

Task D: Participatory Tool

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1. Introduction

This document finalises Task D of the EU project CAPFLO. The CAPFLO project is realised by a consortium of five research institutes in Europe working on the social dimension of flood risk. The general goal of the project is to promote participatory capacity building processes for flood mitigation at local level. To this purpose, the project pursues the following five objectives:

1. To design two consistent tools (the Capacity Assessment Tool and the Participatory Tool) to assess and develop social and civic capacities, as urban resilient capacities, for flood mitigation;
2. To assess social and civic capacities in five high flood risk urban river stretches in different Member States;
3. To carry out, in these five pilot urban river stretches, participatory capacity building processes, implementing pilot actions aiming to develop social and civic capacities for flood mitigation;
4. To identify and share good practices on social and civic capacity building; and finally,
5. To produce a Guideline on social and civic capacity building in order to facilitate the replication of participatory capacity building processes in other urban areas.

Further information is available at the website: <http://capflo.net>.

1.1. The Participatory Tool

Task D of the CAPFLO project contains several objectives, including the development of a methodological framework for designing participatory processes for capacity building; the development of a list of actions to enhance social capacity; the implementation of an international workshop for knowledge sharing on participatory processes for capacity building; and the development of a Participatory Tool for capacity building (Deliverables D.1, D.2, D.3 and D.4). This report is the result of the research conducted to achieve these objectives and includes all the above-mentioned deliverables.

Previous tasks in the CAPFLO project have also contributed to the development of this Participatory Tool. Specifically, Task B developed the Capacity Assessment Tool for the assessment of social and civic capacity for flood mitigation at local level. These two tools are consistent, meaning that they have been synchronised to enable the application of the Participatory Tool after social and civic capacity have been assessed with the Capacity Assessment Tool.

The research conducted in the CAPFLO project is based on two key hypotheses: firstly, it is hypothesised that, in collaboration with other actors, citizens can contribute to the mitigation of flood risk. Secondly, social and civic capacity can be developed and enhanced by the implementation of participatory processes. This Participatory Tool provides the basis for building such capacity.

Besides the hypotheses, the CAPFLO project relies on three assumptions. Firstly, the development of local social and civic capacity is conducive to increase the resilience of socio-ecological systems. Secondly, socio-ecological systems are self-organising and change continuously. Understanding this change is a precondition for building social and civic capacity. Thirdly, dominating patterns of organisation, e.g. institutional frameworks, enable certain dimensions of social capacity more than others due to the priorities and values set by these patterns. The roles actors play in flood risk management are largely dependent on this setup (for further elaboration, see the CAPFLO report on Task B4: Capacity Assessment Tool at <http://capflo.net>).

This Participatory Tool is designed to support organisers of participatory processes who want to develop social and civic capacity for flood mitigation at local level. The scientific novelty of this Tool lies in its assessment of the potential of certain Participatory Mechanisms (for terminology, see Section 2.3) to build social and civic capacity. This assessment is based on an extensive literature review and tested through the implementation of some of these participatory mechanisms and subsequent evaluation of outcomes. To be practically useful to a wide spectrum of users carrying different (levels of) experience with participatory processes, the Tool also includes guidelines on how to plan, implement, and evaluate a participatory process designed to build social and civic capacity.

Although this Participatory Tool is meant to be replicable in different cases, the potential for public participation and capacity building is usually context-dependent. This Participatory Tool is further analysed in Task E of the CAPFLO project through its usage and implementation in five different case studies. It is evaluated and improved to produce a definitive standard version including empirical experience. Nevertheless, users of this tool have to take into account case-specific circumstances and adapt their usage of this tool accordingly for the best results (see also Section 5.1).

1.2. Synthesis of the process of building the Participatory Tool

The Participatory Tool is based on previous tasks of the CAPFLO project, including Deliverables B.4, and D.1-3. Deliverable D.1 was developed by IES-VUA as a proposal for the Participatory Tool and was reviewed by the CAPFLO partners. The proposal included the definitions to be used in the Tool (Chapter 2), emphasising the distinction between Participatory Mechanisms and Participatory Activities; a description of the methodological approach, including the categorisations and characteristics of Participatory Mechanisms and Participatory Activities (Chapter 3); and a proposal regarding how to assess Participatory Mechanisms for their potential and suitability to improve social and civic capacity (Chapter 4). The proposal also included brief outlines of the principles concerning how to implement participation effectively (Chapter 5), and how to evaluate the participation (Chapter 6). The main point of discussion on D.1 was to better represent the implementation (stage) of the Participatory Actions in the Participatory Tool, rather than only focussing on the participatory aspect of the planning stage.

D.2 required the input of all partners who proposed a list of Participatory Actions for building social and civic capacity based on the capacity assessment carried out in each case study area. After bundling and comparing these proposals, IES-VUA compiled a list of general actions replicable in different contexts. These are listed in Annex B. Partners will select, in dialogue with stakeholders (using the most suitable of the proposed Participatory Mechanisms; see Chapter 3 and 4), two actions to implement in their case study area. Finally, D.3 comprised an international workshop held on November 10, 2016. During the workshop an advanced draft of the Participatory tool and the implementation of the actions in the case study areas were discussed. An elaborate report of the workshop is presented in Annex A. Regarding the Participatory Tool, a main point of consideration discussed during the workshop was the usage of modern communication technology by authorities and citizens in public policy and public participation. It was agreed that this modern communication should be a cross-cutting part in the Participatory Tool, in particular represented in the assessment of the potential of Participatory Mechanisms and Activities to increase social capacity, and in the list of General Actions (Annex B). Also, the social capacity dimension 'Finance' was to be reintroduced in the assessment (see Section 3.5).

For the implementation stage of the CAPFLO project (Task E) the partners will promote and lead the implementation of two selected actions. The list of Participatory Mechanisms and Participatory Activities (for explanation of terms, see Chapter 2) provided in this Participatory Tool support the design and implementation of the actions.

To summarize, the CAPFLO project includes three moments of stakeholder participation. Firstly, stakeholders are involved in the participatory planning phase, meaning they contribute to the selection of actions to enhance social and civic capacity in their region (called Participatory Actions). Secondly, the implementation of these Participatory Actions also involves stakeholders as interested parties in the capacity building process. It is important to note that although the CAPFLO partners assist the implementation of these ‘pilot’ actions during the CAPFLO project, for future uses of the Participatory Tool the organisers of participatory activities—which can be citizens, private organisations, or various levels of government—should not necessarily need any external support. Lastly, the evaluation of the Participatory Actions is also participatory as it asks the stakeholders for their personal assessment of the process. For an overview of these phases, see Figure 1. For a general overview of the activities in task D and the function of the Participatory Tool, see Figure 2.

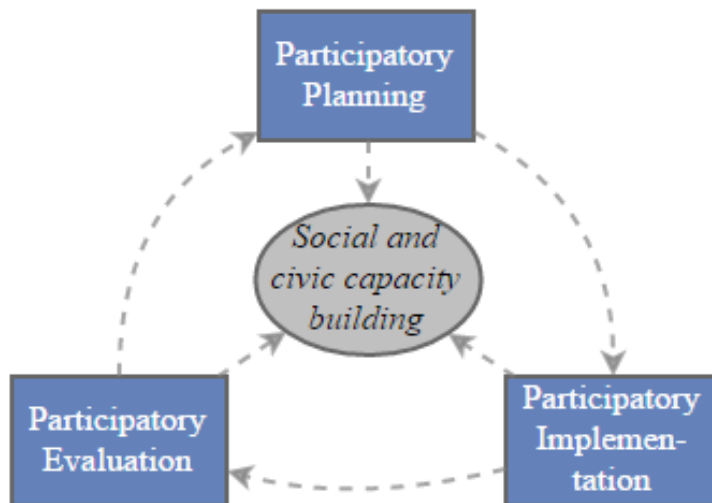


Figure 1. The three participatory stages in the use of the Participatory Tool and their contribution to social and civic capacity building.

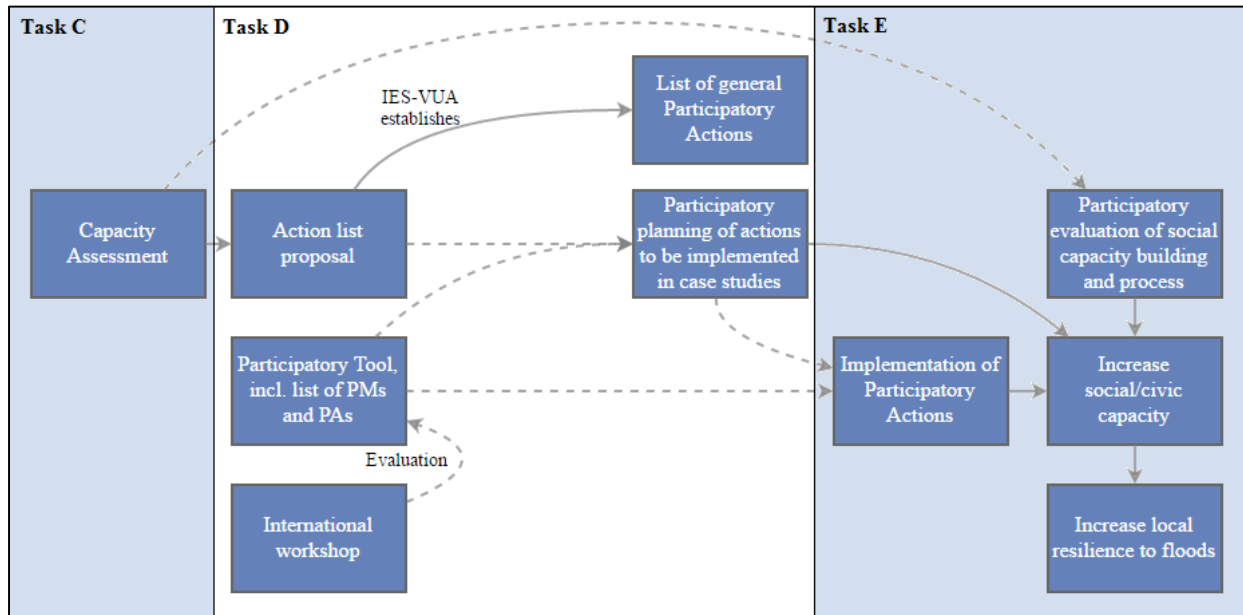


Figure 2. An overview of the CAPFLO project process. The dashed arrows depict how some steps in the process can support others, whilst the solid arrows represent direct contributions of one step to another. The arrows do not necessarily illustrate a sequence.

2. Understanding public participation and related terms

2.1. Public participation in planning and implementation

Public participation, also known as stakeholder involvement¹, is an extensively discussed term in academia. A large part of the literature primarily focuses on participatory planning, i.e. involving citizens and stakeholders in policymaking processes. In this regard, several definitions of participation exist. For instance, Reed (2008: 2418) defines it 'as a process where individuals, groups and organisations choose to take an active role in making decisions that affect them'. Rauschmayer & Risse (2005: 651) regard participation as 'integrat[ing] the public into the decisional process'. According to these views, participation requires action from both policymakers and the public. When discussing the principles of 'citizen' participation, Oulahen & Doberstein (2011: 1) argue that these include 'the rights of individuals to be informed, to be consulted, and to have the opportunity to express their views on government decisions'. Thus, participation does not only comprise the willingness of the public to take a seat at the negotiating table and of policymakers to accept and promote their presence. It also includes the right of the public to be informed properly and to be taken seriously, and the processes that promote these rights in order to have a genuine influence when conferring with policymakers.

Public participation in general, and participatory planning in particular, occurs in many different forms. Arnstein (1969) was among the first to distinguish between many different forms, ranging from informing to citizen control over decisions. The majority of academic literature, as well as the EU Water Framework Directive, includes provisioning of information among the possible participation practices (European Commission 2003; e.g. Brody et al. 2003; Chess & Purcell 1999; Fiorino 1990; Godschalk et al. 2003; Rowe & Frewer 2005). Although information supply is sometimes not regarded as genuine participation because participants only receive something without contributing (see e.g. Michener 1998), this form of participation can be regarded as ensuring the right of being informed (Oulahen & Doberstein 2011: 1).

A participatory process can be prompted both top-down and bottom-up. In this report, when the distinction is made between top-down and bottom-up participatory planning and implementation it is not used in the traditional fashion, which views top-down approaches as 'excluding local people from participating in management discussion and decision-making that

¹ For simplicity, 'public participation' is used in this report as general term that could involve both stakeholders and the general public.

concerns their local environment' (Smith 2008: 354). Rather, the distinction made here refers to the sequence of action, i.e. who initiates the participatory process, and is therefore simply descriptive rather than normative. The planning and implementation may be initiated by citizens (self-organisation) as well as governments, depending on the type of action and how it is planned. In that regard, it is useful to differentiate the dichotomy of process organisers and participants from the dichotomy of authorities and communities/the public. Although in some cases these dichotomies may be overlapping, this does not apply when communities initiate the participatory process (and with that become, at least part of, the organising group of actors). Sometimes it may seem as if there is no difference between the organisers and participants, for instance when communities create a local flood alarm agency. However, by acting as organisers community members actually enforce some hierarchy within their community. It is practically impossible to involve every single citizen of a community as organiser, so some people will be appointed as organisers and others will be consulted or involved, in the broadest sense (depending on the PM), as participants.

Numerous ways of categorising participation exist (for an extensive analysis, see Reed 2008). These include typologies based on the degree of participation; theoretical distinction between process and outcome; and distinction between objectives. According to Rowe & Frewer (2005) forms of participation can generally be divided into three categories, based on the *nature*, i.e. the flow, of communication: 1) public communication, in which the process organiser provides the participants with information; 2) public consultation, in which the flow of information goes from the public to organiser; 3) and public participation², describing a two-way communication flow. Although this latter kind of information flow is often initiated top-down, establishing a back-and-forth flow of communication places participants and process organisers (temporarily) on the same level, while information supply and consultation fail to do so.

2.1.1. Public participation in the 'network society'

Over the last two decades, the advent of the Internet led to the development of new ways of communication which have substantially changed people's way of interacting, something that is referred to as 'network society' (Castells 2005). These developments also influence the means

² Rowe & Frewer (2005) distinguish between 'public participation' and 'public engagement', the latter being equal to the definition of 'public participation' in this report, and the former being a sub-form of this public engagement. This particular nomenclated distinction is not used in this report. Thus, when discussing 'public participation', in this report we refer to the overall process of including the public in the decision-making process. The sub-form of participation is adapted here and renamed 'Dialogue' (see Chapter 3).

people use to participate in public policy and those that governments use to engage people, as ‘technology allows for an entirely new generation of forms and practices of public participation’ (Evans-Cowley & Hollander 2010: 397). The reach of social media (e.g. Facebook, Twitter, Youtube) has new potential to engage far greater numbers (hundreds, thousands) than traditional planning meetings where only a few dozen people attend (Evans-Cowley & Hollander 2010). The progress has increased through the development of the Internet to what some authors call ‘Web 2.0.’, in which co-creation of information and content is central rather than ‘static, one-way communication’ websites (Stoltzfus 2013: 38; Chadwick 2008).

However, there are limits to Internet-based public participation. For instance, Evans-Cowley & Hollander finds in their case studies that the amount of reached people, both by government and citizen initiatives, was not as high as perhaps expected from using social media and influence of the participatory initiatives was limited. Limitations and risks of using modern communication technologies were also discussed during the CAPFLO workshop. For instance, the risk of misinformation or misinterpretation of provided information becomes higher if communication is not personal (i.e. not face-to-face). Also, although social media give people faster ways to participate in for instance a forum or petition, it is also easier for them to ‘disappear’ and not take part in further, more profound participatory processes (see also Evans-Cowley & Hollander 2010: 405). Nevertheless, some of these limits generally arise from lack of experience and skill of both authorities and communities using these technologies, which may be explained by the relative novelty of these communication and participation opportunities (Evans-Cowley & Hollander 2010). The potential for engaging a large amount of people remains, and can be exploited provided the right buttons are pushed. Also, not only does the participation benefit from using online tools, the quality of risk assessments and mitigation can improve too (McCallum et al. 2016). Therefore, this Participatory Tool addresses the possibilities of modern communication technologies and social media regarding public participation, primarily by discussing their possible applications for (and as) Participatory Mechanisms and Participatory Activities.

2.2. Public participation and (community) capacity building

In the Capacity Assessment Tool that preceded this Participatory Tool, social capacity was defined as

all the resources available at various levels (e.g. individuals, organizations, communities, institutions) that can be used to anticipate, respond to, cope with, recover from and adapt

to external stressors (e.g. a hazardous event). These resources include skills, knowledge, social networks as well as institutions, structures and knowledge of how to elicit and use them (Kuhlicke & Steinführer 2010: 16).

Civic capacity was defined as ‘the ability that a community has to articulate different actors (governmental and non-governmental) concerned with collective problems’ (Oriard et al. 2016: 5). Civic capacity is therefore only applicable to the local level, while social capacity may apply to multiple levels. Indeed, Kuhlicke et al. (2011: 806) argue that social capacity building ‘needs to be understood as a multi-level and multi-actor approach’.

The overall ultimate objective of the CAPFLO project is for communities to be able to mitigate flood risk, achieved through the promotion of participatory processes for building social and civic capacity. In establishing the link between social capacity building and risk governance Kuhlicke & Steinführer (2010: 34) argue that, in the context of natural hazards, people’s capacity relates to awareness and understanding of risks; preparedness to protect themselves; ability to heed warnings and respond accordingly; and the ability to participate in decision making and planning processes regarding risk management. The last notion also establishes the link between participation, capacity (building), and risk governance (see also Kinney 2012). Making the link to communication as participation, Höppner et al. (2012: 1756) argue that ‘risk communication is one pivotal way to build social capacities within a society’.

Kuhlicke et al. (2011) distinguish between interventionist and participatory social capacity building. The interventionist approach stimulates capacity building by implementing measures and strategies on a macro-/meso-level of policymaking, while the participatory approach focuses on individuals and can be applied to different types of communities. This latter, typical bottom-up approach ‘may stimulate the self-help of individuals and communities and their increased autonomy’ (idem: 808), and it allows communities to determine the principles, norms, and values that guide the process. The CAPFLO project primarily aims for this kind of participation, initiated by community members. An example of such bottom-up development of flood risk mitigation actions emerged during the capacity assessment conducted in the French case study area of the CAPFLO project, Vitry-sur-Seine. After an area nearby (the commune of Fresnes) was flooded in 1967, one affected individual promoted a local initiative aimed at improving preparedness by initiating the establishment of clear responsibilities among neighbours, which over time transformed into an association that now informs newcomers about the risks and what to do in the event of a flood.

A number of challenges for the implementation of a participatory approach for capacity building exist. Among these, the most relevant describe the danger of local elites dominating the process and the difficulty to strike a balance between efficiency and inclusiveness (Kuhlicke et al. 2011: 808). To help avoiding these pitfalls while using the Participatory Tool, a step-by-step guidance and leading principles for the participatory capacity building process are presented in Chapter 5³.

2.2.1. Five dimensions of social and civic capacity

The CAPFLO project defines five “dimensions” of (local) social and civic capacity regarding flood risk, namely knowledge, motivation, networks, finance, and participation. The **Knowledge** dimension comprises the lay and expert comprehension of flood and risk by various actors, as well as the ability of the various actors to communicate about this understanding and to integrate various forms of knowledge into the flood risk management structure.

Motivation describes the willingness of communities to prepare for flood events and to collaborate regarding this preparation. Concepts such as trust and incentives are central concerning willingness. The potential for change in motivation is also part of this dimension.

The **Networks** dimension emphasises the importance of collaboration. The ability and presence of networks to collaborate, besides the motivation, are crucial for flood risk mitigation. The capacity of networks, for instance among communities, to prepare independently without the aid of external actors is also an important aspect of social capacity.

Finances encompass a central part of the resources communities have or require to prepare for hazardous events. Regarding flood risk, individuals should be insured and understand why they are insured. Also, there should be funds or ways to obtain funds available for community action. Furthermore, the potential for change in the availability of these funds is important.

Lastly, the **Participation** dimension includes the capacity of communities to be part of decision making and to participate proactively in flood risk management. Participation also includes the ability and readiness of the flood risk management structure to pursue more or improved participation.

³ In a society with high inequality, it is unlikely for the process organisers to be able to overcome inequalities and to create a level playing field for all participants during the participatory process. However, a step-by-step guide and guiding principles can help avoiding inherent inequality in the process.

Although for analytical purposes a distinction is made between these dimensions, the reader should understand them as strongly interrelated elements that contribute to building the overall social capacity. Consequently, the overall social capacity is as strong as the weakest dimension; a chain is only as strong as its weakest link. The capacity building process focuses on identifying and developing these weakest social capacity dimensions in order to improve the overall social capacity of local communities. However, organisers of the participatory process should keep in mind that these dimensions cannot be completely isolated, and actually participatory processes can simultaneously address more than one dimension.

2.2.2. Five types of communities

Although communities are here mostly referred to as one unit of analysis, they are often not as homogeneous as portrayed in much literature (Smith 2008):

Any community type is not one single actor, as their members are neither homogeneous nor have a clearly defined stake in risk management. Rather, local and other communities are characterised by a number of diverse interests and internal social differentiation. (Kuhlicke et al. 2011: 807)

In the Capacity Assessment Tool, five types of communities were established: (1) rooted community; (2) institutional community; (3) community of circumstance; (4) community of interest; (5) vulnerable groups. **Rooted communities** are formed by history, when various families have been living together for a long time in the same neighbourhood facing the same natural risks. They have memories of past flood (or other major) events and this contributes to the social capacity of the community.

