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Participatory social capacity building: Conceptualisation and experiences from pilots for flood risk mitigation in the Netherlands

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ABSTRACT

Social capacity building is increasingly suggested as strategy for supporting vulnerable communities in dealing with natural hazards such as floods. However, research on the empirical implementation of social capacity building is still limited. This paper presents a conceptualisation and an empirical case study of participatory social capacity building for flood risk mitigation in the Netherlands. We designed and implemented two distinct participatory pilots, studied the processes and outcomes to assess what factors influence social capacity building, and assessed how existing capacity may be leveraged. Social capacity is herein conceptualised as consisting of five dimensions: Knowledge, Motivation, Networks, Finance, and Participation. The first pilot included a walk in flood-prone areas and a discussion session with citizens and flood risk authority representatives. The second pilot involved elementary school pupils interviewing senior citizens with flood experience. Based on qualitative observation and analysis of the processes, findings suggest there is good potential for mutual sharing of knowledge if all participating actors are equal in the participatory process, and that informal settings open up debates, but also that leveraging existing social capacities might inadvertently impede the dissemination of knowledge that is vital in coping with (future) disaster risks.

1. Introduction

Capacity building is increasingly mentioned as a viable strategy towards an envisioned future of less vulnerable societies (Adger et al., 2005; Cuthill and Fien, 2005). Coming from development studies, wherein it is generally described as increasing the self-reliance of communities, capacity building has recently gained more international prominence through its link with sustainable development (Kuhlicke et al., 2011). Yet, exactly what capacity building entails and how it is fostered remains widely debated, as current approaches to capacity building vary from protecting the rights of communities and supporting their cause with top-down measures to encouraging communities to stand up for themselves and initiate bottom-up actions (Eade, 2007; Kuhlicke et al., 2011). Objectives of capacity building may also vary between left-leaning goals of allowing communities to organise themselves and determine their own values and priorities, and more neoliberal approaches of delegating more responsibility to citizens (Eade, 2007), potentially to downsize governmental budgets or privatise public services. In line with the perception of Eade (2007: 632) that capacity building is not a ‘thing’ with a universal recipe for ‘how to do it’, we adopt the term ‘social capacity building’ to generally describe the

development of tools and resources (‘capacities’) enabling citizens to cope with socio-ecological stresses and pressures, such as disasters, in their specific situation.

In spite of much theoretical debate on capacity building, there is still scant literature about the empirical implementation and analysis of capacity building involving citizens and authorities (Kuhlicke et al., 2011). Insightful contributions focus on, for instance, risk communication (Höppner et al., 2012) or building capacity of scientists to influence and address policymakers (Laing and Wallis, 2016), but do not directly address capacity building processes focusing on citizens’ capacities. By drawing lessons from two pilots implemented in the Netherlands we attempt to fill this gap by empirically analysing how social capacities can be built whilst involving citizens, communities, and (public) organisations, and which factors influence such processes.

Our investigation seeks to contribute to the understanding, development and application of social capacity building efforts in the context of disaster risk and vulnerability management, in particular in the domain of flood risk management (FRM). In FRM, the frequency and magnitude of flood damages experienced worldwide, coupled with the increased flood risk posed by climate change (Alfieri et al., 2018; Hirabayashi et al., 2013), suggest that national governments cannot

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provide full protection against flood risk. Traditional FRM, focusing on preventing floods, needs to be revisited and guided more towards mitigation and adaptation (focusing on vulnerability and exposure instead of the hazard; Kron, 2005). In addition, there is a call for more participation of citizens in (governmental) interventions in FRM (e.g., in the EU Flood Directive). Participatory social capacity building can be valuable in FRM as it may help reduce local vulnerability, and possibly exposure as well, whilst engaging citizens and leveraging their capacity. In light of that, we draw on the growing body of literature supporting participation as tool for citizen empowerment (Reed et al., 2018) and explore how participatory processes contribute to social capacity building in FRM. We analyse how the design and implementation of participation influence the process and outcome, how existing social capacity can be leveraged to build new capacities, and derive enabling and disabling factors for participatory social capacity building.

Itteren and Borgharen, two adjacent villages along the Meuse river near Maastricht in the south of the Netherlands, provide an interesting case to study participatory social capacity building. The parishes were heavily flooded twice in the 1990s and the citizens developed an array of coping mechanisms as well as more deeply embedded practices to deal with flood risk (Engel et al., 2014). To reduce flood risk the Dutch government invested in flood protection infrastructure, and the participatory approach to its implementation (coordinated by the *Consortium Grensmaas*) resulted in a network of knowledgeable governmental authorities and citizens. Yet, as the new infrastructure near Itteren and Borgharen was to be completed in 2018, this network is likely to be disbanded (in the near future). Also, while the flood defences certainly diminished the chance of flooding, a residual risk remains, and the dynamics of a flood will most likely be different. Thus, while some social capacities are well developed, there is a local need for building new (and improving existing) capacities for FRM.

