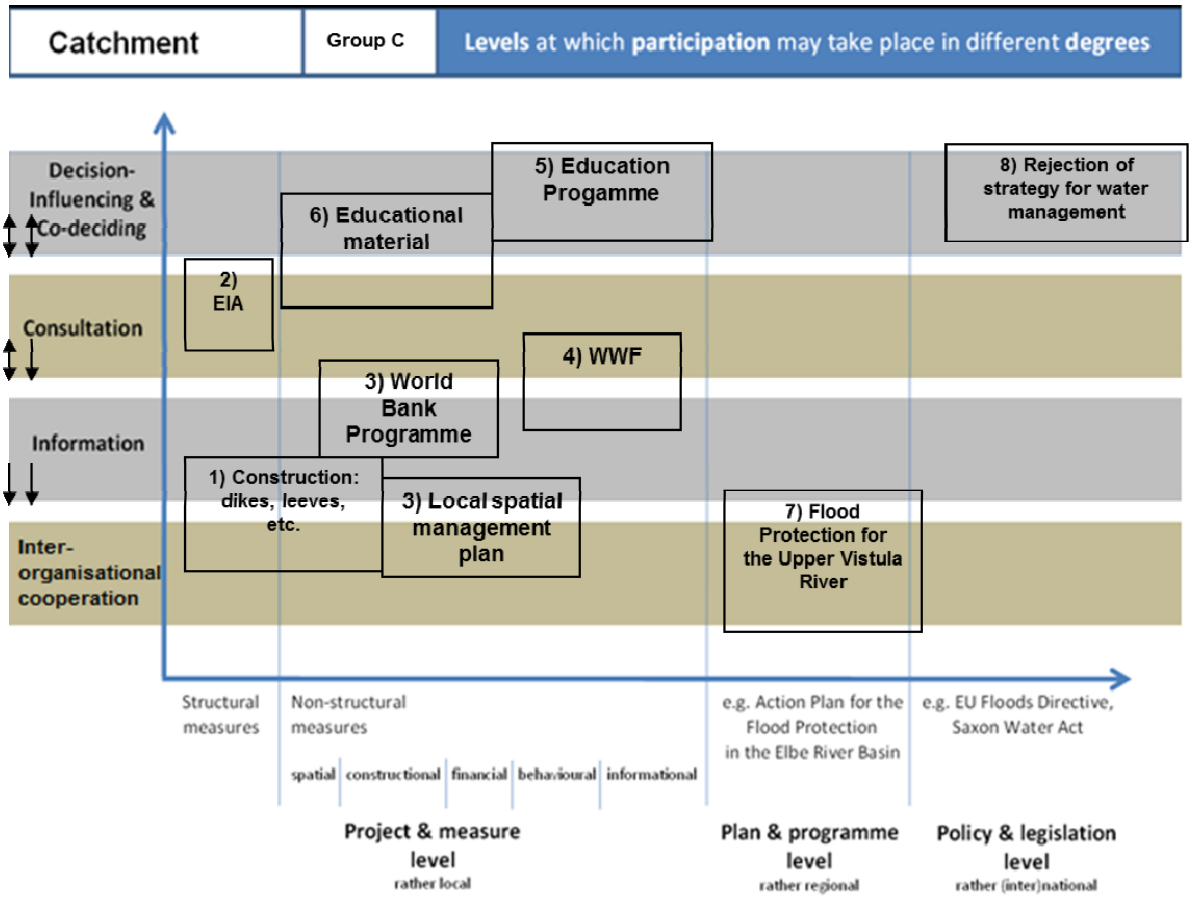


Figure 5.5: Participation Chart from the Polish Group

Project level – structural measures

3. There are many examples of consultation or information actions taking place between interested parties. However, there is no consultation on the level of designing structural measures (e.g. dikes, levees, etc.). Information is provided by the government regarding building measures but, it was noted by the workshop participants, that in many cases the public does not approve, therefore problems arise. For example the Flood Protection Program for the Upper Vistula River approved by the central level was not consulted with local self-governments during planning process and the public. Some form of consultation took place (only with local authorities) during preparation of the document titled: 'Perspective and the Environmental Impact Program' required by regulations.
4. In case of structural measures, inter-sectoral cooperation appears between local and national governments or institutions of national and regional levels. In regards to the Environmental Impact Assessment (EIA), it is necessary to inform or consult in some (mainly) formal ways affected parties.

Project level – non-structural measures

5. Non-structural measures are not popular as methods of reducing flood damages in Poland. Some plans focusing on such measures were prepared but it was usually a part of some international Project. The only examples of such initiative took place after 1997 flood as a part of so called 'Word Bank Program' where flood risk management plans were prepared for 12 local communities. These programs include such

measures like preparation of flood hazard maps, local warning systems and education of the public. However, these efforts were never evaluated and were not the base of the guidelines for other local governments.

6. After the 1997 WWF prepared flood risk maps for Oder River and in cooperation with Regional Water Management Board in Wroclaw implemented the program 'Safe Communes on the Oder River'. Many local communities decided to build and maintain their own local flood warning systems.
7. Existing educational programmes are not implemented at a national level but through bottom-up initiatives. The only institution which systematically promotes non-structural measures is the IMGW Office for Local Government Collaboration. Together with National Water Management Board the Office prepared and implemented in Poland in many places flood education program (book guide for teachers, brochures for local organisers of such activities and families were prepared). This educational program is not implemented at a national level but is some bottom-up initiatives (e.g. a book made for teachers which advise them what to do when flood occurs; based on consultation and even co-deciding of teachers of pilot areas)
8. Educational material (brochures, leaflets, CDs, etc.) are partly co-financed by two institutions National Water Management Authority (KZGW), Institute of Meteorology and Water Management and some international programmes. IMGW promote also local flood mitigation plans and implemented such plans together with local authorities in few places in Poland.

Plan and programme level (regional)

9. At the first stage, preparing a programme, there is only inter-sectoral cooperation. Then there is usually formal or informal information about the programme from the institutions, but for the Flood Protection Program at the Upper Vistula River, for example, there was no consultation with the general public.

Policy and legislation level (national)

10. Polish Water Management Policy provided an interesting but quite negative example for participation. During the preparation of this strategy a lot of consultation with the public and other interested parties and stakeholders took place. The interested groups were invited by the Water Management Board (e.g. NGOs, experts, etc.). It was very difficult to find a consensus of all the different parties, so in the end the Water Management Board rejected the proposed document (note: this was not a strictly flood-focused strategy).

5.5 The Danube River Catchment (Austria)

The following Figure 5.6 provides a selection of examples of participation at different levels and to different degrees within the Danube River catchment. "Organisational" was added to the chart as an additional non-structural measure.

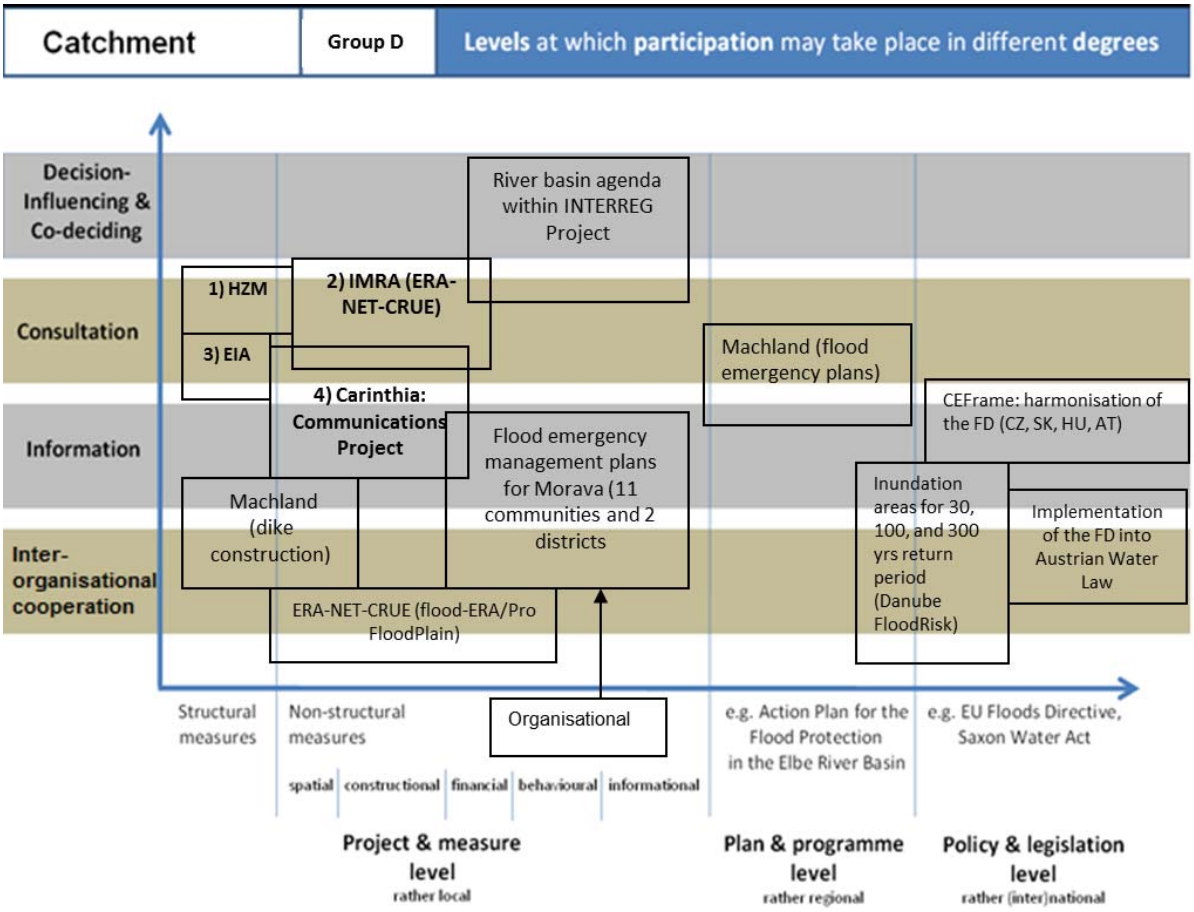


Figure 5.6: Participation Chart from the Austrian Group

At present participation is either demanded by law or within the proposal of a project. All protection measures require participation. However, participation takes place at all kinds of intensities. For example, with structural measures, funding obligations of the project require the production of informative materials (e.g., an information folder). It is also necessary to produce a "letter of notice" which is placed next to the construction area, and the rest, consultation, etc., depends on the project. At present, these forms of participation are employed as soon as problems arise. As stated by one of the workshop participants, "*If everything is fine you won't do it; that's the reality*". Therefore, it was further suggested that the question should be: is participation really necessary? We need to have a better understanding of how participation works and when it is relevant to apply.

The last major floods in southern Austria occurred in 1965-66 – three huge events within 14 months. This changed the face of FRM. In 1968 the interdisciplinary group INTERPRAEVENT was set up to analyse flood events. This provoked a movement towards risk management (but with a low level of public participation). Risk management of floods was organised so that a future flood event would affect rural areas instead of the urban areas by constructing retention areas that are able to absorb the flood (e.g. constructing flood polder where no houses are allowed to be built).[23]

It was found that flood protection resulted in cost benefits because the costs saved by having flood protection in the event of a flood outweighs the costs associated with the investments in flood protection. However, a few things need to be improved:

[23] Information provided by Gernot Koboltschnig (Government of Carinthia and INTERPRAEVENT) during the workshop.

- → Integrated risk management in terms of accessing hazards and the entire risk cycle;
- → Although participation is a requirement of the FD in terms of the FRMPs, ideas still need to be defined and developed ideas regarding how to do this;
- → Participation has already been implemented in the development of Hazard Zone Maps (HZMs), however, because the provinces are stronger than the Federal Government, it has proved difficult to enforce the HZMs into law and action.

The following explains a selection of the examples shown above on the participation chart.

1. Participation in regard to the development of the HZMs is conducted by informing all members of the public that there will be a presentation of the maps by the municipality. After the presentation the public is given four weeks to react in writing (consultation). An onsite examination is carried out by the commission (Federal Hydraulic Engineering Administration (BWV), Torrent and Avalanche Control (WLV), spatial planning, civil engineers, municipality, infrastructure, and the public).
2. An example of this type of participation (consultation) can be seen in the Integrative Flood Risk Governance Approach for Improvement of Risk Awareness and Increased Public Participation (IMRA) Project24, which is part of CRUE ERA-NET25, which aimed to improve risk awareness and increase participation.
3. This process is also similar to the EIA. In Austria, the EIA has two consultation periods one at the beginning, one at the scoping stage and one after the plans have been drafted.
4. An assessment of the communication of the Carinthian Government was carried out and was deemed to be ineffective because it was largely one-way. A workshop was carried out, focusing on hazard maps helped to address what the public needs. The workshop involved technicians and local people who had experienced the last flood in the area in order to gain an idea of how felt to be there when the flood occurred. The Carinthian Government created posters with pictures of the damages caused by historic floods with text written in the local dialect.

5.6 Participation Practices in FRM in other European Catchments: Some Examples

This section provides a sneak-peek at the topic of the following chapter as it provides three examples of participation techniques that have been tested in Germany and France from the participants of the “satellite” group (Group E). Firstly, in Germany (in Bavaria), for example, it was suggested that Flood Risk Management Plans (FRMPs) should be developed by professionals and experts only at the regional level whereas concrete measures are developed at the local level, also engaging the public. Secondly, an example of a bottom-up governance approach to participation conducted in Hamburg was presented. The participants are involved in scoping, developing an understanding of the risk, experimenting with different plans and evaluation. Finally the example from France came from the Loire River Basin Authority which is acting as a moderator in order to bring the diverse local and regional actors in the river basin together and coordinate activities. The following Figure 5.7 expresses two of the examples (provided by the

[24] For more information see: http://www.imra.cnr.it/index.php/en
[25] For more information see: www.crue-eranet.net/

participants Klaus Wagner and Na tasa Manojlovic) on the participation chart that was developed as part of the workshop materials. The final example from France is not added to the chart because it was considered too complex to be placed at any one point on the chart.