Institutional communities may form between institutionalised actors facing the same natural risk. Examples of institutionalised actors are mayors and professional water managers. Through the continuous presence of this risk, the actors may find that working together contributes to dealing with the risk, which results in an established culture of collaboration.

Communities of circumstance emerge in the face of a specific situation. For instance, recurring flood events can lead to neighbours helping each other to avoid adverse effects. The shared experience with the 'circumstance' generates bonding within communities.

Communities of interest share a common interest to achieve a certain goal or to discuss how to deal with a certain problem. It is not the shared experience, but rather the shared interest that generates a ‘strategic’ bonding in these communities.

Members of a **vulnerable group** are connected by their vulnerability to a natural risk, such as flooding. This vulnerability can be based on, for instance, the geographical location, the gender or age, and the (lack of) experience. These groups may be dependent on other groups or communities to deal with flood risk or to build social and civic capacity.

2.3. Terminology regarding participation

Many terms are available to describe public participation initiatives, such as participatory tools, mechanisms, methods, techniques, approaches, activities, etc. These definitions comprise a vast array of options to involve or engage communities, NGOs, or the private sector, and lump all means of participation together. However, it is argued here that there is a distinction to be made between **Participatory Mechanisms**⁴ (PMs) and **Participatory Activities** (PAs). PMs describe the general design, structure and setup of the participatory event and deals with, for instance, the following questions:

- 1) What is the goal of the participation? (e.g. knowledge creation, deliberation, negotiation);
- 2) Who is going to participate? (e.g. open invitation to general public, targeted invitation, stakeholder identification and selection);
- 3) How will stakeholders discuss the topic/issue? (e.g. one-way communication, two-way communication);
- 4) What is the role of the different groups of stakeholders and the facilitators in the process? and
- 5) What is the outcome of the entire event? (e.g. report, policy recommendations, voting, policy decision, training).

PAs refer to the implementation of the PM, and can be stand-alone activities or sub-events taking place during this application. Some simple examples are brainstorming events, role-playing, mind mapping, and Delphi techniques. More extensive and comprehensive examples

⁴ This use/definition of the term ‘mechanism’ is based on *inter alia* Beierle (1998), Fiorino (1990), and Rowe & Frewer (2005).

exist as well, such as citizens' juries and consensus conferences. Although these initiatives could also be classified in different levels considering the variations in complexity, for simplicity only two levels are used in this report (PMs and PAs). In this way, the process organisers (the final users of the CAPFLO Participatory Tool) could choose not only the PM that best suits their goals but also the PAs to include during that PM.

In the CAPFLO project, another frequently used term is **Participatory Action**. Participatory Actions are those implemented in the project case study areas to develop social capacity. These Actions could follow the design of a PM and associated PAs. For instance, a Participatory Action could involve practicing what people should do in case of an emergency, to improve network performance and motivation to prepare for flooding. The most appropriate PM for this action would be 'simulation and role-playing' which would involve an emergency drill as PA (see Chapter 3). Furthermore, the PMs and PAs list proposed in this report is also useful for the identification and selection of the Participatory Actions that are needed to improve the lacking dimensions of social capacity in the case study areas. These can be selected in a participatory fashion with local stakeholders. The selection of the appropriate PMs and PAs for the implementation of these actions (planning stage) is also regarded as potentially contributing to social and civic capacity. Overall, the planning, implementation, and evaluation stages are referred to as the **participatory process**.

Finally, this **Participatory Tool** includes a methodology for selecting and implementing PMs; it thus resembles the setup of a 'toolkit' often presented in grey literature regarding participation (e.g. Slocum 2003; IFRC 2007). The tool, however, goes beyond most of these toolkits by also including a framework for the implementation and evaluation stages of participation, as well as an outline of the tool building process.

3. Methodological approach

This section describes the methodology that was applied to build the Participatory Tool and to assess the potential of the PMs. A list of all assessed PMs and PAs with a brief description is also provided in this chapter.

3.1. Literature review

To analyse the potential of PMs for building social and civic capacity for flood mitigation, a literature review scrutinising both academic and grey literature was conducted. Literature was reviewed to find characteristics and requirements of PAs. This allowed for the mapping of participation and subsequent classification of types of participation. The scope of the review was limited to literature discussing environmental issues and participation, preferably but not exclusively regarding water resources and/or risk management.

It should be noted that the found literature addressing participation did not sufficiently address social capacity building for the authors to underpin the entire assessment with theoretically grounded or empirical arguments. Many of the assessments of both PMs and PAs are therefore based on triangulation. The insights drawn from the literature are combined with the interpretation and estimation of the lead authors, as well as the interpretative feedback from all CAPFLO partners about how a PM could contribute to social capacity. This may prevent personal biases from blurring the objective judgment of potentials.

3.1.1. Coding categories

The literature review was conducted according to a series of coding categories that were pre-established. The coding categories were assigned to one of the following themes:

- 1) General information about the publication and the PA
- 2) PA function
- 3) PA design and implementation
- 4) Assessment of PA in empirical literature (only applicable to empirical research)
- 5) Assessment of the potential of the PM to develop social and civic capacity

The last theme is based on the five dimensions of the Social Capacity Assessment Tool and was filled in according to the authors' judgment of the PM's potential (see Table 3 in Chapter 4). To

support this judgment, the assessment of all PAs that fall under each PM was used to come to a general, aggregated assessment of that type of PM⁵. The coding addressing the PM's potential to improve social capacity is depicted in Table 2. The entire coding set is presented in Annex C.

3.2. Categorising Participatory Mechanisms

There are many academic efforts to categorise the countless existing participatory mechanisms. Rowe & Frewer (2005), for instance, make the aforementioned basic distinction between communication, consultation, and participation. Their ultimate categorisation is more profound, dividing both PMs and PAs into subcategories based on *inter alia* how participants are approached and selected, and how responses and arguments are elicited or aggregated. Krywkow (2009) describes a taxonomy for participation in water resources management, defining nine 'classes of participatory methods' (idem: 47-48). His categorisation is quite different from Rowe & Frewer's, identifying categories such as *inter alia* 'events' and 'popular involvement campaigns'. More importantly, though, Krywkow regards information provision—i.e. communication when comparing with Rowe & Frewer (2005)—, consultation, and active involvement—i.e. participation—as *levels* of participation, with active involvement being closer to the additionally established levels of 'social learning' and 'decision making'. This implies a stronger connection to the 'degree' of participation as independent variable, rather than the nature, as discussed in Section 2.1.

However, due to the here established distinction between PMs and PAs and the focus on social and civic capacity, the preconceived categories proposed in these studies, as well as in others, were not considered to be perfectly applicable to the goals of this project. Also, the different stages of participation, including planning and implementation had to be taken into account when deciding upon the categorisation. Thus, through a combination of insights drawn from *inter alia* the categorisations by Rowe & Frewer (2005) and Krywkow (2009), and an inductive and iterative process allowing new insights to emerge from the literature review data (Hsieh & Shannon 2005: 1279), **ten** PMs were defined. This categorisation (and assessment in Chapter 4) serves three purposes: 1) it provides a simplified overview of the basic setups and functions of existing PMs; 2) it allows organisers to make an initial selection as to what kind of PM they want to apply; and 3) it provides an overview of the similarities and differences between the categorised PMs as well as the PAs, which makes it easier for the organisers to choose diverging

⁵ Some of the PAs may also be categorised under other PMs. However, as explained below, the authors have assigned these PAs to the most fitting PM category.

PMs and PAs to use as design if they are interested in applying more than one during the participatory process. The ten PMs are presented in Table 1. The table also includes the PAs that have been categorised accordingly. Sections 3.3 and 3.4 elaborate on the PMs and PAs and their characteristics.

Users of this tool who are knowledgeable in the area of participation may notice that some of the PAs could also be categorised under different PMs, depending on *inter alia* the design and aim of the process. For the sake of simplicity, those PAs are represented in only one PM, based on the authors' judgment of their best fit. Consequently, the assessments are based on what the PAs would comprise if considered as belonging to the PM under which it is here categorised.

Table 1. The categorisation of assessed PMs, including examples of categorised PAs. Those PA examples that have not been used and considered for the PM assessment are in brackets.

Participatory Mechanisms (numbered), Participatory Activities (bulleted, non-assessed in brackets)

1. Broadcast/distribution (non face-to-face dissemination)
 - Information supply
 - (Leaflet distribution)
 - (Radio announcement)
 2. Public meetings (face-to-face dissemination)
 - Public hearings
 - (Field trips)
 - (Forums) (online)
 3. Citizen polling
 - Public comments
 - Referenda
 - Surveys
 - Focus groups
 4. Citizen advising
 - Citizen advisory committee
 - Citizens' jury
 - Consensus conference
 5. Expert/stakeholder advising
 - Expert panel
 - Stakeholder advising
 6. Negotiations and mediation (towards rule/policymaking)
 - Negotiated rule making
 - Mediation
 7. Deliberative workshops
 - Group model building
 - Scenarios
-

Participatory Mechanisms (numbered), Participatory Activities (bulleted, non-assessed in brackets)

- (Mind mapping)
 - (Brainstorming)
 - (Fund-raising training)
 - 8. Simulations and role-playing
 - Emergency simulation
 - (Role playing games)
 - 9. Citizens' science
 - Citizen observatories
 - 10. Citizen engagement initiatives
 - Mapping (online)
 - (Citizen brigades (voluntary emergency citizen units))
 - (Citizen visioning (e.g. *Recreatiewisje* of Dutch case study))
 - (Crowd funding)
-

3.3. Participatory Mechanisms

Ten Participatory Mechanisms were established. This section briefly describes all. These descriptions provide basic characteristics on which the assessment in Chapter 4 is based, without making many assumptions regarding participants and authority (see Fung 2006 for elaboration on these 'dimensions of participation'). For a more elaborate description of how modern communication technologies may influence these participatory processes, see Annex D comprising the description of PAs and their pros and cons.

1. Broadcast/distribution (non-face-to-face dissemination)

This PM comprises simple information supply efforts by the process organisers. They send the information in the direction of other actors and stakeholders (Rowe & Frewer 2005). The goal of the participation is that 'participants' (recipients of information) become aware of what is happening or what the organisers are planning to do (Krywkwow 2009). In some cases, people are given contact details if they have any further questions, but they are not directly asked for their opinion or knowledge regarding the subject.

2. Public meetings (face-to-face dissemination)

Public meetings are also information supply events, but the participants now have to come to a certain location on a certain date in order to be informed (Rowe & Frewer 2005). The advantage is that the information supply is face-to-face. In most cases, questions can be asked by the participants, but these Q&A sessions serve mainly the goal of providing them with additional and satisfactory information, rather than giving people the opportunity to ask critical thought-provoking questions that could change the minds of the process organisers.

3. Citizen polling

This PM describes efforts to ask a large number of people for their opinion regarding pre-established and fixed topics or questions, where questions can be close-ended, multiple-choice and open-ended. Citizen polling asks the opinions of people individually, and does not include any type of two-way interaction between either two participants or between process organisers and the participants (Rowe & Frewer 2005).

4. Citizen advising

Citizen advising comprises efforts to put a team of citizens together – randomly selected or at least not based on any characteristics of the people except for being part of the case study area – allowing them to discuss the subject and to provide an advice regarding, for instance, policies or to give recommendations. There is no direct deliberative communication between the process organisers and the participants, but there could be experts involved either in the facilitation of the process or providing expert knowledge and opinions on the matter, thus supplying the participants with information upon which to base their decisions.

5. Expert/stakeholder advising

Expert advising is based on the same dynamics as citizen advising, but instead of randomly picked participants, knowledgeable representatives of the public or of other stakeholder groups are selected to form a group that formulates advices. An advisory group purposely consisting of representatives from all relevant stakeholders also falls under this category. The process can still involve facilitation or information sharing by other experts.

6. Negotiation and mediation (towards rule/policymaking)

This PM involves stakeholders from all levels that need to find consensus or to compromise, and involves bargaining to maximise primarily personal but if possible also mutual gains (Kochskämper et al. 2016). The involved participants are primarily expert representatives of the stakeholders, and do not represent the general public if the public is not organised as one stakeholder. Between negotiations and mediation, there is one difference: with negotiations, there is no elaborated (external) facilitation of the discussion (Rowe & Frewer 2005), while mediation involves a third party as mediator and facilitator.

7. Deliberative workshops

Deliberative workshops present facilitated opportunities for both the participants and process organisers (and potentially other stakeholders) to openly discuss the subject (Krywkow 2009). Deliberation comprises ‘rational discussions’ that move beyond the personal interests of the

participants in order to find solutions (Kochskämper et al. 2016: 738). Activities are mostly aimed at knowledge creation and sharing, in order for all participants to learn from each other. Additional objectives of these workshops can be to reach a consensus or to give recommendations.

8. Simulations and role-playing

By staging a real or hypothetical situation, this PM confronts participants (from all levels of government or public) with what could happen in case of, for instance, floods or other emergencies. This can trigger knowledge creation, but also sharing if participants discuss how to react to certain events. Furthermore, in most cases people have to collaborate to deal with the simulated issue (as in real life), which could contribute to building team working skills. These events are often top-down organised, as they require the presence of social workers and trained staff who would be involved in the case of a real event. Although most of the processes involving this PM will simulate real-life events, role-playing can also be used solely for their capacity building potential, without any linkage to the setting or relevant real-time issues. For instance, if there is a lack of collaboration between stakeholders and the subject is very sensitive, a teamwork game is useful to 'playfully' increase the trust and relations of the stakeholders whilst not constantly reminding the participants of the subject by referring to it.

9. Citizens' science

Citizens' science refers to actions taken by members of a community to assist researchers or higher levels of government by providing data that they collect themselves. The data can occur in many diverging forms, ranging from river water levels to demographic information about the community. For technical data, participants may be provided with scientific tools that are easy to use. The initiative usually comes from citizens or communities, but there can also be top-down stimulation for citizens' science.

10. Citizen engagement initiatives

This is a general category including many different forms of community initiatives to contribute to flood risk mitigation by connecting participants to floods, without needing the direct assistance or involvement of other actors. This latter characteristic is applied to distinguish between these initiatives and the PMs that can also be commenced by citizens or communities, but require the direct involvement of other stakeholders for the PM to be fruitful.

This category also contains actions that do not focus on dialogical forms of participation towards decision- or policymaking, but rather on projects giving organisers and participants the opportunity to contribute to the flood risk management by using or integrating local

knowledge. An example is mapping the local area to assess which locations are the most vulnerable and require more attention (e.g. McCallum et al. 2016).

3.4. Assessing the potential of PM and PA to enhance social and civic capacity

After identifying and classifying PMs, an assessment of their potential to improve social and civic capacity was conducted. Table 2 illustrates the criteria that were identified to assess the potential of the PMs. This table is connected to the Capacity Assessment Tool in the sense that for each indicator of the Capacity Assessment Tool it assesses the potential for the PM to improve the particular capacity dimension, on a scale from 0 (no potential) to 3 (high potential). The distinction in the table between ‘resources’ and ‘abilities’ originates in the Capacity Assessment Tool, where it allowed for a more precise account of whether the necessary resources are present, be it knowledge, networks, insured individuals, or influence, and whether actors have the required abilities to use these resources. Also, Table 2 only contains nine dimension indicators, instead of the original twelve, because some were combined as they overlapped too much when formulating how a PM could develop/increase these dimensions of social capacity.

The dimension ‘Finance’ is treated somewhat differently in this assessment, as it is argued that the setup of the PM will not have any direct effect on the presence and development of finance sub-dimensions. However, if the subject of the participatory process addresses finance (e.g. a workshop on the benefits of insurance), then the participatory process may develop financial capacity (albeit arguably by indirect effects through Knowledge or Motivation). The resources ‘sub-dimension’ of dimension F.1 (flood insurance) is omitted as the ‘presence of individuals insured against floods’ (see Capacity Assessment Tool) is regarded as not being influenced by the participatory process. Rather, the resulting understanding, knowledge, or motivation results in this number increasing.

To avoid any misinterpretations, it is emphasised that the assessment addresses the ‘potential’ of the PM. The assessment therefore does not imply that high scores in this ‘potential’ table automatically lead to improved social capacity when the PM is implemented. It depends inter alia on the local context and the quality of the execution whether the potential is reached (see also Chapter 5). Also, it has been avoided to make too many assumptions for each PM regarding the what Fung (2006) calls ‘dimensions of participation’ (involvement of which participants, the nature of participation, the extent of authority). The assessment should thus merely be used as a general indication of which PM could be suitable when a certain social capacity is lacking.



Table 2. Criteria to assess Participatory Mechanisms’ Potential to build social and civic capacity

Knowledge		Motivation	Networks		Finance	Participation	
K.1 – Flood risk knowledge		M.1 – Motivation to mitigate flood risk	N.1 – Network performance		F.1. – Flood insurance	P.1 – Community participation in flood decision making	
Resources	Abilities	Abilities	Resources	Abilities	Abilities	Resources	Abilities
Potential to develop and/or share local flood knowledge	Potential to foster communication between organisers and participants regarding flood knowledge	Potential to foster motivation to mitigate/prepare for flood events (e.g. by changing people’s perception about flood risk)	Potential to foster creation of networks (both networks about flood mitigation and about other issues)	Potential to foster collaboration within and between networks (trust building, bonding, bridging)	Potential to foster understanding of the importance of flood insurance	Potential to foster the power of communities to influence FRM decisions (e.g. leverage, leadership, negotiation capacity)	Potential to foster proactive participation by communities in FRM
K.2 – Learning capacity		M.2 – Motivation to work collectively	N.2 – Network autonomy		F.2. – Financial resources for community action		
Abilities		Abilities	Abilities		Resources	Abilities	
Potential to foster integration of local flood knowledge into FRM structure (learn and adapt)		Potential to foster community motivation to collaborate intra-group (bonding) and inter-group (bridging)	Potential to foster self-organisation capacity of networks		Potential to change availability and allocation of funds for community action	Potential to foster capacity of community organisations and networks to obtain and manage funds	

Likert scale for assessment: 0 – no potential; 1 – low potential; 2 – moderate potential; 3 – high potential

4. Assessment of Participatory Mechanisms for building social capacity

This chapter constitutes the core of the Participatory Tool, comprising its most innovative part. Based on the review of the literature and the assessment illustrated in section 3.5, it provides information for process organizers to identify the PMs and PAs that best suit their needs for building social and civic capacity in their specific context. A main part of the information is presented in the form of two tables for ease of use.

Table 3 depicts the actual assessment of the PMs regarding their potential to build social and civic capacity. The columns represent the (sub-)dimensions of social and civic capacity. An overview of this assessment helps process organisers to decide which PM could be helpful to contribute to the social/civic capacity dimension that is lacking in their case. The assessment is based on the authors' judgment, which in turn is based on a literature review (see Chapter 3). The elaborate justification for all assessments is provided in Annex E. It is emphasised again that most assessments are partially hypothesised, as for some PMs little literature was found that could provide significant arguments regarding certain dimensions of social capacity. Also, considering the remaining room for variety in the setup of the PM, due to the authors' choice of not making too many assumptions regarding particularly how much authority is given to the participants (Fung 2006), potentials can vary and PMs have sometimes been given a range to indicate uncertainty in this regard.

Table 4 depicts an indicative assessment regarding the necessary 'capital' for the implementation of PAs. This assessment is also based on a literature review of participation and the implementation of participatory processes. The PAs have been assessed based on their characteristics when fitting to the assigned PM. The capital includes finance, time and human capital. This table presents a selection of information about the PAs, as an overview of these requirements may help process organisers to decide which PM/PA they can implement considering their capital limits. Also, an indication is given of which type of 'special' actors are commonly involved in these PAs, and whether the PA is usually initiated top-down or bottom-up. An overview of advantages and disadvantages per PA is available in Annex D.

When selecting PMs and PAs, users of this tool should consider two important consequences due to the interrelatedness of the dimensions of social capacity: 1) PMs and PAs can never completely focus on one dimension, as others will be influenced too. This allows aiming for the achievement of multiple improved capacities with each PM/PA; 2) the strength of one dimension can be used to develop the lack of another dimension. For instance, if a community



has low levels of knowledge but high levels of networks, the networks can be used to transmit knowledge. Users should therefore also pay close attention to the output of the Capacity Assessment Tool so as to identify and take advantage of these strengths. This helps to find the most suitable participatory process to increase social capacity.

Table 3. Assessment of Participatory Mechanisms' Potential to build social and civic capacity (score: 0 – no potential; 1 – low potential; 2 – moderate potential; 3 – high potential).

Participatory Mechanism	K.1.		K.2.	M.1.	M.2.	N.1.		N.2.	F.1.*	F.2.*		P.1.	
	Resources	Abilities				Resources	Abilities			Resources	Abilities	Resources	Abilities
PM 1. Broadcast / distribution	1-2	0	0	1	0	1-2	1-2	0	0-3	0-1	0-3	0	1
PM 2. Public meetings	1-2	1	1	1	1	1	1	0	0-3	0-1	0-3	1	1
PM 3. Citizen polling	1	1	1	1	0	1	0	0	0-2	0-2	0-1	1-2	1
PM 4. Citizen advising	1	1	1-2	2	2	1	1	2	0-3	0-3	0-1	2	1
PM 5. Expert advising	2	1	2	2	2	2	2	1-2	0-3	0-3	0-1	2	1
PM 6. Negotiations and mediation	1	3	2	1	2	2	2	2	0-1	0-3	0-2	2	1
PM 7. Deliberative workshops	3	3	2	3	2	3	2	2	0-3	0-1	0-3	2	2
PM 8. Simulations and role-playing	1	2	1	3	3	2	2	3	0-2	0-1	0-1	1	1
PM 9. Citizens' science	2-3	3	1-2	2	2	3	2	1	0-2	0-3	0	1-2	2
PM 10. Citizen engagement initiatives	2-3	2-3	2	2-3	2	2	1-2	1-2	0-3	0-3	0-2	1	2-3

*In most cases, whether the dimension Finance is influenced by the Participatory Mechanism depends mostly on the content of the participatory process, rather than on the setup (which the PM describes). Therefore, in most cases, the score can range from 0-3, depending on the subject of the participatory process. There are some exceptions to this notion (e.g. PM 8 and 9), which are elaborated in Annex D.

