Chapter 3
Enhancing Connectivity Between Strategies by Bridging Actors, Levels and Sectors

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3.1 The Link Between Fragmentation and Diversification

Diversification of flood risk management strategies that is appropriately institutionalised seems to be desirable, provided that this is done through an integrated or aligned approach. In an extreme case, this could be done by avoiding fragmentation altogether. In such a case, a single actor, being a public or private entity, organisation, department, group or even individual would be solely responsible for all tasks related to flood risk management. In practice, such an extreme example does not exist and it would be unlikely that it would occur in the future. Instead, different **types of fragmentation** can be identified (Gilissen et al. 2015):

- Different actors in different sub flood risk governance arrangements are responsible for different FRM strategies (as in France and Poland).
- Different actors within a sub flood risk governance arrangement are responsible for the same FRM strategy (e.g. different actors for different scale levels, as in England, Belgium and the Netherlands).
- Different actors in different sub flood risk governance arrangements are responsible for the same FRM strategy (e.g. different actors for protection against pluvial and fluvial flooding, as in the Netherlands).
- Different actors within the same sub flood risk governance arrangement are responsible for different FRM strategies (e.g. water managers focusing both on flood defence and flood mitigation, as in Belgium).

In case fragmentation occurs, it is necessary to establish bridging mechanisms: all kinds of interlinkages between actors, aiming to intensify interactions in their

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pursuit of various FRM strategies in order to cope with the difficulties potentially resulting from fragmentation (ibid).

We found differences in the extent to which countries have managed to implement such an integrated and aligned approach and the degree of fragmentation present. In England, Belgium and Sweden, several sub flood risk governance arrangements have been identified that do not vary widely in terms of their power basis. While the English system consists of numerous actors, different resources, discourses and levels of governance, the level of cooperation between actors, the legal instruments or the informal bridging processes push the English case towards a more integrative approach. A similar finding applies for Belgium, although the federal structure of the country was found to lead to complexity and hence fragmentation. In the Netherlands, we found a relatively dominant water system sub-arrangement. Diversification is taking place mainly within this sub-arrangement. Preparation and prevention are being mobilised within this sub-arrangement, but this is less so the case for the recovery strategy. The Dutch multi-hazard oriented safety regions are still operating at a relative distance from the water system sub-arrangement. Especially in France and Poland we found that the actors operating in different sub arrangements are each operating within a relatively narrow scope and bridging mechanisms were found to be lacking or ineffective (Matczak et al. 2016). One of the main examples of fragmentation is that between water management and spatial planning. As will be detailed below, countries differ in the extent to which effective bridging between the two domains is achieved.

We conclude that diversification of FRM strategies may lead to fragmentation and that this in turn may hamper flood resilience and the effectiveness and legitimacy of FRM. In many countries efforts to overcome this fragmentation are underway and bridging processes and mechanisms between actors, sub flood risk governance arrangements and FRM strategies are being developed. This leads us to assume that fragmentation as found in the STAR-FLOOD project may not be seen as permanent but as a stage that several countries have to go through. Coordination of strategies and bridging between them is taking place to an increasing extent. Good practices in overcoming strong fragmentation can be derived from Belgium (Mees et al. 2016a, b). This country's administrative system, with much power going to the level of the regions (Flanders, Walloon and Brussels Capital Region) has resulted in fragmentation but also in the development of many bridging mechanisms, some of which will be discussed in subsequent sub-sections. The English system has also been reported to be extremely fragmented and complex in the distribution of FRM responsibilities, but on the other hand it has been shown to be a highly flexible governance arrangement (Alexander et al. 2016).

3.2 The Involvement of Governments, Businesses, NGOs and Citizens in Flood Risk Governance

3.2.1 The Role of Governmental Actors in Flood Risk Governance

Governmental actors at different levels play a role in flood risk governance. A distinction can be made between actors at the international/European level, national level actors, and actors operating at the regional/local level. The six countries researched in the STAR-FLOOD project are engaged in a struggle to achieve a balance between local flexibility and coordination at the national level, with some countries lacking coordination (e.g. Sweden) and others lacking resources at local level to be able to execute the responsibilities attributed to local actors. With some risk of overgeneralisation, it is often local and regional actors that implement FRM measures, while the responsibility for maintaining a strategic overview as well as implementing measures of supra-local importance lies at the national level. At the supra-national level, mostly procedural steering (e.g. EU Floods Directive) and the development of principles and decision-making frameworks (e.g. OECD water governance principles) is taking place.