We present our theoretical framework in Section 2, drawing on the extensive literature about participatory approaches in (environmental) governance and combining related insights with social capacity building theory. Sections 3 and 4 briefly discuss the preceding assessment of social capacity in Itteren and Borgharen within the international project CAPFLO,¹ addressing participatory social capacity building for flood risk mitigation, and our methodology. Thereafter we present our results in Section 5, followed by a discussion of insights regarding participatory social capacity building.

2. Participatory social capacity building: theoretical framework

2.1. Social capacity building

Social capacity is a fairly new concept in environmental governance theory. It is an umbrella term that incorporates sociological and political elements of social capital (e.g., networks, trust, norms); civic capacity (citizen's ability to participate in policymaking); and other social, political, financial, and intrinsic characteristics of an actor or group of actors influencing its vulnerability (Kuhlicke and Steinführer, 2010). In this paper we adopt the definition of Kuhlicke and Steinführer (2010: 16) who describe *social capacity* in the context of natural hazards as “all the resources available at various levels (e.g., individuals, organisations, communities, institutions) that can be used to anticipate, respond to, cope with, recover from and adapt to external stressors (e.g. a hazardous event)”. Such resources, including the strategies and knowledge on how to use them, are context-dependent as capacities for FRM in one community may not be relevant for other policy domains or in different socio-ecological settings. An elaborate characterisation of social capacity was developed in the CAPFLO project (based on earlier work by Kuhlicke et al., 2011) in which five key dimensions of social capacity were articulated: Knowledge, Motivation, Networks, Finance,

and Participation (Table 1). The CAPFLO categorisation applies the original typology by Kuhlicke et al. (2011) to FRM specifically (but remains easily applicable to other environmental policy domains) and substitutes the type of ‘institutional capacity’ for participatory capacity to emphasise the relevance of citizen inclusion in social capacity building.

As social capacity for FRM is defined as all the resources available to cope with flood risk, social capacity *building* for FRM comprises efforts for acquiring and being able to use those resources in a specific context of flood risk. The underlying assumption is that governments ensure a certain level of flood protection through flood protection infrastructure and emergency plans (minimising hazard and exposure), while citizens prepare, with governmental support, to face the unavoidable risk of flood events and related consequences by taking preventive and preparedness measures (minimising vulnerability, and to some extent exposure). Social capacity building is about finding ‘local solutions to local problems’ (Atkinson and Willis, 2006: 3), involving both governments and citizens with divergent existing social capacities.

2.2. Participation in environmental governance

Participation, also referred to as stakeholder involvement (governments, businesses, NGOs, citizens) or citizen engagement, is a matter of extensive academic debate. Many forms of participation exist (e.g., Fung, 2006) as well as many categorisations of participation (Reed, 2008). Arnstein (1969) was among the first to distinguish a typology based on power delegation, ranging from informing citizens to citizens controlling decision making. In the context of policymaking, there are several definitions of participation. Reed (2008: 2418) defines participation “as a process where individuals, groups and organisations choose to take an active role in making decisions that affect them”. Rauschmayer and Risse (2005: 651) regard (public) participation as “integrat[ing] the public into the decisional process”. Juxtaposing these perspectives, participation requires an initiative from both policy-makers and stakeholders.

Despite theoretical advantages, such as creating policy acceptance and mitigating conflicts (Newig et al., 2018; Kochskämper et al., 2016), participation in environmental governance is regularly criticised. For example, public hearings are often condemned for a lack of effectiveness due to lacking interest from the public and as a potential cause of more antagonism between groups of participants (e.g., Few et al., 2007; Innes and Booher, 2004; Fiorino, 1990). More complex processes of participation aimed at collaboration, consensus building or even empowerment, also have potential disadvantages: these often require the involvement of external experts and facilitators and take longer both to prepare and implement, asking for additional motivation from citizens whilst public apathy is already a genuine problem (Bloomfield et al., 2001). Some also argue there is a general overly optimistic view of the outcome of complex participatory processes, specifically regarding consensus building (Few et al., 2007).

