



Country and case study workshop report

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Preface

This report is a deliverable of the EU 7th Framework Project STAR-FLOOD (www.starflood.eu). STAR-FLOOD focuses on Flood Risk Governance. The project investigates strategies for dealing with flood risks in 18 vulnerable urban regions in six European countries: England in the UK, Belgium, France, the Netherlands, Poland and Sweden. The project assesses Flood Risk Governance Arrangements from a combined public administration and legal perspective, with the aim of making European regions more resilient to flood risks.

This report constitutes deliverable D3.1, the case study workshop report. Work Package 1 provided an extended problem analysis related to Flood Risk Governance in Europe. Work Package 2 focused on how Flood Risk Governance in Europe can be researched. Work Package 3 forms the empirical core of the project, in which analyses, explanations and evaluations of each country, including three case studies, have been performed.

Each country held one or more workshops in order to validate research results and disseminate the findings from the research. The number of workshops held in each country as well as their precise aim and scope varied for methodological reasons. Depending on the empirical findings gathered by the researchers, their precise needs for input from workshop participants varied. Besides that, the countries differed in terms of existing networks and communities of practice the researchers could link up with. Each country-specific chapter provides a justification for the number of workshops held and their aim and scope.

The six country reports, including case studies, of WP3, together with D3.1, the report on the case study workshops in each country, form the main input for the last two Work Packages of STAR-FLOOD, being WP4 and WP5. WP4 focuses on a systematic comparison between the STAR-FLOOD consortium countries; WP5 focuses on the identification of design principles for appropriate and resilient Flood Risk Governance.

We trust that the current report is of interest for a broad readership with an interest in Flood Risk Management and Governance. The content of this report may inspire researchers and professionals with an interest in social scientific and legal research into flood risk management, disaster risk reduction and climate change adaptation.

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1 Introduction

This report is deliverable D3.1 of the EU 7th Framework Project STAR-FLOOD (see www.starflood.eu for an outline of the project). STAR-FLOOD focuses on flood risk governance. The project investigates strategies for dealing with flood risks in 18 vulnerable urban regions in six European countries: England, Belgium, France, The Netherlands, Poland and Sweden. The project is assessing the institutional embedding of these strategies from a combined public administration and legal perspective, with the aim to make European regions more resilient to flood risks.

STAR-FLOOD consists of several work packages, or WPs. Within WP1, four reports have been prepared providing an extended problem analysis related to flood risk governance in Europe. WP 2 focused on how Flood Risk Governance in Europe can be researched. This report is one of the deliverables of WP3, the country analyses in which empirical research is carried out at the National Flood Policy and Regulation domain and at the case study level. Together with WP4, in which we will analyse, explain and evaluate the main similarities and differences between the selected EU Member States in terms of development and performance of Flood Risk Governance Arrangements (FGRAs, *i.e.* the institutional embedding of flood risk management strategies in society), WP3 forms the empirical core of the STAR-FLOOD project. Between October 2013 and September 2015, we have analysed, evaluated and designed the several Flood Risk Management Strategies (prevention, defence, mitigation, preparation and response, and recovery) and Flood Risk Governance Arrangements in the three selected cases studies of the six participating EU member states, as a step forward make European regions more resilient to flood risks. The data collection methods that we used in WP3 were desk research, country-specific expert panels, interviews and, lastly, workshops per selected case study.

The workshops held in every case study were principally meant to disseminate research results at a case study level and a national level, but were also used for further data gathering. Other aims were to a) develop a bottom-up dissemination network; b) formulate policy recommendations, and c) build partnerships. Comparisons at the country level will be made during the international workshops, and the expert panel will look at the European level.

The number of workshops held in each country as well as their precise aim and scope varied for methodological reasons. Depending on the empirical findings gathered by the researchers, their precise needs for input from workshop participants varied. Besides that, the countries differed in terms of existing networks and communities of practice the researchers could link up with. For those reasons, in Poland and Sweden, one workshop was held with the aim of corroborating and disseminating the overall research findings. In France, one workshop was held focusing on three salient themes arising from the research: is integrated management the solution; how to manage “decentralisation”; and the role of citizens in flood risk management. In the Netherlands two case workshops were organised, a first one to share and discuss the results of the case study Nijmegen (also to generate new insights to take on board in the remaining two case studies in the Netherlands), and a second one to discuss the issue of the role of the public in flood risk management. In England, two workshops were conducted during the research

process, one discussing the national level results with a smaller circle of experts and a second discussing all research findings with a wider audience, involving, but not limited to, flood risk management practitioners who had participated in the interview process. Finally, in Belgium three workshops were held, one on the Belgian country level, one on the case study of Antwerp and one on the case studies of Geraardsbergen and Lessines.