3.2.2 The Role of Businesses in Flood Risk Governance

To enhance flood resilience, the input of a diverse set of resources and capacities is needed, which are not all available within governmental institutions. Instead, several private actors on a spectrum from fully private companies to quasi commercial actors (e.g. English utility companies which are privatised but heavily regulated) should be involved (e.g. Alexander et al. 2016).

A good practice in terms of moving towards public-private cooperation is the Partnership Funding scheme implemented in England in 2012. Grant-in-Aid (GiA), available through the Department for Food, Environment and Rural Affairs (Defra) and administered by the Environment Agency, must be supported by funding sourced at the local level, via Local Authorities, the private sector or civil society (Defra 2011); thus the costs for the project are distributed across funding partners according to risk sharing arrangements and defined in a legally-binding contract. This approach means new types of actors, with a financial stake in FRM, can enter into the governance arrangements at the project scale. In those countries where a private insurance mechanism is applicable to support ex-post compensation following floods, a good balance between public rules and private implementation is crucial, and cooperation between the public and private actors is thus indispensable. For example, the legislator/public authorities have an important role to play in setting forth regulations and instruments with the goal of promoting, incentivising or enforcing the uptake of preventative measures or, for example, adaptive building measures by citizens.

3.2.3 The Role of Community Groups, NGOs and Citizens in Flood Risk Governance

Importantly, citizens and NGOs are not always aware of flood risks, their action perspectives in dealing with them and their legal position. For instance, they are legally entitled to flood protection in dike-protected areas in the Netherlands, but not in countries like Belgium and England (Kaufmann et al. 2016; Mees et al. 2016a, b; Alexander et al. 2016). We see some room for improvement in how flood managers and politicians could communicate flood risks and action perspectives to private actors. We see it as a challenge for flood managers to communicate risks and provide or suggest the options for dealing with them. This includes addressing the question of whether to focus on probability reduction or reduction of consequences as well as considerations regarding how costs and benefits should be divided, in more accessible language. The increasing availability of flood maps, serious games and other (spatial) information systems should facilitate this enhanced risk communication. On the other hand, we also found that citizens sometimes showed limited interest in flood issues, even in cases of large flood risk.

Citizens are, however, crucial actors in flood risk management. In their capacity of residents they can take actions in and around their own homes, e.g. decreasing the amount of hardened surface, and flood proofing their houses. Furthermore, citizens have a right to know the flood risks in their areas (e.g. Floods Directive) and from a democratic legitimacy perspective they should have a say in what is seen as acceptable levels of risks. Moreover, they should be able to protect their interests, e.g. by going to court in case they want to challenge governmental or private actors that negatively affect the flood safety of their property or alternatively, if they are disadvantaged by flood protection measures. For instance, if a decision has been made that some residents would need to evacuate in case of a flood rather than being protected by defence measures, it should be possible to challenge such a decision before a court. Vice versa, the possibility should be offered to go to court to challenge the decision to realise flood protection measures.

In practice, in all countries, we found that authorities at different levels are struggling with how best to engage the public in flood risk management. First of all, albeit to different extents, there is a lack of flood risk awareness in several countries, most notably in the Netherlands, Belgium and Sweden (Kaufmann et al. 2016; Mees et al. 2016a, b; Ek et al. 2016). In these countries, citizens were found to lack concrete knowledge on the potential consequences of flooding for their property, the probability of this occurring and the available options should a flood occur. Flood awareness is more present in France, England and especially Poland, countries that have relatively frequent flood events. Communicating flood risks to citizens is made difficult by the highly technical language of flood managers (e.g. scientific calculation of return periods or recurrence intervals), which is poorly understood by the public or poorly communicated (Klijn et al. 2008). Moreover, in some of the researched countries there is an institutional culture of only consulting/transferring knowledge to the public, as opposed to more two-way communication/participation techniques now encouraged.