2.3. A participatory approach to social capacity building

Overall, there is a need for balancing between the purpose and the ‘complexity’ or form of the participatory process. In the environmental literature, public participation is often directly linked to decision-making processes (e.g., Newig et al., 2018). Yet, participation can and should be adapted to needs and circumstances: besides supporting policymaking and decision-making, participation can also be implemented, for instance, to educate (beyond mere informing) which increases knowledge; to connect and establish relationships (‘networking’) which strengthens networks and communication; and to leverage the knowledge and abilities of citizens (Wynne, 1992). Simpler participatory processes may work just as well for education as more complex processes may for decision-making, *ceteris paribus*: provided the organisers adhere to certain principles of participation (see e.g.,

¹ www.capflo.net.

Table 1
Dimensions of social capacity for flood risk management (adapted from Kuhlicke et al., 2011; Ballester and Parés, 2017).

| Dimensions of social capacity | Examples |
|-------------------------------|---|
| Knowledge | Awareness of flood risk Capacity to prepare for and deal with the flood hazard Capacity to understand the flood hazard Capacity to disseminate and exchange knowledge Capacity to understand relevant measures and policies |
| Motivation | Proactive attitude for preparedness and protection Capacity to generate social commitment |
| Network | Capacity to use networks for FRM Capacity to create networks for FRM |
| Finance | Access to financial resources for FRM projects Capacity for entrepreneurship in FRM |
| Participation | Capacity to access information about FRM and policy Capacity to put forward opinions and proposals about FRM Capacity to deliberate about FRM action and policy Capacity to be proactive in FRM (e.g., citizens' initiatives) |

Reed, 2008; Irving and Stansbury, 2004; Glick, 2000). As a basic condition, meaningful engagement entails that participants not only have an actual say, but also that a level playing field is created to enable genuine iterative and two-way learning (Prell et al., 2007). Therefore, developing ways of supporting and implementing appropriate forms of participation may prove valuable to build and leverage social capacities of citizens (in turn, addressing such capacities may indirectly increase the quality of and support for decisions; Newig et al., 2018).

Accordingly, we define *participatory* social capacity building as the engagement of citizens in capacity building efforts who, by leveraging existing social capacities (skills, abilities, knowledge), develop new capacities and strengthen existing ones; thus improving the overall citizens' capacity to cope with external (hazardous) pressures. Herein, we regard the participatory aspect more as 'bottom-linked' participation that emphasises the need for multi-level governance efforts (i.e., material or financial support from governmental institutions) when pursuing community initiatives (Eizaguirre et al., 2012), thereby blurring the distinction between top-down and bottom-up approaches to participation that others have pointed out (e.g., Kuhlicke et al., 2011). Such an approach recognises the requisite balance between not undermining governmental authority and not creating dependency of citizens on governmental support, two potential pitfalls of capacity building (Eade, 1997).

3. Assessment of social capacity for FRM in Itteren and Borgharen

In 2016, the CAPFLO project assessed, through a comparative study of five cases in five European countries, local social capacity for FRM using the characterisation of social capacity as shown in Table 1 (Ballester and Parés, 2017). The research in Itteren and Borgharen, sites for the Dutch study, included semi-structured in-depth interviews, a door-to-door survey and desktop research, all focusing on regional FRM and social capacity. The data was triangulated to qualitatively assess the local social capacity. Interviewees included authority representatives (Maastricht municipality, Regional Water Authority, Safety Region, Province of Limburg, Rijkswaterstaat²) and local citizens, including representatives of the local parish councils. Eighty completed surveys were submitted.

Overall social capacity was assessed as fairly well developed in Itteren and Borgharen, but some capacities are underdeveloped, potentially undermining how the parishes address residual flood risk. For instance, there is little *Motivation* amongst citizens in the parishes to take measures regarding flood risk, for two reasons. First, many citizens now feel they are fully protected from flooding by the new flood

defences, whilst a small 'residual' flood risk (the modelled return period of critical water levels after construction of flood infrastructure) remains. This is also true for young or new citizens that have not experienced any floods. Second, a small group of citizens involved in the local parish councils consider their own experience-based *Knowledge* about floods, gained in the 1990s and afore, as sufficient. This is part of what Engel et al. (2014) identified as a 'disaster subculture' in these parishes. However, river and flood dynamics have changed due to the new dikes, possibly rendering obsolete some of the local knowledge about, for instance, the speed and intensity of floods.