Table 4. Capital Assessment of assessed Participatory Activities. Values are aggregates of values given by multiple sources (if >1 sources was available). Values between square brackets are estimates made by the authors, based on the literature review and own experience. NS = Not Specified; NK = Not Known

Participatory Activity	Duration pre- and post-event activities for organisers	Duration of PA for participating stakeholders / public	Finances required for preparation and implementation	Technical expertise required (low / medium / high)	Participants' expertise required (low/medium/high)	Special types of actors that should be involved	Top-down or bottom-up (or both)
Information supply	NK	<1 hour	[low]	[low]	[low]	NS	top-down
Public hearing	NK	[±2 hrs per event]	[medium-high]	low	low-medium	NS	both
Public comment	NK	NK	[low]	[low-medium]	[medium-high]	NS	top-down
Referendum	NK	<1 hour	[medium]	[low]	[low]	electorate	top-down
Survey	NK	<1 hour	[low-medium]	medium	low	NS	both
Focus group	2 months	±2 hours	low	medium-high	low	NS	top-down
Citizens' jury	4-5 months	2-10 days	medium-high	medium-high	low	expert witnesses	top-down
Consensus conference	7-12 months	3-4 days	medium-high	medium	low	expert witnesses	top-down
Citizen advisory committee	NK	[<4 days]	[low-medium]	[low]	medium	NS	top-down
Expert panel	NK	[<4 days]	medium	[low]	high	expert participants	top-down
Stakeholder advising	NK	[<4 days]	[medium]	[low]	[medium-high]	stakeholder participants	top-down
Negotiated rule making	NK	NK	[low]	[high]	[high]	organised stakeholders	top-down
Mediation	NK	NK	[low-medium]	[high]	[medium-high]	third-party facilitator	top-down
Group model building	NK	NK	[medium]	[medium]	[medium]	model builder / moderator	both
Scenarios	6 months	2-5 days	low-medium	medium	low-medium	NS	both
Emergency simulation	NK	[1-3 days]	[high]	[medium-high]	[low-medium]	NS	top-down
Citizen observatories	NK	NS	[low]	[medium]	[low-medium]	NS	both
Mapping (online)	NK	NS	[low]	[low-medium]	[low-medium]	NS	both

5. Planning and implementation of the participatory process: Step-by-step guide and guiding principles

Participation can be evaluated in different ways (see Chapter 6 on evaluation criteria) as many people perceive the goal of participation differently. The most frequently occurring dichotomy is the process versus outcome debate, in which on the one hand, the process is seen as the means to the end, which would be the outcome; while on the other hand, the quality of the process is regarded as the end. Reed (2008: 2421) circumnavigates this discussion and provides a middle ground, stating that either way, 'the quality of a decision is strongly depend[en]t on the quality of the process that leads to it'. In terms of capacity building, Ballester & Mott Lacroix (2016) argue that the quality of the process also determines the extent to which—in their case adaptive—capacity is built. It seems, then, that no matter which side of this debate one supports, a well-established process is vital to have a positive impact. Therefore, this chapter elaborates on how to plan and implement the participatory process for social and civic capacity building, the two first stages of the participatory process. A general step-by-step guide is provided, as well as some guiding principles to adhere to.

5.1. General step-by-step guide for participatory planning and implementation

As depicted in Figure 1, the participatory process for which this Participatory Tool is created includes three stages: planning, implementation, and evaluation. Table 5 presents general steps to follow during the planning and implementation of a participatory process (the evaluation of the process is addressed in Chapter 6). The steps have been extracted and assembled from Krywkow & Hare (2008), Slocum (2003), and the WFP guide to participation (WFP 2001a). Users of this Participatory Tool should note that the presented chronological order of the steps is only a handhold; some steps can be iteratively revisited, also by participatory consultation. For instance, the selection of stakeholders to include in the participatory process may be refined based on findings in steps that come after the initial stakeholder analysis: 'it depends on your concrete objective and aspired level of participation, which people you should involve in the project' (Hage & Leroy 2008: 6).

Table 5. General step-by-step guide for the planning and implementation of the participatory process. Based on Krywkow & Hare (2008), Slocum (2003), and WFP (2001a).

Steps	Elaboration
<i>Planning stage</i>	
1. Problem analysis and definition	What is the problem that requires a participatory process? This is related to the capacity assessment: which social and civic capacity is lacking and needs improvement or development?
2. Goal definition	Identify the goal of the participatory process: what does the participation contribute to and how?
3. Scope definition	Identify the scope of the participation, both geographically (spatial scale) and politically (which levels of government to involve).
4. Context analysis	Identify the political, legal, and social context of the case. Also, identify potential (contextual) barriers for participation.
5. Stakeholder analysis	Identify the actors that have a stake in the case and that need to enhance social and civic capacity. Also, describe the network connections among these actors (who knows who, collaborations in place, etc.).
6. Stakeholder selection for participatory planning	Select which stakeholders should be necessarily involved in the participatory process and explain why.
7. Resources and time analysis	How many financial resources are/can be made available? What is the timescale in which the participatory process has to take place? What expertise is required to design and implement the participatory process?
8. Potential Participatory Actions list	For the implementation stage, think of Participatory Actions that could contribute to building the social and civic capacity that is lacking in your case.
9. PM and PA selection (from Participatory Tool) for participatory planning	Identify the most appropriate PM and PA to use for deciding in dialogue with stakeholders which Participatory Actions to implement based on your preliminary list. Depending on resources availability and goals some PMs and PAs are more suitable than others. The assessment of PMs and PAs provided in Chapter 4 provides assistance for that choice.
10. Participatory planning of Actions' implementation	Implement the selected PM: the output of this process is a number of selected Participatory Actions to implement to improve social and civic capacity, including who to involve, and when to implement them.
11. PM and PA selection	Select the most appropriate PM and PA to use for the

(from the Participatory Tool) for the implementation of Participatory Actions	implementation of the selected Actions. Depending on resources availability, goals and type of action some PMs and PAs are more suitable than others. The assessment of PMs and PAs provided in Chapter 4 provides assistance for that choice.
<i>Implementation stage</i>	
12. Invite/select and inform participants for implementation	Based on the stakeholder analysis and the form of PM and PA selected, select and invite the target group for participation. Inform the invitees on the subject and what their role is (see also <i>Principles 2 and 3, Table 6</i>).
13. Promote the event	Not only promote the importance of the event among the potential participants, but also inform external actors of what is going to happen. This could, for instance, inspire people to conduct similar processes.
14. Carry out Participatory Actions	Together with the participants, conduct the Participatory Actions to build social and civic capacity.

5.2. Guiding principles for participation

Much literature prescribes principles for participation to be neutral and successful, regardless of what the goal of the participation is, as the decisions of the process organiser can have a significant impact (Chess & Purcell 1999: 2688). Glicken (2000: 309) identifies six questions to consider for ‘an effective stakeholder inclusion process’ concerning the communication of the purpose of stakeholder input; identification of stakeholders; use of proper information tools; application of participatory ‘tools’⁶; analysis of data; and documentation. Additionally, Irving & Stansbury (2004: 16) find several low-cost and high-benefit indicators for ‘enhanced citizen participation’. Although they argue these ideal conditions apply to ‘agency decision-making’, i.e. planning stage, there is no reason why some of these indicators would not also apply to the implementation stage. Lastly, Reed (2008) identifies eight best practices in public participation. Some of these are already integrated in the CAPFLO project and the Participatory Tool. For instance, Reed argues that ‘stakeholder participation should be considered as early as possible and throughout the process’ (idem: 2422), which is enabled by involving stakeholders in all three stages of the participatory process. Although in the CAPFLO project, prior to the planning stage, research was conducted without direct stakeholder participation other than information elicitation to identify areas for improvement regarding social and civic capacity, this is often viewed as required to prepare properly (e.g. Krywkow & Hare 2008). Moreover, Reed (2008:

⁶ The concept ‘Tools’ as used by Glicken (2000) is similar to the combined definition of the concepts of PMs, PAs, and Participatory Actions applied here.

2424) argues that appropriate ‘participatory methods’ should be selected, considering ‘the objectives, type of participants and appropriate level of engagement’ (see also Glicken 2000: 309-10). This is achieved by the assessment of PMs and PAs in this Participatory Tool and the subsequent selection of appropriate participation by process organisers. By basing this selection on the capacity assessment completed with Task C of the CAPFLO project, the application of the tool is already partially adapted to the specific local context in which the participation takes place.

The findings of these abovementioned researches have been combined, along with other academic literature, to formulate **eight** key general guiding principles for both the planning and the implementation stages of participation. They are presented in Table 6 and elaborated in the next paragraphs. The principles described here have been suggested by at least two separate articles as important for a participatory process. Also, included in the table is an indication of which social and civic capacity dimensions might be affected by poor execution of the principle. These principles also provide a basis for the process evaluation (see Chapter 6).

Table 6. Guiding principles for the planning and implementation stages of the participatory process, and dimensions potentially affected by poor execution.

Guiding principle	Literature reference	Dimensions affected
1. Involved stakeholders should be carefully selected OR informed properly of an open invitation.	Glicken 2000; Irving & Stansbury 2004; Meadowcroft 2004; Reed 2008	N.1; P.1
2. All participants should be adequately informed about the subject of the participatory process.	Brody et al. 2003; Irving & Stansbury 2004; Kuhlicke et al. 2011; Höppner et al. 2012	K.1; M.2; P.1
3. Participants should be fully aware of the purpose of their participation and of the whole process.	Glicken 2000; Reed 2008	M.2; N.1
4. The input of the participants should be clearly and transparently dealt with by the process organisers.	Chase et al. 2004; Irving & Stansbury 2004; Reed 2008	M.2; N.1
5. All involved participants should be treated equally and fairly.	Chase et al. 2004; Kochskämper et al. 2016; Reed 2008	K.2; M.2; N.1; P.1
6. The most updated scientific knowledge and the most relevant lay knowledge should be used and combined when appropriate.	Chase et al. 2004; Coenen et al. 1998; Kochskämper et al. 2016; Meadowcroft 2004; Reed 2008	K.2; N.1; P.1
7. The participatory process should be	Glicken 2000; Irving & Stansbury	K.2; M.2

facilitated adequately.	2004; Reed 2008	
8. The entire participatory process should be tracked and documented.	Glicken 2000; Krywkow & Hare 2008; Rowe & Frewer 2000	K.2; P.1

1. *Involved participants should be carefully selected OR informed properly of an open invitation.*

Depending on the nature of the participatory process, i.e. which PMs and PAs are used, a selection of participants takes place or an open invitation is disseminated amongst stakeholders. Either way, it is important for the process organisers to make sure to include or at least approach all parties that have a genuine stake in the subject to be discussed. This can be accomplished, for instance, by a preceding stakeholder analysis. If not, important information or possible network connections may be left unexploited, and overlooked stakeholders may become disappointed and as reaction may disregard the process.

2. *All participants should be adequately informed about the subject of the participatory process.*

The quality of communication about (flood) risk and about participation influences how motivated people are to become engaged (Brody et al. 2003; Höppner et al. 2012). The information should be simple to ensure that all participants can master the subject (Irving & Stansbury 2004). If scientists are involved in the participatory process, either as process organisers or consultants, their 'language' should be translated to 'lay' language. Also, Brody et al. (2003: 259) argue that for citizens to become involved in the planning stage, the use of more types of information and of information created by participants themselves can increase the likelihood of groups to participate. Besides, although the planning stage itself is already participatory, it additionally serves as a preparation to improve participation in the implementation of actions. In other words, how many stakeholders participate in the implementation of actions depends partly on whether they have been involved and informed properly beforehand. Regarding (flood) risk communication, Kuhlicke et al. (2011: 809) argue that it is 'one process among others through which social capacities can be developed and by which risk awareness might be raised and risk management knowledge improved'.

3. *Participants should be fully aware of the purpose of their participation and of the whole process.*

Citizens and other stakeholders who are inclined to participate should know why they are involved and how their input will be used. In that regard, it does not matter how large this role is, as long as participants know what to expect, and agree to this role as well as the goal of the participatory process (Reed 2008: 2424). If expectations or promises are not met, they might

become disappointed or angry with the process organisers, which would decrease trust and willingness to cooperate.

4. *The input of the participants should be clearly and transparently dealt with by the process organisers.*

After participants have been made aware of the purpose of their participation (and optionally have agreed with it), process organisers should make sure to explicitly consider their input in the output of the participatory process. For instance, comments on reports or projects could be included as an annex in the final document. Even if the role of the input of participants is minor, organisers should put effort into clarifying to which aspect the input of participants has contributed. If the input is not used at all, organisers should substantiate and clarify why. This could increase the willingness of participants to further cooperate with the organisers and other stakeholders.

5. *All involved participants should be treated equally and fairly.*

There should be no arbitrary distinction between stakeholders with regards to their treatment, input, and status during the participatory process. Also, all participants should be able to participate in terms of their capability to actually be part of the process and to understand what they have to do to 'meaningfully engage in the process' (Reed 2008: 2422). Thus, for instance, a meeting should be held within surmountable geographical distance or a survey should be easily accessed and filled in. Besides, a loss of necessary income by participants should be avoided (Irving & Stansbury 2004); participants should be compensated for their participation if their financial situation does not allow them to participate completely voluntarily. Also, the required knowledge to understand discussions should not surpass the knowledge of the most uninformed participant. Providing information using simple language to all participants, part of Principle 2, could obviate this (Höppner et al. 2012: 1766). Not realising this principle could undermine the process in many different aspects, such as the creation of knowledge, motivation, networks, and the quality of participation.

6. *The most updated scientific knowledge and the most relevant lay knowledge should be used and combined when appropriate.*

Chase et al. (2004) empirically find that stakeholders would like the participatory process to use scientific information. However, scientific knowledge often endeavours to cover multiple contexts and find underlying generalisable theories, whereas this Participatory Tool is meant to be adaptable to local contexts. Reed (2008: 2425-2426) therefore argues that a transdisciplinary approach, including local non-scientific knowledge, is preferred in stakeholder participation. This would already contribute to Principle 3, as local knowledge may be represented in the outputs of the participation. Also, Schauppenlehner-Kloyber & Penker

(2015: 58) argue that transdisciplinary research ‘facilitates capacity building concerning local self-organisation’. Besides, process organisers may learn more about experience-based knowledge (if they are not community representatives themselves).

7. *The participatory process should be facilitated adequately.*

In the ideal case, the process facilitators are professionally capable in their role, regardless of whether the process involves negotiations, surveys, etc., and are also external, i.e. not ‘member’ of any stakeholder party. This could increase the capacity to learn and to participate (Schauppenlehner-Kloyber & Penker 2015: 66). However, if the process organisers are community members, they might not have the resources to hire (external) professionals. Nevertheless, the organisers can still carefully appoint or select someone to facilitate the process based on their credibility amongst all stakeholders (Irving & Stansbury 2004). The potential to learn and participate properly is likely to increase when all participants trust the facilitator to be neutral and capable of leading the process.

8. *The entire participatory process should be tracked and documented.*

Continuous documentation is a necessity that supports other principles as well as the evaluation process. It provides process organisers the opportunity to take note of all suggestions made by stakeholders during the participatory process, while the minutes of meetings or the aggregate results of surveys already include the output of participants. This documentation allows for reflection and transparency (Rowe & Frewer 2000: 16) as well as for future projects to gain insights from the process. Future organisers or participants may learn more about the issue or about how to initiate a process well.

5.3. Participation cycle

Some principles that can contribute to a good implementation of participation are also part of the goal of the participation, i.e. part of the social and civic capacity building as defined by the indicators in the CAPFLO Capacity Assessment Tool. For instance, Ballester & Mott Lacroix (2016: 12) imply that trust is important in public processes (of planning), which can be considered as part of network performance (indicator N.1). Also, the authors argue that on-site consultation and deliberation will improve the process. The capacity dimension Participation (indicator P.1 and P.2) includes opportunities for communities to be involved, which are of course provided when a process organiser commences a participatory process. In addition, the criteria identified by Irving & Stansbury (2004), describing ‘ideal conditions for implementation of enhanced citizen participation in agency decision-making’ (idem: 16), i.e. ideal conditions regarding the public for effective implementation of PMs and arguably PAs, also bear similarities to the social and civic capacities described in Chapter 2.

Ideally, then, a participatory process would be iterative, repeating the cycle of planning, implementation, and evaluation to improve all stages. Although both the CAPFLO project and future users of the Participatory Tool probably neither have the time nor the resources to perform multiple cycles of planning, implementation, and evaluation, the fact that one cycle provides three opportunities of participation during three different stages might already contribute to building social and civic capacity throughout the process to improve participation in following stages (see Figure 1 in Chapter 1).

Nevertheless, a continuity of participation after the CAPFLO project, and also after the first use of the Participatory Tool by other process organisers, is vital to ensure sustained capacity building and social learning (Ballester & Mott Lacroix 2016: 16), as well as improved risk preparedness (Höppner et al. 2012: 1774). The possibility of a continued participatory process can be increased by, for instance, developing motivation and demonstrating the benefits of participation to all involved stakeholders. Indeed, building the foundation for sustained participation is part of social and civic capacity building. In that way, the inherent temporariness of the PMs and PAs, considering many of these describe one-time processes, could be overcome partially.

6. Evaluation of participatory process

After the Participatory Actions have been implemented, the process organisers have to evaluate the results of the entire process. Chess (2000: 771) identifies key methodological questions for evaluators to ask themselves when evaluating ‘environmental public participation programmes’. These questions address why and when to evaluate; what to evaluate, using which criteria; who evaluates; and how to evaluate. These questions are answered in the following sections.

6.1. Why and what to evaluate?

The focus of evaluation can vary depending on the goals of participation, which are as diverse as ‘[i]ncreasing knowledge, building consensus, improving agency decisions, generating acceptance of agency actions, increasing trust and empowering citizens’ (Chess 2000: 775). The CAPFLO project has one particular, broad goal: flood risk mitigation through social and civic capacity building. In some way, this capacity building encompasses many of the given examples by Chess (2000): to build capacity is to empower citizens and includes notions of trust and knowledge, and perhaps also builds consensus and acceptance through deliberation. Beierle (1998) forms an evaluative framework for public participation using social goals. These social goals include ‘educating and informing the public, incorporating public values into decision-making, improving the substantive quality of decisions, increasing trust in institutions, reducing conflict, and achieving cost-effectiveness’ (idem: 3). Most of these goals can also be categorised into the five dimensions of social and civic capacity defined in the CAPFLO project; the first two contribute to knowledge, while building trust and reducing conflict can be considered as ‘network’ concepts.

The CAPFLO project focuses on the impact⁷ of the participatory process on participants regarding built social capacity. However, other aspects of a participatory process, although not related to capacity building, are also important. For instance, ‘cost-effectiveness’ of a participatory process is relevant to measure as one wants to build capacity in the most efficient way, especially when limited resources are available as is often the case when community members act as the process organisers (Smith 2008). Thus, when evaluating the participatory process designed for social capacity building, the evaluators need to look beyond the results

⁷ Impact, for instance when compared to the terms ‘output’ and ‘outcome’, is often referred to as a long-term concept (Chess 2000: 773). However, the debate about the conceptualisation of the different forms of consequences of participation and the resultant distinction is beyond the scope of this research. Therefore, impact is here considered as a term primarily linked to the goal of the participation, namely social capacity building.

regarding social and civic capacity to include criteria regarding resources and other aspects of the process.

Evaluating social and civic capacity building can be considered as ‘theory-based evaluation’ (Chess 2000: 775). To clarify, the evaluation is based on the theoretical hypotheses that citizens can contribute to mitigating flood risk and that the requisite capacities for this contribution can be identified and developed through participation. The goals for the participation have thus already been set by the CAPFLO project with its five dimensions of social and civic capacity, *inter alia* in this Participatory Tool. Within this set of goals, however, there can be large differences in what the process organisers, using this Tool, want to achieve. For instance, some will want to improve motivation, while others will want to build networks. Nonetheless, ‘guiding’ (sets of) questions that generate likable answers need to be avoided: ‘It is important [...] to take care in selecting indicators of results to ensure that they do not prejudge research hypotheses’ (Dietz & Stern 2008: 73).

6.2. Who evaluates when and how?

The evaluation of the effects of public participation is difficult (Dietz & Stern 2008: 66-74). Uncertainties arise, for instance, ‘in terms of the temporal stability of the findings [and] interfering influence factors’ (Buchecker et al. 2013: 1428). Indeed, increased or developed social and civic capacity is difficult to detect in short-term evaluations (Chess 2000), but the CAPFLO project lacks the project time to conduct long-term evaluations.

Notwithstanding this difficulty, in order to get some grasp of how the process contributed to social and civic capacity building, the evaluation is participatory as well; i.e., the participants of the Actions are asked to self-evaluate whether they have gained new or improved capacity compared to before the implementation. This self-evaluation is conducted in two separate occasions: right after the Participatory Action the organisers hold a **debriefing session** with the participants, asking them for their opinions on the process and impact; built capacity is here considered as impact. This evaluation includes an assessment of ‘immediate outcomes’, comprising changes in ‘attitudes, beliefs, knowledge, skills, [...] practices, [...] relationships and mutual understanding [of and] among the participants’ (Dietz & Stern 2008: 68). The second participatory evaluation takes place one or two months after the Participatory Action, when a **survey** is sent to the participants, asking them to reflect upon what they have learned through participating in the process.