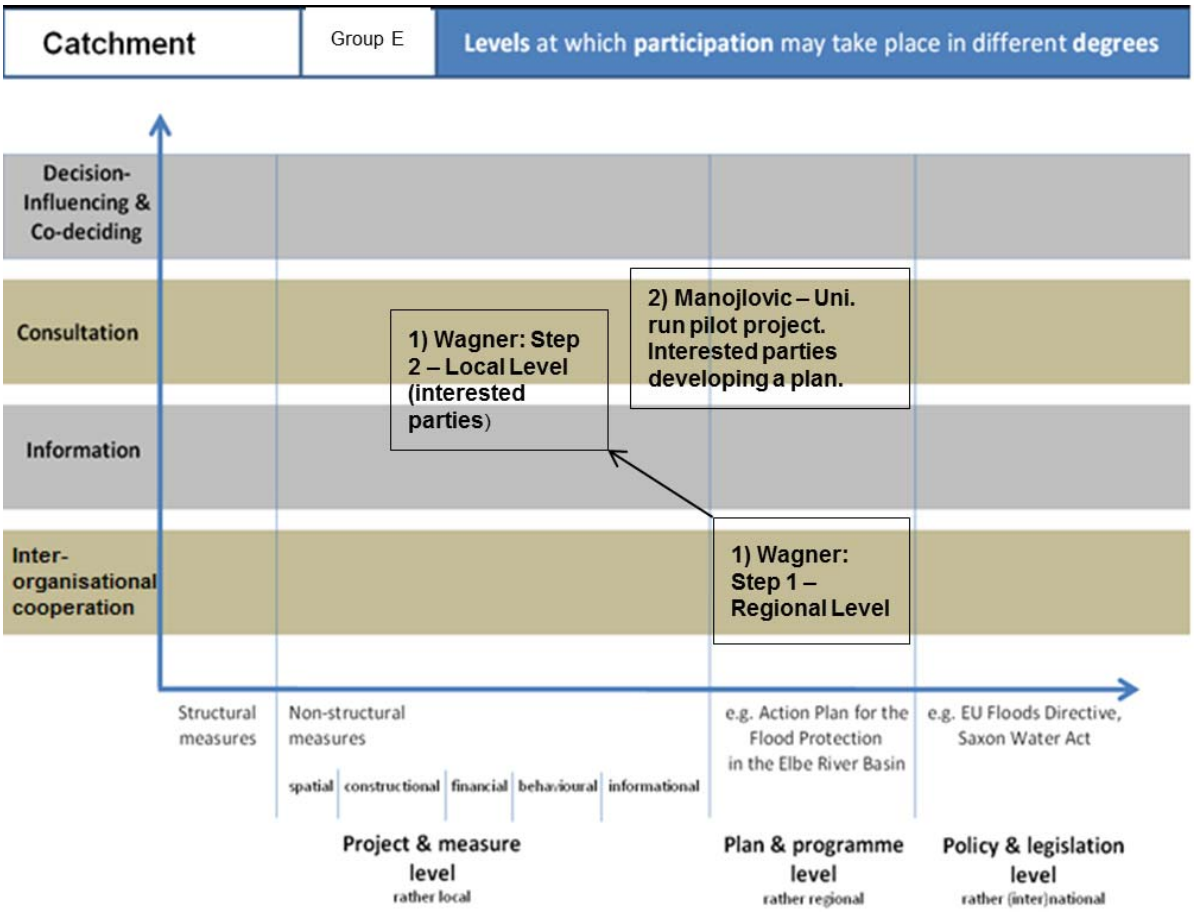


Figure 5.7: Participation Chart from the Satellite Group

1) Klaus Wagner (Technical University Munich) discussed how plans might be implemented in Bavaria in case the Ministry of Environment takes into account the recommendations made by TU München. This included sectoral and inter-sectoral plans and requires answering questions such as: What sort of plan is it? Who do we involve? In Bavaria there are 56 sub-catchments. The average number of municipalities within areas of potential significant flood risk (APSFR) is around 30. If other parties than municipalities are to be involved, the sub-catchments were still considered too large. Therefore, 10-15 municipalities as well as other stakeholders from that area were recommended to work together at the local level. Participation operates at two levels; regional and local. The regional level sets the objectives (FRMP) and provides expert consultation. The local level develops the measures and involves intense participation (decision influencing). This represents a change in the idea of who is responsible for the plan (not just the government).

2) Natasa Manojlovic (Hamburg University of Technology) discussed a project which employed a governance approach to participation, which focused on the development of FRMPs and involved working with the public. She broke the approach down into four steps:

1. Scoping (problem definition)
   → Social games to build trust

- → Stakeholder analysis in order to ensure representativeness

2. Understanding (of the risk)
   - → Understanding the risk and the system
   - → This is critical in order to stimulate interest
   - → Give examples of facts
   - → Going onsite
   - → Maps
   - → Flood simulation
   - → Current and future risks and what are the measure to deal with this
3. Experimenting (development and testing of different plans)
   - → Develop measures as a group
4. Evaluation
   - → Bring different plans together into one

This approach uses a bottom-up approach. There is the need to get everyone on the same level (capacity building) and make the experience inviting for participants. However, this approach is resource intensive and the current issues that need to be resolved are, how to integrate climate change, utilise online participation and how can the approach be evaluated?

3) Jean-Claude Eude (Director General, Loire River Basin Authority) and focused on the Loire Basin. The Loire Basin considers themselves as a moderator rather than a direct actor and therefore finances research regarding the basin, focusing on vulnerability, communication and risk, as well as hydrological, ecological, social issues and makes the information public. The aim of the Loire Basin is to:

- → Adopt a strategic approach vis-à-vis the assessment and management of flood risk
- → Develop synergies between the public and private sectors
- → Inform and involve stakeholders and the general public
- → Strengthen cooperation between actor throughout the basin and risk managers
- → Make better uses of technological potential and enhance research efforts.

5.7 Summary

In sum, the findings from the workshop discussions 6 main points which were discussed in this section are:

1. There are **two main types of participation** - decision-making that involves the professional / organised public (inter-sectoral: top-down) and decision-making that involves the general public (public participation: bottom-up).
2. It was found that while **inter-sectoral participation** usually takes place at the levels of policy / legislation and plans / programmes, public participation is usually found at the project level.
3. When discussing participation at **different degrees**, the groups found that:
   - → At the international / national level inter-sectoral cooperation exists but that there is a small amount of participation in terms of consultation and co-decision making with other interested parties.
   - → There is very little consultation in regards to construction plans (e.g. EIA).

- ⟶ Bottom-up approaches do exist within education programs (e.g. Polish Group C).
- ⟶ It was discussed that, in Germany, vertical governance seems to work well in terms of inter-sectoral cooperation. However, horizontal governance, in terms of including other interested parties needs to be improved.

4. It seems that at present most intense participation with multiple actors occurs at the **structural project level** also because most measures occur at this level. However, we found that while there are certain trends, there is no one-size-fits-all method/approach to how this is or should be applied. Furthermore, on the levels of plans, programmes, policy and legislation, although participation is not explicit, projects do not evolve unaided. They are products of previous work, networks and experience. Therefore, it is important to point out that we only focused on highly visible participation. Therefore, although participation exists at these higher levels, it is not formalised and hard to trace.
5. **Consultation** seems to be a popular mode of participation. Consultation seems to mostly exist as information provision and a timeframe within which the public (organised and general) can react in writing. For example, each country mentioned the existence of an EIA which is required before any large constructions and allows interested parties to make comments in writing. However, only Austria and the Free State of Saxony, Germany, mentioned having two consultation periods; one at the scoping stage and one after the plans have been drafted. The other countries mentioned that this consultation only exists in the latter stage.
6. Group E provided some suggestions for future participation practices. The main points to come out of these examples are: 1) allowing plans to be defined at the policy / inter-sectoral level and then implemented at the project level through consultation and information provision. 2) There is a space for bottom-up approaches which involve the general public in the development of plans. However, this is resource and time consumptive and is still being developed. 3) There is a place for a facilitator who supports research and initiatives rather than stirring them.

6 Needs for Action

This chapter aims at presenting and summarising the main discussions of the working groups in regards to future actions needed to improve flood risk management. This topic was the theme of the final working group sessions. At the beginning of the workshop CapHaz-Net posed three questions:

1. What is the current situation?
2. What are the goals for 2020 regarding participation and FRM?
3. What needs to be done to achieve these goals?

As a result of the discussions during the workshop the focus remained mostly on the first two questions with the last question being largely in the background with a few examples of how to identify interested parties offered as a way to improve FRM. Firstly, the discussions are divided into catchments. Secondly, commonalities will be highlighted between them. Finally, these discussions will be linked to the previous theoretical work completed in the first phase of the CapHaz-Net project.

6.1 The Elbe River Catchment

For the final session of the workshop both Elbe groups (the Czech Republic and Germany) worked together. Therefore, the following provides suggestions of how participation should improve given within the context of the Elbe catchment as a whole with specific examples arising from each country.

6.1.1 Overall Changes and Improvements to FRM

It was argued that usually both top-down and bottom-up approaches are necessary for successful decision-making. The whole river catchment must strategically focus on the effectiveness of institutions so that an effective vision and a large set of measures can be developed. It was argued that only after this has been established can some kind of (general) public participation process be possible. The following summarises on which level and to what degree participation should take place:

- ⟶ In regards to **policy**, a top-down approach was suggested (information should be provided to the general public but this information should be transparent – everyone should understand why and how the policy was developed).
- ⟶ **Measures** should employ a bottom-up approach. It is important to develop some kind of learning process that lasts. This is perhaps more obtainable and is much more attractive than everything being decided on the top by few and being cycled down to the rest of society.
- ⟶ **Planning** should start with a top-down approach (e.g., Action Plans) but there should also be emphasis on consultation with the general public.

However, it is still unclear what role consultation should play in the planning practice. It was suggested that future FRM needs to include, first and foremost, the mayors in order to gain a relevant conception of what needs to be done and what needs to be taken into consideration. It is also important to involve the general public. The success of the plan was said to be highly de-

pendent on the general public's **perception of risk** and benefits. The public maybe have had experience with floods and believe that they know what to do in the occurrence of a future event and therefore accept that they live in a flood-prone area and would prefer to be flooded once every 20 years than live behind a dike. Therefore, the general public should be involved in planning because it is up to them to take **responsibility** and decide who they want to deal with / solve the problem with. The role of engineers / administrators should be to advise the general public of whether it is possible or not, if it is economical or not economical. Importantly, responsibilities need to be clearly defined.

6.1.2 The Floods Directive

The problem at present is that the remaining public is not directly involved in the process and is instead provided with information. If the comments from the broad public are evaluated, we see a lot of requests but the solutions are not provided by the general public and, as a result, the solutions developed will not be able to meet everyone's interests. According to some of the participants, in Germany, participation on the vertical level is working quite well, but on the horizontal level it could be improved. With regards to (general) public participation, there are some examples where the public is very strongly involved and they can achieve a lot but they cannot decide about the project itself (e.g. they can only decide about the aesthetic design of the project; the project or the measure is fixed in a plan or a programme but then the public is involved when they are asked what it should look like, in regards to their specific context). Therefore, there needs to be a consistent and transparent institutional framework that most people are aware of. It is then useful to start thinking about stronger involvement of interested parties, by drawing on existing practices and connecting them more systematically.

The FD is an iterative process. It is not be possible or feasible to involve all interested parties in the first stage of the FD (preliminary flood risk assessment). Although more participation with the general public is seen as necessary, it is perhaps more appreciate in some stages of the FD than others.

- ⟶ All stages involve should involve the professional and organised public who are divided into special groups according to their professional orientation.
- ⟶ At the **first stage** of the FD should be developed by the professional / organised public (inter-sectoral participation)
- ⟶ The general public are and should be involved in the **second stage** – revision of the maps (whether they are useful / readable).
- ⟶ The general public should also be involved in the **third stage** – development of the FRMPs. The professional / organised public should be consulted and should be directly involved in the creation of the plans.

6.1.3 Difficulties Facing Planning and the Development of Measures

In the case of large / extreme floods, structural measures do not always work. There needs to be a **stronger interconnection between regional and local planning** in regards to construction permits and land use planning. Measures are spatially restricted and initiatives at the local level might not be possible to generalise across different contexts. For example, the City of Grimma on the Mulde River was heavily affected in 2002, and although the state provides a warning system, they decided to develop their own warning system. This example worked in this case but

might not be the right solution in other contexts. Moreover, it was argued by one participant that this is a positive example of a local initiative but on the other hand, in terms of the FD, it is unhelpful because if everybody did this there would be too many different approaches and it would be very difficult for the responsible authority to control. Therefore, the framework (goal) needs to be developed in the first step and agreed upon by the locals. Moreover, although it is difficult to generalise measures, it is also important for the implementation FD that some **standardisation** is developed. For example, it is necessary that everyone in the catchment is using the same measurements, to a certain extent (e.g. using the same flood return period), otherwise it makes no sense to communicate the warnings downstream.

6.1.4 The Role of Insurance in FRM

An aspect of FRM that was heavily discussed by the group was insurance. The results of this **conflict of interests** between actors have implications for the decision-making process and therefore, the outcome of FRM.

In the Czech Republic, insurance companies believe that the community should protect themselves. Insurance focuses on money and engineers focus on warning. Therefore, the goals are not the same. In Hamburg, damages from storm surges, being the most common flood type, are not insurable. In Baden-Württemberg, if homeowners are asked to participate, they try to make the area of the 100-year flood smaller because they know that if they are in this area that they will not be able to claim insurance. The reason that the insurance companies have a broader flood-prone area is because of the financial compensation scheme. If they broaden the area, they include more people that could be affected by a flood. Therefore, insurance has its own calculation about where and what they insure. However, engineers base their results on mathematical equations and past experience. Therefore, the area that is identified as being at risk is the result of hydraulic models and cannot be disputed. It was suggested that insurance is a good example of a conflict of interests. There are two different types of calculation occurring. The calculation of financial payments is subject to different criteria than the criteria of the objective hydrologic analysis. Flood insurance is very different to other insurance where you might have a steady stream of payment over the year and people that are not affected pay for the people who are affected. In addition, no one in the Czech Republic is speaking about non-structural measures in terms of moving people away from flood-prone areas.

It was suggested that insurance could be used as a regulative tool in terms of discouraging people to build in areas that are prone to flooding by refusing to insure them, while (government) incentives, where possible, could be a way of helping households to leave hazard prone areas.