Although flood risk is perceived as low in the parishes, there is a good *Network* of community and authority representatives built around FRM issues. The construction of new dikes in this area started in the mid-2000s, and is realised by the *Consortium Grensmaas* as part of the national *Maaswerken* programme (Wesselink et al., 2013). This Consortium has held regular meetings with stakeholders, including authorities and any interested citizens (usually a small recurring group). These meetings have contributed to improved relationships and communication between citizens, the Consortium and authorities. Together with the parish council groups addressing other local issues, they provide local citizens with some *Participatory* opportunities, for instance to express concerns. Despite good relations, there is still room for improvement regarding flood risk communication. For instance, the notion of flood risk is often not clear to citizens, as technical terms such as a 'flood protection level of 1:250' are still used, which can be confusing and misinterpreted (see e.g., O'Sullivan et al., 2012; Burningham et al., 2008). Regarding *Finances*, the parish councils receive a yearly budget from the municipality for administration but do not receive a budget for addressing flood risk specifically.

4. Methodology

4.1. Research approach

We used the distinction of five social capacity dimensions as a framework for exemplifying what capacity building actions can contribute (see Table 1). The capacity assessment showed that although there is *Knowledge* among both citizens and authorities regarding FRM, this knowledge needs to be expanded and better communicated. Most citizens are not aware of, or do not fully understand, the residual flood risk, which explains the low *Motivation* to act. In light of this, the participatory social capacity building pilots were focused on sharing professional and lay *Knowledge*, particularly (but not exclusively) among more vulnerable groups in the community such as young pupils and newcomers, to increase *Motivation* for preparedness. In our conceptualization, capacity building is also about leveraging (and

² The executive water agency of the national government.

improving) existing capacity; hence, we used the existing Network and existing Knowledge (from both government and citizens) in the participatory capacity building process. The Network helped reaching and including various actors, whilst the existing Knowledge was deemed crucial to increase awareness about flood impacts beyond the existing Network.

We applied an inductive approach to understand how these pilots can contribute to building certain aspects of social capacity, and aimed to understand the factors and characteristics that might influence such capacity building. Although quantitative methods of analysis were used for the evaluation, these have been interpreted in a qualitative manner and were mainly used to substantiate the qualitative arguments we posited. As initiators and organisers, we facilitated but refrained from other participation, providing a level playing field during the pilots in which all involved actors (citizens and representatives of various governmental and private agencies) could take on roles as initiators (of discussion), listeners and contributors (Reed et al., 2018). In this way we aimed to construct a 'natural' or 'contextual' study setting, more suited to free-flowing group conversations than more artificial settings such as interviews (Mason, 2002).

Both pilots were primarily analysed through observation. Three researchers were present; one researcher focused on facilitating, the other two observed and took pictures and notes. We focused on the general attitude and behaviour of participants during the actions, interactions, the type of content of information that was shared, and the direction of discussions. Furthermore, all three researchers interacted with the participants in the form of informal conversations that were also noted down. After completion of the pilots, the research team shared observations, notes and insights and discussed the most relevant developments that had occurred during the pilots.

Although observation is useful to draw empirical data from contextual settings, the interpretation of processes that are difficult to make tangible, such as capacity building, is prone to researcher bias as there is no clarification or evaluation of certain developments or actions by those participants who were actively involved (Mason, 2002). Therefore, the observations were triangulated with other methods of evaluation involving direct input from participants. These additional evaluations differed between the two pilots due to their different structures. The analysis of the first pilot was supported by an ex-post evaluation questionnaire for all participants (27 completed), and three ex-post interviews with participants about three weeks after the pilot. The questionnaire and interviews focused on what participants had learned during the pilots, whether they found the pilots useful, and how they rated the quality of the pilots (to account for limitations in the facilitation or organisation that could affect results). In the second pilot participants comprised school pupils, and they were asked to fill in an ex-ante questionnaire with six questions about their knowledge on floods. Afterwards, all pupils had to submit a short report that served as comparative material for an ex-post evaluation of frequently mentioned keywords, regarded as proxies for their (increased) understanding of flood risk (19 reports submitted by groups of students).

4.2. Setup and design of the pilots

The setup of the pilots is summarised in Table 2. The design of the first pilot was discussed with various stakeholders, using the existing Network established during the implementation of flood defences (see Section 3). We agreed upon a walk through the village to share flood experiences and Knowledge of both local citizens and authorities and a discussion afterwards with authorities sharing current flood risk knowledge and policy. The pilot thus focused on sharing lay and expert Knowledge and increasing Motivation to be involved in local FRM. During the walk in the parish, sites that had been flooded were visited and photo collages were shown of these flooded sites. Local inhabitants shared stories about their experience with past floods and representatives of regional organisations working with flood risk (the Regional Water Authority and the Consortium Grensmaas) illustrated implemented flood protection measures. During the discussion, three authority representatives, from the municipality of Maastricht, the Safety Region (*veiligheidsregio*, responsible for regional crisis management), and Rijkswaterstaat presented recent developments and current knowledge concerning flood risk. The discussion was stimulated by prepared topic questions from the facilitator.