Even though evaluation through the eyes of participants can be problematic (Coglianese 2002), this issue is more probable when participants evaluate the accomplishments of a policy process,

i.e. quality of the output, and their own satisfaction (idem: 19-20). To evaluate the impact on participants in terms of what they have learned or gained, there might be no other way, except for extremely subtle long-term tests, than asking the participants themselves. Besides these participatory reflections, the process organisers also **self-reflect** on the process, within one week after the conclusion of the Participatory Action, by using criteria that address the quality of the process itself. The entire evaluation is therefore a combination between ‘outsider’ and ‘participatory’ evaluations (Chess 2000: 776-777).

6.3. Criteria and questions for evaluation

Regarding the content of the evaluation, the criteria address two parts: the process of the participation, and the outcome in terms of built social capacity. The section below presents the general subjects of the evaluation. Specific questions are presented in Annex F. The evaluation subjects and questions have been extracted, assembled and adapted from diverse literature sources (e.g. Beierle 1998; Coenen et al. 1998; Dietz & Stern 2008; Rowe & Frewer 2000; Warburton et al. 2011).

1. First participatory evaluation (debriefing session after Participatory Action)

The guiding principles, presented in Chapter 5, have been established to make sure that the participatory process takes place on neutral ground, i.e. to decrease the possibility of subjective or arbitrary circumstances affecting the process and its results. To assess whether this was accomplished, the participants are asked several questions, related to these principles, regarding how they rate the process. This potentially gives insight into why some groups of stakeholders may have learned more or built more capacity than others.

Indeed, the insights gained regarding the process can be compared to the insights gained from the subsequent questions in the debriefing session related to what participants think they have learned from their participation. Although this debriefing session may be too early for participants to consciously experience any changes in their opinions or knowledge, some exploratory questions can be asked that could already imply built social capacity. These are then verified in the second participatory evaluation that takes place one or two months after the Participatory Action.

2. *Process organisers' evaluation (within one week after Participatory Action)*

Besides asking participants for their views on the process, the organisers have to critically self-reflect too. Did the process go according to plan, were stakeholders adequately represented, what could have been done better? One of the aspects to contemplate is that these few opportunities for participation, in which the according to analysis important stakeholders take part, should be used to the fullest possible extent to engage participants, receive input, and build social and civic capacity. If this is not the case, the organisers should analyse why and how this can be achieved in future events. After all, not using the opportunities may result in requiring more participatory processes, and repeatedly asking stakeholders to participate can result in 'stakeholder fatigue' (Hauck et al. 2016: 4).

3. *Second participatory evaluation (participant survey, 1-2 months after Participatory Action)*

Assessing the impact of participation on participants involves tracking long-term social progress such as learning (Chess 2000: 773), or in this project social capacity building. Although a period of one or two months after the participatory process cannot be considered as long-term, the survey could provide insights into what people remember from the participatory process. This also includes any change in perspective due to their participation. By asking questions about changes in perspectives regarding, for instance, flood risk, willingness, and collaboration, some preliminary conclusions could be drawn concerning built social capacity. Also, participants are asked about whether they have shared the gained knowledge, motivation or any other developments in social capacity, with other people in their network. The potential for sustained development of social capacity might become clearer through this query.

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Participatory mechanisms for building social and civic capacity for flood mitigation

Workshop report

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Introduction

This report illustrates the key discussion points of the international workshop “Participatory mechanisms for building social and civic capacity for flood mitigation” held by the CAPFLO consortium on November 10, 2016 in Amsterdam (NL). The CAPFLO project works towards promoting participatory capacity building processes for flood mitigation at local level. The workshop revolved around the Capacity Assessment Tool and the Participatory Tool developed by the consortium as well as the experiences of workshop participants with public participation. The workshop was organized in four sessions as follows:

1. Illustration of Capacity Assessment Tool, case studies, and comparative assessment
2. Illustration of Participatory Tool, feedback from international experts and discussion
3. Sharing experiences and learn lessons about participatory processes
4. Plenary discussion of workshop outcomes and conclusions

Representatives from all CAPFLO partners attended the workshop. Additionally, three stakeholders from the CAPFLO case studies joined the workshop to share their thoughts and experiences regarding public participation: Mr. Raffaele Veneziani, mayor of the municipality of Rottofreno in Italy; Miss Marion Cauvin, public official at the Seine Grands Lacs River basin Authority in France, and Mr. Manuel Cayuela consultant collaborating with the Ebro River Basin Authority in Spain. Furthermore, two international experts, Louise Comfort of the University of Pittsburgh and Peter Knoepfel of the University of Lausanne, were invited to participate in the workshop and to provide feedbacks on the draft Participatory Tool. Although they could not join the workshop in person (one of them joined the conversations via Skype), their comments were discussed elaborately by all participants.

The following sections provide summaries of the main points of the different workshop sessions. Action points for the CAPFLO consortium were derived from the discussion and are listed in the conclusions.



Figure 3. Some snapshots of the workshop.

Capacity assessment, case studies, and comparative assessment

The morning session began with an introduction of the IVM director prof. Pieter van Beukering. Pieter emphasised the importance of making academic research relevant for and applied to society, and acknowledged the effort of the CAPFLO project to focus on this societal relevance.

Capacity Assessment Tool and case studies

The session continued with a summary of the Capacity Assessment Tool. The presentation addressed its components, and how it can be and was applied during the case studies. Subsequently, the case studies were presented by representatives of the five CAPFLO partners. The following paragraphs summarize key points raised during the presentation of the various case studies.

Vitry-sur-Seine (Seine river basin), France

In the French case study, there was a common idea among citizens that floods would not occur, a view developed by the low flood recurrence in the region. However, the flood events in spring 2016 have changed this perspective. During these events it also became clear that the flood simulations/exercises carried out beforehand proved useful for people to know what to do in the real event. Still, there is little motivation among citizens to act due to the existing flood infrastructure and the dominant view that the government is mainly responsible for dealing with floods.

Trebbia river and the Arturo Project (Po river basin), Italy

In the Trebbia river basin, one of the main limitations to flood risk management (FRM) is the lack of trustworthy and predictive models of (changing patterns of) precipitation, as current models are no longer considered relevant. Another point raised regarding the societal relevance of FRM is that current information systems in the case study region require technical knowledge about flood risk to understand. Since many citizens do not have this knowledge, this type of information supply is not adequate.

To address this lack of comprehensible information an app is in development, project Arturo, at the initiative of the mayor of Rottofreno, a municipality in the case study region. The mayor presented the app during the workshop. Essentially, the app comprises an early warning system using existing flood monitoring instruments, and allows users to learn more about floods in their region. The app also endeavours to inspire people to participate more in the FRM by not allowing full access to all functionalities upon downloading the app. Rather, citizens have to attend training or information workshops to be allowed to use the entire app. Therewith the

initiators aim for the ‘bandwagon’ effect: if one person has full access, people in the person’s social circles may be inclined to do more (i.e. participate more) to gain this full access as well. An elaborate discussion, indicative of the interest of the CAPFLO partners in the initiative, followed the presentation.

Iller river (Danube river basin), Germany

In the German case study flood risk knowledge is high among regional and municipal leaders and authorities, but it is not shared with communities and citizens. Also, communities think they are safe behind highly technical infrastructural flood defences. Hence, there is neither knowledge nor motivation to act among communities. Another interesting notion is that FRM is regarded as a separate subject from (general) water management. This possibly impedes the linkage of various social, water-related, issues.

The parishes of Itteren and Borgharen in Maastricht (Meuse river basin), The Netherlands

The Dutch case study focuses on two parishes by the Meuse River, Itteren and Borgharen, where local flood knowledge among long-term residents is high due to frequent recurrences of minor floods, as well as two major flood events in 1993 and 1995. However, as a result of the construction of new flood defence infrastructure, this knowledge may have become inadequate or obsolete. Also, the motivation of both older and new residents has lowered because of this new infrastructure, but the good (local) communication between communities and authorities might be used to return or improve social capacity at local level.

Ribera Alta del Ebro (Ebro river basin), Spain

Regarding the Spanish case study, it was mentioned that the motivation for FRM is present although primarily aimed at the response phase rather than preparedness or any other stage of FRM. A major issue generating conflict is the variety of approaches to FRM in the region. As a general overview of all case studies, it was remarked that seemingly the strategies followed by the actors involved in the FRM partially contribute to the existing social capacity in the case studies.

Comparative assessment

The morning session was concluded with the presentation of the preliminary comparative assessment of the five case studies, conducted by the French partners. Some preliminary findings include that, generally, institutional actors have higher scores regarding social capacity compared to community actors, but also that there are more ‘surprisingly’ lacking dimensions of social capacity among institutions. For instance, institutional actors have little capacity

regarding insurance in the Dutch and German cases, and there is little change in the motivation regarding FRM of the French institutional actors.

Presentation of and feedback on Participatory Tool

The first afternoon session started with the presentation of the Participatory Tool and its contents. An elaborate discussion ensued involving comments on the contents of the presentation and feedback given by the international experts Louise Comfort and Peter Knoepfel on the draft of the Participatory Tool. Below the key points of such discussion are illustrated and a number of derived action points are listed.

Terminology: Participatory Mechanisms

A first discussion addressed the use of the term ‘mechanism’. In other research domains (e.g. sociology), the term mechanism is defined differently and its definition in the Participatory Tool might therefore cause confusion. However, there were also proponents of the term, arguing that its definition as used in the Participatory Tool is similar to definitions of mechanisms in other strains of literature addressing public participation. No alternative was suggested, but a decision on this issue was postponed.

The role of modern communication technologies in public participation

A question raised much interest and discussion, namely: how do the CAPFLO partners integrate technological/instant communication in the design of participatory processes and/or workshops? This kind of communication may refer to social media (Twitter, Facebook), and the Internet in general as news provider, as well as the use of smartphones or computers. This form of modern communication technology could be and is used both for including citizens in decision processes (e.g. technological Participatory Activities), and for sharing knowledge and information across a wide range of interested (and non-interested) citizens and stakeholders.

The benefits of modern communication for citizens were mentioned, such as the fact that the organization of an event or an action as well as the interaction between different stakeholders become easier. Also, the easy, instant access to information that these technologies offer may increase communities’ knowledge and awareness on important issues such as flood risk. For example, it was mentioned that the use of social media may stimulate greater participation in FRM of young adults (20-40 years old) in the German case study where the level of participation is very low.

Risks of using modern communication technologies

The risks of using this kind of communication were also discussed. For instance, the risk of misinformation or misinterpretation becomes higher if communication is not personal. The validity and truthfulness of the information posted online is difficult to control, especially during flood events (the spread of rumours in times of emergencies is significantly high). This could be tackled by authorities providing official information (e.g. by using a certified Twitter account). Another option is a monitoring agency controlling the distribution of (mis)information. Furthermore, although new technologies give citizens access to quick interaction, it also allows citizens and citizen initiatives to disappear more rapidly; i.e., citizens have better opportunities to participate temporarily (and perhaps anonymously) after which the incentives to continue participation (e.g. social pressure) might be lacking. On this point one workshop participant argued that citizens mainly want to be engaged when they are needed (e.g. in times of emergency), and not on a regular basis.

One of the conclusions of this debate is that the CAPFLO partners could observe whether connections endure between authorities and people that use these technologies as primary communication tool. Also, the use of modern communication is a cross-cutting issue for all categories of Participatory Mechanisms and Participatory Activities, so it was advised that the Participatory Tool maintained a broad approach to this issue. It would for instance be interesting to identify at least one example of the use of this technology per Participatory Mechanism category. Finally, in light of this discussion it was suggested to reconsider the list of general actions for improving social capacity taking into account the possibilities offered by the use of information technology.

Diversifying the sources of empirical data and considering top-down legislation

Another point of discussion concerned whether there are other sources of data, apart from surveys, about who learns, what is learned, and how communities are involved in participation in the case study regions. Methodological diversity is useful, and it was advised to use at least three methods of looking at the same issue. As an example, in the German case local authorities made flood risk maps available for anyone interested. However, they are sometimes difficult to find. The usage of these maps may be 'mapped' and used as a source of data about citizen learning.

On a different note, it was observed that because each case study is also influenced in different ways by national and regional laws and policies, this divergence should be taken into account when designing the Participatory Tool. This could be done, for instance, by including steps in

the Tool to highlight and address both potential (case-specific) legal hurdles and opportunities for a participatory process regarding FRM.

Integrating decision-making in the participatory process

It was suggested to include the flood decision-making process as another stage of the participatory (policy) process, alongside the planning, implementation, and evaluation stages that are already addressed in the Participatory Tool. However, this suggestion raised concerns, mainly because it was considered too ambitious. Also, it would face the problem of citizens participation as many flood risk management decisions are usually made on higher levels of government than the local level. For instance, in the Italian case in principle local governments are not included in or linked to the flood decision-making process on national level. Besides, the aim of the CAPFLO project is to increase social capacity for flood mitigation at community level, whereas including flood decision-making processes in the Tool would shift the focus to higher levels of government. Still, if local governments have the authority to make decisions regarding FRM, there may be opportunities for increased public participation in the flood decision-making process. It was suggested to include decision-making as part of the Participatory Actions, rather than forming a new stage for this process.

Reintroducing the Finance dimension in the Participatory Tool

A more conceptual and methodological point was also discussed during the workshop, namely the absence of the Finance dimension as an assessed dimension in the Participatory Tool. The Participatory Tool includes tables that assess the potential of a Participatory Mechanism to increase the five dimensions of social capacity. Finance was not included, because it was argued that the setup of public participation cannot influence this dimension; rather, the subject of the participatory event may influence this (for instance if a workshop deals with sharing information about flood insurance). However, this was debated, and crowdfunding was given as an example of a setup of a participatory process that fundamentally deals with finance. Additionally, it was argued that finance is inherently linked to the participation of people, as participants have to have the financial capacity to participate; e.g. travelling to the location of a workshop and the cost of not working may influence the participatory capabilities of citizens. How this latter notion, which is already considered in Participation Principle 5 of the Participatory Tool, translates into reinstating the Finance dimension in the Participatory Tool remained somewhat unclear.

Minding the length and complexity of the CAPFLO deliverables

It was also advised that the CAPFLO partners should not become 'more bureaucratic than the European Commission', referring inter alia to the length and complexity of the Participatory

Tool report. In this regard, it was clarified that both the Capacity Assessment Tool and the Participatory Tool can be extensive and comprehensive documents as the final stage of the project foresees the elaboration of a user guidance which compiles the two tools in a short, easy-to-read-and-use format.

Experiences with participatory processes

The second part of the afternoon was dedicated to share the (practical) experiences of the participants with participatory processes. The discussion took place in 3 small groups with a moderator and a note-taker. In a subsequent plenary session each group reported its main thoughts and could further discuss. Below are presented the most relevant points emerged in this session.

Group 1

- Stakeholders often have well-established points of view related to specific interests, which are difficult to change through participatory processes. This may lead to decisions that do not imply many sacrifices for the sake of participants. Organisers of a participatory process should consider how to overcome this, especially when the process is about making a decision based on the votes/opinions of all stakeholders.
- The scale of a participatory process is important: a small-scale process potentially neglects the interests of upstream/downstream stakeholders, whilst a large-scale process might be difficult to control and lead, particularly due to the wide diversity of interests.
- Participatory processes are essential for both citizens and authorities, as they create a bridge between these actors.
- It is not possible for the government to protect everyone from flooding; citizens should be trained and their knowledge and opinions should be considered.
- The Participatory Tool could be simpler and less theoretical. It would be good to illustrate the work with examples and to be more precise on goals and results.
- It is important to achieve a kind of structure of the participatory process that allows continued participation and feedbacks.

Group 2

- Flood events (or other emergencies) trigger the involvement of citizens, but the pivotal issue is how to engage citizens in “calm, non-crises periods of time”.
- It is important to share experiences with citizens and to share new knowledge of a new phenomenon (e.g. increased precipitation) to make sure citizens know there is a risk.
- Scenarios can be useful to learn what to do (e.g. evacuate) when a flood event of a certain magnitude happens. Scenarios can be supported with simulations/training exercises, and by supplying people with information about the content of the scenarios.
- Providing (sufficient and adequate) information reduces panic responses.
- The communication should be adapted to the characteristics of the receiving community; leaders (e.g. mayors) should be identified and involved in providing information and developing participation. A mayor is for instance the direct link between citizens and public institutions.
- There is a trade-off between safety and the sensitiveness of discussing risk issues.
- Time and fear to be engaged (e.g. because people think they do not have knowledge to contribute to the discussion) may be explanatory factors of why people do not participate regularly.
- Engaged people are often disappointed by the lack of influence their participation has on public policies.
- Trust is essential for community resilience.
- There is knowledge among locals, e.g. fishermen about fluvial dynamics. There should be mechanisms or ways for this knowledge to be integrated in FRM.

Group 3

- It should be made clearer in the Participatory Tool what the usefulness is and what the implications of using it are for organisations involved in the local/regional FRM. The aim of every participatory process should be clear and openly communicated to not raise false or misleading expectations.
- Ethical diversity is very important in the context of participation and can sometimes provide the key for reaching certain neighbourhoods, but ethnicity can be a barrier to public participation, as marginalised groups in general can encounter difficulties to participate.

- Flood risk may be emphasised by forms of direct or experiential participation, such as the use of art, e.g. the statue in Itteren representing the level of flood reached in 1993, or flood marks highlighted creatively through street art such as planned by the French Seine River Basin Authority. It is important to make the topic of flood risk attractive to citizens with more engaging initiatives such as information walks-by-the-river or excursions coupled with events or art for citizens.
- With the deployment of volunteers during emergency events (also a form of public participation), one should consider the accountability of authority for volunteers: who is responsible if something happens to these volunteers? The mere devolving of authority or providing of responsibility or ownership also has to be seen critical in this context.
- Each public participatory process suffers from time lag. The main question is then how to keep people engaged and interested during the whole process or over a longer period of time, even if there was/is no recent or current threat.
- The idea/concept of intermediaries was advanced, e.g. in the form of citizens with advanced knowledge about (local) flood risk, that can help bridge the gap between authorities (with technical information) and communities/citizens (with lay knowledge). Volunteers of civil protection associations (e.g. Red Cross, the Dutch 'Ready-to-help' initiative) may fit this description.

Plenary discussion and conclusions

The workshop was concluded with a plenary discussion, addressing the most important points raised during the entire day as well as some additional points for consideration.

Some new points were raised during the plenary discussion, among which the following two: how to integrate/consider the interaction of different types of hazards (e.g. earthquakes and floods; this was not discussed any further), and how to sustain participation and its contents. Regarding the latter point, participants agreed that there should be some sort of structure to engage citizens repeatedly/regularly over time, rather than a one-time participatory process. It was suggested to engage people in practical activities (e.g. to clean the river banks) to make the participants more motivated to acquire knowledge about the river (dynamics). It was also suggested that providing feedback to the participants and keeping them informed after the implementation of the Actions in the case studies may benefit everyone involved.

Another discussion point revolved around the possibility of establishing a relationship between the level of capacity and the level of risk, to establish a link between social capacity building and flood risk mitigation. It was argued, though, that it would be very difficult to measure such a connection. Nevertheless, it is interesting to think about this and perhaps at the end of the project all partners can have a look at this potential addition to CAPFLO objectives.

The concept of intermediaries, i.e. citizens with some knowledge about (local) flood risk that can help bridge the gap between authorities (with technical information) and communities/citizens (with lay knowledge) was picked up again. In particular, it was emphasized the importance of the role that these figures could play in stimulating and sustaining participation as well as in spreading knowledge and information among people.

Concerning the comparative assessment, it was agreed that partners should investigate which characteristics of the FRM or community structure that help building social capacity in the case studies could be replicable in other regions.

As for the Participatory Tool, the workshop discussion accounted in this report lead to identify a number of action points for the finalization of the Participatory Tool.

Action points for the finalization of the Participatory Tool

- Make a decision about the term 'mechanism';
- Include information technology as a cross-cutting topic that is featured in all Participatory Mechanisms and Participatory Activities in the Tool;
- Reconsider and expand the list of actions to increase social capacity thinking of the potential to use information technology (blogs, websites) as well as more creative (e.g. use of art), fun, catchy ways to engage citizens;
- Consider reintegrating the Finance dimension in the Participatory Tool;
- Consider integrating in the Participatory Tool other written feedbacks provided by the workshop participants.

Annex B. List of general Participatory Actions⁸

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Meuse river in Limburg, NL	The action includes experience sharing activities such as storytelling night about the past floods	Directly: M1, M3; Indirectly: K1-Resources; N1 Abilities	Deliberative Workshops
Meuse river in Limburg, NL	The action includes learning/understanding what to do in an emergency situation by means of a simulation of an emergency (training exercise)	Directly: M1, M3; K1-Abilities; Indirectly: N1-Abilities, N2	Simulation and role-playing
Meuse river in Limburg, NL	The action consists of an information evening about the importance of flood insurance and of options to insure assets against flood damage	Directly: F1-resources, F1-abilities; Indirectly: M1, M3	Public meeting / Deliberative Workshop
Meuse river in Limburg, NL	The action consists of a workshop to discuss and address the multiple layers/dimensions/levels of safety: not only on RWS scale (dikes) but also on household scale (safety kits) and neighbourhood scale (communication network)	Directly: K.1, M.3, Indirectly: K.2, M.1	Deliberative workshops

⁸ This annex includes the list of actions that could be implemented in the case study regions that were identified as result of the assessment of the social and civic capacity in each case. This list constitutes the starting point for the development of the pilot actions, part of Task E in the CAPFLO project.