6.1.5 Identifying Interested Parties

As already mentioned in Section 5.7, it was discussed that it is good to define the actors according to the A, B or C levels when developing FRMPs, for example, a stakeholder from a very small catchment (C-Level) is quite different from scoping stakeholders for the whole catchment (A-Level).

It was agreed that it is difficult to produce a generic map (scheme) of interested parties. It is difficult not to narrow the focus to a certain scope. Usually groups that participate are from the:

- ⟶ The state sector (municipalities, agencies, etc.)
- ⟶ The intermediary sector (associations, NGOs, and science)

⟶ The private sector (different institutions, companies, individuals)

An approach for finding interested parties is the snow ball strategy, entails approaching certain groups of people and asking them who else should be involved. A problem with defining who to involve is: Who decides? Who is active and who should stay passive? The whole process has to be directed and it must be clear how decisions of inclusion and exclusion are made. The question of who decides leads to the question of who gets to define what interested means. Are there approaches/measures which can help to define this? For example, the snow ball project. In this snowball process it is first asked, who is participating? And, at the very end: who did we forget? It's very important to have a clear goal (with responsibilities, priorities and measures). With a clear goal it is easier to scope your interested parties. If you have ambiguous goals there is the risk of the participant process failing. FRM within the FD has the advantage of having a very clear goal.

6.1.6 Summary:

The discussion surrounded the limits to the involvement of interested parties (e.g. insurance). The Czech Republic group reported of several trials to include them, but roles and interests are distinct or even opposite; hence: "there are stakeholders you cannot involve". Moreover, the discussion about the levels and degrees on/to which participation makes sense: local – measures vs. regional – planning vs. national – policy. The professional and organised public should be involved in the policy development and the general public should participate in the planning and development of measures. Furthermore, general public participation should occur locally and must come out of local needs (not imposed from outside), in other words, experts should act as facilitators while the public should have more freedom to design their own solutions. However, intense participation with all "interested parties" is neither desirable nor possible for all levels. Moreover, it was seen as important to define the interests of the parties who define interested parties, as well as the importance of developing a clear goal which will help select the appropriate interested parties for the particular problem at hand. Finally, although it has been suggested that for the FD to be successful there is a need for a certain amount of standardisation, too much could lead to the loss of local initiatives.

6.2 The Odra and Vistula River Catchment

In contrast to the Elbe group the Odra and Vistula group focused on describing why participation with the general public is important by highlighting the overall goal and developed a method for identifying potential participants. This section begins with that goal and continues by explaining how to get there within the Polish context. This group agreed that the general public should play a stronger role in planning.

6.2.1 The Overall Goal of Participation with the General Public:

The overall goal of participation with the general public is to *develop a feeling of responsibility among citizens and other actors in the catchment so that they feel that they actually can do something to minimise the impact of floods.*

In order to reach this goal, in principle as many interested parties as possible should be involved. They need to be involved to develop a feeling of responsibility and ownership (prerequisite for action). However, as this is clearly an “idealistic” goal which is not completely practical, therefore two approaches to making participation more effective were provided:

4. On the level of the catchment an expert group that identifies central issues and problems needs to be set up. They would need to have scientific background but also more general background which is relevant for all interested parties and be mostly responsible for setting frameworks. They would then identify relevant interested parties which would need to be involved.
5. How to select the relevant interested party?
   → The general Simon McCarthy provided the example of how the selection of an interested party it is completed by the Environmental Agency in the UK. This approach connects the identification of an interested party with different intensity levels of participation (informing, consulting, co-decision-making).

The following matrixes were developed based on previous work by the Environment Agency UK[26] and developed within the working group session (Figure 6.1 and Figure 6.2).

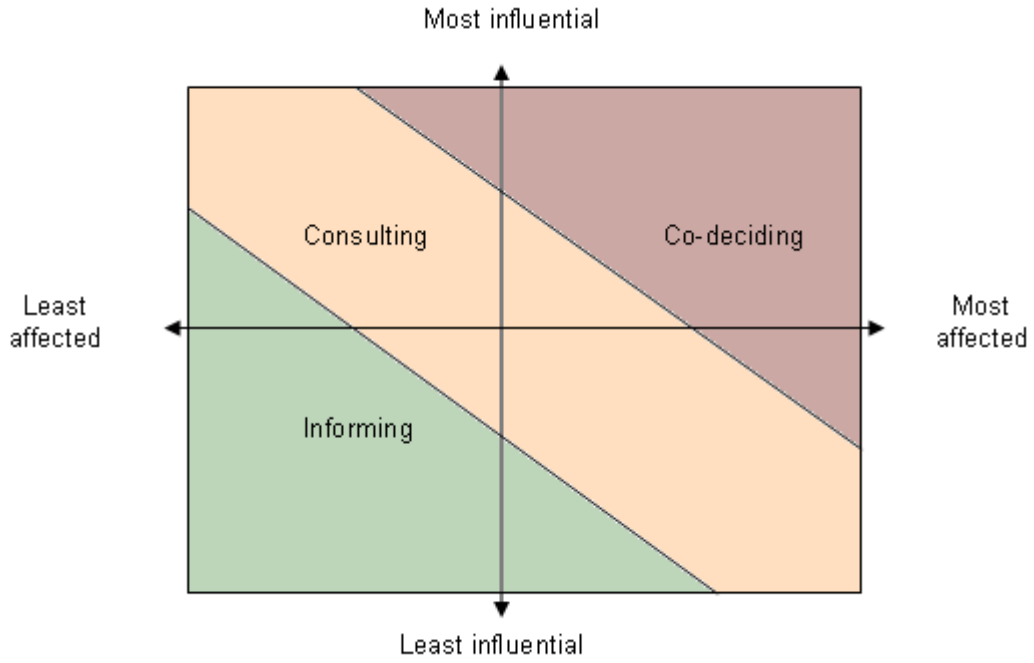


Figure 6.1: Matrix to define interested parties (effected and influential)

[26] Information provided by Simon McCarthy.

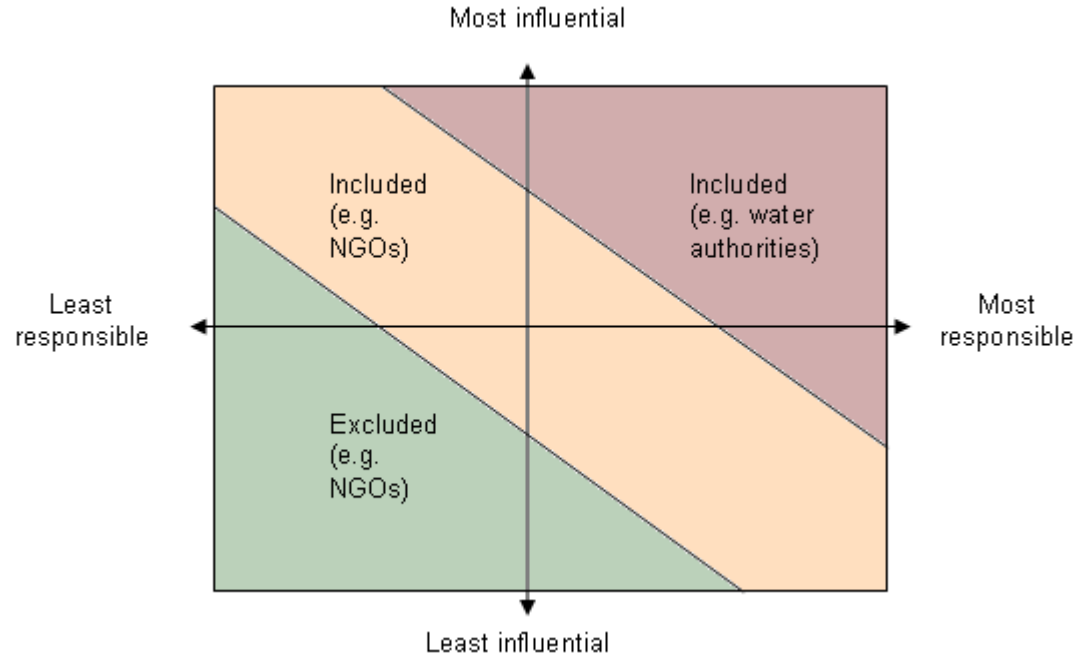


Figure 6.2: Matrix to define interested parties (influential and responsible)

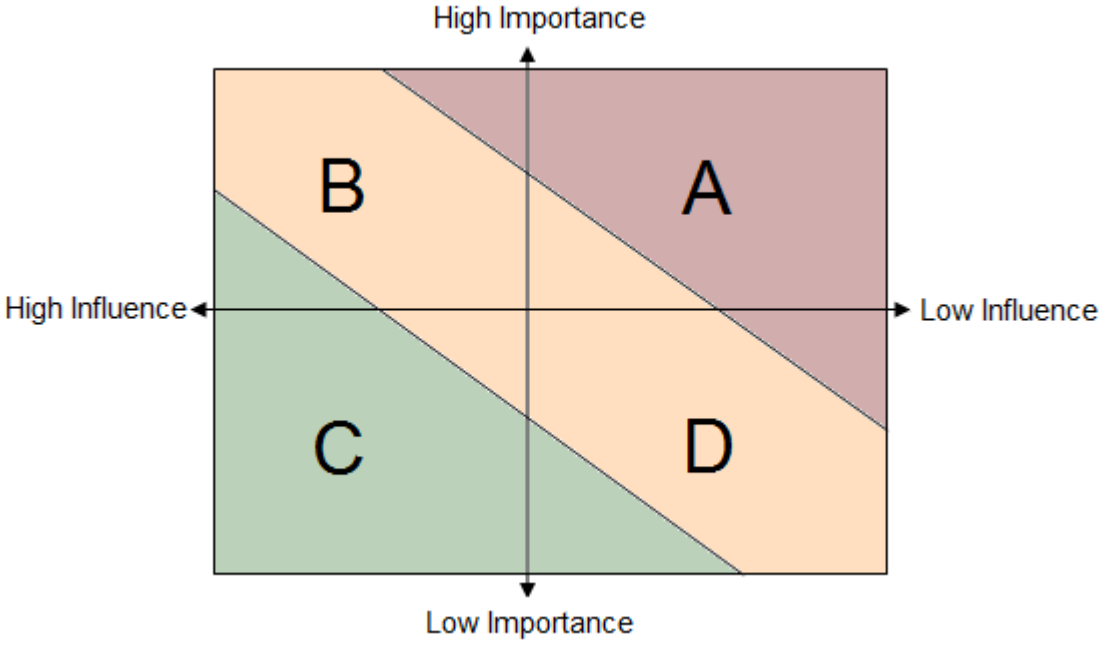


Figure 6.3: Level of priority from A to D

- The general It was agreed that such a matrix – however it might look at the end – needs to be adapted to the context (e.g. who the main interested parties are). Moreover, having two matrixes might be beneficial as it allows a better understanding about the different potential interested parties and their importance within the context of the problem at hand.
- Identified interested parties would then work on issues (mostly on the local level) which are conflict laden, where different interests collide and stakes are high.

One of the concrete steps could to be to create a definition of who an “interested party” is: people who know, people who want, people who have power, and people who disseminate. It is important to be able to deal with different actors/different interests.

Such a definition could help fill in the matrixes above, one should start with the expert group; identify the issues and then the interested parties: Importance – the simplest definition is accordance of the goals of the stakeholder with the goals of the project or plan and influence – means capacity to influence decision. For example:

- ⟶ Inhabitants threaten with flood: high importance, low influence (A)
- ⟶ Environmental NGO: low importance, high influence (C)
- ⟶ Water administration responsible for planning: high importance, high influence (B)
- ⟶ Local authority: High importance, high influence (B)
- ⟶ Representatives of locals not threaten by flood: low importance, low influence (D)

This approach helps to identify and classify groups of the stakeholder and, what is more important, helps to build policy of cooperation with different group of stakeholders:

- ⟶ Group A – support is needed because the goal of the group is in accordance with to the goals of the project but their influence on the final results is week
- ⟶ Group B – close cooperation is needed because they are crucial for the project and they are able to influence on decisions
- ⟶ Group C – monitoring is needed because the group could pose the threat for the project (monitoring is required and education)
- ⟶ Group D – group is not important but should be informed.

What each group is provided with is of great importance. However, it is also important to know which group needs to be involved in the management of which problem. What should the red group (influential and affected / responsible) be provided with? This group should receive very detailed information about the issues and measures which they can use to solve this problem. Therefore, it only makes sense to do something if we really have a problem. Only then do we need to think about this very time consuming and demanding bottom-up participation process. Therefore, this would be a criterion, a high stake / high uncertainty problem. Then it makes sense to think about this participatory process. However, **different interests** of the different parties also have to be dealt with. For example, there are different interests between people who represent flood protection and people who represent the environment. It is important to gain an understanding of these interests before consulting a group in order to encourage effective communication within and between groups.

On the catchment level we are not able to include everyone but it is necessary to provide a very good information and education system which helps to change the way that people think about safety because safety is essentially not the problem of the government, it is a problem for the general public. The general public have particular knowledge; they develop ownership and responsibility if they are part of the process (municipally level-projects and measures).

6.2.2 Responsibility

It is not necessary to think of the participatory process as a homogenous process but divide it into different groups and the different groups can use different forms of participation. Some form

of participation already exists at each level; it is possible, even at the policy level, to involve everyone, even the general public (i.e. through voting). However, consultation and consensus are perhaps not always possible and are tools that can be used at the local level. For example, when consulting or involving people in co-deciding is attempted representatives of some social or professional groups are involved. There is also need to take the general public into consideration. Ideally, everyone should be involved. It makes sense because if someone is told that they should take responsibility then they should be involved otherwise the problem of delegation of responsibility is still present.

There is a myth that the public are passive and self-interested and that, therefore, it is not possible to work with them. Classical protection involves fighting against something / someone. The move towards resilience is a fight against ourselves and one has to lose control when working with other people. In order to help the public take responsibility for their own protection we first need to overcome the 3Ds (from dismissing and despair to do-ability) as well as the myth that people are passive. Participation might overcome this because when people are involved they will hopefully develop responsibilities and when the public develop responsibility the administration needs to share responsibility.