The second pilot was designed after learning that senior citizens at the local day care regularly discuss and share their experiences with floods, sharply contrasting with local elementary school pupils who, even though most of them live in floodplains, have never experienced a flood. Together with senior citizens and teachers, we decided to arrange a meeting in which the senior citizens could share their Knowledge in the form of stories and experiences with the pupils. Besides regular senior visitors of the day care, other local senior citizens with flood experiences, known to us from previous involvement in the CAPFLO research, were also invited to join the meeting. Before the meeting, the pupils were taught a short class (prepared by us, taught by their teachers) about what floods are and what these have meant for the region. They had to come up with questions to ask the senior citizens, playing the role of journalists interviewing senior citizens about past floods in the villages, and writing reports about their findings. This pilot was primarily aimed at sharing experiences and lay Knowledge of senior citizens with young pupils. Again, we used the existing Network to approach senior citizens with Knowledge about floods.

5. Results

We present the results per pilot in terms of the outcomes, assessing whether the pilot succeeded in achieving its goals. We provide possible explanations (e.g., contextual or process-related factors, characteristics of the pilot) for these outcomes and in doing so, derive enabling and disabling factors for capacity building (See summary in Tables 3 and 4, respectively). These provide a first step in identifying which kind of factors influence participatory social capacity building.

5.1. Pilot 1: walk and discussion

The lay Knowledge resulted in educational lay storytelling during

Table 2
Breakdown of the pilots.

| Pilot | #1: walk and discussion session | #2: pupils meet senior citizens |
|----------------------------|---|---|
| <i>Main objective</i> | Sharing and making people aware of up to date Knowledge to Motivate them to engage in FRM | Sharing lay Knowledge and experiences of floods with young citizens with no flood experience |
| <i>Target group</i> | Citizens, especially with little to no Knowledge on local flood risks; authority representatives | School pupils with no flood experience (9-12 years old); senior citizens with flood experience |
| <i>Participants' role</i> | Sharing Knowledge and stories; presenting FRM measures; starting discussion about flood risk and preparedness actions | Pupils: role-playing as journalist (posing questions); senior citizens: sharing Knowledge and stories |
| <i>No. of participants</i> | 28 during walk; 35 during discussion | 47 pupils; 9 senior citizens |
| <i>Facilitation</i> | Experienced facilitator (Bisschops) | Experienced facilitator (Bisschops) |

Table 3
Summary of the design, implementation and results of the first pilot (walk and discussion).

| Targeted social capacity | Goals | Results | Enabling/disabling factors |
|--|--|--|---|
| <p>Capacity to improve</p> <ul style="list-style-type: none"> • Knowledge: awareness about flood risk; capacity to prepare for floods; capacity to understand relevant measures • Motivation: proactive attitude for preparedness and protection; capacity to generate social commitment <p>Existing capacity to leverage</p> <ul style="list-style-type: none"> • Knowledge: capacity to prepare for and deal with the flood hazard; to disseminate and exchange knowledge • Network: capacity to create and use networks | <p>Walk</p> <ul style="list-style-type: none"> • Sharing memories of past floods and in particular (lay) strategies used to cope with the (consequences of the) floods <p>Discussion session</p> <ul style="list-style-type: none"> • Sharing current flood risk knowledge and measures • Making clear that: residual flood risk is topical; that flood dynamics have changed; that past experience may be outdated; and that preparedness is still needed for flood risk | <ul style="list-style-type: none"> • Knowledge about flood risk and strategies used (in the past) to cope with flood risk was shared mutually • Authority representatives became more aware of impact of floods on citizens • Citizens became more aware of the possibility that they would not receive the same (quick) assistance as in the past during a flood | <p>Enabling</p> <ul style="list-style-type: none"> • Informal setting of the walk eliminated distinction authorities/citizens • Presence of knowledgeable and charismatic storytellers among citizens • Use of visuals such as pictures for bringing up memories and a more vivid impression of flood impacts <p>Disabling</p> <ul style="list-style-type: none"> • Formal setup of second part hindered discussions • Sceptical attitude of both citizens and authorities towards current residual flood risk |

Table 4
Summary of the second pilot (school pupils interviewing senior citizens).

