

Chapter 5

Evaluations of Flood Risk Governance in Terms of Resilience, Efficiency and Legitimacy

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5.1 Evaluations of Resilience¹

In STAR-FLOOD, the notion of flood resilience was disentangled into three capacities as criteria for determining the degree of flood resilience, being the capacity to resist, the capacity to absorb and recover and the capacity to adapt. Regarding the first criterion, *capacity to resist*, differences were found between the six countries. The Netherlands, Belgium and France can be characterized by a dominant focus on defences, which functioning can be said to be effective in the sense that they generally live up to the standards set for them (Kaufmann et al. 2016; Larrue et al. 2016; Mees et al. 2016). A same dominance is present in Poland, but here effectiveness of flood defences is lacking, as the floods of 1997 and 2010 showed (Maczak et al. 2016). In Sweden and England, there can be said to be a more holistic approach to FRM in which resistance measures are considered vis-à-vis other types of measures (Alexander et al. 2016; Ek et al. 2016a, b). Measures to store water, both through upstream retention and urban drainage, are being implemented in the Netherlands, France and especially in England and Belgium. In Belgium an increase in the amount of hardened surface is being counterbalanced, while such development is barely counterbalanced in Poland. Although defence was found to be dominant and effective both in the Netherlands and France, they face some or even significant lack of maintenance respectively. This issue is relevant also for other countries, including England. Similarly, Sweden can be said to be dealing flexibly with flood risks with some examples of flood defence infrastructures in some municipalities while temporary small-scale defences are used in many situations. Sweden differs from

¹This text is based on Hegger et al. (2016).

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the other evaluated countries in that flood risks are relatively low, so the need to build resistance through flood defences is very local by nature.

The six countries also vary in terms of their *capacity to absorb and recover*. The Netherlands and Poland rely significantly on the defence strategy, thus resistance is the main focus. In the Netherlands, development of mitigation (which is also a resistance capacity) and preparation measures backs up the dominant defence strategy. These measures are receiving increasing but still limited attention in the Delta Programme, a national programme on flood management and fresh water supply, through the Multi-Layered Safety approach which explicitly aims to diversify flood risk management strategies. England has a sophisticated flood warning and crisis management system. Poland has made significant improvement in terms of this flood preparation, while this strategy can be said to still need further development in the Netherlands, Belgium and France.

The *capacity to recover* requires resources to be applied after a disturbance. It comprises financial resources as well as material ones and institutional ability. The main systems are public disaster funds and insurance systems, or hybrid mechanisms. Such systems are in place in all countries, although they are governed in different ways (e.g. through public or private mechanisms). In terms of available resources in relation to flood risks, France seems to do well, while Poland seems to be at risk. In Belgium, ex-post compensation procedures improved with the inclusion of flood events in fire policies.

Flood risk governance in the investigated countries finally differs in its *capacity to adapt*. In all countries we witness some changes in recent decades, indicating that all are adaptive to some extent. All countries have stronger and weaker points in relation to their adaptive capacity. England seems to have most strengths compared to the other countries, with relatively well-developed flood awareness of citizens and a strong learning culture. Hence, adaptive capacity in England can be said to be high. This, by the way, does not mean that flood risks are reduced, damage is diminished or that citizens feel protected but rather that they are used to floods and used to deal with the damage. Other countries show a more mixed view in terms of their strengths and weaknesses and hence their adaptive capacity can be said to be moderate. Belgium, France, Sweden and especially the Netherlands report a relatively low flood awareness of citizens, an important aspect of adaptive capacity, while flood awareness in Poland, due to catastrophic floods in 1997 and 2010, is high. Established systems for learning are in place in the Netherlands, France and Belgium. Other aspects of adaptive capacity found in the research include: (i) the presence of systems for risk analysis: in Sweden and the Netherlands, established systems for risk analysis are in place, in the Netherlands focusing on the maintenance of flood defences, in Sweden focusing on multiple risks, including floods; (ii) the ability of civil servants to react flexibly to changes in the legal system and in political constellations. This was found in Belgium and Poland.