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Meuse river in Limburg, NL	Guided walk through the nature area between Itteren/Borgharen for interested people from the villages and the city of Maastricht. In cooperation with developers of Overstroomik.nl (+app), use smartphone or tablets to show with virtual reality what a flood for the area could mean. (use existing material of MEGO project)	M1, M3	Public meeting (field trip) / Deliberative workshop / Simulation and role-playing
Upstream Seine river basin, Vitry-sur-Seine, FR	Case tailored action Focus group (15 October 2016) – Evaluation of civic capacities through playing the game of a hypothetical flood event, this focus group will include information session on flood risk in the area (theoretical) and experimental through the simulation of a flood event.	Focus group: Capacities to be evaluated: K.1, P.1; Indirectly: capacity to form networks and work together (N.1), motivation (M.1, M.2) Capacities to be developed: Focus group (knowledge K.1 – resource flood related)	Deliberative workshops / Simulation and role-playing

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Upstream Seine river basin, Vitry-sur-Seine, FR	<p>Experimental participatory workshop (December 2016) – Development of social and civic capacities through the inhabitants’ development of an action plan for their neighbourhood, in the second part of the workshop the inhabitants will discuss the action plan with the municipality risk manager to adapt the plan to the municipality constraints. Confrontation with the institutional frames will be an aspect of particular interest in this action.</p> <p>Link between the focus group and the experimental workshop is fundamental, the same participants will go through the same process.</p>	<p>Experimental participatory group: Capacities to evaluate/develop: (P.1) - Capacity to establish – K.1, P.1, P.2, N.1</p>	Deliberative workshops
Rivergaro – Trebbia sub-river basin	<p>Flood risks prevention and management for kids and with kids (3-13 years) – the action aims at: increasing children’s knowledge and preparedness on floods, flood risks and on how to act in case of floods through information (i.e. what are and how floods occur, what are the main flood risks in the municipality of Rivergaro, how to prevent risks of floods) and games (i.e. building your own flood emergency kit; building the classroom/school flood emergency plan, etc) on flood prevention and management; workshop with teachers on incentivizing safe behaviours within schools and contributing to flood management during floods.</p> <p>The action will represent an opportunity to present and discuss a brief mini-guide/card of the local Civic</p>	Direct: K1; Indirectly: M1	Public meeting / Workshop

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Rivergaro – Trebbia sub-river basin	<p>Protection Plan</p> <p>Looking for pokemon Swampert along Trebbia river: the event is aimed, in particular, at attracting youth (15-25 years old) along Trebbia river to discuss how they can prepare for floods and contribute to floods prevention and management. The action will represent an opportunity to present and discuss a brief mini-guide/card of the local Civic Protection Plan. Furthermore, the action could also include a civic protection simulation on floods management</p>	Direct: K1; Indirectly: M1	Public meeting (field trip) / workshop / Simulation and role-playing
Rivergaro – Trebbia sub-river basin	<p>Public meeting on floods prevention and management: the action is meant to provide citizens from Rivergaro with information on the functioning of the flood risks management system at all levels, on how to read the alarms and weather forecasts provided by the Agency for Civic Protection and Territory Defence, on Arturo project, the local flood risks management system, on the Civic Protection Plan of Rivergaro municipality and on safe behaviours during floods. Furthermore, it is also aimed at discussing together the results of the case study and at fostering an exchange of ideas between citizens and local authorities on how their knowledge and competences could feed into the local flood risks management system. Opinions</p>	Directly: K1, K2 and indirectly M 1, M2; M3; P1	Public meeting / Workshops

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Rivergaro – Trebbia sub-river basin	<p>gather should feed into the process of revising the Civic Protection Plan. Furthermore, during the meeting citizens could also work together on building their potential flood prevention family/business plan. The action will represent an opportunity for identifying citizens interested in testing the Arturo app and in becoming a civic protection volunteer. The action will be followed by a training workshop on the use of the Arturo app for those signed up for testing it.</p> <p>Towards a Trebbia sub-basin flood risk prevention and management system workshop: the action consists of a workshop with regional and local authorities and stakeholders (i.e. farmers' associations, fishermen associations, civic protection associations, local associations, etc) from the Trebbia sub-basin on how to prevent and manage floods at the sub-basin level. The action is aimed at debating on several issues related to floods prevention and management in this area, for example: presentation of the case study results, implementation and use of Arturo app along the entire sub-basin as well as its integration with other measures foreseen by the local civic protection plans, further integration between local administrations (i.e. local municipal police and civic protection department, etc) in order to prevent and</p>	Directly N1 and K1; Indirectly: M2 and P1	Workshops

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Rivergaro – Trebbia sub-river basin	<p>manage floods as well as between them and local stakeholders (i.e. farmers' associations, business associations, fishermen associations, environmental associations, etc); feasibility and potential effectiveness of floods prevention and management measures proposed by the Trebbia river contract, citizen's role in the flood risks management system, etc.</p> <p>Guide to floods prevention and management: the action consists of drafting a printed/online quickly and easy to read guide including information on floods prevention and management. The Guide will build on the Civic Protection Plan measures, presenting them in a simplified language and form, as well as on the feedback provided by citizens, stakeholders and local bodies during the participatory events. The guide will also include indications on the use of Arturo app.</p>	Directly; K1; Indirectly: M1, M2 and P1	Broadcast/distribution
Ebro	Creation of a database of volunteers ready to be involved on response management when flooding	N1, N2	Citizen engagement initiative (although the database is probably created by other actors?)

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Ebro	Cycle of conferences: Flood risk maps, return periods, effectiveness of current measures, exchange of best practices in other territories, etc.	K1, K2. Indirectly: M	Citizen advising / Deliberative workshops
Ebro	Field trips to see the impacts of floods, new measures implemented, etc. with sectoral and local authorities, etc.	K1, K2. Indirectly: M, N	Public meeting / Deliberative workshops
Ebro	Descending in kayak to learn about the fluvial dynamics and river morphology...(i.e. dialogue, develop of river transects, bathymetries...)	K1, K2. Indirectly: M	Public meeting
Ebro	Identification of financial mechanisms: Examples of crowdfunding; brainstorming of its use on floods mitigation (i.e. buying field crops in order to setting back the dikes, etc.)	F3, F2. Indirectly: K, M, N	Deliberative workshops
Ebro	Role playing game (examples: https://goo.gl/7wzr8H ; https://goo.gl/a4ozNj)	K1, K2, M1, M2, M3, P1, P2	Simulation and role-playing
Ebro	Participatory process on flood management measures: mitigation, response, recovery.	P1, P2. Indirectly: K, M, N, F	Deliberative workshops

Case study area	Description of the action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u> ; it can be more than one!)	Which participatory mechanism could be used to implement the action?
Ebro	Creation of a citizen observatory for floods mitigation (monitoring/managing). This action could be made up with the aforementioned actions.	K, M, N, F, P	Citizens' science
Iller	Participatory Workshop I on perceived flood risk and FRM, experience sharing, vision-building, scenario-building	K 1, K2, M1, M2, M 3, N 1, N2, F1	Deliberative workshops
Iller	Participatory Workshop II on better information/ knowledge exchange. Brainstorming and best practices in emergency situations (if possible write/ enhance emergency plan)	K 1, K2, M1, M2, M 3, N 1, N2, P1, P2	Deliberative workshops
Iller	Excursion/ Field trip to the river stretch of the Iller that has been re-naturalized in order to enhance dynamization, water quality and flood protection. Presentation and discussion of this type of measures. If possible short introduction into nature photography at the beginning of the excursion and taking of pictures during the river walk. The pictures would be presented at workshop II and the best pictures elected. In this context, explanation of advantages of monitoring though foto-documentation.	K 1, K2, M1, M2, M 3, N 1, N2	Public meeting / Deliberative workshops

Additional suggestions	Description of the Action	Which social/civic capacity does the action address? Specify the indicator of the Capacity Assessment Tool that the action addresses (indicate the <u>directly targeted indicator(s)</u> and the <u>indirectly affected indicators</u>; it can be more than one!)	Which participatory mechanism could be used to implement the action?
	<p>Create a Facebook page on which people can connect and on which information etc. can be provided</p>	K, M, N, P	Information/distribution; public meetings; citizen engagement initiative
	<p>Instagram page for the river. Uploading pictures of the river and try to incentivize people to upload their pictures - e.g. from the river walks - potentially with little stories, so that people would connect more to the river again.</p>	M, N	Information/distribution; citizen engagement initiative
	<p>Generation of QR Codes at important river sites or in affected neighbourhoods for flood marks, people could scan them with their smartphones to get the information. This information is not only linked to local stories etc., but could also include information on flood risk, measures, recent projects, etc. The sites of the QR Codes could be marked as 'walks' in a google maps map on the facebook site. It is a possibility to think about a blog site (needs frequent updating, though). What exactly should be provided with the QR codes could be jointly decided with the community.</p>	K, M	Information/distribution
	<p>Geocaching: 'treasure hunt' using GPS through an app (there are several apps, e.g. https://www.geocaching.com/play). Every member can introduce new routes by hiding little boxes with the exact coordinates. The main aim is to find the</p>	K, M	Citizen engagement initiative

	<p>box, therefore the main content is only a logbook and the reward to announce in the app community that the site has been found. These boxes could contain information about flooding, for instance.</p>		
	<p>Lunch seminar: invite participants for an informative session including lunch</p> <p><i>In any case, it was noted during a CAPFLO meeting that food is a good 'bait' to attract more participants for a participatory process</i></p>	K.1, M.1-3, N.1, depending on subject F.1, F.2, F.3	Information/distribution
As part of a larger festivity (e.g. Carnival, local traditional celebrations):	<p>Exposition of art related to flood (or any kind of water dynamics) (e.g. project Waterlicht: https://www.studioroosegaard.net/project/waterlicht/)</p>	K.1, M.1-3	Information/distribution; public meetings
As part of a larger festivity:	<p>Mural graffiti related to floods (in urban areas): in collaboration with artists, participants would make street art related to floods</p>	K.1, M.1-3	Citizen engagement initiative
As part of a larger festivity:	<p>Theatre plays about flood-related subjects</p>	K.1, M.1-3	Information/distribution
	<p>Integration of flood knowledge (learning) in school programmes (e.g. civics courses)</p>	K.1, M.1, M.2, M.3, F.1,	Citizen engagement initiative
	<p>Mapping of local important places (schools, hospitals, homes) and things (wells, electricity boxes)</p>	K.1, K.2, M.1, M.2, M.3, N.1, P.1, P.2,	Citizen engagement initiative

Annex C. Coding categories for literature review on Participatory Activities (and Mechanisms)

The database was created using Microsoft Excel.

General info about the publication and the PA

Authors

Year

Title

Pages

Link

Description of PA (pages in cell and brief description in comments)

PA function

What is the main research question of the paper, or goal if a question is not stated?

What is the function/goal of the PA? (e.g. capacity building, conflict resolution, awareness raising, knowledge creation/sharing, etc.)

Are social and/or civic capacity defined? If yes, how?

PA design and implementation

How long do pre- and post-event activities of the PA take for the process organisers?

How long does the PA take for the participants?

How many financial resources does the preparation and running of the PA require? (*no specific indicator given, as indication of costs diverges much between different sources*)

How many participants are involved?

How are participants selected? (random, stratified, expertise, open invitation etc.) or: which participants are involved?

How much technical expertise does the preparation and running of the PA require (e.g. research, facilitation, IT, etc.) *low/medium/high*

How much participants' expertise does the PA require? *low/medium/high*

Mentioned advantages of PA (page in cell, text in comment)

Mentioned disadvantages/limitations of PA (page in cell, text in comment)

Assessment of PA in empirical literature (only applicable to empirical research)

Is the research empirical (e.g. analyses data, cases or evidence)? *Yes/no*

Who took the initiative to begin the participatory process? (e.g. public authority; researchers; stakeholders; communities)

Who organised the participatory process?

During which stage did the participation take place? *Planning/implementation/evaluation*

Which environmental issue is addressed? E.g. water, land, forests, fisheries, etc.

What is the primary scientific field of the study? *(1) sociology; (2) political science (and sub-disciplines such as policy sciences); (3) communication sciences; (4) environmental studies; (5) other (if so which?)*

What is the applied methodology for the empirical studies (check all that apply)? *(1) Single case study; (2) multi-case study; (3) Literature review; (4) Interviews; (5) Written surveys; (6) Direct observation*

How many units of observation (e.g. # case studies, # focus groups, # of papers reviewed, # of respondents of survey, etc.)?

What is the composition of the participating stakeholders' group? *(1) uniform stakeholder group; (2) mixed stakeholder group*

What type of stakeholders were involved (check all that apply)? (e.g. public authorities, community, NGOs, businesses)

If applicable, what kind of community is involved? *(1) rooted community; (2) institutional community; (3) community of circumstance; (4) community of interest; (5) vulnerable group*

Does the publication measure/evaluate the achievement of goals of the PA? *YES/NO/Not clear/NA*

How was the achievement of PA goals measured? *(1) (Subjective) judgement by the author (2) Judgement by the (participating) actors*

Have the goals of the PA been achieved? *YES/NO/Not clear/NA*

Were any other effects of the PA illustrated/measured? *YES/NO/Not clear/NA*; if YES, specify

If any other effect was measured, how was it measured? *(1) (Subjective) judgement by the author (2) Judgement by the (participating) actors*

Does the publication explicitly/implicitly (specify) measure/evaluate the change in social and/or civic capacity? *YES/NO/Not clear/NA*

Annex D. Participatory Activities: Advantages and disadvantages

The following list of PAs is not meant to be comprehensive, as there are far more forms of participation that could be described as PA. Rather, the list consists of the PAs that have been assessed for their characteristics and qualities, to in turn assess the potential of the PM to which these PAs are categorised. The listed pros and cons are generally relevant for the participatory aspect of the process, and are illustrative.

Information supply (*broadcast/distribution*)

This PA comprises one-way flows of communication, for instance in the form of public education campaigns and notices. Although this PA is usually initiated by authorities informing members of the public, citizens could also start a local information campaign about, for instance, the risks of floods and what to do in case of a local emergency.

Advantages (from Beierle 1998):

- Knowledge of 'participants' (recipients) may increase;
- Trust of participants in organisers may increase due to increased accountability and transparency

Disadvantages:

- The possibility of non-targeted information not reaching non-professional stakeholders is high (Beierle 1998)

Public hearing (*public meeting*)

A public hearing generally functions as a platform for the process organiser to present their proposal, for instance for new FRM regulations, and for the participants to give feedback and comment on these proposals. The Internet may make hearings more accessible through options such as livestreams and live commenting.

The public hearing is difficult to categorise, both due to different interpretations of what it comprises and due to its general vagueness in the role of participants and their interaction with the process organisers. Beierle (1998: 21) describes it well by arguing that 'although information flows in a public hearing are nominally two-way, they are generally not deliberative'. Indeed, a public hearing involves information from both sides, but there is usually little room for any further discussion beyond initial statements. Due to this lack of genuine participation public hearings have been criticised often as participatory process (idem: 20).

Advantages:

- All kinds of actors/stakeholders can attend the hearing
- It serves as a good indicator for the organisers of the public's opinion/approval
- Conflict may be reduced/prevented due to increased transparency

Disadvantages:

- Hearings are often used rather to defend the proposals than to involve the participants in the decision-making (Chess & Purcell 1999)
- Related to this, hearings are sometimes legally obligatory ways of participation that do not represent true intentions of the organisers to involve the participants (Fiorino 1990)
- Empirical studies have found that participants often represent institutions and economic stakeholders, rather than the general public (see Fiorino 1990: 231)
- Despite two-way flows of communication, there is generally no real deliberation

Public comments (*citizen polling*)

Public commenting is a frequently used PA by authorities to provide citizens the opportunity to give feedback on policy proposals and reports. This allows participants to share their concerns and comments, and gives the organisers the opportunity to consider these views. The rise of the Internet has made public commenting much easier as websites make reports and adjacent comment tools more accessible. Usually, public commenting lasts some months after the initial publication⁹.

Advantages:

- Participants can share their own knowledge and views elaborately (written)
- The feedback can improve the reports by including various perspectives and preferences of citizens and stakeholders

Disadvantages:

- There is no to little deliberation after an initial comment is made
- A distance remains between participants and organisers, due to the lack of deliberation and physical connection
- Beierle (1998) argues that the most frequent commenters are professional stakeholders and not citizens.
- Often there is no elaboration on how the feedback has been considered or integrated, let alone that the feedback is binding

⁹ A new form of participation that stems from public commenting comprises online forums, where both the 'organisers' (developers of the forum) and participants can begin discussions on various topics (see Evans-Cowley & Hollander 2010, for instance).

Referenda (*citizen polling*)

A referendum generally comprises two options to choose from for the participants (yes or no), and depending on the legislation surrounding the referendum its outcome can be binding for the organisers (recipients of 'advice'). There are exceptions, though, as two recent examples in the EU member states the United Kingdom and the Netherlands involved an 'advisory referendum'. Still, as can be noticed now, the governments of both countries feel they cannot easily reject the outcome and are inclined to do something with the 'advice'. The power of such a large turnout (that is, at least in absolute terms as in percentages the Dutch turnout was not high) is apparently large enough to influence the decisions of the government on that particular matter.

Advantages:

- The referendum can be called for by a citizens' initiative with enough support (signatures)
- Straightforward way of eliciting the opinion of many people
- Influence of participants is potentially high
- It is clear what is expected from the participants

Disadvantages:

- There is no structured room for discussion about the topic between organisers and participants
- Often the access to information to make a well-informed decision is limited (Rowe & Frewer 2000), although the Internet can serve as information source.
- The choice is often between 'black and white', and does not represent a continuum of nuance (choice represents direction rather than intensity of beliefs, Fiorino 1990: 232; Rowe & Frewer 2000: 21)
- In the case of an advisory referendum, it is unclear what the organisers will do with the outcome

Surveys (*citizen polling*)

Surveys are an often used method by both researchers and governments to elicit opinions of and (demographic) information about many participants. Milbrath (1981: 482) argues that surveys can reach 'the uninterested but affected public' that would not be participating or represented in other (traditional) forms of participation, such as public hearings or citizen committees. The Internet has increased the potential of surveys to reach a large amount of people even more, as it has become easier to create, disseminate, and respond to a survey.

Advantages:

- Survey data provides a representative overview of public opinion/information (if turnout is arguably representative) (Milbrath 1981)
- Intensity of beliefs is better represented instead of only direction (Milbrath 1981; Fiorino 1990: 233)
- Values underlying opinions could be identified by asking the right questions (Fiorino 1990)
- The potential bias that arises when only (professionally) interested people participate in processes such as hearings and commenting could be overcome by a large sample that includes people without relevant interests (if they do take the time to fill in the survey, but since this requires much less effort than travelling somewhere or reading a full report chances are higher) (Fiorino 1990: 233)

Disadvantages:

- There is no deliberation between organisers and participants
- It is generally unclear what the input of participants is used for, let alone that it is binding
- The surveys usually come with little information about the subject to inform people
- The design of the survey could have a large influence on answers and conclusions (Fiorino 1990); it requires a good 'facilitator' (creator) of the survey

Focus group (*citizen polling*)

A focus group is an organised dialogue between a group of participants. Group dynamics are assumed to add something extra to the insights as participants respond to and ask each other questions. The organisers generally do not join discussions but act as facilitator of the session. Skilled facilitation is often regarded as necessary to maintain efficient discussions. Focus groups are similar to surveys in that the goal is to elicit opinions and information from the participants. Focus groups are generally organised by authorities or researchers to find out more about the opinion of citizens.

Online focus groups are a relatively new option that allows participants to join the conversation without having to be in the same place.

Advantages:

- Participants act in a more natural social context, allowing for more genuine responses/opinions (Slocum 2003)

- May identify the more profound objections against, for instance, the implementation of a policy proposal (Red Cross 2007)
- It generates a discussion among participants, allowing them to develop new and more profound opinions/perspectives
- The format is usually flexible, allowing for more information than the initial questions may give

Disadvantages:

- There is no to little discussion between organisers and participants
- With sensitive subjects, the participants may not feel free to share their thoughts when other stakeholders are present in the focus group (Red Cross 2007)
- The group dynamics can blur/cover individual opinions/perspectives (Slocum 2003)
- The small amount of participants limits the representativeness of the participation (this also depends on the method of participant selection)

Citizens' jury (*citizen advising*)

The citizen's jury comprises a group of people, between 12 to 24 participants, that attend closed meetings during which they learn about a specific (policy) subject and discuss with each other what their conclusions will be. Experts with different backgrounds and perspectives, independent of the process organisers, inform participants for them to develop well-informed opinions on the subject. Participants can also question the experts. The deliverable produced by the participants usually consists of recommendations regarding the policy subject. A citizens' jury is hence often initiated by policymaking authorities.

The possibilities of online communication have made it easier for organisers to invite people and for experts to provide examples regarding their information, such as videos, but the participants still need to attend the meetings. Meeting online is probably more problematic when they should repeatedly both listen to presentations and deliberate with their fellow 'jurors' on the deliverable.