| Targeted social capacity | Goals | Results | Enabling/disabling factors |
|--|---|---|---|
| <p>Capacity to improve</p> <ul style="list-style-type: none"> • Knowledge: awareness of flood risk; capacity to understand the flood hazard; capacity to prepare for and deal with floods • Existing capacity to leverage • Knowledge: capacity to prepare for and deal with the flood hazard; to disseminate and exchange knowledge • Network: capacity to create and use networks | <p>Interview meeting</p> <ul style="list-style-type: none"> • Making pupils aware of what floods are and what they can mean for people • Providing pupils with suggestions on what to do and what not to do during a flood • Making clear there is a flood risk in Borgharen, providing the pupils with a basic idea of the possibility that they might face a flood in this area | <p>Pupils have learned about floods; particularly about local experiences with floods and how floods were dealt with</p> <ul style="list-style-type: none"> • Pupils liked the assignment, showed interest in learning about floods • Both school teachers and elder citizens would participate in (future) similar processes | <p>Enabling</p> <ul style="list-style-type: none"> • Vivid storytelling by senior citizen captivated the pupils • Role-playing motivated the pupils as they liked playing journalists • Using visuals, e.g. pictures and a pair of waders to try on, appealed to pupils' imagination <p>Disabling</p> <ul style="list-style-type: none"> • Little discussion about residual flood risk and importance of preparedness, changed flood dynamics, and the relevance of past experience in coping with floods • Target group (vulnerable non-knowledgeable citizens, newcomers) not reached • Little change in Motivation for proactivity in FRM • Short preparation time for pupils |

the walk. Several citizens voluntarily and spontaneously shared their experiences and stories, triggered for instance by shown pictures or by visiting certain sites. Generally, the stories told suggested that although many people suffered both mentally and physically from the consequences of the floods, they also felt a growing solidarity in the parishes, as people helped each other to respond and recover. After conclusion of the pilot as well as during the ex-post interviews, two authority representatives reported to have learned more about how citizens had experienced past floods. One authority representative said he would propose to monitor and include public concerns in disaster management plans, because of what he had learned. Another representative had mentioned CAPFLO and the pilots when discussing a potential flood-related collaboration with a cultural organisation.

Whereas the walk focused on sharing of experience and stories from both sides, the discussion session mainly facilitated the authority representatives to share updates on current flood risk data and strategies. For instance, the Rijkswaterstaat representative discussed how flood risk had been reduced for Ifteren and Borgharen and showed visual examples of models and simulations. He raised the fact that due to the area now being one of the most flood-protected in the province, the attention of authorities would initially be directed towards other areas in case of a flood. This implies that any flood assistance (e.g., materials, personnel) for Ifteren and Borgharen would likely be less than in the past and possibly delayed. Most local participants reported they had not realised this before the pilot.

However, despite this valuable lesson, the emphasis of the overall story on how flood risk had been largely reduced undermined a potential discussion about residual flood risk. There was little attention for how floods would actually materialise nowadays and how these flood dynamics would differ from past events. Subsequently, there was no discussion on what experiences from past floods would still be useful or how people could prepare. Finally, the pilot failed to reach our target group of non-knowledgeable and new citizens in the villages. The pilots mainly attracted citizens who were already knowledgeable about or interested in flood risk.

A primary factor influencing the outcome of the pilot was the informal setting of the walk, with no clear distinction between participants, which created a comfortable environment that allowed people to spontaneously contribute. Also, as some of the contributing locals were quite lively and charismatic in their storytelling, the atmosphere in the group grew positively during the walk. The use of visuals further triggered responses from participants. For these reasons, the discussion of what had happened during past floods became open and transparent. The more formal approach in the second part, and the distinction between presenters and listeners, impeded a similar open and transparent discussion. This was exacerbated by the sceptical attitude of both citizens and authority representatives to residual flood risk. For instance, Rijkswaterstaat showed a simulation of a worst-case scenario in which the parishes would be inundated, only to make the point that this would not ever happen, thus ignoring the issue of residual risk. An observation by another Rijkswaterstaat attendee that flood *protection* is nowadays higher but flood *safety* lower, as the water would now arrive in more dangerous fashion, did not trigger any further discussion. As for the citizens, the social capacity assessment (Section 3) pointed out that the locals are confident in their knowledge of flood risk, which may explain the scepticism towards the remaining risk.

5.2. Pilot 2: meeting between school pupils and senior citizens

During the pilot meeting the pupils were eager to ask questions and paid close attention to the answers of the senior citizens. Afterwards, the teachers also indicated that the pupils had liked talking about floods and were still discussing it some days later. The pupils seemed to have learned a variety of new insights considering the many topics that were covered in their reports. For instance, six reports cited elder citizens who had told that the entry of the water into houses can often merely be

postponed, not stopped. Hence, it is more important to move precious and expensive things to safe, 'dry' places such as higher floors. Eight reports discussed how the pupils also learned that citizens of a community can and should help each other during a flood, as such solidarity can help in mitigating both physical and psychological damage.