6.2.3 Linking FRM to Livelihoods

When thinking about FRM it is important to remember that it is not just about FRM it is about the life and livelihood of the people. It is about safety and development/improvement of life. Very often there is a conflict because when the general public think about the future and their main source of their income and therefore have different interests, for example tourism, the main goal is the safety the area for tourists. It is necessary to compare FRM with development strategies of a particular area. Is it possible, for example, to stop development and new building projects in the area which will bring more money into the area? When we restrict the development in this area, the locals may not be able to achieve the overall goal of improving the livelihoods of the society.

6.2.4 Management Approaches for Floods of all Return Periods

In Poland only large floods receive attention because of the damages they cause which are much larger than the damages caused by a small flood. However, a small flood may have a relatively high return period. The conclusion is that after 12 years the same damages / losses have occurred from small floods as would have from one single large flood (100 years return period). That is why it is important to focus on different types of measures and solutions.

6.2.5 Summary

Although it was acknowledge that some form of participation already exists at each level, there is always the possibility of improvement. The group discussed the overall goals of participation and how to achieve this. Ideally, everyone should be involved in the participation / decision-making process. This is especially important if it is believed that the general public should take responsibility for their personal safety. The group developed a matrix that aimed to provide a strategy for identifying interested parties. By doing so, it was also possible to define what degree of participation each group requires. However, it was also argued that such a process only makes sense

when there is a problem. Moreover, although it is important to involve everyone in understanding and developing solutions to manage risk it is perhaps also useful to take into consideration where FRM fits in people's everyday lives. It is perhaps useful to then communicate and develop understandings of FRM within how it affects different interest groups and their livelihoods. Additionally, it is also important that people understand the relative damages of small floods with high frequency rather than just focusing on the large, infrequent events.

6.3 The Danube River Catchment

The Austrian group discussed who *should* be involved at what level and to what degree including the challenge and pitfalls of doing so.

6.3.1 Management of the whole Danube Catchment

It was argued that good management only exists when the Danube is assessed as a whole, not only within Austria. Good management can only be achieved if all the possible hazards of the whole catchment are taken into account. It was explained that this type of overview exists in the form of the International Commission for the Protection of the Danube River (ICPDR). Therefore, it would be interesting to evaluate the effectiveness of the ICPDR.

It was further argued that there is a need for standardisation within the Danube River Basin. At the international level and as it is stated in the Floods Directive, although each country is responsible for its own FRM, the main goal is that the measures that are taken in one country should not harm the other countries in the same catchment. Every country has to provide a certain amount of retention. However, it was further argued that in order to compare risks in a certain area, there is the need for the use of the same assessment criteria. It was explained by the participants that this exists in the sense that each country works with similar return periods. For example, protection measures within most countries sharing the Upper Danube catchment are designed for a return period of 100 years.

6.3.2 Participation in the Management of the whole Danube Catchment

It was asked if there is already an international agreement on **accepted risk**. Many parties of society should be involved in this discussion. However, management is the job of the expert. It was agreed that *risk acceptance is the main reason to employ participation*. Participation was argued to mainly help people realise the difficulty of the decision-making process. They need to participate so that we can decide at which stage to employ structural or non-structural measures, as well as decide at what stage we invest resources to protect. We have to decide whether this is employed at an international or a national level because if different protection levels at different lines of the stream exist, there will be negative political consequences.

6.3.3 What Degree of Participation with whom at what Level?

It was argued that participation is a question of organisation in terms of who is making the plan and who actively works on developing the plan. In former case, participation should involve all the legal bodies which have an obligation of FRM. In the latter case, actors that are really impor-

tant to disaster management, such as municipalities, need to be involved ideally in the form of consultation and co-decision making.

Real participation with the general public can take place effectively at the local level in regards to territorial planning, spatial planning. This involves involving the people that live in the area in the development of new infrastructure and assets. This is also were the maps are needed, before any new developments commence.

Therefore, the following describes how the Austrian group understand how participation should be at each stage of the FD:

- ⟶ **Stage 1**: Framework development – legal bodies
- ⟶ **Stage 2**: Mapping – all interested parties
- ⟶ **Stage 3**: Planning – all interested parties

It was explained that in Austria there is a big gap between water management and spatial planning. People involved in these fields know this and they are now looking for ways to implement flood hazard maps at an earlier stage into spatial planning, policies and strategies because there is often a contradiction of what the maps say and what is done in spatial planning. If there is a residual risk, planners do not know about it because they do not know the modelling results and so they build settlements in areas that the maps have found to be at risk. However, a shift is starting to take place – this problem has been recognised, at least at the municipal level, and they try to avoid it. It was argued that this can be overcome by the development of the FRMPs. However, it was argued that at the FRMP stage it is too late. The interaction should start earlier, for example, with the hazard maps, risk maps and the presentation of them before commencing a risk management plan and then start to integrate them.

In regards to who should be involved in the mapping process, to some extent the experts have to complete the hazard mapping because they are the ones who know how to do this. However, some of the information that is needed for the hazard zone maps can come from the local population because, to a certain extent, local knowledge is important.[27] That was suggested to be the first step; integrate the general public, complete the mapping and then present the results. It was agreed that at this second stage there is a good opportunity for involvement of interested parties but that at present it is not mandatory. However, one participant mentioned that the Aarhus Convention[28] states that all citizens have the right to access information regarding the environment. This was argued to provide a framework that allows participation at all stages, even if it is not required by the EU FD.

6.3.4 Communicating Residual Risk

It was argued that a lot has changed in the past decade in regards to communicating residual risk. Unfortunately, residual risk is normally only fully understood after an event. It was then asked if it is the responsibility of the economy and the population to put pressure on decision-makers. It was argued that it shouldn't be the responsibility of the public but of the decision-makers themselves and that they should be informed enough to know what options are available in regards to the possible risk to say: '"*ok, look, we can do this with a certain amount of money but then we will have a residual risk, we can also do this but it will cost a lot more and then the*

[27] This result was also found within the RISK MAP Project. Final results available at: www.risk-map.org

[28] See: http://www.inece.org/conference/7/vol1/22_Kremlis.pdf

residual risk will be lower". *And then the consequence could be, "are you willing to accept higher taxes for the next 10 years?"'* However, this could also be a question of if people are willing to live behind a five metre high wall. Moreover, it was argued that decision-makers would never be able to access money for such a high level of risk. But, such discussions could be an effective tool for showing people the type of decisions that have to be made.

6.3.5 Pitfalls and Challenges of Participation

It is much easier to regulate participation of legal bodies (spatial planners, regional governments, etc.) by law than it is to regulate the participation of the general public. Also because the question remains: who is included in the general public? This is not so easy. For example "*If the general public does not come, what do you do? Did you do a bad job? Or, can someone say, you didn't ask me? You can't do more than inviting the interested parties that have been defined in a given situation*" (workshop participant).

It is a question of the procedure of participation. People participate when something (for example, a risk) affects them and when they are engaged to do so: this occurs when they see they can actually make a difference; that their comments are taken up and somehow visible in the final decision or project. Therefore, it is more about how to foster and communicate engagement. The questions are; "*how can we engage people? How can we establish some steps regarding participation that allows all different bodies - governmental, interested parties, and the general public - to be engaged and be pro-active in FRMP?*" It was argued that this is something which requires further discussion. It seems that we need different models for different settings. It is very clear that the structural measures will decrease in importance in the coming decades and the non-structural measures will start to increase in importance, such as organisational structures, for example, warning systems that aim to increase preparedness and require the highest level of participation.

6.3.6 Summary

This session aimed at discussing ways of improving FRM and the role of participation in the future. The discussion started surrounding the legal obligation to conduct participation within the FD and moved to focus on local participation with the general public to how participation can exist at an entire catchment level. The importance of communication and engaging the public was highlighted. It is important that residual risk is communicated effectively in order to define which level of risk is acceptable. Moreover, it is difficult to create a definition of an interested party that fits every situation. Therefore, participation with the general public is always going to be difficult because there will always be people who are left out – intentionally or unintentionally. It is also a question of how to engage people who may have an interest or stake in the decision being made, but are not aware of it or willing to do so?

6.4 Commonalities between Catchments

The following provides a short summary of commonalties and differences in regards to what needs to be improved in FRM within the different catchment areas.

1. **The goal of participation:**
   - ⟶ According the Polish group (Group C), the goal of participation is to develop personal **responsibility** for FRM actions, whereas, for the Austrian group (Group D), risk acceptance is the main goal. Although each group mentioned the importance of responsibility, the Polish group discussed it in regards to the notion that if the general public is to take responsibility for FRM, then they have to be involved in the decision-making process. The Austrian group discussed responsibility in terms of who should be responsible for residual risk and the Elbe group (Group A and B) noted that successful FRM relies heavily on how clear the role and responsibilities of the interested parties are.
2. **Interested parties:**
   - ⟶ In regards to defining interested parties, both the Elbe group and the Polish group developed methods of identifying them and defining the degree of participation that each party requires. However, interestingly, the Austrian group did not do this; instead they felt that no matter who is invited, there will always be someone left out. Therefore, it was argued that the question should not be who to invite but how to encourage and attract potential interested parties to get involved?
   - ⟶ Additionally, the importance of managing different interests was highlighted by both the Polish and the Elbe groups. For example, the Elbe group focused on the interests of insurance companies and concluded that they are totally different to those of FRM actors such as engineers.
3. **A whole catchment approach (levels and degrees of participation):**
   - ⟶ Each catchment highlighted the importance of the whole catchment when dealing with FRM. The Polish group and the Elbe group both argued that the organised public at the **catchment level** should identify goals and develop frameworks. However, the Austrian group argued that in order to define acceptable risks all interested parties should be involved in the definition of the problem. In other words, it is not good enough if the problem is only defined by a select group of the organised public.
   - ⟶ All groups agreed that **policy** development should be based on top-down approaches to governance and measures should be based on bottom-up approaches governance. All three groups saw planning as an area where the general public should be heavily involved. Additionally, as the Polish group pointed out, the success of **planning** is heavily dependent on the general publics' risk perception and that bottom-up approaches only really need to take place when faced with a problem with high stake / uncertainty (a notion shared by both the Polish and Austrian Groups).
4. **Involvement of interested parties in the 3 stages of the FD:**
   - ⟶ As a result of the discussion presented in the second point of this section, it was agreed by all groups that not all interested parties should be included at each stage of the FD. The Austrian and Elbe groups both argued that the first

stage should take place at the inter-organisational level between members of the organised public and the second and third stages should involve both the organised and the general public.

→ Both the Austrian and the Elbe groups agreed that the success of the FD requires a certain amount of **standardisation** in regards to measures applied within a catchment.

6.5 Linking the Discussion to CapHaz-Net's Theoretical Findings

The following section focuses on linking CapHaz-Net's previous findings in relation to participation to the discussions from the workshop. Commonalities and differences will be highlighted and will provide the basis for the recommendations that will be provided in the following chapter. Summaries of these theoretical findings can be found, along with findings from the previous RHWs, in Chapter 1.

6.5.1 WP1: Social Capacity Building

S*ocial capacity building* is considered as an overarching concept of which, participation plays a key role. Capacity building is considered to be a long-term, iterative and mutual learning process, which is based on the cooperation and interaction of a variety of members of society. The above discussion highlights just how important social capacity building is for the success of participation and therefore, FRM. Yet, there is no one-size-fits-all approach to participation across Europe. In regards to residents at risk, most of the examples provided by the workshop participants showed that most policies, plans/measures and projects are communicated to the general public through a process of information distribution. At most, they are asked to provide comments in writing regarding a certain proposal or plan. Such consultation is currently used quite often in the development of structural measures. However, there are not many cases where the general public is involved in some kind of co-decision-making. Most of the decisions are rather made by the professional public (via intra- and inter-organisational cooperation) with some examples including the organised public. Furthermore, the organised and general public are seen to be involved at the level of planning where they are encouraged to provide comments on draft plans (e.g. EIA). However, the decisions are still made by the professional public.

Therefore, capacity building needs to take place at the level of responsible organisations. At this stage these organisations do not have a clear understanding of how to organise participation. This workshop offered a forum for horizontal exchange and learning. There is need for more such forums (e.g. as this is a continuous process). However, local and regional participation cultures in the different catchments clearly point to different traditions of either more top-down intervention or more participatory bottom-up approaches (Kuhlicke et al., 2011). This will not change overnight.

6.5.2 WP2: Risk Governance

Social capacities need to be developed in regards to supporting effective top-down and bottom-up approaches to *risk governance*. As mentioned above, it seems that decisions are still largely being made by the professional public. Therefore, it could be argued that although we are see-

ing shifts in responsibility and an increased number of actors, it is still only a handful of people who are making the decision. A question which begs to be asked here is: is that necessarily a bad thing? Most groups agreed that not everyone can be involved in the decision-making process. In fact, the Austrian group (Group D) argued that it is not just a matter of inviting the right people but it is also about whether the right people are interested in the first place. Therefore, they argued, the question should not so much focus on whom to invite but also how to engage with people who might have an interest in the decision being made.

The literature review conducted by Walker et al. (2010) argued that through new forms of governance, new forms of collaboration are being developed. The Polish group (Group C) stated that the purpose of public participation is so that the general public who have been given responsibility for their own protection. Therefore, the Elbe group (Group A and B) argued, the general public should be involved in the decision-making process. Moreover, it was suggested that administrative bodies and engineers should play the role of facilitator rather than primary decision-maker and allow the organised/general public develop their own solutions and the professional public can tell them whether it is possible or not.

6.5.3 WP3: Risk Perception

Findings from *risk perception* studies clearly underline that the awareness of a hazard does not necessarily translate into preparedness or concrete actions; they rather underline the relevance of the experience of hazardous events as well as the trust in authorities and measures as factors influencing risk perception. How people perceive risk and people's acceptance of the risk was highlighted by all groups. The Elbe Group (Group A and B) argued that the success of the plan highly depends on the general public's perception of risk and benefits. If people don't see flooding as a high risk or they accept the risk, there it is less likely that they will take responsibility and therefore actions that result in their own personal protection. Moreover, the Polish group (Group C) highlighted the importance of dealing with different interest groups. It was suggested that without having an understanding of the different interests of the interested parties, the participation process will not be successful. Moreover, the Polish group also argued that in order to communicate to "interested parties" (specifically the general public) it is important to link FRM to livelihoods, that way the importance of the issue can be linked to everyday experiences and people may be more inclined to become personally involved with the issue.