We found that none of the researched countries can be regarded as resilience champions in that a very high degree of resilience was found for all three capacities. Instead, we see that the Netherlands have a very high 'capacity to resist', Belgium and France a very high 'capacity to absorb and recover', while England is especially

strong on capacity to adapt. Poland and Sweden's achievements are lower, scores in Poland from low to medium-high, and in Sweden from medium to high, in individual categories. In Poland significant progress has been made in capacity to adapt by establishing the crisis management system. With some risk of over-simplification, it seems that the implementation of a more diverse portfolio of strategies contributes to a higher capacity to absorb and to adapt, obviously provided that the strategies have been implemented effectively and have been aligned.

In terms of policy implications, we argue that a thorough and broad analysis of the flood risks and potential measures against them is necessary in different countries. Every strategy needs to be considered in such an analysis. In the end, the country needs to be able to resist, absorb and recover from flooding. However, a full suite of strategies can only ensure resilience if each strategy is implemented effectively. Diversification should not lead to an underinvestment in all strategies. Furthermore, it is crucial that lock-in effects are avoided as much as possible, so that different strategies could be applied in the future, e.g. by not building a flood retention zone now but making sure it remains unbuilt so it can be developed as one in the future.

5.2 Evaluation of Efficiency²

In the analyses performed within the STAR-FLOOD project, we have focused on whether there is empirical evidence indicating that efficiency is an important issue in flood risk management in each country; whether concerns for resource efficiency are widely applied within the flood risk governance arrangement and/or taken into account in decision-making. In general, a regular practice of analysing the societal costs and benefits has been interpreted as an enhancing factor for resource efficiency.

The frequency at which cost benefit analyses are used differs across the analysed countries: while there are well-established practices in England, and analyses are becoming increasingly common in all countries (e.g. the Netherlands, Sweden and parts of Belgium (Flanders)), such analyses still seem to be less frequently applied in France. In Poland, although standard cost-benefit analysis procedures are applied to particular projects, funding spent for flood risk governance is fragmented and the vested interests of administration and business groups play an important role in resource allocation. This makes an analysis of resource efficiency in Poland difficult.

In the researched countries, decisions to invest in permanent defence structures are generally preceded by an assessment of the expected benefits and costs of the project. Challenges may for instance be related to how monetary values are estimated for the expected future benefits in terms of reduced flood risk. Permanent flood defences are high-cost investments with a long life span, while their expected

²This text is largely based on section 2.2 of Ek et al. (2016a).

benefits are associated with significant uncertainties. If investment decisions are not based on long-term, forward planning also taking possible impacts of climate change into account the resource efficiency may well be challenged.

However, although cost benefit analyses could potentially contribute to increased transparency and knowledge about the costs and benefits associated with different flood risk management strategies, concerns have been raised by local authorities, for instance in Flanders, Belgium, that cost benefit analysis is a technocratic manner of decision-making that they have little insight into. In Poland, there is a focus on gaining additional funds through realising investments in flood defence, which has created a short-term oriented budget maximisation, rather than using resources where they are most needed. There is also a lack of adequate and coherent data, which constitutes an obstacle to conducting comprehensive and independent evaluations of the resource efficiency of flood risk management. An overly rigid use of cost benefit analyses may thus come at the expense of reduced legitimacy. On the other hand, if flood risk management is using financial, physical and/or human resources in an inefficient way, or if it is difficult to trace how money is being spent, this may also have a negative impact on the legitimacy of flood risk management.

Different examples of potentially beneficial measures or instruments that have not been implemented as a result of inflexibilities in decision-making and/or legislation are mentioned as factors possibly restricting resource efficiency. For example, in some countries (England, Sweden and the Netherlands) small-scale property based measures, such as so-called check valves, are currently underutilised and property owners have limited or no incentives to invest in such measures (e.g. the costs in case of floods are spread out across all insured or protected parties).

5.3 Evaluation of Legitimacy³

In the context of evaluating the current (and to some extent past) FRGAs from the perspective of legitimacy, the Aarhus Convention and the European legislative framework play an important role. However, within the STAR-FLOOD project, the multi-faceted concept of legitimacy was interpreted not only from a legal point of view, but also from a social science point of view. This approach led to the development of a range of specific criteria in order to assess the extent to which flood risk governance arrangements can be described as legitimate (Ek et al. 2016b). As indicated in the introduction, seven criteria for evaluating the legitimacy of flood risk governance have been identified: social equity; access to information and transparency; procedural justice and accountability; public participation and acceptability. Each criterion will now be discussed in turn.