Advantages:

- Participants have access to elaborate information, also to technical information that is simplified for them to comprehend (Fiorino 1990)
- Participants can mix their own knowledge with the knowledge acquired from the experts to produce the deliverable

- The jury is useful when there are multiple options (e.g. what kind of measures to take against flooding), as multiple experts can defend the options and the participants can weigh the arguments

Disadvantages:

- The formal arrangement of producing a deliverable may raise an expectation amongst the participants that their recommendations will be used. Organisers have to be very clear about their intentions for the deliverable, even if the results are against the organisers' own interests/expectations
- Any learning effects from the participation in the jury are only relevant for the participants, who only represent a small portion of the community they come from, as the sessions are behind closed doors

Consensus conference (*citizen advising*):

The consensus conference is nearly identical to the citizens' jury; opinions differ on what sets apart the two PAs. Partially following Fiorino 1990, Rauschmayer & Risse (2005), and Rowe & Frewer (2000), two main differences are that conferences are open to the public, while citizens' juries are closed, and the citizen panel of the conference picks the experts to be heard, rather than a preselection of experts either by the organisers or a 'steering committee' for the citizens' juries.

The following advantages and disadvantages are based on these differences; other pros and cons for the consensus conference are similar to those of the citizens' jury, if not in contradiction with the following.

Advantages:

- With the doors open to the public, the potential to reach a larger group with the information provided during the conference is higher
- Participants can prepare questions based on who they select to provide expert information

Disadvantages:

- The selection of experts and the preparation and participation in the conference require much effort from the participants.
- The selection of experts is much dependent on the knowledge of the participants before the conference (prone to bias)

Citizen advisory committee (*citizen advising*)

The group of participants in the citizen advisory committee does the same as the panels in the citizens' jury and the consensus conference. The difference of this PA with the other two is that there are no sessions during which experts provide information. The participants have to study the project on their own, but naturally discuss their insights and findings with each other to in the end produce a deliverable (e.g. recommendations).

Modern communication may contribute to more regular discussion sessions of the group, as these can also be held using online tools (e.g. Skype).

Advantages:

- The deliberative sessions provide the participants a good opportunity to share knowledge and to get familiar with different perspectives
- Organisers get a good impression of the knowledge of participants, as well as their perspective on, for instance, the desirability and feasibility of policy proposals

Disadvantages:

- There is no deliberation between organisers and participants
- There is no to little support for the participants in the process of forming the deliverable
- According to Chess & Purcell (1999), there is a trade-off between the independence of the participants in relation to the process organisers, and the likeliness of 'significant issues' being addressed; i.e. if there are few connections between the organisers and participants, the organisers might not want to delegate an advice regarding a significant issue to these participants

Expert panel (*expert advising*)

The expert panel resembles the citizen advisory committee in many ways. Essentially, the only significant difference is that the participants comprise people (citizens) who are regarded as experts on the issue, instead of randomly/representatively selected citizens. The experts are furthermore not representing a specific interest group; although they may work for a certain stakeholder, the goal of their presence in the panel is not to defend its 'stakes' (Slocum 2003; cf. stakeholder advising), but to contribute advanced knowledge of the issue at hand.

Advantages:

- With more prior knowledge, the expert panel may be more capable of dealing with complex and/or technical issues
- As 'independent' experts, the objectiveness of the deliverables could be higher

Disadvantages:

- The public representativeness of the experts, even though they could be citizens, is likely to be low as they form the 'elite' of the public that is actively interested and knows much about the issue
- Opportunities for much learning on the participant side are low
- There is no to little discussion between organisers and participants
- The presence of many perspectives and opinions on the issue may be limited

Stakeholder advising (*expert advising*)

In turn, the stakeholder advisory group is very similar to the expert panel, the only difference being that the participants now actively represent a stakeholder or interest group. By having an equal amount of participants per stakeholder, there can be no dominance of any interest. The participants therefore need to find consensus by deliberating, considering each other's perspectives, and compromising, in order to produce a deliverable that both represents all interests and is useful for the organiser to consider/integrate.

The following advantages and disadvantages are based on this difference between stakeholder and expert advising; other pros and cons are similar if not in contradiction with the following.

Advantages:

- By an active representation of all stakeholder perspectives, a balanced consensus or conclusion could be found that considers all interests
- Although it is also a disadvantage that the end result is not binding but merely advising, this fact could lower tensions between stakeholders as the stakes are not as high as during direct decision-making negotiations (see the following disadvantages; cf. *Negotiations and Mediation*). The absence of the organisers during deliberations may also contribute to this

Disadvantages:

- With a sensitive or highly important issue, the (many diverging) stakes could bring tensions to the deliberation table
- Related to this, whether an interest is considered and integrated well enough depends on the skills of the representative

Negotiated rule making (*negotiations and mediation*)

Negotiated rule making describes the effort of (organised) stakeholders and the process organisers to negotiate an agreement about policymaking (e.g. rules, regulations, legislation). A

consensus is generally required, and the outcome is often binding. The primary goal is thus to find a compromise or common agreement between 'personal' (stakeholder's) interests, and not to broaden perspectives or to find the optimal solutions for the broader community/region.

Advantages:

- Process organisers actively participate, so there is deliberation between organisers and participants
- All stakeholders can be represented, allowing for the consideration of all relevant interests
- The influence of the participants on related decisions is high

Disadvantages:

- The general public is generally not invited to negotiations, as they usually do not represent an organised stakeholder (Fiorino 1990)
- 'Neutral' experts are not included in the process to provide information
- Transparency of the decision-making process is low for the public (Rowe & Frewer 2000)

Mediation (*negotiations and mediation*)

Mediation is similar to negotiated rule making, with the same goal of reaching consensus while participants are generally holding on to the interests of those they represent. The important difference is that mediation involves a third (neutral, independent) party as facilitator of the process.

The following advantages and disadvantages are based on this difference between mediation and negotiated rule making; other pros and cons are similar if not in contradiction with the following.

Advantages:

- The facilitator may find a better balance between all interests, making the result less dependent on the (deliberative) qualities of the stakeholder representatives

Disadvantages:

- The selection of an appropriate facilitator might already cause discussion and hiring one can be expensive

Group model building (*deliberative workshops*)

The participants of group model building work in collaboration with the process organisers to create a model that simulates, for instance, the effects of policies. Group model building, also known as 'mediated modelling', combines systems thinking with collaborative practices (Rauschmayer & Risse 2005). The process includes several sessions, during which participants share ideas, opinions, and perspectives, and during which all try to reach a consensus about what the goal is of the model. The model itself can also be a tool in reaching this consensus (Hage & Leroy 2008: 33).

Usually, model building involves a facilitator (an organiser or an external party) that knows how to build and manage the model (technically). The use of computers and visual software can be helpful in making the model and its calculations more understandable and accessible to the participants.

Advantages:

- Organisers, stakeholders, and citizens can participate in discussions
- Having to work together towards a common goal of building a model can contribute to the relations between all participants and organisers (Rauschmayer & Wittmer 2006)
- Much exchange of different types of knowledge (organisers, stakeholders, citizens)
- End results are generally supported by the participants as they have been actively forming the results (Hage & Leroy 2008)

Disadvantages:

- External experts are usually not invited (Rauschmayer & Wittmer 2006: 117)
- The model can be difficult to access or understand for people who did not participate (Hage & Leroy 2008: 34)

Scenarios (*deliberative workshops*)

Developing scenarios engages the participants in the identification of key issues, after which participants explore multiple ways of dealing with these. Usually the most important points of consideration of the scenarios comprise policy options and their potential effects. The conceived scenarios can vary from realistic to highly speculative ideas; the idea is to consider and eventually integrate uncertainty and unexpected developments into the policymaking.

Although there is a high level of uncertainty involved, by developing scenarios with a multitude of stakeholders from different perspectives participants can get a better idea of what the

implications of implementing one or the other policy would be. This allows for a better understanding of the options as well as the positions of others.

Advantages:

- New ideas or perspectives for all participants could emerge through the discussions, using both local (lay) and scientific knowledge (Hage & Leroy 2008)
- There is much deliberation between all participants, including the process organisers
- Contemplating a way to a desirable future can stimulate finding common ground (Hatzilacou et al. 2007)

Disadvantages:

- It is difficult to construct scenarios that contribute to a specific and better understanding of the potential effects of policies, as participants often focus too much on a detail about which they know much or to which they are familiar (Slocum 2003)

Emergency simulation (*simulations and role-playing*)

Emergency drills are well-known simulations of a serious event that are applied in many places. Fire evacuation is often an obligatory regular exercise in schools and public buildings. On a larger scale, natural disaster simulations are done to test the coordination between the involved authorities, the functioning of all systems, and whether citizens know what they should do (prioritise). A recent example occurred in Marken, the Netherlands, where in November 2016 hundreds of citizens were evacuated as a training exercise.

There is a potentially large role for social media in the information supply from authorities to citizens in the event of an emergency. The organisers of the simulation process should also apply modern communication technology, as well as evaluate the benefits and limitations of using this as a primary communication tool between organisers and participants (see e.g. Terpstra et al. 2012). A different application of modern technology for emergency simulation is the use of virtual reality. Chen (2014) evaluated the use of a virtual world in which the emergencies and resulting coordination took place and found promise in terms of testing and improving communication and coordination among participants.

Although an emergency exercise is sometimes primarily meant for the authorities that are responsible for emergency response and therefore does not always involve citizens, by actually involving them there could also be input from citizens about the information supply and about general proceedings (they may have 'out-of-the-box' tips).

Advantages:

- An emergency training can develop the skills and competencies of the participants regarding teamwork, and 'intra- and inter-[network] communication and coordination' (Chen 2014: 735)
- It helps to find common ground among and differences between the various collaborating actors in terms of decision-making processes (Chen 2014: 735)

Disadvantages:

- The exercise requires a large group of participants, including professional personnel
- There is usually limited time for a simulation of an event that can take days or weeks in reality (although computer simulation might overcome this) (Chen 2014)
- The emergency simulation itself does not provide room for discussion during which citizens, as participants, can share their knowledge. The simulation is used more for testing the adequacy of the current knowledge and coordination among the authorities responsible for dealing with the emergency.

Citizen observatories (*citizens' science*)

Citizen observatories consist of citizens taking the role of researcher in monitoring, i.e. collecting data about the environment, for instance regarding water levels and water quality. The activities usually involve relatively simple tasks such as installing and reading gauges.

Conrad & Hilchey (2011) describe different forms of 'community-based monitoring', divided on the criterion of who takes the initiative and who is involved. Indeed, citizen observatories can be initiated both top-down and bottom-up, and all forms have their pros and cons (see Conrad & Hilchey 2011: 279).

Wehn et al. (2015) investigate the potential of ICT-based citizen observatories. Of course, sensor technologies have been improving and have become more accessible, both in terms of price and usability, to non-academics, adding to their potential use by citizens. Furthermore, the possibilities of instant communication and virtualisation of data allow for better communication between the collectors and the users of the data, both when the collectors want to upload and update the data and when the users want to illustrate what kind of conclusions can be drawn from the data.

Advantages:

- Information about local phenomena is shared between process organisers and participants as everyone contributes

- The sharing of a goal, with different tasks for different actors, can increase the relation between organisers and ‘participants’ (data collectors), or between authorities and citizens (communication/coordination can improve)
- Being actively engaged, citizens may develop interest, awareness, and motivation to be involved in more (advanced) participation (Wehn et al. 2015: 234)
- Although citizens might need some support in the access to the required measuring instruments, they can take the initiative in establishing a database that can then be used by interested (other) stakeholders, allowing for greater involvement

Disadvantages:

- If authorities are the process organisers, the personal input of citizens, e.g. personal knowledge, may be limited
- The collected data can be fragmented and inaccurate (amateur) (Conrad & Hilchey 2011: 282), potentially leading to non-use of data and subsequent frustration of participants

(Online) mapping (*citizen engagement initiatives*)

Maps are used to indicate the positions of vulnerable areas within a community (where flooding occurs more often), and where hazards may arise (exposed elements, e.g. houses near the river, elderly people, electrical boxes, public places, wells). In the same map, risk management resources can be identified (e.g. emergency centre, medical clinic). The action allows citizens to actively think about their living area, and which areas need special attention, and it gives them and cooperating/supporting actors the opportunity to assess the overall risk in the community. McCallum et al. (2016) considered the use of *inter alia* online mapping in flood risk management.

Advantages

- Maps provide a good illustrated overview that is accessible even to illiterate people
- The local knowledge of people about flooding and vulnerable locations is used extensively
- If online mapping, using an online tool can give faster access to a larger amount of people

Disadvantages:

- if online mapping, the lack of regular access to or skill with using online technologies of communities can impede the effectiveness
- If non-online mapping, it is difficult to have a central database for the maps to which every community citizen can contribute and which every citizen can access and consult

Annex E. Explanation on the assessment of the potential of Participatory Mechanisms for social and civic capacity building

It is emphasised once more that the following explanations and the PM assessments are a product of triangulation between a literature review, the judgment of the main authors and second opinions from contributing CAPFLO partners. The assessments are therefore primarily hypotheses, which can be tested by empirical observations of participatory capacity building.

Broadcast/distribution of information

K.1. Potential to improve/develop flood risk knowledge

Resources: 1-2

By distributing knowledge or information to a large group, e.g. through leaflet distribution, television broadcast, or websites/apps, the process organisers may reach a significant amount of relevant stakeholders/citizens. However, this depends much on the premise that these stakeholders actually encounter this distribution, and hence is dependent, to a certain extent, on the efforts made by recipients to receive this distribution. Also, it might be difficult to convey much (in-depth) information in one message, taking into account ‘attention spans’ of the recipients. Repeated distribution over a longer period can overcome this.

Abilities: 0

Communication from the organisers to the ‘participants’ (i.e. recipients) is temporarily increased as the organisers share their knowledge/information with the rest. However, there is no opportunity for dialogue, leaving participants unable to reciprocate.

K.2. Potential to improve/develop learning capacity: 0

If authorities act as process organisers, the one-way flow of communication inhibits the potential of integration of local knowledge. All the same, even if the local actors with local experience-based knowledge take the role of process organisers and attempt to distribute this knowledge (bottom-up), the limited room for in-depth information and the unknown rate of participants, e.g. government officials, actually reading the message, and subsequently taking into account this information, downplay the possibility of local knowledge being integrated into flood risk management structures.

M.1. Potential to improve/develop motivation to mitigate flood risk: 1

A distribution of knowledge or facts regarding the risk of floods and addressing how people and stakeholders may prepare for floods could increase the motivation of people to act. However,

there is no active face-to-face elaboration of the risk, and it could be difficult to explain diverging issues of flood risk in a brief document or message.

M.2. Potential to improve/develop community motivation to work collectively: 0

The distributed message may draw recipients' attention to the importance of working together. However, it is unlikely that the recipients in a community will become more motivated to work together just by reading about collaboration in a message. It has proven to be difficult to motivate people to do more than what most currently do; the attempt to motivate therefore requires process organisers to do more as well and to personally reach out to the targeted participants.

N.1. Potential to improve/develop network performance

Resources: 1-2

Although the creation of networks and the collaboration between networks requires motivation, a social capacity not influenced much by information supply, simple messages may contain links or references to organisations involved in the participatory process. By including simple ways of reaching more information about these organisations and their networks (e.g. hyperlinks, QR codes), the step to connect might be small enough for recipients. Nevertheless, there is no to very little personal contact, whilst this kind of contact often serves as a good start for new connections.

Abilities: 1- 2

A large-scale random distribution of information from one network is unlikely to reach other networks significantly in the sense that it will be noticed by actors in this network. If the information is distributed purposefully among other networks, the collaboration may increase due to the same arguments given above.

To foster collaboration, especially between authorities and communities, requires trust building, bonding, and bridging. Although disseminating information may increase the accountability and transparency of the process organisers (Beierle 1998: 20), only supplying information without opportunities for more participation may also be interpreted as a weak attempt to connect.

N.2. Potential to improve/develop network autonomy: 0

The distribution of information does not contribute to the self-organisational skills of either the process organisers' networks or the recipients' networks.

F.1. Potential to improve/develop flood insurance: 0-3¹⁰

Leaflets are a well-known medium used for information about insurances (in general). Depending on the subject and quality of the content of the distributed information, recipients may become more aware of the importance of insurance.

F.2. Potential to improve/develop financial resources for community action

Resources 0-1

To change the availability and allocation of funds for community action requires active engagement of the community in, for instance, negotiations about fund allocation by governments. The distribution of information, even if done by communities about benefits of community funds, does not actively contribute to this and is therefore considered to have low potential of contributing to the financial resources for community action.

Abilities 0-3

If the actor controlling funds, such as a government, distributes information about how to apply for a fund, communities may become more capable regarding these applications when reading this information. The same applies to networks, although this depends on how many actors in the network are reached by the information

P.1 Potential to improve/develop community participation in flood decision making

Resources: 0

It is highly unlikely that information supply increases the power of communities to influence flood decisions. Even if communities distribute information or their knowledge and it reaches authorities, there is little incentive for the authorities to allow more bottom-up influence.

Abilities: 1

Pro-active participation might be stimulated if people know more about flood risk and want to do something based on this new information. Again, however, pro-active participation requires (motivational) stimulation, which was argued unlikely to be provided much by information distribution.

¹⁰ For an explanation of deviating Finance scores, see Table 3, p. 27.

Public meetings (face-to-face dissemination)

K.1. Potential to improve/develop flood risk knowledge

Resources: 1-2

A public meeting can serve as an information exchange, mostly from the organisers to participants. Participants can gather info and develop their knowledge about flood risks connected to the subject of the public meeting. However, the potential of sharing the local flood knowledge is limited to the questions or comments participants can have during the meeting. In the case of a public hearing, there is usually no official statement on how these comments are considered or integrated in the FRM.

Abilities: 1

Although there is the opportunity for Q&A sessions during forms of public meetings, for instance a public hearing or field trip, there is little room for genuine deliberation about fundamental aspects of e.g. the policy that is (being) introduced. Giving comments to a policy proposal with potentially some follow-up questions does not imply elaborate and deliberative communication between the organisers and participants.

K.2. Potential to improve/develop learning capacity: 1

Again, the limitation of Q&A sessions as primary communication impedes the potential for integration of local flood knowledge into FRM structure. The comments made on a policy proposal during a public hearing could be integrated, but this depends entirely on whether the organisers judge the comment to be useful.

M.1. Potential to improve/develop motivation to mitigate flood risk: 1

During the public meetings, organisers can provide participants with facts and further knowledge about flood risk. Signalling a high risk of flood in the area and proposing policies to deal with this could motivate people to contribute to the implementation of these policies. However, without having much to say about what the organisers decide regarding policy, apart from asking questions and giving comments, it is difficult to persuade citizens to engage in mitigation/preparation actions.

M.2. Potential to improve/develop motivation to work collectively: 1

Related to the aforementioned, facing facts about increased flood risk may increase the motivation of citizens to collaborate with their community. If the risk mitigation requires the involvement of other actors, for instance governments or NGOs, inter-group collaboration may also increase. However, also for this kind of motivation it is relevant whether citizens have

some form of influence on the policymaking. If this influence is low, as in the case of public meetings, the potential for increased motivation to collaborate is low.

N.1. Potential to improve/develop network performance

Resources: 1

As public meetings involve personal contact and gatherings of people, there is some potential for these people to connect, whether it is between organisers and participants or between different participants. Indeed, having come to the same place, participants of various backgrounds may start to discuss the subject with each other, if only because deliberation with the organisers is often lacking. This lack of deliberation impedes the potential for network creation, however, as organisers of these meetings are often an important actor in the management. Also, the deliberation between participants cannot be ascribed to the setup of the public meetings, as there is no formal facilitation for this kind of discussion. It is rather that both participants are in the same place for the same reason that discussions may arise.

Abilities: 1

With the low potentials for increased motivation to collaborate and for the creation of networks, the potential for more collaboration between and within networks is also low. Bonding and bridging could occur, but probably more through non-facilitated methods. Trust building may occur due to a potentially increased transparency of government policies, but this depends heavily on the timing of the meeting (early or late in the policymaking stage) and the intentions of the organisers for the feedback provided during the meeting.

N.2. Potential to improve/develop network autonomy: 0

There is no potential for increased self-organisation capacity of networks by disseminating information through public meetings and accompanying Q&A sessions.

F.1. Potential to improve/develop flood insurance: 0-3

If the public meeting informs the participants about flood insurances and future policies regarding insurance, the participants may develop their knowledge and understanding of flood insurance.

F.2. Potential to improve/develop financial resources for community action:

Resources: 0-1

The low influence of participants during public meetings has been addressed previously, and is here again a decisive factor for the potential to change the availability and allocation of community funds for flood actions. If the discussion of the public meeting is the allocation of

funds, by making a strong case for more community funds in the comment session community members might be able to get more funds or make existing ones more accessible. However, considering the previously assumed low influence of participants, the reach of this potential is smaller than for other Finance dimensions.

Abilities: 0-3

If the public meeting addresses the opportunities for funding, community members and network members could be able to increase their own capacity to obtain and manage funding.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 1

Once more, this potential leans on the intentions of the organisers for the comments and questions of participants. If the feedback is genuinely considered and integrated into the policy proposal, there is potential for the communities to influence FRM decisions. Then again, this potential influence is totally in the hands of the organisers, which inherently restricts this potential power of communities.

Abilities: 1

Public meetings, and public hearings in particular, have often been criticised for their lack of participatory involvement, especially during the planning of the meeting (e.g. Rowe & Frewer 2000: 18). The information that is provided often does not include information from other sources than the organisers' own research. In this regard, the potential for proactivity is low. Although communities could also organise public meetings to discuss a policy that they want to implement, it is questionable whether this meeting will attract other, top-level actors in the FRM that can influence this policy top-down too. Whether this proactive participation is then fruitful remains debatable.