6.5.4 WP4: Social Vulnerability

The concept of *social vulnerability* is gaining increasing relevance on the policy level. Yet, the question of how to define vulnerability and how to measure it remains contested. The problem with defining who to involve is: Who decides? Who is active and who should stay passive? These were also discussed by the Elbe group (Group A and B). It was argued that it must be clear how decisions of inclusion and exclusion are made. The question of who decides leads to the question of who gets to define what interested means. Are there approaches/measures which can help to define this? For example, the snowball project (Group A and B see Section 6.1.5). Moreover, the Polish group (Group C) described the overall goal of participation being that of allowing the people who are perceived as vulnerable and who therefore have responsibility be involved so that they feel that they can do something to minimise the impact of floods. They need to be involved to develop a feeling of responsibility and ownership (prerequisite for action).

However, it was also acknowledged that involving everyone is not likely or possible (Group C). Furthermore, the Polish group (Group C) also mentioned the importance of livelihoods which could contribute to identifying existing and non-existing capacities at the local level. By understanding local livelihoods it is more likely that an effective framework (goal) will be developed.

6.5.5 WP5: Risk Communication

Aspects of *risk communication* gain increasing relevance in practice, as decision-making processes become more inclusive and as the increasing recognition and acknowledgement of uncertainties are requiring participatory approaches where scientists as well as involved authorities no longer have a uniquely privileged position. The literature review pointed out the benefits of communication being to enhance trust, improve relationship and reduce conflicts, as well as increase personal responsibility and cooperation between interested parties. The possible negative outcomes of communication could be the reinforcing of power relations and potential tokenism. Therefore, it was suggested that two-way communication be employed in order to encourage effective participation. Communication was alluded to by the participants in four ways: 1) communicating residual risk, 2) communication between interested parties (consultation), 3) information provision and 4) livelihoods:

1. The Austrian group (Group D) described the importance of communicating residual risk in terms of showing interested parties how difficult the decision-making process can be and therefore raising awareness.
2. Consultation was constantly found to be the most common degree of participation. The means of communication that is usually employed but such a process normally take the form of written comments. Therefore, this practice does not reflect the findings of WP5 in the sense that most consultation processes do not include two-way dialogue.
3. Information provision appears to be the most common degree of participation in regards to the general public.
4. The Polish group (Group C) argued that flood risk should be understood and therefore communicated within the frame of livelihoods. This will help develop positive frameworks and also help people to understand the impact a flood might have on their livelihood.

6.5.6 WP6: Risk Education

Risk education with respect to natural hazards is a genuine social capacity building effort which includes all age groups and goes well beyond mere dissemination of knowledge. To start with in this rather poorly developed research field, CapHaz-Net has a major focus on formal education, the curricula and materials used there. However, risk education is by far not restricted to formalised schooling, but rather includes a wide range of arenas, tools, actors and materials within the broad field of education for sustainability. The Polish group (Group C) provided some examples as to how education can be a useful tool in FRM. One example was of a book made for teachers which advise them what to do when flood occurs; based on consultation and even co-deciding of teachers of pilot areas. This is an example of participative learning (Kuhlicke et al. 2011).

7 Lessons learnt: Participation and Risk Management in the Context of the EU Floods Directive

7.1 Introduction

This chapter aims to summarise the workshop experiences and to draw lessons learnt. We do not attempt to provide step-by-step instructions as to how to develop a successful participation process but offer some key points and issues to think about when initiating these processes in the context of FRM and by doing so, open up new questions that represent uncharted waters. The workshop aimed at answering three questions:

1. What is the current situation with regard to practices of flood risk management in Central Europe and the role of participatory approaches in them?
2. Which goals do the workshop participants want to achieve by 2020 with regard to participation in flood risk management?
3. What needs to be done to achieve these goals and what needs to be considered?

As mentioned in Chapter 6, the focus of the workshop remained largely on the first two questions. Therefore, in this chapter we intend to build on the findings from the workshop thus far and summarise where participation takes place, at what level and to what degree. Furthermore, we also aim to question these outcomes and consider whether they should be improved or not and what the outcomes of these possible actions could be.

This chapter provides a summary of the lessons learnt from previous findings as well as the Leipzig Regional Hazard Workshop. The hope is that these lessons will be useful in informing future FRM activities.

7.2 Major Lessons learnt from the Workshop

7.2.1 Lesson 1: Participation is relevant in the context of FRM. It helps …

- ⟶ to build trustful relationships between scientists, decision-makers, policy-makers, experts and the public;
- ⟶ to encourage learning and sharing of experiences;
- ⟶ to improve relationships, achieve acceptance or consensus and minimise conflicts;
- ⟶ to improve inter-organisational collaboration and exchange;
- ⟶ to activate social and democratic learning processes.

7.2.2 Lesson 2: The Flood Directive offers a 'window of opportunity' to more strategically systematise already existing participatory practices:

- ⟶ It was found that participation is a common practice in many countries represented in the workshop.
- ⟶ There are different types of participation, namely information provision (indirect, one-way communication with almost no feedback mechanisms); consultation (two-way communication which actively seeks information); decision-influencing (creating open and mutual exchange; participants may actively influence the final

decision-making process); inter organisational exchange (coordinating actors from different organisations or sectoral decision-making structures).

- ⟶ It was found that inter organisational participation usually takes place at the levels of policy / legislation and plans / programmes.
- ⟶ It was found that public participation is taking place at the project level also because most measures occur at this level.
- ⟶ Consultation seems to be the most popular mode of participation. Consultation seems to mostly exist as information provision and a within a timeframe within which the public (organised and general) can react in writing.
- ⟶ At the international, transnational and national level inter organisational cooperation exists but that there is a small amount of participation in terms of consultation and co-decision making with other interested parties.

7.2.3 Lesson 3: Defining and identifying ‘interested parties” that are meant to participate in the development of FRM plans is a challenging and at the same time important task

- ⟶ There is no agreed upon definition of what an ‘interested party’ could mean.
- ⟶ The European Commission defines interested party (or "stakeholder") as: “Any person, group or organisation with an interest or "stake" in an issue, either because they will be directly affected or because they may have some influence on its outcome. ‘Interested party’ also includes members of the public who are not yet aware that they will be affected (in practice most individual citizens and many small NGOs and companies)”.
- ⟶ Based on the workshop there is a certain consensus that an ‘Interested Party’ might be a member of professional / organised public and/or the general public. Professional public: experts (including scientists), government representatives and practitioners (e.g. engineers, consultants, insurers, etc.); Organised public: NGOs and interest groups (e.g., fishing associations, nature conservationists, citizen initiatives etc.); General public: residents and other individuals.
- ⟶ The definition of ‘Interested Parties’ will depend on the context
- ⟶ The identification and analysis of ‘Interested Parties’ should provide a broad overview of the main actors and their interests and relationships. Although all interested parties are encouraged to be involved, participants need to be selected due to restricted resources (e.g. time, availability, funds, etc.). Also, willingness to participate is crucial.
- ⟶ Main questions to be clarified for each participatory process in the very beginning are: Who are interested parties, how and when to involve them, who defines that, and what are rationales for their involvement?

7.2.4 Lesson 4: It is relevant to discuss and define the goals of both the participatory process and the flood risk management plan. Two goals were highlighted:

- ⟶ A participatory process should contribute to develop among actors prone to flood risks a sense of ownership and responsibility for their own but also for the actions of others.

→ A participatory process should aim at discussing and agreeing on acceptable levels of risk within a catchment.

7.2.5 Lesson 5: Not all interested parties can or should be involved at every level. Therefore, a two-step approach is suggested:

→ It was argued that usually both top-down and bottom-up approaches are necessary for successful participatory decision-making processes in the context of developing a flood risk management plan.

→ There was a certain agreement that on the level of catchments (particularly large ones) general frames should be developed outlining the overall goals of a flood risk management plan and defining specific roles and responsibilities. This would mostly take place through inter-organisational participation as well as by involving representatives of the organised public.

→ On the local level the general public should participate in the planning and development of measures by including local needs, views and expectations. In other words, representatives of the professional public should act as facilitators while the public should have more freedom to co-design their own solutions.

→ There was identified a certain drawback of such a two-level approach: In order to define what an acceptable risk is or in order to fully accept responsibility, interested parties who are likely to be affected by the problem should be involved in the definition of the problem. In other words, in some cases (e.g. high risk and uncertainty), it is not sufficient if the problem is only defined by a selected group of the professionals and organised public and the participants from the public are only involved in subsequent states as the objectives shape the way that a problem is framed and therefore how it is dealt with. Therefore there needs to be identified a balance between practicability and legitimation of the process.

7.2.6 Lesson 6: A context-specific or gradual involvement of interested parties throughout all 3 stages of the FD (assessment, mapping and management) is desirable.

→ Although there was a certain consensus that not all interested parties should be included at each stage of the FD; it was suggested that during the first stage (assessment) participation should take place at the inter-organisational level between members of the professional public; during the second and third stages (mapping and management) both the organised and the general public should be involved.

7.2.7 Lesson 7: Capacity building needs to take place also at the level of the organisations in charge of FRM:

→ At this stage many FRM organisations do not have a clear understanding of how to organise participation. The workshop offered a forum for horizontal exchange and learning. There is need for more such forums (desirably as a continuous process). However, local and regional participation cultures in the different catchments clearly point to different traditions of either more top-down intervention or

more participatory bottom-up approaches. This will not change overnight in spite of the EU-wide implementation of the FD.

7.2.8 Lesson 8: Participation is not without its pitfalls:

- → Participation is resource consumptive and might be implemented in the context of the FD in a rather pragmatic, top-down manner (if at all) because of, among other, a lack of administrative and financial resources or of a respective commitment by FRM authorities.
- → Actors play different roles in the decision-making process and have different powers to influence it. There are furthermore people with decision-making power (e.g. elected officials) and the people who are interested in protecting their interests (e.g. NGOs). It is important to be able to deal with such different actors and their different interests.
- → Participation might imply a new understanding of the roles of involved organisations as it requires a loss of or letting go of control, since the administration has to let other players take control in order for participation to be effective.

7.2.9 Lesson 9: Additional further research questions:

- → What are the relationships between the interested parties? Are their conflicts, problems, etc.?
- → How do they perceive the problem that is in the focus of the initiator?
- → How can they be motivated to participate, what are their concerns?
- → Which resources do they have available?
- → In which broader social, cultural, political, institutional and legal context do they operate?
- → Project organisation (resources), compensate people for their time (caution!)?

8 Annexes

8.1 Annex 1 – Workshop Programme

CapHaz-Net's 3rd Regional Hazard Workshop: River Floods in Central Europe

Participation in Flood Risk Management as a Means of Social Capacity Building

for invited external experts and the CapHaz-Net project consortium

10–11 May 2011, Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany

TUESDAY, 10 MAY 2011

12h30	*Invitation to lunch buffet*
13h30	**Opening by UFZ team** *Jochen Luther, Chloe Begg, Nathalie Jean-Baptiste, Anna Kunath, Anne-Katrin Schulz, Christian Kuhlicke & Annett Steinführer* Welcome by *Dr. Frank Messner*, Head of the Office of the Scientific Director, UFZ Welcome by *Prof. Dr. Sigrun Kabisch*, Head of the Department of Urban and Environmental Sociology, UFZ
13h50	**CapHaz-Net: First Project Findings and Workshop Intentions** *Christian Kuhlicke (UFZ) & Annett Steinführer (vTI), project coordinators*
14h10	**Short presentation round by participants**
14h20	**Key note I: Principles of Participation** *Ortwin Renn, University of Stuttgart, Germany*
14h45	**Key note II: Principles of Flood Risk Management** *Martin Cassel-Gintz, Technical University of Kaiserslautern, Germany*
15h10	**Plenary discussion**
16h00	*Coffee, tea & fruits*
16h30	**Group work I (Groups A, B, C, D, E):** **Flood risk management and participation – current situation in different river catchments in Central Europe** Group A: German Elbe River catchment **PRESS ROOM** Group B: Czech Elbe River catchment **PC POOL** Group C: Polish Odra & Vistula River catchments **CONFERENCE OFFICE** Group D: **FOYER** 1. Short introduction of participants 2. Reassurance about catchment profiles: measures

3. Start of discussion with regard to participation: In which projects/fields does participation play a role in your catchment and at which levels? Which roles does it exactly play?

Group C (Researchers including CapHaz-Net members and invited researchers) – Exchange of experiences:

1. Short introduction of participants
2. Short presentation of examples, collection of other practice examples
3. Exchange and discussion
4. List of specific actions to be considered with regard to flood risk management and participation

17h30 **Plenary: Transition from Group work I to Group work II: Board presentations of results HALL 2**

17h55 **Group work II (Groups A, B, C, D):**

Participation and involvement of interested parties in the frame of the European Floods Directive: Needs for change / actions and envisioning 2020

Groups A, B, C, & D including members of Group E distributed evenly to each of them.

1. Short introduction of participants
2. Evaluation of the status quo: Are the interested parties (all) already involved? If yes, is it satisfactory? If not, why?
3. Needs for change: What is already working well? What are the most urgent needs for action (now)? Where do you want to be in 2020 (define goals to be achieved until 2020 with regard to participation, addressing rather the programme and policy levels)?

19h00 **Plenary session: Presenting the results of the last group session (all 5), preparing next day**

19h20 *Barbecue at UFZ terrace*

21h00 *(optional) Drinks in Leipzig city centre*

WEDNESDAY, 11 MAY 2011

08h30 *Morning coffee & tea*

09h00 **Outline of the 2nd workshop day** *Jochen Luther*

09h05 **Key note III: The Implementation of the European Floods Directive in Austria – Experiences and Insights**

Gernot Koboltschnig, Government of Carinthia, Austria

09h30 **Plenary discussion**

10h00 **Plenary with presentation of results of Group E from day 1: Lessons learned, existing pilot projects and concrete steps**

Everyone in the plenary should be able to express his/her points of view, experiences and opinions about what needs to be considered with regard to participation and flood risk management

11h00 *Coffee, tea, cookies & fruits*

11h30 **Group work III (Groups A, B, C, D):**
Concrete steps of how to achieve the identified goals and of how to tackle the needs previously identified

Which actors should be involved, and how? What can they change themselves? How is participation organised in practice?