Nevertheless, policy makers should consider critically whether flood awareness campaigns are the best investment to enhance citizens' capabilities to prepare for floods. Research shows that the main explanatory factor for appropriate flood risk behaviour is experience with flooding and closeness to water (Matczak et al. 2016; Wiering et al. 2017). In countries/regions where floods do not regularly occur, there may come a tendency to wonder whether it pays off at all to invest in trying to raise the public's awareness. Would it not be better instead to develop the crisis coordination strategy in such a way that, during a flood, it can be immediately communicated to residents what they should do? However, because of EU and domestic regulations, such investments are necessary and inescapable from the perspective of having access to information and having the right to know about flood risks. Besides that, risk communication during a crisis will be vastly facilitated by pre-event knowledge and awareness. During a crisis so many developments are taking place that it would be difficult to delay such essential things as risk communication, where people are difficult to reach, and who may react irrationally/differently than expected. If nothing else, highly exposed and socially vulnerable groups should be identified (elderly, single-parents, migrants, deprived households etc.) and receive (extra and tailored) risk communication.

In all countries, FRM practitioners interacting with the public reported a tendency of citizens to attribute much responsibility for dealing with floods to governmental actors combined with a preference for engineered flood defence solutions. This was found to a larger extent in the Netherlands, Belgium and Poland than, for instance, in England and France (Alexander et al. 2016; Ek et al. 2016; Kaufmann et al. 2016; Matczak et al. 2016; Mees et al. 2016a, b; Larrue et al. 2016). But strikingly, in France, Belgium and England this attitude runs counter to citizens' legal position when it comes to floods. Whereas in the Netherlands citizens living in dike protected areas have legal rights to flood protection through the Constitution and safety norms established in the Water Act, in France, Belgium and England there is no explicit constitutional legal right to flood protection and powers of flood authorities are permissive in nature. In most countries, these authorities base their decisions regarding acceptable levels of risks on cost-benefit analyses.

The lack of public engagement in the prevention and mitigation of flood damage appears to be a barrier to improving flood resilience. But the pursuit of a more balanced distribution of public-private responsibilities is hindered by the current attitudes among some citizens who consider FRM to be a governmental, rather than an individual, responsibility. In order to make a responsibility shift possible, it is recommendable to make it the result of an open public debate. In the field some positive experiences have been reported at the local level where residents have been included from the beginning of the decision-making process, in which it was discussed which measures against flooding should be taken by whom, thereby providing clarity about the distribution of responsibilities. Examples of this approach can be found in England, with the establishment of Community Flood Emergency Plans. Such a comprehensive co-production of flood-relevant policies by citizens and authorities may help to counteract the tendency to involve citizens only in phases where the main policy measures are already decided by policy makers, and

citizens are only approached as purely executing actors (Mees et al. 2016a). Involvement in earlier phases can increase complexity but can improve the legitimacy of the whole process. The question can be raised if such a citizen-inclusive approach to flood management would also be worthwhile to pursue when discussing issues such as the level of safety for which a country aims, the concept of appropriate protection within the Floods Directive and the question of whether protection by defence should be replaced by spatial measures or evacuation.

Another example of improving citizen involvement in FRM is the increased use of technology, for instance through smartphone apps, alerts, websites and flood maps (Alexander et al. 2016). However, these information platforms leave out certain highly vulnerable groups because they demand a pro-active choice by citizens to search for information. The elderly might not have access or consider searching for this information, single parents might not have time, immigrants/expats might not understand the information if it is only available in the country-specific language, and deprived households might not have smartphones or connections to have constant access to these apps. Mechanisms to foster community engagement are underway. Amongst other countries, in the UK there was found to be an increased focus on self-reliance e.g. through flood action groups. The Environment Agency and Local Authorities are now actively encouraging the formation of such community groups in areas of known flood risk and work with the National Flood Forum to assist and advise groups in their formation and continued functioning. Another good practice in involving the public in flood management is the Flemish duty to inform, implying that sellers of properties have to actively inform potential buyers of flood risks on their property. This information dissemination with regard to the flood-prone character of the location of the building should be undertaken widely, i.e. in all internet publicity, and brochures. This instrument could also be implemented in other countries as well without the necessity to overhaul the existing institutional and legal settings in these countries. It does not require substantial resources for implementation, and promotes risk awareness with citizens in an effective manner.