Citizen polling

K.1. Potential to improve/develop flood risk knowledge

Resources: 1

By asking citizens about the issue at hand through surveys, opportunities to vote or large-scale referenda, process organisers may gain insights into embedded (local) flood knowledge. However, the knowledge is at that point only elicited by these organisers; in order for other stakeholders to learn, the process organisers have to take another step and disseminate their findings.

Abilities: 1

Although the communication is mostly one-way, from participants to organisers, the 'vehicle' for participant input, e.g. a questionnaire or vote options, can also include information from the organisers to the participants. Nevertheless, any further communication will be very limited.

K.2. Potential to improve/develop learning capacity: 1

Eliciting local knowledge through one-way communication does not allow for any further explanation of the participants' answers either. However, if a large sample or majority of the participants have the same opinion, citizen polling may allow for this opinion to be emphasised. This may increase the willingness of the flood management to integrate this opinion based on local knowledge.

M.1. Potential to improve/develop motivation to mitigate flood risk: 1

Filling in a questionnaire can introduce the participant to issues that he/she had not thought of before, and having to vote for a decision may trigger participants' contemplation of the subject. However, since the information provided by organisers is fixed without any potential further explanation, the persuasive power of the citizen polling remains limited to the initial explanation and justification provided at the beginning of the process.

M.2. Potential to improve/develop motivation to work collectively: 0

As the polling events ask for the opinions of participants individually, there is no collaboration or discussion between the participants of a community and organisers. Therefore, there is no incentive provided during the participatory process that would stimulate the community to work more collectively.

N.1. Potential to improve/develop network performance

Resources: 1

Citizen polling does not include interactions between participants and organisers. There is again, however, the possibility for the organisers to include links to join networks along with the distributed question(s).

Abilities: 0

As there is no interaction between organisers and participants, and no interaction between participants either, it is unlikely that collaboration will increase due to the citizen polling. Therefore, networks will not be expanded, nor will any existing collaboration between members of the flood management structure be increased.

N.2. Potential to improve/develop network autonomy: 0

Individuals giving their vote or opinion regarding posed questions will not increase the autonomy or self-organisation of any network involved in this participatory process.

F.1. Potential to improve/develop flood insurance: 0-2

As the main aim of a poll, in any form, is to ask participants about something, rather than to inform participants, the potential to increase participants' understanding of anything is probably lower than when the emphasis is on information supply. Still, by asking questions about flood insurance, respondents could become more aware of its importance.

F.2. Potential to improve/develop financial resources for community action:

Resources: 0-2

The process of citizen polling will not change the availability and allocation of community funds. However, the outcome of citizen polling may result in more allocated funds if, during or in the polling, participants have indicated to want more funding and what they would use it for.

Abilities: 0-1

The capacity of communities to obtain and manage funds is not influenced by citizen polling, other than that the polling questions might contain some information about methods to apply for funding.

P.1. Potential to improve/develop community participation in flood decision making

Resources: 1-2

Again, the process of citizen polling does not allow participants to become more influential in the form of leadership, negotiation capacity or financial leverage. Only in the case of a binding

voting event can participants develop political leverage. The process and outcome of citizen polling can therefore influence the power of communities.

Abilities: 1

In the case of a questionnaire, participants will not be able to participate proactively; however, a referendum can be initiated by its voters, but that requires a legal act supporting citizens' initiatives.

Citizen advising

K.1. Potential to improve/develop flood risk knowledge

Resources: 1

Overall, participants are randomly but representatively selected from the case study population. The advisory groups only include a small amount of people (5-20 people), which reduces the probability of relevant local knowledge being represented and shared.

In most citizen advising processes, the participants hear experts (expert witnesses). Whether there is potential for the elicitation and sharing of local flood knowledge depends very much on what kind of experts are present to provide the participants with supportive information, as the participants usually base their final deliverable (e.g. recommendations, conclusions, report) on the hearings, considering that the subject often requires more than general knowledge to grasp. If the experts are professionals, lay knowledge may not be represented much. If the experts are local citizens with much knowledge on the issue at hand, their local knowledge may be elicited and shared.

Abilities: 1

The communication between the organisers and other stakeholders, be they participants or experts, is limited primarily to the final deliverable of the participants, as the organisers often only take the role of moderator/facilitator.

K.2. Potential to improve/develop learning capacity: 1-2

The deliverables of the citizen advising process generally amounts to suggestions or recommendations for the process organisers. These outputs are usually not binding, which potentially reduces the probability of their inclusion, and with that the inclusion of local knowledge, in the FRM structure (if the process organisers are part of the FRM in the first place).

M.1. Potential to improve/develop motivation to mitigate flood risk: 2

The experts/expert witnesses provide information and feedback to the advising group about, for instance, flood risk (management). An example of a citizen advising subject would be the implementation of preparedness strategies by the local community or higher levels of government. By being confronted with the expert information surrounding this implementation, the participants may likely become more aware of the flood risk in their area, and about what the suggested strategies can do. It would also give more insights into what

these strategies would mean for the participants and what they might have to or can do themselves.

M.2. Potential to improve/develop motivation to work collectively: 2

The advisory participation is not aimed at the collaboration between participants and process organisers. However, within the advisory group collaboration is required for all participants to complete the deliverable. Hence, the advising requires teamwork and intra-group bonding from the participants. By spending time together working on the same thing, actors might (start to) relate to one another's viewpoints. Nevertheless, the organisers are not part of these deliberations, even though they probably are an important actor in the FRM and their input might be valuable for collaboration. Also, since the participants do not represent any organised institution (only by chance), the probability of inter-group collaboration is low.

N.1. Potential to improve/develop network performance

Resources: 1

Whether the Networks dimension is influenced by the citizen advising process depends much on the composition of the advisory group. As the group only consists of representatives from the general public (randomly but representatively selected), the creation of networks is limited as these people do not represent any organised institution (if they do, this is only due to luck). Naturally, citizens can create a network amongst themselves (during the deliberative sessions; see N.1. assessment for Expert Advising), but with no representatives of organised interests, the creation of networks between different groups of stakeholders is limited. Also, heard experts, process organisers and participants may 'network' during breaks, but this is not considered as part of the PM's potential.

Abilities: 1

Within the potential network of citizens, the collaboration can be increased during the deliberative sessions foregoing the creation of the advisory groups' deliverable (e.g. recommendations). However, outside of this network (if it is existing, see N.1. Resources), it will be difficult to foster collaboration between networks.

N.2. Potential to improve/develop network autonomy: 2

By having had the experience of producing a deliverable in collaboration with what were likely mainly unacquainted persons, the advisory group's individuals may develop organisational skills in relation to the other individuals. This could only be useful for 'network's self-organisation' if the participants form a network based on their collaboration in this citizen advising process.

Any other network, although they may be represented by some individuals in the advisory group, are unlikely to reap the benefits from this advising process.

F.1. Potential to improve/develop flood insurance: 0-3

If the organisers want to receive advice on insurances regarding flood risk, the participants will be informed by experts regarding flood risk insurance, after which they are expected to form opinions on the matter. This may contribute to participants' understanding of flood insurance.

F.2. Potential to improve/develop financial resources for community action:

Resources: 0-3

The availability of funds for community action might be a subject of a participatory process including citizen advising, as the process organisers might want to have recommendations on public expenditure. This could be an opportunity for the participants to make a case for more community budget to address flood risk management on the local level.

Abilities: 0-1

The participatory process itself probably does not increase the organisational capacity of communities to obtain funds, as citizen advising does not include trainings or workshops. However, if the subject of the process is floods and the participants form a network after the process, their mutual interest in flood insurance could lead to the participants collaborating to obtain more funds.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 2

By allowing the citizen advisory group to produce a deliverable, a certain expectation is raised of the process organisers to consider the suggestions/recommendations/outcomes of this deliverable. It should be clear from the outset what the organisers will do with the deliverable, but there is potential for this to be influential regarding the FRM decision.

Abilities: 1

Being invited to participate in an advisory group is inherently not proactive. However, communities can set up an advisory group by inviting people from the community to discuss and hear about flood risk. The question is, nevertheless to whom the final advice would be given since the community itself probably does not have any authority in the FRM. As process organiser, the community would have to invite an actor from the FRM to be informed. Hence, the only thing in which the community can be proactive is to initiate the process and invite all other participants (advisors and recipients).

Expert advising

K.1. Potential to improve/develop flood risk knowledge

Resources: 2

Provided that community members with much (experience-based) local knowledge are considered as experts, an expert advisory group supported by (external) expert witnesses can elicit and share much local flood knowledge. This potential is considered higher than the citizen advisory group's because the selection of participants is purposeful (non-random). Chances of picking out people with relevant expertise then become higher.

Abilities: 1

The communication between the organisers and other stakeholders, be they expert participants or expert witnesses, is limited primarily to the final deliverable of the participants, as the organisers often only take the role of moderator/facilitator (*same explanation as for 'Citizen advising K.1.A'*).

K.2. Potential to improve/develop learning capacity: 2

The deliverables of the expert advising process usually are the same as the citizen advising, i.e. suggestions or recommendations for the process organisers. These outputs are not binding, which potentially reduces the probability of local knowledge being included in the FRM. However, it is hypothesised that actors in the FRM may be inclined to consider experts' advices, more so than citizens' advices, as experts are likely to provide more detailed and profound advice.

M.1. Potential to improve/develop motivation to mitigate flood risk: 2

Assuming that the participants considered as experts are quite familiar with floods (to be labelled an expert), it should be difficult but at the same time not very necessary to change their perception about flood risk. Nevertheless, experts can still learn from each other's expertise, and new knowledge might create new motivation.

M.2. Potential to improve/develop motivation to work collectively: 2

The advisory participation is not aimed at the collaboration between participants and process organisers. However, within the advisory group collaboration is required for all participants to complete the deliverable. Hence, the advising requires teamwork and intra-group bonding from the participants. By spending time together working on the same thing, actors might (start to) relate to one another's viewpoints. Nevertheless, the process organisers are left out of these deliberations, even though they probably represent an important actor in the flood risk

management and their input might be valuable towards the cause of collaboration. Also, since the participants do not represent any organised institution (only by chance), the probability of inter-group collaboration is low (*same explanation as for 'Citizen advising M.2.'*)

N.1. Potential to improve/develop network performance

Resources: 2

Experts often represent some organisation or institution that supports their expert work. Concerning local experts, they may represent the community. With all these parties at one table, the deliberative sessions can be used to foster the creation of new networks (if there weren't already existing networks between these institutions). The process organisers do not attend these sessions though (usually), which reduces the overall potential slightly.

Abilities: 2

If the advising group consists of representatives of all stakeholders in the flood risk management (network) of the same region, the representatives could very well use the sessions, during which they have to negotiate about the deliverable, as networking moments. Having to work together to come to a deliverable could trigger bonding and bridging. Nevertheless, the deliberative sessions only comprise a small part of advising, as most time is spent on 'witness' hearings and other forms of information supply. Also, the process organisers do not participate in the talks.

N.2. Potential to improve/develop network autonomy: 1-2

Again, the potential of expert advising to develop network autonomy depends on the composition due to the presence of network representatives. If they are in the advisory group, their responsibility to produce a deliverable requires all representatives to collaborate. If there is no assigned mediator/manager of the process towards this deliverable, the representatives will have to figure out amongst themselves how to deliver. This could foster the self-organisation capacity of the network comprising all representatives in the advisory group.

F.1. Potential to improve/develop flood insurance: 0-3

If the process organisers want to receive advice on insurances regarding flood risk, the participants will be informed by experts regarding flood risk insurance. Based on their own expertise and the statements of witnesses this may contribute to participants' understanding of flood insurance. However, if the participants are representatives from institutions involved in the FRM, there is an increased possibility that they are not part of the community and the FRM region as individuals (e.g. they live somewhere else). This would reduce the chance of *relevant* individuals increasing their understanding of the importance of flood insurance.

F.2. Potential to improve/develop financial resources for community action:

Resources: 0-3

The availability of funds for community action might be a subject of a participatory process including expert advising, as the process organisers might want to have recommendations on public expenditure. If the expert participants are members or representatives of a community, this could be an opportunity for the participants to make a case for more community budget to address flood risk management on the local level.

Abilities: 0-1

The participatory process itself probably does not increase the organisational capacity of communities to obtain funds. Even if the experts are community representatives, the process of expert advising does not include trainings or workshops. However, if the subject of the process is floods and the participants form a network after the process, their mutual interest in flood insurance could lead to the participants collaborating to obtain more funds.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 2

By giving the expert advisory group the opportunity to produce a deliverable, there is potential for this product to be integrated in FRM decisions. Provided some of the experts represent the community, this process could give communities influence in FRM decision-making. Still, as these deliverables usually comprise only non-binding recommendations, it is up to the FRM actors to decide whether and how to use these.

Abilities: 1

Similarly argued as Citizen advising, if the experts represent the community and initiate the participatory process, this is potentially proactive participation. However, the initiators are still dependent on the authorities or other stakeholders, whom they want to give advice, to accept the invitation to be advised on FRM.

It could also be the case that communities want to be advised themselves by experts. Then again, the question arises to what extent the communities participate in FRM, as being the initiators of this particular participatory process only contributes to proactive FRM participation if they are actually part of the FRM.

Negotiations and mediation

K.1. Potential to improve/develop flood risk knowledge

Resources: 1

For local knowledge to be developed or shared, community members have to be part of the negotiating process in the first place. Assuming they do, as a representative of a community organisation for instance, the negotiations do not allow much for elaborate sharing of knowledge. Knowledge is rather used for the foundation of one's arguments or point of view in the discussion, as the negotiation usually works towards a compromise.

Abilities: 3

Negotiations are a good way of facilitating communication and deliberation between organisers and participants. With representatives of the community present as well as authorities, the potential for communication between authorities and communities is similar. With the possible support of a third-party mediator, all parties have the same opportunities to discuss, convince, persuade and refute each other.

K.2. Potential to improve/develop learning capacity: 2

Although negotiations are not primarily meant for mutual learning, good argumentation of the involved local citizens (community representatives) may lead to the integration of local knowledge-based arguments in the subsequent decision- and policymaking. Nevertheless, the room for the elaboration of this knowledge is limited to arguments for a specific policy subject, as negotiations offer little room for elaborations on indirect subjects.

M.1. Potential to improve/develop motivation to mitigate flood risk: 1

The various perspectives represented during negotiations can give all actors new insights regarding flood risk mitigation. Although negotiations are not necessarily about broadening each other's perspectives, for negotiating towards a mutual agreement concessions have to be made that can be adopted by the actors. This along with newly assigned roles as a result of the negotiations could motivate the actors to act regarding flood risk. This is, however, only applicable to those representatives at the negotiation table, while the public is (usually) not represented. The common lack of transparency concerning the negotiations obscures the creation of the agreement. Then, even though this agreement might call for more action regarding flood risk, people will not be motivated as they have not been part and do not know how decisions were made.

M.2. Potential to improve/develop motivation to work collectively: 2

During the negotiations it may become clear that the present actors need to collaborate to mitigate flood risk, or the actors find a compromise in which all actors contribute to the mitigation. Either way, the representatives of the community at the negotiation table may become more motivated to work together with the other actors after they have listened to all standpoints and arguments, as well as the different perceptions of risk. However, transferring this motivation to the broader community might be difficult, as the transparency of a negotiation is often low and the announcement of the resultant flood policy might not have more effect on non-participants than a broadcasted message about flood risk.

N.1. Potential to improve/develop network performance

Resources: 2

Negotiations are not meant for networking, as all actors primarily seek to defend their own stakes. However, if there is an agreement and it includes notions of collaboration between the actors, they might connect and create a network to deal with the issue about which was negotiated. As there is much deliberation, there is room for more understanding of each other's perspectives as well as skills, experience, and capacities.

Abilities: 2

If one network negotiates about the way forward regarding a certain policy, an agreement might lead to more collaboration between all nodes of the network.

If several networks are represented at the negotiation table and there is an agreement in the end, the networks might start collaborating. For instance, if a consortium (a network) is working on new flood infrastructure, but citizens from different communities (forming a temporary network) have objections against some plans, these networks might start to collaborate to make new plans if all agree during negotiations on modifying the original plans.

N.2. Potential to improve/develop network autonomy: 2

Negotiations can be useful in establishing which actor is responsible for which task when implementing a certain policy. When a network of actors negotiates about the roles and responsibilities of actors, an agreement could improve the self-organisational capacity of this network.

F.1. Potential to improve/develop flood insurance: 0-1

As previously argued negotiations are not mainly about informing the other participants or sharing knowledge. Even if the negotiations address anything related to flood insurance, it is

difficult for participants who do not know much about flood insurance to learn more through these negotiations.

F.2. Potential to improve/develop financial resources for community action

Resources: 0-3

If the negotiations are about the allocation of funds, they provide an excellent opportunity for community representatives (if present) to increase the availability and allocation of funds for community action.

Abilities: 0-2

During negotiations there is little room for learning about how to obtain and manage funds for community organisations, even though the experience might increase the negotiation skills of the representatives. However, the capacity of community organisations to obtain and manage funds can be increased if the negotiations discuss who should be included, or at least consulted, in the decision-making about which policy areas need and get funding.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 2

If the communities are represented as a party equal to all other parties present at the negotiation table, the influence of the community can be high. However, single citizens will not influence the negotiations as they are (usually) not present. Communities and their citizens are therefore dependent on their representatives for them to influence decisions, and need to deliberate beforehand to coordinate their preferences.

Abilities: 1

In light of the previous argument, communities have to be proactive in establishing what they want to achieve during the negotiations. On the other hand, negotiations are difficult to establish bottom-up, as governments and businesses are reserved to accept an invitation to negotiate about something they would otherwise decide amongst themselves. Therefore, whilst negotiations probably need proactive participation from communities, the question is whether the option of negotiations fosters this proactivity.

(Deliberative) workshops

K.1. Potential to improve/develop flood risk knowledge

Resources: 3

Workshops provide great opportunities for participants from all levels and domains of society – research, government, private sector, citizens – to come together and discuss their perspectives, ideas, and perceptions of the workshop’s subject. If many community members attend, the chances of local knowledge being shared increase.

Abilities: 3

Organisers of a workshop usually participate, at least partially, in the activities during the process. This allows for much communication between the organisers and participants about their own knowledge, for instance during a brainstorming or scenario session. The extensive communication during such a workshop could lay the groundwork for continued collaboration after this particular participatory workshop.

K.2. Potential to improve/develop learning capacity: 2

Due to the large potential for knowledge development and sharing as well as communication between participants and organisers, the potential to foster integration of this local knowledge into decision-making automatically increases. There are some possible snags, though. For instance, if the workshop is organised by a community, it is questionable whether any results from the workshop will be considered by the participating authorities. Related to this, it is often either not clearly defined what the results (e.g. deliverable) of the workshop are used for, or the workshop only serves as an exploratory activity without any binding results.

M.1. Potential to improve/develop motivation to mitigate flood risk: 3

As the participants interact with each other and attend informative sessions about floods during the workshop, their awareness of the present flood risk may increase. Visualising this risk, for instance through videos of floods, models and 3D depictions, may increase the motivation of participants to prepare. However, the flood representations during a workshop may still be too abstract for participants to fully grasp the idea of what floods can mean for a community in terms of loss and damage, but this depends on the setup of the workshop.

M.2. Potential to improve/develop motivation to work collectively: 2

With many opportunities for deliberation and with participants receiving the same information, various actors might try to find ways to work together. Community members might recognise

the need to work together as one community to deal with adverse effects of floods, and the need for support from other actors (and vice versa).

However, opponents of for instance the workshop's organisers or of the discussed progressive policies may feel that attending the workshop weakens their own position as opponent (Chess & Purcell 1999: 2688). Workshops are often held to discuss ways of going forward, in a different way than negotiations during which opponents need to attend to negotiate compromises that include their preferences too. Deliberative workshops are aimed to discuss each other's arguments and objections, but in the end to find a way to progress. Opponents of a workshop may therefore decide to not attend, decreasing opportunities for collaboration between pro- and con-networks.

N.1. Potential to improve/develop network performance

Resources: 3

As participants from various backgrounds come together during a workshop and deliberate about a relevant issue, there is a good possibility of actors connecting and creating new networks to assist each other in further actions.

Abilities: 2

Likewise, attending actors may discover new opportunities in collaborating during the workshops either within their existing network if several actors of the network attend or with new networks. The potential for collaboration between networks is again somewhat limited by the possibility of opponents not attending the workshop (see M.2).

N.2. Potential to improve/develop network autonomy: 2

Workshops are, unlike negotiations, not aimed at compromising, delivering a policy that every participant (more or less) agrees with and handing out accompanying responsibilities and tasks. Workshops are rather aimed at broadening knowledge and perspectives and sometimes delivering a report that summarises all insights and findings. This difference makes workshops potentially less useful for increasing the self-organisational capacity of the network that is present at the workshop. Nevertheless, through discussions and presentations actors can discover each other's capacities and skills, which might contribute to a better division of responsibilities and tasks in the aftermath of the workshop.

F.1. Potential to improve/develop flood insurance: 0-3

As a generally informative participatory process, workshops dealing with flood insurance can greatly increase the knowledge of the participants about flood insurance. The often facilitated

discussions can lead to more insights from different perspectives about the need for flood insurance.

F.2. Potential to improve/develop financial resources for community action

Resources: 0-1

As workshops are usually not used for (binding) decision-making, there is a low potential for changing the availability and allocation of funds for community action. Still, an outcome of the deliberations may be a recommendation for more community funding, and community members might use the opportunity to lobby for more funding in discussion with the relevant authorities.