Group A: German Elbe River catchment **PRESS ROOM**

Group B: Czech Elbe River catchment **FOYER**

Group C: Odra & Vistula River catchments **CONFERENCE OFFICE**

Group D: Danube River catchment **HALL 2**

12h00 **Plenary – presenting and discussing the group work results**

13h00 **Closing down**

- Summary, open issues, concrete recommendations, further exchange
- Workshop evaluation questionnaire

13h30 *Lunch and farewell to external guests*

14h00 **Internal CapHaz-Net consortium meeting**

8.2 Annex 2 – List of Participants

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8.3 Annex 3 – Original Workshop Material

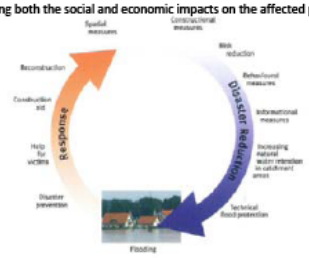
8.3.1 Definitions Poster

Defining important terms:
Flood Risk Management – EU Floods Directive – Involvement of Interested Parties

Flood Risk Management

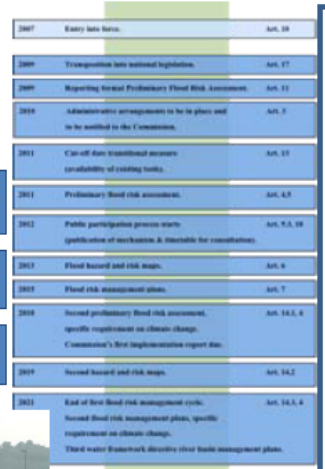
What is flood risk management (FRM)?
Flood risk management aims to reduce the likelihood and/or the impact of floods. Experience has shown that the most effective approach to FRM is through the development of flood risk management programs incorporating the following elements (Source: COM(2004) 472 final of 12.7.2004.).

- Prevention: preventing damage caused by floods by avoiding construction of houses and industries in present and future flood-prone areas; by adapting future developments to the risk of flooding; and by promoting appropriate land-use, agricultural and forestry practices;
- Protection: taking measures, both structural and non-structural, to reduce the likelihood of floods and/or the impact of floods in a specific location;
- Preparedness: informing the population about flood risks and what to do in the event of a flood;
- Emergency response: developing emergency response plans in the case of a flood;
- Recovery and lessons learned: returning to normal conditions as soon as possible and mitigating both the social and economic impacts on the affected population.



Flood risk management is an integral part of integrated river basin management, and the Floods Directive (FD) shall therefore be coordinated with the Water Framework Directive (WFD). Civil protection is also a crucial component of flood risk management.

EU Floods Directive



- Preliminary Flood Risk Assessment (until 22.12.2011)
- Flood Hazard and Flood Risk Maps (until 22.12.2013)
- Flood Risk Management Plans (until 22.12.2015)

Every step needs to be revised in a cycle of 6 years

→ Encourage the **involvement of interested parties** in FRMPs

Implementation Levels

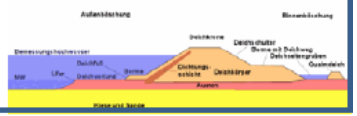
1. Policies and legislation
At this overarching level, goals and general direction of development are defined. These policies and legislations include long-term strategic decisions made on the levels of parliaments, governments or high-level administrative bodies. They are usually expressed in a rather abstract way and outline the general framework for flood risk management (Arbter et al. 2007, 8 and 62). Examples for this level are the "Recommendations for the Establishment of Flood Risk Management Plans" by the German Working Group on Water Issues of the Federal States and the Federal Government (LAWA 2010) or the;

2. Plans and programs
At this level, specific measures and instruments, which aim to reach a given goal, are defined (e.g. a goal defined at the policy level) (Arbter et al. 2007, 8). An example from the Elbe catchment is the "Action Plan for the Flood Protection in the Elbe River Basin" by the International Commission for the Protection of the Elbe River (ICPER 2009).

3. Projects
At this level specific measures are planned, described in detail and implemented (Arbter et al. 2007, 8). A technical flood protection wall may be constructed in a specific community and/or a local warning system may be installed.

Measures in flood risk management:
Generally, we propose to distinguish in structural and non-structural measures. Based on Schanze et al. 2008, 10), structural measures are interventions in the flood risk system based on (structural) works of hydraulic engineering. Non-structural measures (NSM) are all other interventions. Preventive measures are furthermore differentiated in (based on DKKV 2004):

- Spatial measures: keeping constructional development out of floodplains as far as possible
- Constructional measures: ensuring appropriately adapted construction methods in areas prone to flooding
- Risk reduction measures: own financial provisions (backed by insurance)
- Behavioural measures: explaining, preparing for and practicing how to cope with flood/related danger situations
- Informational measures: alarming, warning
- and informing about impending events
- Increasing natural water retention in
- catchment areas
- Technical flood protection:
- constructional facilities for water
- retention (dams, storage, reservoirs,
- polders).



Degrees of Public Participation

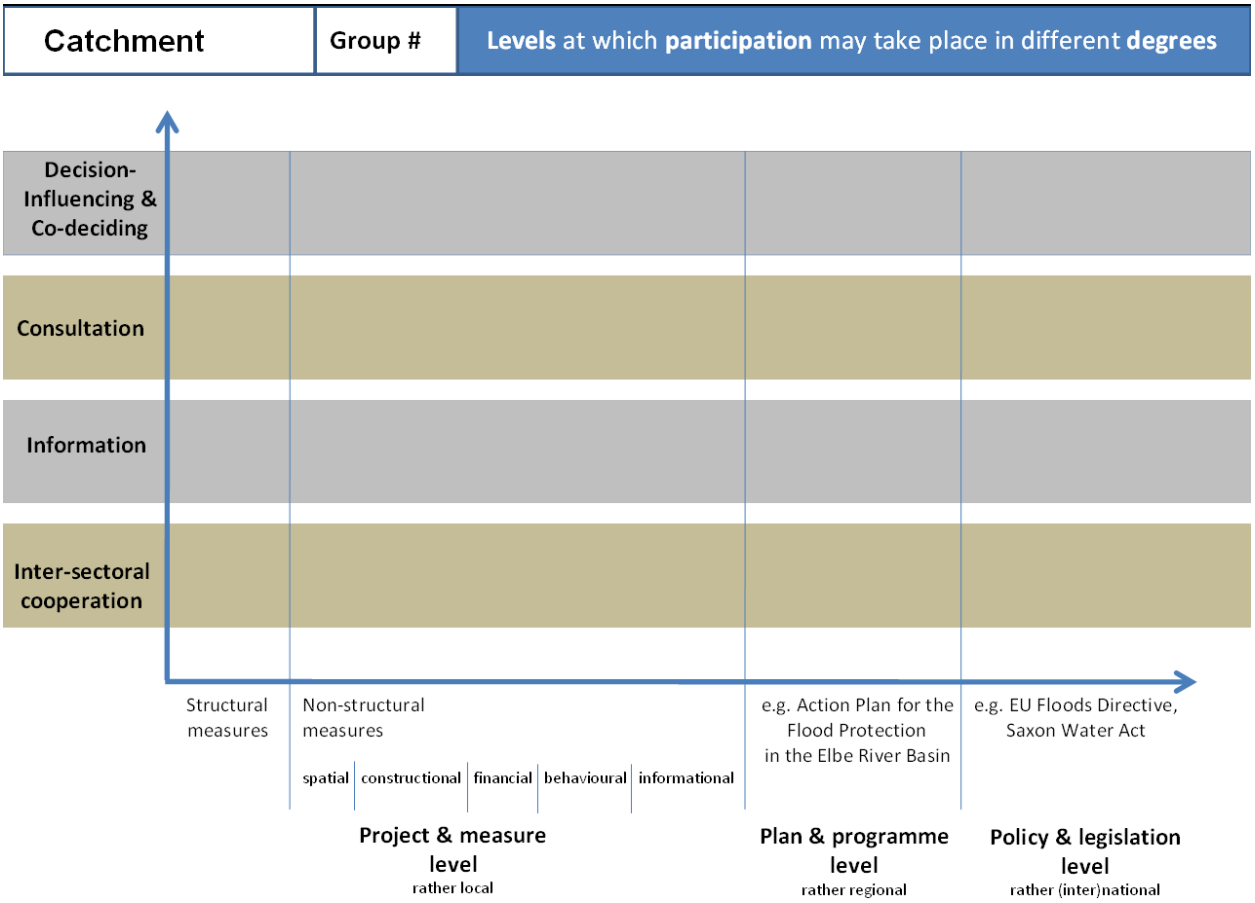
1. **Information providing** relies on an indirect, one-way communication mode with no feedback mechanisms (e.g., notice-boards, mailing lists, public meetings to inform residents or other actors, making documents and plans publically accessible). The purposes of such communication are: informing about projects, plans and policies, raising awareness, encouraging protective behaviour, or warning residents at risk (e.g., flood risk maps) (Arbter et al. 2007, 9; Kuhlicke and Steinführer 2010, 89ff.).
2. **Consultation** is a form of two way communication which actively seeks information from or discussions with different actors through dialogue. It aims to receive some kind of feedback, for instance, that previously provided information is understood and adapted. It also aims to allow different actors to express their opinions and views on a planned project. Examples of this participant strategy are: public meetings with discussions, opinion surveys, citizens panel, or a request for comments (Arbter et al. 2007, 9; Kuhlicke and Steinführer 2010, 89ff.).
3. **Decision-influencing** aims at creating open and mutual exchange and allows, on the one hand, the identification of different or similar opinions/worldviews/ values among and between different actors; on the other hand, it also aims at the participants to actively influence the final decision-making process. Examples: study-groups, round tables, citizens juries, mediation procedures etc. (Arbter et al. 2007, 9; Kuhlicke and Steinführer 2010, 89ff.).
4. **Inter-sectoral and governmental exchange** aims at coordinating actors from different sectors or sectoral decision-making structures are aware of each others' programmes and initiatives and aim not to duplicate efforts or to interfer (Holg, 2002).

Interested Parties

Social Capacities

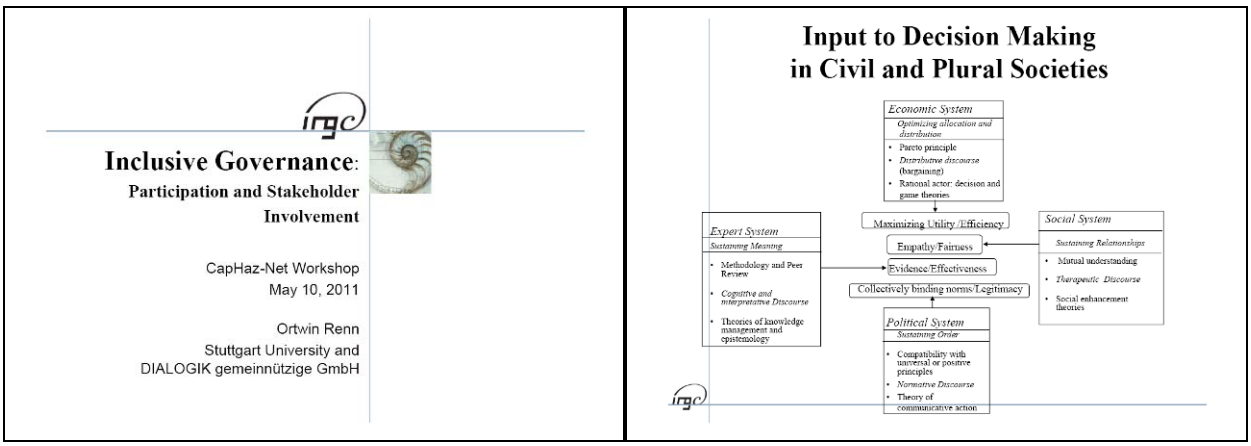
Types of social capacities	Specification/description
1. Knowledge capacities	• knowledge about the hazard/risk and how to prepare for, cope with and recover from (PCR) the negative impact of a hazard (formal: legal frameworks/laws and informal: norms/beliefs)
2. Motivational capacities	• motivation to PCR the negative impact of a hazard and sense of responsibility for one's own and other's actions
3. Network capacities	• the possession or development of stable trustful relationships among and between different organisational, local and individual actors
5. Economic capacities	• Availability of financial resources to PCR the negative impact of a hazard
6. Institutional capacities	• Consideration of principles of fair governance (legitimacy, equity, accountability) and a variety of problem frames, multi-actor, multi-level, multi-sector, diversity of solutions, redundancy)
7. Procedural capacities	• Understanding of how to elicit and apply the aforementioned capacities

8.3.2 Participation Chart



8.4 Annex 4 – Presentations

8.4.1 Ortwin Renn: Inclusive Governance – Participation and Stakeholder Involvement



Crucial Questions for Involvement

- ***Inclusion***
  - *Who:* stakeholders, scientists, public(s)
  - *What:* options, policies, scenarios, frames, preferences
  - *Scope:* multi-level governance (vertical and horizontal)
  - *Scale:* space, time period, future generations
- ***Closure***
  - *What counts:* acceptable evidence
  - *What is more convincing:* competition of arguments
  - *What option is selected:* decision making rule (consensus, compromise, voting)

Who should be involved?

- ***Vertical governance***
  - *Political bodies ranging from communities via regions, states, countries, to EU*
  - *Other agencies or ministries*
  - *Subordinate administrations*
- ***Horizontal governance***
  - *Stakeholders (organized groups with an interest in the issue including private sector and NGOs)*
  - *Experts (groups with specific knowledge)*
  - *Multipliers (Media, opinion leaders)*
  - *Affected and general public*

How should closure be organized?