The main flaw of the pilot was that current and future flood risks were not discussed, whilst it is important to be aware of their existence when living in floodplains. Although the school pupils learned much about past experiences and how one can act during a flood, some knowledge based on old experiences is not entirely relevant anymore. For instance, the worst consequences of the floods in these communities comprised damaged property and loss of pet animals, as the water reached the neighbourhoods slowly and rose only to waist-high levels. Evidently, we did not intend to scare the pupils with worst-case scenarios, but we would have liked for them to learn more about how the situation has changed.

One factor that increased the interest and attention of the school pupils was the vivid storytelling by the senior citizens. The use of visuals (same material as used during the walk) was important here as well, as it resulted in many questions from the pupils. Also, one senior citizen brought a pair of waders and allowed students to try them on. This resulted in a memorable moment for the pupils. A third enabling factor was identified in the setup of the assignment. The assignment was designed as a basic form of role-playing, with pupils impersonating journalists, but in its simplicity it seemed effective in immersing the pupils in the experience. A disabling factor comprised short preparation time for the pupils. As the idea for this pilot was conceived in a later stage than the first pilot and planned on a short notice (for logistic reasons) the introductory lecture and the meeting took place on the same day. The teachers suggested that a longer preparation for the activity would have possibly led to even more interesting questions from the school pupils.

6. Discussion

In this section we elaborate on the lessons we have drawn from the pilots regarding the implementation and the outcomes of participatory social capacity building. We discuss our findings based on three key lessons about: (1) the potential for bilateral knowledge sharing; (2) the role of researchers in the process; and (3) the double-edged sword of using existing capacity.

6.1. Potential for bilateral knowledge sharing in participatory social capacity building

In the first pilot we attempted to give all participants an equal opportunity to share their Knowledge. It turned out that the authority representatives were more interested in the layman Knowledge than the other way around, learning more about the impact floods have had on citizens. This, in combination with finding that the authority representatives have mentioned these pilots in work-related discussions afterwards, highlights the potential for bilateral knowledge creation and sharing through participatory capacity building (Kochskämper et al., 2016). This may improve governmental disaster risk management as the emotional and experience-based knowledge of citizens that have been subject to disasters can be valuable for adequately implementing, for instance, disaster risk communication, support, and recovery.

Successfully leveraging this potential of participatory capacity building depends on several factors. We believe the interactive, relatively informal setup of the pilots has played a major role. A direct meeting between citizens and authority representatives outside of formal arrangements had a positive effect on the willingness to listen to each other, whilst at the school the pupils asking questions to the senior citizens engaged both sides. The appreciation of the openness and transparency of the discussions was expressed by various participants after conclusion.

Whilst the potential for Knowledge sharing exists, we did not observe an increase in the participants' Motivation after the first pilot. It proved to be difficult to achieve Motivation goals because the discussion after the presentations did not take off in any thought-provoking direction. The sceptical attitude about residual flood risk from both sides may have influenced this, and a more interactive way of sharing Knowledge and increasing Motivation, such as during the walk, might have sustained a more open discussion. Indeed, we noticed a significant difference between the walk and the discussion in terms of openness: during the discussion session, it seemed participants instantly fell back into 'traditional' roles of citizens as listeners, and authorities as presenters of information, whereas we had hoped the room for discussion would prevent this. This finding underpins the general scepticism towards simpler forms of participation such as public hearings (e.g., Fiorino, 1990; Innes and Booher, 2004), but at the same time offers insights in the pitfalls of such processes and how those may be overcome by modifying the setup (i.e., the predefined roles of participants) of the process. This might also call for a reconsideration of the role of researchers in these processes.

6.2. Role of researchers in the participatory process

During the pilots, we took on the role of facilitators and chose not to enter the discussions with our scientific view on residual flood risk. In hindsight, we might have relied too much on the assumption that speakers in both pilots would be willing to discuss this subject, as they were aware of the residual flood risk. It may be logical that with the relatively high local safety standards achieved by the national and regional government agencies, they may not want to imply that risk is high, but they could have acknowledged residual flood risk more clearly; especially because it will likely increase due to climate change if no future measures are implemented (Alfieri et al., 2018). Also, we expected more emphasis on the fact that flood impact is nowadays more related to altered flood dynamics than flood frequency.