- **Social equity** – In the researched countries, systems range from a strongly prevailing solidarity principle in France, to a market-based insurance system in

³This text is largely based on section 2.3 of Ek et al. (2016a).

England, implying that a number of (potential) tensions concerning social equity can be distinguished. A first tension, connected to the solidarity principle, manifests itself in the ex-post compensation sphere, where citizens who are not at risk of flooding are often also contributing to the compensation of others. Similarly, social equity issues have been identified when it comes to beneficiaries of defensive measures. Some citizens, e.g. in the Netherlands, are entitled to different levels of flood protection to others, while at the same time the presence of flood protection encourages further urban development. On the other hand, it can be said to be in the interest of all citizens that the economically most important areas in a country receive the highest level of flood protection.

- **Access to information and transparency** – In general, access to information and transparency do not seem to be problematic in the researched countries. All countries have implemented the Aarhus Convention into their own legal system and make legislation and policy documents available to the wider public. In Sweden for instance, all official documents are in principle public. Everyone may request and study them, without having to provide information regarding identity or purpose for the request. In general, since the implementation of legal instruments such as the Aarhus Convention, the availability to the public of flood risk information has improved, and for instance in England, both public awareness of flood risks and transparency in policy decisions on flood risk management has increased. Transparency is also enhanced by independent reviews and responses to significant flood events, such as the thorough evaluation of the November 2010 floods in the Flemish Region by the Coordination Committee on Integrated Water Policy and the accompanying policy recommendations.
- **Procedural justice and accountability** – In relation to the EU Floods Directive, stakeholders' access to justice, in terms of enforcing their rights to participate in or challenge decisions, is limited. Citizens can only enforce their right to have Flood Risk Management Plans actually established and not that the Flood Risk Management is appropriate (see case ECJ C-237/07 Ek et al. 2016a). Citizens do not have other recourses with respect to substantive issues stemming from the FD (Ek et al. 2016b). For access to justice, each country relies on national rules. In Belgium, the Netherlands and Sweden, access to administrative courts is relatively inexpensive, and court decisions from the highest administrative courts are available in a relatively short time span. However, litigation costs and judicial backlog, resulting in judicial proceedings extending over longer periods of time, were identified as constraining factors to achieving procedural justice. In Poland, for instance, there is a discrepancy between the lack of resources from civil society to go to court and the dominant position of the administration and investors. Moreover, this constraining factor is further enhanced by judicial backlog and the general lack of trust in Polish state institutions. Also in England, there are discussions on the existence (in practice) of social inequities regarding access to justice, for instance issues concerning financial costs involved, and restrictions being made to legal aid are raised.
- **Public participation** – The Aarhus Convention holds the obligation for Parties to provide for early public participation, when all options are open and effective

public participation can take place. The public participation procedures must hereby include reasonable timeframes for the different phases, allowing sufficient time for informing the public and for the public to prepare and participate effectively during environmental decision-making (art. 6, 3-4). Moreover, each Party must ensure that due account is taken in the decision of the outcome of the public participation (article 6, 8). Participation is also included in the Floods Directive. However, the requirements are vague and there are no specific guidelines on what constitutes effective participation or on the objectives of active citizen participation. There is thus a large variability across Member States in terms of the implementation of these requirements.

- **Acceptability** – Legitimacy also implies that the decisions and the processes involved in decision-making are accepted by stakeholders. Acceptability is therefore an important aspect of the legitimacy of any flood risk governance arrangement. However, it is difficult to quantify in a precise manner as it very much relates to perceptions of stakeholders. There are objective indicators, however, to identify what the constraining factors related to acceptability are and how it can be improved. In all STAR-FLOOD countries, acceptability could be improved, in the first instance through raising awareness of the population to flood risks and the implications thereof (Fig. 5.1).



Fig. 5.1 Flood proof building in Hamburg, Germany (Source T. Raadgever)

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