- ***Voting models***
  - *neoliberal view of participation*
  - *Representativeness is crucial*
  - *Vote represents informed preferences*
- ***Consensus Models***
  - *Deliberative view of participation*
  - *Completeness of arguments is crucial*
  - *Consensus reflects best possible outcome based on given knowledge and expressed preferences*
- ***Consultation Models***
  - *Postmodern view of participation*
  - *Awareness of variety is crucial*
  - *No agreement or final verdict (representation of plurality)*

General Requirements for a Participation Model

- ***Fairness***
  - inclusion of all affected parties
  - representation of all relevant arguments
  - representation of all relevant interests and values
- ***Competence***
  - communicative ability (able to make claims and challenge them)
  - substantive validity (state of the art in knowledge)
- ***Legitimacy***
  - Transparency (internal and external)
  - Compatibility with legal decision making (Anschlussfähigkeit)
- ***Efficiency***

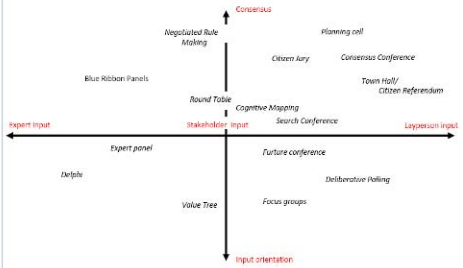
Specific Requirements for Participation Models

- Clear mandate and time frame
- Range of available and suitable options
- Willingness of legal decision makers to give product of participation serious attention
- Willingness of all parties to learn from each other
- Refraining from moralizing other parties or their positions

Candidates for Participatory Models

- ***Organized stakeholders***
  - Hearing
  - Round Tables (Forum, Dialogue Processes)
  - Negotiated Rulemaking
  - Mediation and Alternate Conflict Resolution
- ***General public***
  - Ombudsperson
  - Public Hearings
  - Citizen Advisory Committees
  - Citizen Forum, Planning Cells, Citizen Juries
  - Consensus Conferences (Danish Model)

Typology of stakeholder involvement techniques and procedures



9

Stakeholder Involvement at Different Stages

Understanding the situation and the social context

Shaping the process (consensus on frames)

Inclusion of framemakers; closure by consensus or parallel processing (supported by creative dialogue methods such as open space conferencing)

Objective: acknowledge different (legitimate) frames and select the ones that seem appropriate to the problem

Characterizing our knowledge (water systems and interventions)

Gathering information and assessing impacts

Inclusion of knowledge carriers; closure by methodology and peer review (supported by hearings , Delphi, etc.)

Objective: Collect and process all relevant information on the impacts, its wider implications and the concerns that people have

Stakeholder Involvement at Different Stages

Evaluation of the present situation and means of intervention

Deliberating around values/perspectives and assigning trade-offs

Inclusion of "winners" and "losers"; closure by consensus or due process (supported by deliberative methods)

Objectives: Becoming aware of the trade-offs involved, making them transparent to a wider audience and making sure that major violations of interests and values are avoided

Selecting intervention methods and monitoring impacts

Weighing pros and cons of management measures

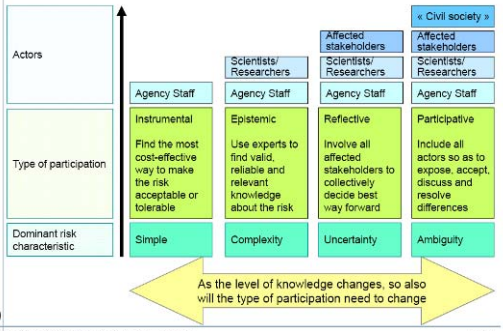
Inclusion of those directly affected; closure by due process (low ambiguity)

Inclusion of major value-driven stakeholders and closure by public participation exercises (high ambiguity)

Objective: Designing effective, efficient, fair and ethically acceptable water management options

irgc

STAKEHOLDER INVOLVEMENT



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Criteria for Evaluating Governance Performance

- **Effectiveness** (Were the goals of risk management accomplished or are they likely to be accomplished?)
- **Efficiency** (Are the management measures cost/effective?)
- **Legality** (Are the risk measurement measures compatible with legal prescriptions and national/international laws?)
- **Legitimacy** (Are the management measures based on due process and publicly accepted procedures)
- **Accountability** (Are all responsibilities for risk management and liability clear and unambiguous?)
- **Fairness** (Is the risk/benefit distribution considered fair and just?)
- **Acceptance** (Are the measures approved by the main stakeholders and the public at large?)
- **Acceptability** (Are the measures compatible with ethical and moral standards?)
- **Sustainability** (Are the measures in line with the goals of sustainable development?)

irgc

Summary

- **Requirements for Stakeholder Involvement**
  - Inclusion: fair representation of relevant stakeholders and/or the general public
  - Closure: vote, consensus, plurality
  - Legitimacy: phase- specific input, procedures and stakeholder composition in each phase of water basin governance
- **Specific Needs for Each Governance Phase**
  - *Before the measure:* Legitimacy of frames
  - *Consequence analysis:* Inclusion of all relevant knowledge
  - *Evaluation:* Assigning trade-offs
  - *Management:* Selecting and implementing effective, efficient, fair and acceptable options

irgc

Final Note

Deliberative processes for involving stakeholders and the general public are instruments of art and science:
They require a solid theoretical knowledge, a personal propensity to engage in group interactions, and lots of practical experience

irgc

8.4.2 Martin Cassel-Gintz: Principles of Flood Risk Management

KLIWA

Principles of Flood Risk Management

Dr. Martin Cassel-Gintz
Prof. Dr. Robert Jüpner
University of Kaiserslautern
Hydraulic Engineering and Water Management

Technische Universität Kaiserslautern

KLIWA

Content

Technische Universität Kaiserslautern 2

Introduction

(Picture: Stefan Haßler, 2002)

Floods are parts of the natural water cycle.

- Floods are value-free
- have **positive** effects for adapted ecosystems, e.g. meadows
- have **negative** effects, if anthropogenic structures are affected

3

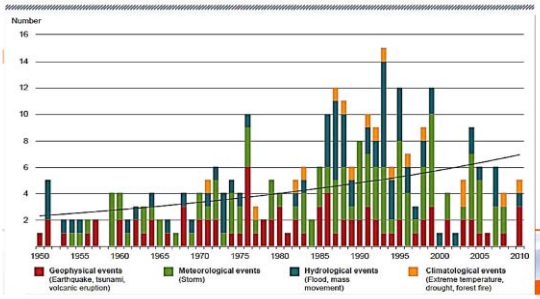
Introduction

NatCatSERVICE

Great natural catastrophes worldwide 1950 – 2010

Number of events with trend

Munich RE



4

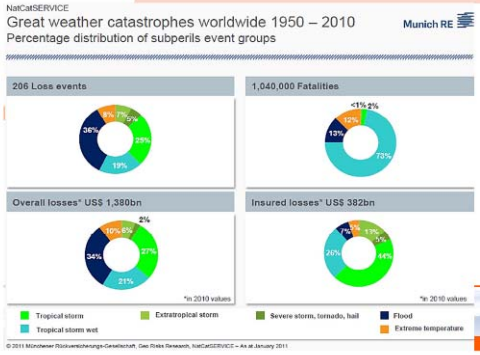
Introduction

NatCatSERVICE

Great weather catastrophes worldwide 1950 – 2010

Percentage distribution of subperils event groups

Munich RE



© 2011 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE – As at January 2011

5

Introduction

Flood Events of the last Decades

(Jüpner, 2002)

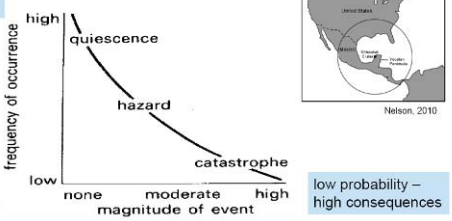
- Depict the limits of technical flood protection
- Paradigm shift of a culture of "promised" security towards a risk culture
- Introduction of EU Directive on the assessment and management of flood risks
- Fundamental change in the cultural understanding of risk and the legislative framework

6

Flood Risk – Flood Resilience

disaster – frequency of occurrence vs. impact

high probability – low consequences



Nelson, 2010

low probability – high consequences

7

Flood Risk – Flood Resilience

Picture: Steingraf, LHW, April 2006

8

Flood Risk – Flood Resilience

Flood Risk

- Flood risk = flood hazard (e.g. probability of occurrence) x potential damage (vulnerability)
- Vulnerability of the receptor is the crucial factor for managing extreme flood events

Pasche (2008)

Flood Risk Management

- Strategy encompassing all components of the risk development from the source to the receptor

→ **Aim:** minimizing harm to the receptor

9

Flood Risk – Flood Resilience

Flood Risk
– Article 2 EU Directive on the assessment and management of flood risks

1. **'flood'** means the **temporary covering by water of land not normally covered by water**. This **shall include** floods from rivers, mountain torrents, Mediterranean ephemeral water courses, and floods from the sea in coastal areas, and ***may exclude*** floods from sewerage systems

2. **'flood risk'** means the **combination** of the **probability of a flood event** and of the **potential adverse consequences** for **human health**, the **environment**, **cultural heritage** and **economic activity** associated with a flood event.

10

Flood Risk – Flood Resilience

Flood Resilience

- The ability of a system to **absorb perturbations or stresses without changes** in its **fundamental structure** and **function** that would drive the system into a different state (or extinction).
  (Research and Assessment Systems for Sustainability Program 2001)
- **Internal property** of dynamical systems
- Focus and strengthening of resilience allows for easier handling of **uncertainty** and "**surprises**"

Flood Risk – Flood Resilience

Flood Resilience Measures

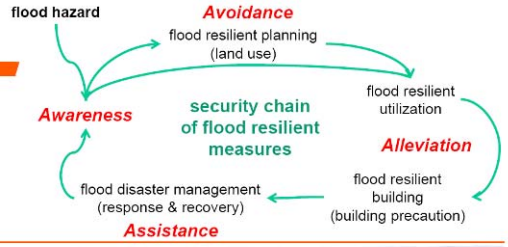
1. **Group (-> Source):**
   - Reduction of flood hazard by increased retention
   - Increased technical flood protection
2. **Group (-> Receptor):**
   - Reduction of flood impact at receptor
   - Reduction of flood vulnerability
   - Increased resilience

Aim: not damage avoidance at all costs, but limit damages

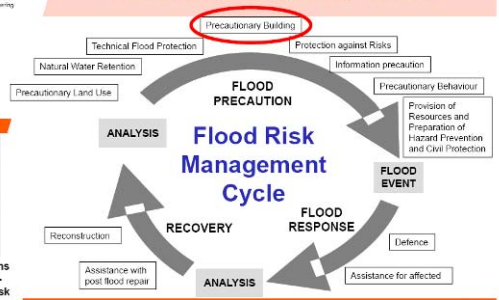
Pasche (2008)

Flood Risk – Flood Resilience

Aspects of flood resilience



Flood Risk – Flood Resilience



Recommendations for the Establishment of Flood Risk Management Plans

- Adopted at the 139th LAWA Gen. Meeting in Dresden 25/26 March 2010

[translated from LAWA-2010]

Flood Risk – Flood Resilience

Precautionary Building

- encompasses flood-adapted planning and modes of construction and also flood-proof storage of water-hazardous substances.

Potential actions in the field of "Precautionary Building":

Flood Risk – Flood Resilience

Area of action	Precautionary Building
Sub-area	Architectural, engineering and artisanal services
Legal bases	If appropriate, Architects Acts and similar legislation applicable to other professions
Competent authorities	Professional bodies (chambers) of architects, engineers and trades
Possible objective	Competent advice and planning
Review of status quo	Ascertain the level of knowledge about flood-adapted planning, construction and renovation among architects, engineers and tradespersons
Possible actions	Advanced training programmes Adaptation of the university curriculum
Possible implementation	In line with the advanced training programmes established

Flood Risk – Flood Resilience

Building precaution strategies

- ***Flood avoidance*** - constructing the building in such a way that it avoids being flooded, e.g. by raising it above flood level
- ***Flood resistant*** - constructing the building to prevent flood water entering the building or damaging its fabric. -> ***flood proof***
- ***Flood resilient*** - constructing the building in such a way that minimises water ingress and promotes fast drying and easy cleaning, and does not cause any permanent damage
- ***Flood repairable*** - constructing the building in such a way that although flood water enters the building, elements that are damaged by flood water can be easily repaired or replaced

FLOW MS

The INTERREG IV-A Project "Flood and low-water management in the Mosel-Saar catchment" (FLOW MS)

Interreg IV-A
Großregion · Grande Région

Gefördert durch den Europäischen Fonds für regionale Entwicklung im Rahmen des Programms Interreg IV-A Großregion

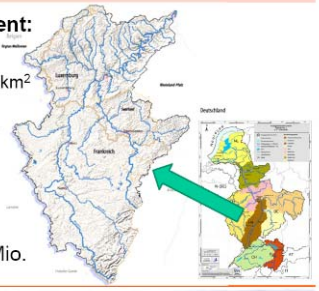
Die Europäische Union investiert in ihre Zukunft

Project duration: 5 years; 2009 - 2013
Project costs: 3 350 500 €; 50% by European Regional Development Fund

FLOW MS

Mosel-Saar catchment:

- Area: 28 286 km²
  - B (Wallonien): 767 km²
  - F: 15 360 km²
  - L: 2 521 km²
  - D: 9 637 km²
    - RLP: 6 980 km²
    - SL: 2 569 km²
    - NRW: 88 km²
- Population: ~ 4.3 Mio.