All in all, this brings up the question about the role of scientists in participatory social capacity building: if, from a scientific point of view, there is an important topic that others are not willing to discuss (residual flood risk, in this case), should scientists take on an active role in the discussion to address this (sensitive) subject or remain merely an observer documenting the unwillingness? The same question goes for potentially outdated (lay) knowledge about how to handle floods. Laing and Wallis (2016: 28) argue that "scientists have unique roles in policy-making processes and often have a persuasive advantage in some circles because of their qualifications and affiliations contributing to their perceived credibility". Researchers may thus also take on a role of contributors of knowledge, besides organisation and facilitation. Yet, the perceptions of flood risk differ between researchers, authorities and people who have experienced floods personally, which may affect how receptive each interest group is for the knowledge of others. How can researchers perform as 'objective experts' when opinions on the matter at hand differ (Laing and Wallis, 2016)? Such dilemmas are also related to questions of methodology regarding whether researchers should be participants, observers, or participant-observers when conducting observational research (Mason, 2002). There is not a clear-cut answer to these questions, but the role researchers take in participatory capacity building needs careful consideration in each specific case. Particularly, researchers need to be aware of the (unintended) consequences of their chosen role on internal dynamics of these processes, whether it is as facilitator or as active contributor.

6.3. Double-edged sword of using existing capacity

The outcomes of both pilots highly depended on the (experience-based) Knowledge and narrative skills of the storytellers, in this case the local citizens. Their vivid storytelling stimulated other citizens to share their own stories spontaneously and succeeded in holding the attention

of participants throughout the pilots. Hence, it is recommended to make sure there are some capable and knowledgeable speakers contributing to the process, even if the capacity building effort has an open invitation. In our case, we were able to use the existing Network to approach contributors. For instance, local citizens active in the FRM network and the local councils invited fellow citizens from their communities, and authority representatives were more inclined to join the pilots when other authorities in their network joined.

However, the use of this existing Knowledge and Network capacity had some potential downsides that need heeding in future social capacity building processes. Using the existing Knowledge, the sceptical attitude on both sides surfaced, which undermined the process of increasing Motivation. Although the existing Knowledge was necessary to drive discussions, steering a participatory capacity building process towards a certain goal of gaining new Knowledge might require scientists to moderate the process more actively (as discussed above), or even to share some of their Knowledge when others are not able or willing to do so.

Using the existing Network simplified the implementation of the capacity building pilots (more than half of the participants indicated that they had been involved in the CAPFLO project in earlier phases), but hampered achieving the objective of reaching uninformed people. Besides leaving certain (more vulnerable) groups less knowledgeable about the issue at hand, this may also result in disproportionate influence of 'elite or special-interest groups' when future participatory capacity building efforts aim to include citizens in decision-making (Few et al., 2007: 49). We advertised the event in many ways to reach audiences beyond the Network of informed citizens and authorities, but apparently to little avail. Additionally, the existing network might be severely weakened as local network meetings (via Consortium Grensmaas) will stop, and interviewees expressed concerns about the local parish councils being disbanded as there is no trend of younger people becoming involved. This showcases the challenge of maintaining built capacity in communities, and also shows how social capacity can be influenced by external factors. Regarding Networks in general, this insight asks practitioners of social capacity building (researchers, governments, or citizens themselves) to go beyond existing Networks to form new ones with other, new actors. Using new forms of communication such as social media may provide solutions as it potentially engages far greater numbers than traditional ways of promotion, but there is still uncertainty about this potential (Evans-Cowley and Hollander, 2010), not least because some vulnerable groups, such as senior citizens, may not have proper access to this communication. Another possibility is that working with pupils and teaching them about floods may help educating parents, hearing about these lessons from their pupils (Wachinger et al., 2013: 1061). It may prove worthwhile investigating this potential in future research.

7. Conclusion

With this paper we have introduced a conceptualisation and empirical analysis of participatory social capacity building. By implementing two participatory capacity building pilots we have empirically assessed factors that may influence the quality and outcome of such processes. Our findings led us to conclude that there is a good potential for mutual sharing of knowledge between citizens and authority representatives if they have equal roles in the process and are represented by knowledgeable speakers. The preferred role of researchers in this process is up for debate, as sticking to facilitation might lead to more open discussions but failure to touch upon vital topics, whilst active contribution by researchers can potentially infringe the self-governing role of other participants. Using the existing capacity in the process forms herein a double-edged sword, as it can be very helpful to guide the process of social capacity building but can also restrict the diffusion of that built capacity and exclude different kinds of knowledge and target groups.

Besides a better understanding of participatory social capacity building, there is also a need to provide communities with tools to be able to assess and develop, as well as sustain, social capacity themselves, without the intervention of external actors (Kuhlicke et al., 2011; Eade, 1997). In discussing the insights drawn from the pilots, this paper has taken a first step towards understanding the perks of certain characteristics and practices that may help in participatory social capacity building. Further research, building on our work, could focus on how communities can empower themselves or be empowered towards self-imposed and self-sustained social capacity building.

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