3.2.4 Towards Multi-actor Co-production

As the previous sections have shown, public-private cooperation in flood risk management should be seen as 'multi-actor co-production' in the sense of further developed forms of participation, public private partnerships and self-realisation. This interpretation seems more productive than the, much more narrow, interpretation of 'letting market parties/companies do more in flood risk governance'. Co-production is most outspoken in discourse and practice in England, and is emergent in France and Flanders (Alexander et al. 2016; Larrue et al. 2016; Mees et al. 2016a, b). By contrast, FRM in the Netherlands and Poland remains almost exclusively reliant on governmental protection measures. Further diversification of FRM strategies as discussed in this report makes it increasingly unlikely that a limited number of governmental actors can oversee and implement complete portfolios of FRM strategies, hence co-production becomes a necessity. Co-production can be seen as a form of

bridging between actors and strategies in the sense that governmental actors adopt rules as coordinators and facilitators of FRM strategies and measures rather than that of implementers.

3.3 Bridging Between Administrative Levels: Reconciling the Need for Local Flexibility and Coordination

We found that in all STAR-FLOOD countries it turned out to be challenging to balance the need for local flexibility and coordination. Too much top-down steering may hamper the possibilities for implementing tailor-made solutions, while too little coordination may hamper learning between regions and also hamper efforts to tackle up-stream/down-stream issues. Some countries seem to be doing a better job in striking a balance. In Sweden, dealing with flood risk is predominantly a local issue (Ek et al. 2016). Sweden knows strong municipal self-governance. This is to some extent to be evaluated as positive, since it allows for flexible and tailor-made approaches, but through a lack of coordination at the national level, there is the risk of several municipalities "reinventing the wheel". Also, counter-intuitively, in France there was found to be much room for local initiatives through inter-municipal cooperation and in particular through local flood action plans (PAPIs) (Larrue et al. 2016) (Fig. 3.1).

Some examples of more balanced multi-level governance (MLG) processes were also found. Dutch policy programmes such as the recently finalised 'Room for the River' programme, a national policy programme consisting of 30 projects to increase space for water along several major watercourses in the Netherlands and

Fig. 3.1 STAR-FLOOD session at the knowledge conference of the Dutch Delta Programme, Wageningen, 23 April 2013

the Delta Programme, a strategic programme to develop a long-term perspective on ensuring flood protection and fresh water availability, can be characterised as cooperation between governmental actors at several levels. While this cooperation was not without struggles, the dominant message from studies of these programmes is a positive one (Van Buuren et al. 2014). Also in Belgium and England we see mechanisms that enable MLG to take place. In England it is the Environment Agency that maintains a strategic overview of FRM for all types of flooding, while Lead Local Flood Authorities and Internal Drainage Boards amongst other actors have responsibilities for local-scale FRM. In Belgium, the role of spatial planning and environmental departments within municipalities is becoming increasingly important (Mees et al. 2016a, b). Coordination of and inspiration to their actions is provided at the level of the regions, in Flanders by the Flemish Environment Agency (VMM), in Wallonia via the river contracts, which operate at sub-basin scale. In Poland, a dominant role is played by governmental actors at the regional and national level, to some extent hampering local flexibility.

These struggles between levels of government are taking place against the background of a broader tendency towards decentralisation. We found that this decentralisation de facto often leads to shifting the financial and executive burden from national to local governments, while the national governments keep holding the strings. Instead, FRM needs a good combination of top-down and bottom-up working. On the one hand, at a high level, strategic discussions should be held on, for example, the risks that we as a society are willing to accept, the division of responsibilities in dealing with these risks, etc. On the other hand, more room should be created for bottom-up work: local stakeholders (preferably at hydrological level) draft flood risk plans together, based on their objectives and are hereby supported with funding and expertise from the higher governments (national and EU-level). The river contracts in Wallonia and France could serve here as a good example.

3.4 Bridging Between Flood Risk Management Strategies

3.4.1 A Bridging Role for Spatial Planning: Strengthening Flood Prevention and Flood Mitigation

Spatial planning is supposed to be holistic and hence integration of flood risk considerations in spatial planning would in principle be conducive to addressing flood risks, in particular by strengthening the strategies of flood prevention and flood mitigation. Spatial planning's task is to organise spatial demands of a society; it needs to promote spaces for economic development, space for housing, for nature etc. Often, the various priorities present come into conflict with FRM. If and how flood risk considerations are taken into account is a matter of priority and requires balancing with all other spatial claims. Such integration of flood issues in spatial planning exists on paper – although more for new building areas (e.g. through the sequential and exception test in England) than for existing areas – but in practice it is not

always effective. In all STAR-FLOOD countries we found examples where FRM comes into conflict with other priorities, such as economic development and housing supply. This needs not to be a problem as long as those with a stake in the prioritisation were adequately represented in a well-informed political debate about acceptable levels of risk. However, this is not always the case, implying that flood risks receive insufficient priority. Regulations exist, but they are not always addressing this specific point or the regulations need further development. In general, besides sometimes a lack of powers to enforce we find a lack of enforcement in the sense that existing regulations are not used in accordance with their full potential, for instance in cases in which spatial planners in principle have the power to regulate development, constrain it or put requirements to it from a floods perspective.