FLOW MS – Project Partners

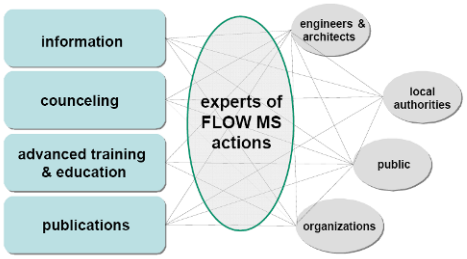
Project Partner	Role
International Commissions for the Protection of Mosel and Saar (IKSMS)	Project Coordination
Department for Water Management Luxembourg – Administration de la Gestion d´Eau Luxembourg	Project Partner
Prefecture Lorrain (F) – DREAL Lorraine	Project Partner
Ministry for the Environment Rhine-Palatine (RLP)	Project Partner
Ministry for the Environment Saarland (SL)	Project Partner

FLOW MS – Project Goals

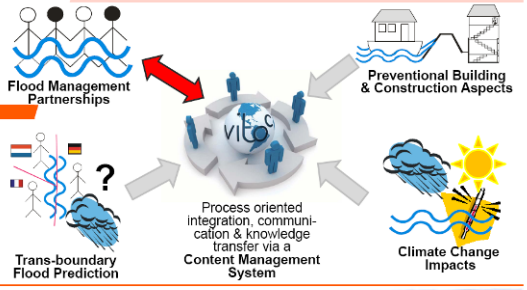
Improvement of flood and low-water prediction and management and reduction of potential damages in the Mosel-Saar catchment:

- improved trans-boundary cooperation
- Strengthening of preventive measures for effected individuals, local authorities and their organizations
- Adaption of local and regional flood and low-water management to expected climate change impacts
- Improvement of cross-boundary flood prediction

FLOW-MS
Requirement Profile and Integrative Structure



FLOW MS Overview



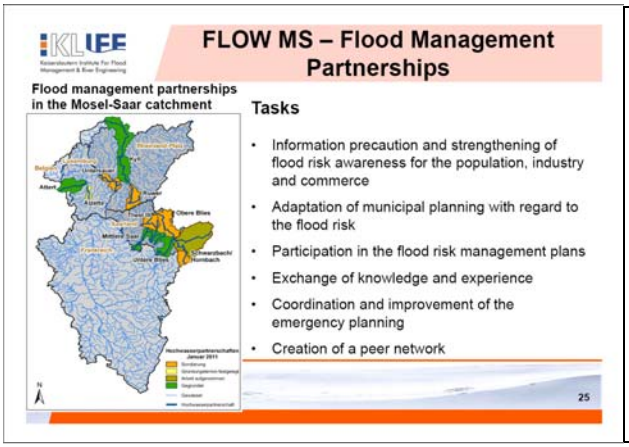
FLOW MS – Flood Management Partnerships

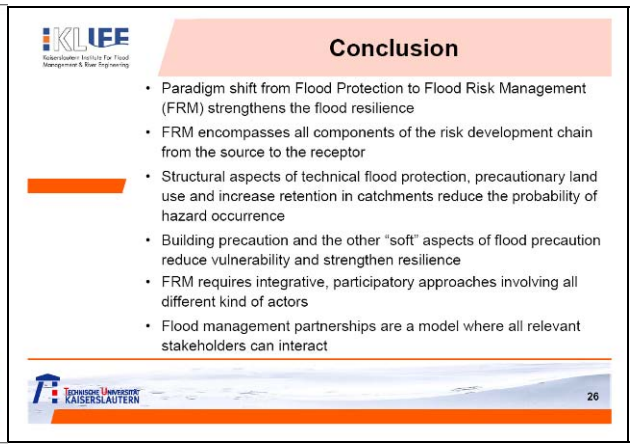
Flood Management Partnership

- Instrument for the improvement of the communal flood precaution

What is a flood management partnership?

- voluntary partnership of communities, towns and counties in a catchment or along a river reach
- Reduction of flood impacts through common activities and implementation of flood risk reduction measures
- Improvement of municipal flood precaution





8.4.3 *Gernot Koboltsching: The Implementation of the EU Floods Directive in Austria - Experiences and Insights*

History of flood risk management in Austria

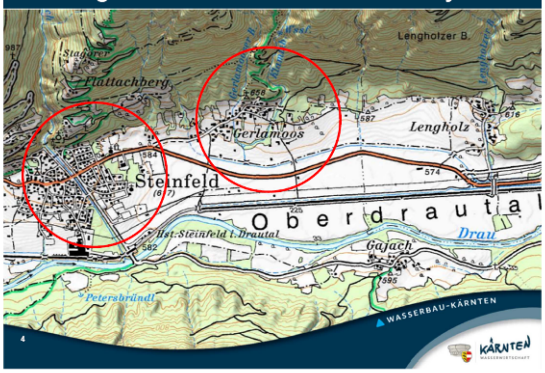
History of flood risk management in Austria

Early historical example from the Alps

- settlements in valleys often affected by floods
  - flooding from main river: HQ_{5-10} or even annually and affecting large area
- consequence: "self regulation"
  - villages moved on alluvial cones
  - flooding from main river: HQ_{5-10} or even annually and affecting larger area.
  - flooding from torrent: more seldom

  risk reduction !
- achieved by *local* protection alliances

Villages on alluvial cones not in valley



Villages on alluvial cones not in valley

History of flood risk management in Austria

After WW II Austria tried to build the "10th region"

- drainage of wetlands combined with flood protection of farm land (funding system)
- consequences:
  - rivers were put into coarse channels and flood wave accelerated
  - although the Austrian water law says that people affected from flooding are self-responsible for their own protection, funding supported the opposite
  - **no participation – no interest in participation! "responsibility of state"**

Channelisation of rivers

Nature „fought back" in 1965 and 1966

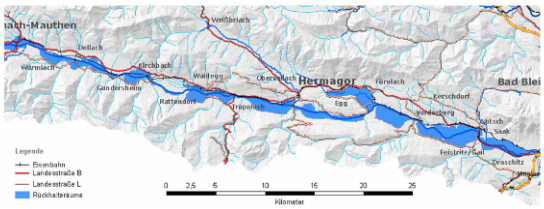
Nature „fought back" in 1965 and 1966

History of flood risk management in Austria

Many technical measures did not work, further consequences were needed

- formation of an interdisciplinary group
  - foundation of INTERPRAEVENT (1968)
  - documentation and analysis of events
- flood protection concepts towards risk management (low level of participation)
  → e.g. Gail valley
  - flood retention system upstream in rural area to protect city from flooding

Flood retention system Gail valley

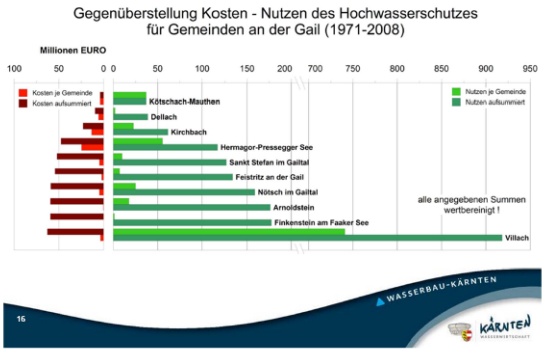


Retention pool „Presseggersee“

Ring dam in Gail valley

Flood retention in unsettled area

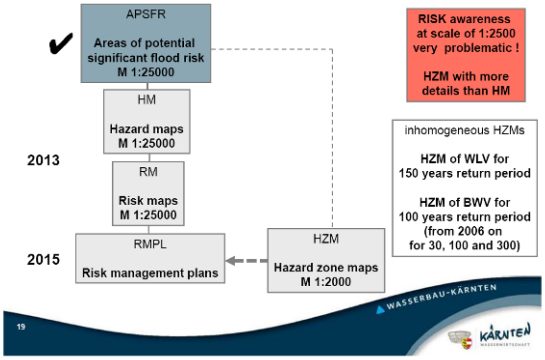
Cost–benefit ratio of flood protection



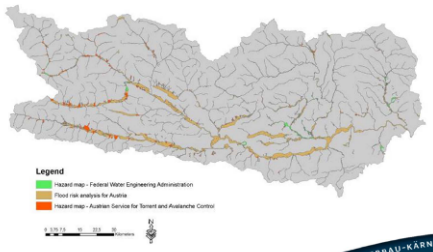
Implementation of the EU-FD in Austria (current stage)

HZM: a part of the integrated risk management

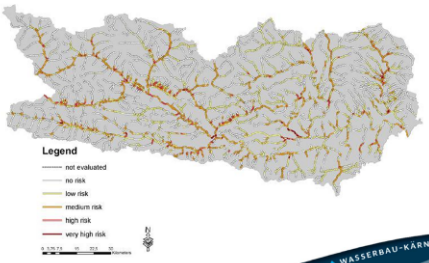
Steps and problems of implementation



Hazard maps in Carinthia



Map of risk



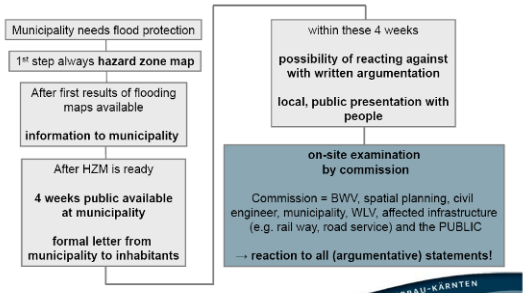
Flood hazard maps in Austria – not only a tool

Hazard maps for already 35 years in Austria

- 1975: Torrent and avalanche control started and implemented HZM in the Forestry Law → consequence of INTERPRAEVENT
- 1994: Hazard zone maps for rivers fixed in technical funding guideline
- 2006: addition of 300 years return period events in technical funding guideline
- 2011: Hazard zone maps in Water Law but still a an expertise

The role and current stage of particpation

Participation within hazard mapping



Public presentation

On-site examination by commission

Folder describing hazard zone mapping

IMRA project

Integrative flood risk governance approach for improvement of risk awareness and increased public participation

Main goals:

- Self assessment of risk communication methods
- Workshop on the undersatndability of hazard maps and other plans
- Stake holder workshops → definition of roles
- Improvement of riks awareness
- Implementation of a natural hazards commission

Increasing risk awareness (poster presentation)

Stakeholder workshop

Conclusions

- Integrated flood risk management has in some ways already started
- Risk management like in Switzerland not yet in Austria
- Participation is necessary
- The proper level of participation is not clear yet
- Participation needs time and human resources

Good example from Switzerland

8.4.4 *Jean-Claude Eude*

Integration of scientific findings in the river basin interregional policies

THE LOIRE RIVER BASIN: AN OECD CASE STUDY

ORGANISATION DE COOPÉRATION ET DE DEVELOPPEMENT ÉCONOMIQUES

OCDE

OECD case study dedicated to the Loire river basin **flood vulnerability reduction strategy**, together with the means and tools to implement it. Particular attention is paid to economic activities.

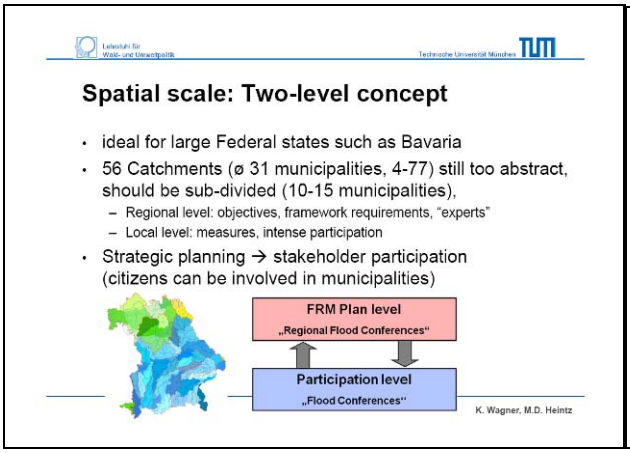
Brussels
October 29, 2010

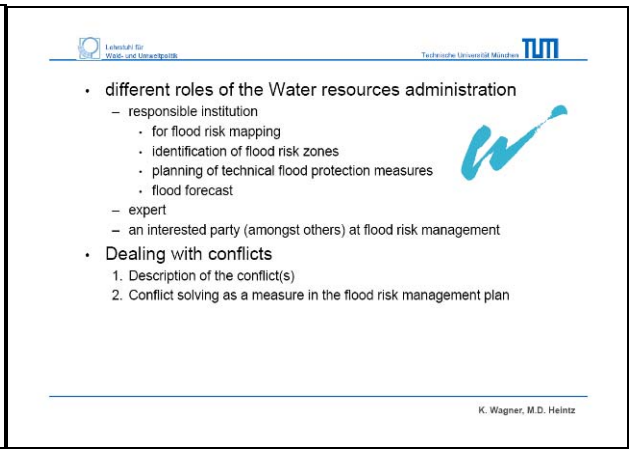
Prevention and Management of Flood Risks
Contribution of the 2007-2013 Loire River Interregional Programme

1. Adopt a strategic approach vis-à-vis the assessment and management of flood risk
2. Develop synergies between the public and private sectors
3. Inform and involve stakeholders and the general public
4. Strengthen cooperation between actors throughout the basin and risk managers
5. Make better uses of technological potential and enhance research efforts

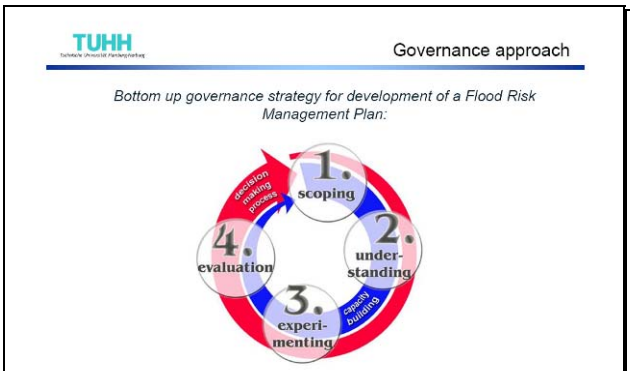
OECD (2010)

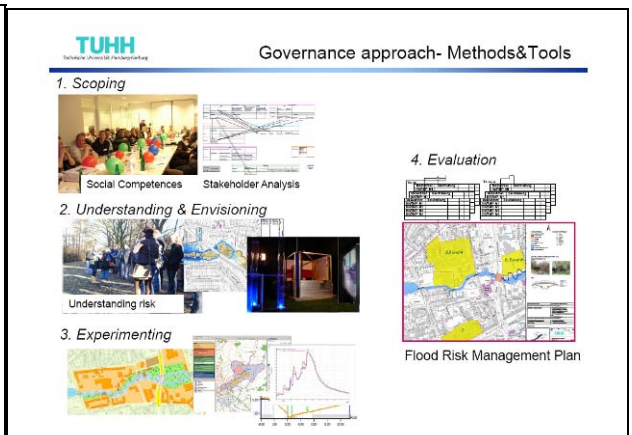
8.4.5 Klaus Wagner

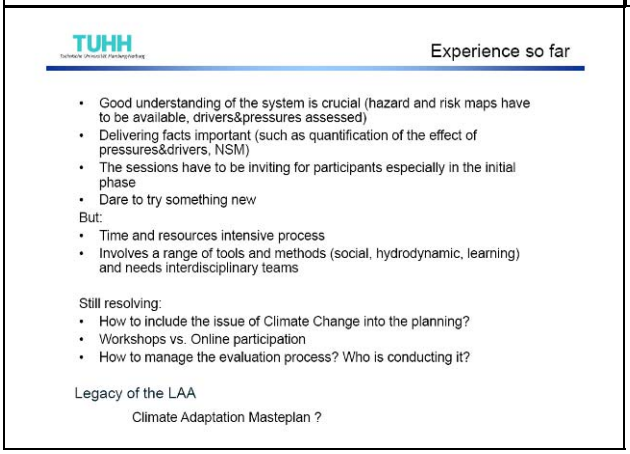




8.4.6 Natasa Manojlovic







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