Abilities: 0-3

If the workshop is organised by, for instance, a funding authority to discuss how to apply for and manage funds, communities may become more capable in obtaining and managing funds for flood risk action. Through possible informative sessions or plenary discussions, this capacity building potential of workshops is high.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 2

As a generally non-binding form of participation, the workshop cannot serve as political leverage or increased negotiating capacity for communities, regardless of whether they are the organisers or participants. There is some potential for them to influence FRM if FRM actors are present at the workshop and policies (proposals) are discussed during the workshop. This could give communities the opportunity of lobbying or persuading, although they may not be the only actors present at the workshop trying to influence policymaking.

Abilities: 2

As organisers of the workshop, communities may use the workshop to broaden the authorities' perspectives by discussing FRM decisions and the ideas of community members. Workshops might be somewhat more attractive for authority personnel to attend than other forms of participation for which they can be invited, such as (binding) negotiations, or for being the recipients of the recommendations of for instance a citizen advisory group, which would raise the expectation of the recommendations' integration. The workshop's potential to make communities proactive in FRM is therefore higher than other forms, but it is still dependent on the willingness of those actors already part of FRM (if communities are not yet part; if they are, the problem of proactive participation would be different).

Simulations and role-playing

K.1. Potential to improve/develop flood risk knowledge

Resources: 1

Simulations are generally meant to test the adequacy and effectiveness of current *plan de campagnes* and coordination between the responsible authorities and communities. There is usually no formal facilitation of local feedback regarding for instance flood dynamics, although feedback about the communication between authorities and communities can obviously be very helpful. Local flood knowledge is not developed much during the exercise beyond learning about evacuation protocols, although they may also learn something about, for instance, the areas with the highest risk of flooding.

Abilities: 2

Although the communication about expert and lay knowledge of floods is limited to immediate preparation and response phase knowledge, simulations are a very useful method for testing the communication between organisers and participants, usually authorities and communities respectively. Communication is probably one of the most important aspects of an evacuation and testing this could improve the communication where necessary.

K.2. Potential to improve/develop learning capacity: 1

Although simulations are used for testing the current state of FRM flood knowledge (in the form of adequate estimates of requisite and available response time, for instance), the participants are mainly present for their own experience and for making the evacuation exercise as close to reality as possible. The integration of local flood knowledge is not likely to happen during these participatory processes; only if feedback from participants provided during the exercise is integrated might this occur.

M.1. Potential to improve/develop motivation to mitigate flood risk: 3

It is often found that people are most motivated to do something about flood preparation right after a flood event. The simulation of real events is the closest thing to such an event and the most appropriate way of confronting participants with what could happen in reality. Abstract theories or mapped visualisations can only go so far towards the realisation of participants regarding, for instance, the risk of flooding their community faces. A 3D online simulation or a real-time emergency exercise therefore has greater potential of motivating people.

M.2. Potential to improve/develop motivation to work collectively: 3

Although with a greater motivation participants may already be more motivated towards collective action too, there remains a difference between individual action and collaboration towards flood risk mitigation. Nevertheless, the simulation of a flood event and accompanying response measures may expose the limits to what all actors can achieve before, during, and after a flood without proper collaboration. Communities may notice that action coordination is not sufficient without communication (collaboration) with authorities, and vice versa.

N.1. Potential to improve/develop network performance

Resources: 2

If it turns out during the simulation that the current coordination and measures during flood events are not sufficient, participants to the simulation exercise might create new connections to deal with the issues more adequately. Authorities may consult participating citizens regarding the communication and form a new network of coordination and communication. However, usually simulations are done within an already (extensive but regional) network of authorities and citizens, which diminishes the potential for new network creation slightly.

Abilities: 2

Simulations potentially bring all participants together to experience what could happen and to collaborate to deal with the potential event. This could develop and improve the collaboration within the network of authorities and communities that deal with the simulated flood event. If there is no such network, it might be developed as a result of the simulation. Outside of this network, it is difficult to see increased opportunities for inter-network collaboration, except if external actors provide experience-based feedback on what could be done better.

N.2. Potential to improve/develop network autonomy: 3

Simulations offer a great opportunity to test the organisation of the network of authorities and citizens, in terms of evacuation and other response measures. Testing potentially uncovers the flaws in the organisation, which could lead to the implementation of improvements. This would increase the self-organisation of the network regarding flood preparation and response.

F.1. Potential to improve/develop flood insurance: 0-2

Although a simulation may not provide the technical details of flood insurance, being confronted with the possible event of damage to one's house may foster the understanding of participants about the importance of flood insurance.

F.2. Potential to improve/develop financial resources for community action

Resources: 0-1

During the simulation it may become clear that the role of communities (citizens themselves) in the preparation and response to flood events should be larger. This could potentially increase the availability and allocation of funds for community action, although it is debatable whether this change is attributable to the setup of the PM (the simulation event), or rather to this specific realisation of the process organisers that actually follows the evaluation of the PM.

Abilities: 0-1

A simulation is not regarded as an exercise useful for communities to increase their capacity of obtaining funds. However, there is a possibility that it is useful for communities to know which aspects of flood risk mitigation need improvement and perhaps more funding, if the simulation shows that the capacity in this specific aspect is lacking. This is a slightly different form of managing funding than previously addressed, but the possibility warrants the consideration.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 1

Although simulations are mainly used for testing the decision-making quality during flood events rather than actually making decisions about flood policies, a poor rating of the coping process, and also the communication and coordination, may lead to new decisions to change the current FRM. With communities present during the simulations and evaluations, there might be some potential for these participants to influence how the current structure should change to improve the preparation and response.

Abilities: 1

A simulation requires much preparation time from the process organisers, whilst participants are not asked to prepare much in detail (except for knowing what the participatory process will consist of). Also considering that communities probably do not have the capacity or tools (maybe not even authority) to organise a real-time simulation of a flood event or a 3D simulation of the coordination and communication (e.g. Chen 2014), the potential for proactivity is considered low.

Citizens' science

K.1. Potential to improve/develop flood risk knowledge

Resources: 2-3

By being involved in a data collection initiative, the knowledge of participants may increase. As data collectors, they probably hear about what the data is used for and what kind of results the data delivers. Also, there should be opportunities for participants to provide feedback, for instance about what to measure and where to do this. Process organisers, especially if not close to the community, may not always know the best locations for measuring or the most relevant things to measure; local knowledge is then helpful. This becomes particularly valuable in situations of uncertainties in measurement, such as risk assessments, as measurement methods – especially traditional ones – cannot render one specific set of results.

Abilities: 3

The potential for increased communication is high for this PM, as communication is essential in citizens' science, for both sides. For participants, they would like to have feedback on their data collection, both in terms of the quality and about the conclusions drawn from the data. For the organisers, they want to continuously update the participants with new knowledge and perhaps also new measuring assignments. The quality of the communication is important because organisers should not demand too much from participants and participants should indicate when something in the data collection is not going according to plan or when they have feedback or input for improved measuring. It is thus argued here that the potential is high because the need for (good) communication is high.

K.2. Potential to improve/develop learning capacity: 1-2

If the data collection is initiated by non-local actors, the local participants are probably asked to provide a form of objective data (measuring, gauging). This would not allow much room for the integration of local knowledge into the collected and supplied data, let alone for the integration of this knowledge into the FRM structure. However, if the communities organise the citizens' science themselves, for instance because they want FRM actors to have a better grasp or overview of their region, their own knowledge may be the first thing they integrate into the information that they provide the FRM with. This may allow for the integration of local knowledge into the FRM structure.

M.1. Potential to improve/develop motivation to mitigate flood risk: 2

By giving citizens the opportunity to be involved in research about FRM, the participants may become more connected to the problem of flood risk and with that more motivated to act. This

depends very much on the reception of the idea of citizens' science, though, if participants feel that organisers are trying to let them do research without any (monetary) compensation. This could also cause the opposite of motivation: cynicism.

M.2. Potential to improve/develop motivation to work collectively: 2

It is necessary for the collaboration between organisers and participants to increase, due to the need for good communication between the collectors and researcher. The fact that the organisers need the participants for doing a task, which they would otherwise do themselves but do not have the time or resources for, may trigger a sense of responsibility or significance in the participants, increasing also their motivation to collaborate with those who entrust this task with them.

Regarding intra-group collaboration, those participants who feel connected to the FRM problem may coordinate and standardise their data collection and findings to improve the overview over all data for the process organisers. However, this requires an extra effort by the participants; it is expected that not many will be interested in investing even more time in these voluntary actions.

N.1. Potential to improve/develop network performance

Resources: 3

There is a high potential for the creation of a network between the organisers and the participants regarding flood risk research. If both sides put efforts into maintaining frequent communication and deliberation about problems that may arise, the network could be sustained to form long-term research collaboration.

Abilities: 2

Within the local research network established by citizens' science or any other preceding participatory process, the dependence of organisers on participants for data and of participants on organisers for research results (of societal relevance) may trigger more collaboration. This depends, though, on the quality of the data and its (subsequent) use by the organisers. If they do not use the data, for instance because it is not useful or too inaccurate, participants may become wary of continuing the collaboration.

Regarding inter-network collaboration, the data that is collected in this participatory process is likely to be case-specific and locally relevant. Therefore, it may not be so relevant in terms of data collection for the local research network to collaborate with other networks. However, if the applied methodology of data collection is successful, this may be communicated to other

networks. The conclusions drawn from the research by the organisers may be generalisable, but this would not be part of the participatory process.

N.2. Potential to improve/develop network autonomy: 1

Citizens' science could increase the skills of the participants to do research (learning by doing), and this could potentially increase the self-organisational capacity regarding data collection of the participants. However, this organisational capacity would be limited to this data collection, and would not be applicable to other aspects of organisation.

F.1. Potential to improve/develop flood insurance: 0-2

If the participants have to collect data for researchers to be able to establish insurance premiums on more updated data about, for instance, water levels, the inclusion of these participants in the process, and their confrontation with facts about flood risk corresponding to the data, may develop their understanding of why flood insurances are important. It remains debatable, though, whether citizens are likely to collaborate (indirectly) with insurance companies, as more updated data may also increase premiums.

F.2. Potential to improve/develop financial resources for community action

Resources: 0-3

If the data collected by participants proves fruitful for the process organisers (be they higher authorities, researchers, municipalities, or community groups), the community effort might trigger more funding opportunities to continue its data collection. If obtained, this funding could then maybe also be used for new community initiatives regarding data collection or subsequent information dissemination.

Abilities: 0

Taking part in citizens' science does not contribute significantly to the capacity of community organisations to obtain and manage funding for their own activities.

P.1 Potential to improve/develop community participation in flood decision making

Resources: 1-2

As an important source of data about the flood risk in the region, the participants in citizens' science may influence FRM decisions that are based on this data collection. However, it is unlikely that this data collected by amateurs is the only source on which FRM decisions are based. Also, as argued before the data supply (if done objectively) does not include any knowledge or perspectives of the collectors themselves. This begs the question to what extent

the potential influence of the participants, through the data collection, represents the interests they have regarding FRM.

Abilities: 2

Communities can start data collection initiatives for a couple of reasons, such as to support the municipality or other authorities in making FRM decisions, or to make clear that, for instance, water levels have been rising and greater attention is required for a potential flood problem. Therefore, there is a good potential for proactivity concerning this kind of PM. However, depending on the type of measurement or monitoring the PM might be limited by the fact that citizens may need support from higher levels of government or researchers, in terms of funding and technical tools, to be able to conduct accurate (useful) measuring.

Citizen engagement initiatives

K.1. Potential to improve/develop flood risk knowledge

Resources: 2-3

One of the main characteristics of citizen engagement initiative is that local knowledge is used as a basis for the actions in this category. As participants use their local knowledge, other participating actors (also other local actors) can learn from this and develop their knowledge base. The potential to share local knowledge can decrease, if the initiatives do not involve other actors (including authorities).

Abilities: 2-3

Again depending on the involvement of other actors than the local participants (who can also be the organisers of the process), communication about local knowledge can be increased if authorities are involved or interested in the results of the participatory process.

K.2. Potential to improve/develop learning capacity: 2

However, as authorities are often not directly involved in the process, it might be difficult for the participants with local knowledge to reach these authorities and convince them of using the acquired or established local knowledge for FRM decisions. It depends on whether the FRM structure sees the project and its results as useful and/or legitimate, as there is no official facilitation of the integration of this knowledge (e.g. no binding or advising role for the project).

M.1. Potential to improve/develop motivation to mitigate flood risk: 2-3

Projects established for and by communities can come in very diverse forms, but often the project addresses flood risk in a creative and educative way. By doing more than just citing facts about risk or giving data about flood dynamics, and instead attempting to connect people to the problem, citizen engagement initiatives have a high potential for motivating people to act regarding flood risk mitigation and preparation.

M.2. Potential to improve/develop motivation to work collectively: 2

By establishing a connection between participants and flood risk, people might become more motivated to act (as argued prior). This could coincide with a motivation to act together, especially considering that many people might not be so sure what to do (since the projects are not always aimed to be informative regarding flood risk mitigation). Also, the projects might indicate that collaboration is necessary for effective action against flood risk. However, since for instance the connection between authorities and communities is not facilitated, the potential

to foster motivation to collaborate with other actors, outside of the direct community network, is regarded to be somewhat decreased.

N.1. Potential to improve/develop network performance

Resources: 2

Bottom-up initiatives can be used to create or broaden networks between the organising community members and other members, as well as other stakeholders *if* they participate in the initiative. Being initiated by fellow citizens, community members may feel more inclined to connect with this initiative than when 'distant' authorities address the matter.

Abilities: 1-2

Although the local initiatives regarding awareness or local knowledge may be attractive to fellow citizens and actors, it is uncertain whether these projects can connect the local actors with externals not affiliated with local issues (and perhaps local symbolism used in projects). This requires the external actors to in the first place participate (and need to be invited as an open invitation will likely not reach them), and secondly to see potential for both parties in collaboration.

N.2. Potential to improve/develop network autonomy: 1-2

Initiating a bottom-up initiative requires organisational skills of the organisers. By performing this initiative and by connecting to interested actors, they might develop those organisational skills. However, whether the self-organisation of the (regional/local) network dealing with flood risk is increased by this project organisation is debatable.

F.1. Potential to improve/develop flood insurance: 0-3

Depending on the focus of the citizen engagement initiative, participants might be informed about the usefulness and necessity of flood insurances.

F.2. Potential to improve/develop financial resources for community action

Resources: 0-3

The engagement initiatives might be used for the promotion of community actions. A very straightforward example is crowdfunding (e.g. in combination with a festivity, art exposition, food), during which the organisers (communities in this case) may ask participants to donate money for the cause of community flood action.

Abilities: 0-2

The experience with promoting community actions might give the organising community more capacity in obtaining and managing funds. However, they have to learn this by themselves, as it is unlikely that a bottom-up initiative addresses how to obtain (apply for) and manage flood risk funding.

P.1 Potential to improve/develop community participation in flood decision making**Resources: 1**

Bottom-up initiatives have a low potential of influencing FRM decisions, especially if there is no direct collaboration with authorities part of the FRM structure. Still, if the action shows potential for raising awareness among, motivating, stimulating, and urging people to participate in flood risk actions, the authorities may give notice to the actions and consult or consider any findings or recommendations coming out of these bottom-up initiatives.

Abilities: 2-3

A bottom-up initiative addressing flood risk is per definition a pro-active move by the organising community. However, this does not mean directly that the initiative is regarded as or integrated in the FRM, if the organisers are not part of the FRM structure. Nevertheless, proactivity might trigger the FRM actors to include the organisers in the FRM to stimulate future development of these initiatives. This could help the FRM in raising awareness or increasing knowledge among local actors that participate in these initiatives.

Annex F. Evaluation of participatory processes for capacity building: questionnaires for the evaluation of process and outcomes

Debriefing session at the end of the Participatory Action: evaluation of understanding and learning

Please, fill in this form in silence. Write in only few words or phrases; no need for long sentences. The information that you provide is crucial for our research, so answer as fully as you are able. Write clearly.

1. Why did you participate in today's activity?

2. Overall, how have you experienced today's activity? (e.g. helpful, useless, thought-provoking, dull, satisfactory, frustrating)

3. Do you feel all important interest groups were represented today? Yes / No
If not, who else would you have invited?

4. Was the purpose of today's activity clear to you?

0 = not at all; 1 = slightly 2 = moderately 3 = completely

If not, what did you not understand?

5. Do you think everyone could share their knowledge and express their opinion during the activities?

0 = not at all; 1 = slightly 2 = moderately 3 = completely

Which stakeholder groups were more active and which one were less active?

6. What have you learned personally and/or professionally from today's experience, if anything? Indicate one or two **specific, concrete** things that you learned about:

a. The way floods occur and can put your life and your properties at risk:

b. How you can personally prepare for flood events (e.g. where to find information about flood risk, what you can do at home to be safe, where to seek for help in case of emergency, etc.):

c. Measures that the government can take to prevent and protect citizens from floods:

d. How you can become involved in public decisions about measures to prevent and protect citizens from floods:

e. How you can engage with other fellow citizens in activities for improving preparedness for flood events or for contributing to public decisions on flood protection:

f. How you can access financial funds for activities aimed at improving flood preparedness or flood mitigation

7. Do you think that by participating to today's activity you had the chance to contribute with your knowledge and experience to flood risk decision making in your region?

0 = not at all; 1 = slightly 2 = moderately 3 = completely

-
8. Have you met new people you might collaborate with in the future for initiatives concerning flood preparedness and mitigation? Yes / No

If yes, who are they? (e.g. citizens interested in taking action, representative of public authorities, representative of private organizations such as NGOs, consultancies; no need to write names) ?

9. To what extent do you think that the communication between public authorities and citizens concerning flood risk management has improved or has potential to improve as result of today's activity?

0 = not at all; 1 = slightly 2 = moderately 3 = completely

What do you think could be done more to improve communication between citizens and public authorities?

10. To what extent do you think that flood management policymakers will be more open and proactive towards the participation of citizens in flood risk decision making as result of today's activity?

0 = not at all; 1 = slightly 2 = moderately 3 = completely

What do you think could be done more to ensure better citizens' participation in flood risk decision making?

11. Any other thoughts, issues about today's activity that you would like to share with us?
-
-

Evaluation questions for the organisers of the participatory process (within few days after the Participatory Action took place): self-reflection on the process design

1. Overall, as organizer, how have you experienced the Participatory Action? (e.g. helpful, useless, thought-provoking, dull, satisfactory, frustrating)
2. How many participants took part in the Participatory Action?
3. Which stakeholder groups were represented during the Action?
4. Was there any missing stakeholder group (either because people could not join or because you realized you did not include them)? If yes, who was missing and how do you think this has affected the activities?
5. To what extent the purpose of the Participatory Action has been achieved? If you did not fully achieve the initial purpose, why is that? What could you have done differently?
6. Did you complete all the planned activities you designed for the event in a satisfactory way? If not, what did you not manage to do and why?
7. Have the participants actively participated to the activities of the event according to their 'assigned' role? If not, why is that and what could you have done differently?
8. Did the process meet the monetary and non-monetary (time, personnel) restraints? If not, why? What could you have done differently?
9. Any other lesson learned from the Participatory Action that may be useful for the next time you will implement another Action?

Short participants on-line survey about 1 month after the Participatory Action: evaluation of changes in attitude, perception and behaviour

About one month ago you participated to an initiative organized by [name] concerning [description]. Now we would like to invite you to take a short on-line survey which will help our research and the planning of future activities. The survey consists of 8 questions and will take less than 10 minutes of your time. Please take a moment to think back to the last 30 days after you participated to the event on [date]. Try to recall things you did, said, shared as result of your participation to the event. Thanks for your collaboration!

1. Could you share with us 3 things you have learned as result of your participation to the event? _____
2. Would you say that your perception of flood risk has changed?
0 = not at all; 1 = slightly 2 = moderately 3 = completely
If some change occurred, what and how has your perception changed? _____
3. Have you taken any concrete action in relation to flood preparedness and mitigation over the past 30 days after the event? Yes / No
4. If yes, what did you do? (multiple-choice option)
 - you shared your knowledge about flood risk with fellow citizens
 - you shared your knowledge about flood risk in your professional network
 - you shared your experience about participating in the event of [date] with fellow citizens
 - you shared your experience about participating in the event of [date] in your professional network
 - you sought information about flood risk and how to be prepared
 - you took concrete actions to protect your properties
 - you engaged in conversation with other interested fellow citizens to start an initiative together about flood risk mitigation
 - you engaged in conversation with other interested colleagues in your professional network to start an initiative together about flood risk mitigation

- you joined events/activities organized by public authorities on flood risk mitigation in your region
 - you took action (e.g. collected information, contacted relevant actors) on how to be more involved in public decisions on flood risk management
 - other _____
5. If yes, why did you decide to take action? _____
6. If no, are you planning to take any of the following actions within the next 30 days? (multiple-choice option)
- sharing your knowledge about flood risk with fellow citizens
 - sharing your knowledge about flood risk in your professional network
 - sharing your experience about participating in the event of [date] with fellow citizens
 - sharing your experience about participating in the event of [date] in your professional network
 - seeking information about flood risk and how to be prepared
 - taking concrete actions to protect your properties
 - engaging in conversation with other interested fellow citizens to start an initiative together about flood risk mitigation
 - engaging in conversation with other interested colleagues in your professional network to start an initiative together about flood risk mitigation
 - joining events/activities organized by public authorities on flood risk mitigation in your region
 - taking action (e.g. collected information, contacted relevant actors) on how to be more involved in public decisions on flood risk management
 - other _____
7. If no, why are you not going to take any action? _____
8. Is there any other issue, thought that you would like to share with us in relation to your experience with the participatory activity of the [date]? _____