We found some good practices, e.g. the Water Assessment and Signal Areas in Belgium (Mees et al. 2016a, b). The Water Assessment has been subject to a substantial reform following an initial negative evaluation after the floods of 2010, which has significantly improved the application of the instrument. Attention is thus paid to the effectiveness of the existing instruments. Enforceability by public and private parties of the instruments is a crucial element in ensuring actual implementation. Also in France, strong policies exist that may prohibit urban development in at risk areas and are actually enforced (e.g. PPRI). As opposed to that, in the Netherlands spatial planning has been found to be too flexible when it comes to addressing flood risks (Kaufmann et al. 2016). While flexible rules in principle allow for adaptive policies, in the Netherlands they have been found to be hampering a consideration of flood risks in spatial planning, as there is still a dominant discourse amongst planners that flood managers should have a serving role to planning and should enable spatial development (OECD 2014; Van Rijswick and Havekes 2012; Wiering and Immink 2006).

Besides limited prioritisation, another factor hampering the consideration of flood risks in spatial planning is the lack of exchange of practical knowledge, although this is improving in several countries, a lack of insights in costs and insufficient development of building requirements for flood proof building.

To conclude on this point, we argue that while it would probably be unrealistic to ban development on the floodplain altogether as so much development has already occurred, there is a need to invest in adaptive development and retrofitting existing urban areas at risk of flooding to enhance adaptive capacity (e.g. with Sustainable Urban Drainage Systems).

3.4.2 The Role of Spatial Planning in Emergency Management: Bridging Between Defence, Prevention and Preparation

Flood preparation is present in all researched countries. In all countries, a distinction can be made between at least two activities: flood forecasting and emergency management. The former is strongly linked to meteorological services, as is the case

in England where the Environment Agency and the MET Office have formed a partnership called the Flood Forecasting Centre. On the other hand, emergency management in all countries is embedded in institutions related to more general crisis management (e.g. Safety Regions in the Netherlands; Local Resilience Forums made up of category 1 and 2 responders in England; the national Contingency agency in Sweden and similar organisations in France, Belgium and Poland). Flood emergency management is embedded within a multi-hazard approach in which similar organisations deal with multiple types of (natural or man-made) hazards. This can in itself be evaluated as positive, since despite the specifics of flood hazards vis-à-vis other hazards, the same types of responses (informing the community, evacuation, providing shelters) are often required.

On the other hand, there is also a need to strengthen the linkages between emergency management and other flood-relevant policy domains. For instance, spatial planning is needed to ensure that the spatial conditions for emergency management are available, including evacuation routes on higher grounds and shelters. The extent to which this is taken into account has been reported to vary between countries. We also found that in some cases (e.g. in the Netherlands) contingency agencies seem to give relatively low priority to floods vis-à-vis other issues of external safety. Another issue, to be discussed in more detail in the next chapter, is the need to stimulate appropriate behaviour of citizens, which in several countries, especially in Belgium, the Netherlands and Sweden, was found to be relatively low.

3.4.3 Bridging Between FRM and the Insurance Sector: The Link Between Prevention and Recovery

Incentives can be created through the insurance/compensation sector to ensure that after floods societies do not simply 'return to normal' but that they learn and adapt to minimise future damages. In principle, there is much potential within the recovery strategy for promoting preventive action, for example in terms of discouraging citizens from living in high-risk areas, and taking mitigation measures, such as adaptive building efforts. We found that there is still much room for improving existing legal frameworks so that these enable a better linking of recovery, prevention and flood mitigation. Possibilities are to promote resilient reinstatement of flood-affected areas through recovery mechanisms and the removal of legal barriers preventing the establishment of link-inducing measures (Suykens et al. 2016).

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