The results of the workshops held in all STAR-FLOOD countries are combined in this report. Lessons learned, reflections and conclusions drawn from these workshops are incorporated in deliverable D3.2-D3.7, the country reports.

Every chapter is devoted to one country - Belgium (Chapter 2), France (Chapter 3), Poland (Chapter 4), Sweden (Chapter 5), the Netherlands (chapter 6) and England (Chapter 7) - and has a similar structure: after a short introduction including the number of workshops held in that particular country, the workshop process is described, after which a validation of research results per workshop is written down, containing insights gained on similarities and differences with the research results. Each chapter is concluded with policy recommendations valuable to other areas/countries and a succinct summary.

2 Belgium

Beyers, J.-C., Mees, H., Suykens, C., Crabbé, A., Delvaux, B. & Deketelaere, K.

2.1 Introduction

This report presents the results and conclusions of three workshops held in the context of the Belgian part of the STARFLOOD-research: the first workshop took place on 19 June 2014 in Antwerp, the second workshop was organised on 19 January 2015 in Geraardsbergen and the final workshop was held in Brussels on 26 March 2015. These workshops were organised in a close cooperation between Grontmij Belgium and the STAR-FLOOD-researchers from the universities of Antwerp and Leuven, whereby the former took on the practical organisation (with exception of the first workshop), and the latter provided the actual content of the workshops.

This report serves a double aim:

1. First, this report is a deliverable for the fourth work package of the EU7 Framework Project STAR-FLOOD (www.starflood.eu). STAR-FLOOD stands for: “*STrengthening And Redesigning European FLOOD risk practices: Towards appropriate and resilient flood risk governance arrangements*”. The project aims to analyse, explain, evaluate and design policies to better deal with flood risks from rivers in urban agglomerations across Europe. It therefore investigates, from a combined public administration and legal perspective, strategies for dealing with flood risks in 18 vulnerable urban regions in six European countries: Belgium, Sweden, Poland, The Netherlands, France and England.
2. Second, this report presents the results and the conclusions of the workshop organised by the Belgium STAR-FLOOD-team. These workshops form an integral part of the research, since they allow to test the research results and to identify possible gaps. Furthermore, the final workshop provided a chance for the researchers to disseminate their knowledge to the main actors involved within the Belgian Flood risk governance.

Next to more general information on the workshop (date, location and participants), the reader may find in this report notions on, firstly, the objectives that were put forward, secondly, the concrete programme and activities of which each workshop consisted, thirdly, the similarities and differences of the research results with the visions expressed in the workshop, fourthly, the insights that were generated during the workshop and finally some policy recommendation that came out of the workshop.

2.2 Case study workshop Antwerp

2.2.1 Workshop process

This workshop was organised by the STAR-FLOOD researchers of the University of Antwerp and KU Leuven.

2.2.1.1 Objectives

The principal aim of our workshop was to test the results from our first case study. By presenting them to the principal actors we had interviewed in the research process, we hoped to have our first results confirmed or refined. The workshop also had the goal of bringing the main actors involved within the Flood Risk Governance Arrangement together to reflect on the current strengths and weaknesses of the arrangement and on how this could be improved. Moreover, at the workshop there was a presentation from the Environment Department of the city. For them the workshop functioned as a first gathering of parties involved in their climate adaptation strategy.

2.2.1.2 Date, location and participants

Date: 19 June 2014

Location: University Antwerp

There had been 12 officials invited, of which 8 in the end participated (see the annex on p.18 and following).

As is clear from the overview of stakeholders, the participants were drawn mainly from the level of the City of Antwerp, but also from the Province of Antwerp and from the level of the Flemish Region.

Four of the invitees had to excuse themselves on short notice and could therefore not be replaced in time. Two of them were direct colleagues of the participants and their presence was therefore not essential. The other two represented actors from emergency planning and navigable waterways. The absence of these stakeholders has possibly influenced the results of our workshop. They have however been asked to review our case study results on an individual basis.

Each of the participants has been interviewed during the data collection of the case study, which was helpful to increase their willingness to participate. The participants seemed to appreciate the chance they had to reflect on problems of flood policy in group and to react on our first results.

2.2.1.3 Programme & activities

The workshop started with a SWOT-analysis, carried out in two groups formed by the participants. Every group had to reflect on the strengths and weaknesses of flood policy in Antwerp and on what it saw as opportunities and threats. The discussion was recorded and written down by the STAR-FLOOD researchers. By opening the workshop with the SWOT-exercise, we wanted to capture first the opinion and ideas among the participants before influencing them potentially with our own results. Of course, many of the things discussed had been already brought up during the interviews but with this exercise we could let the viewpoint of the single respondents interact with each other.

After the SWOT-analysis the STAR-FLOOD researchers presented their first case study results, in a presentation of 15 minutes. The presentation was followed by a 'proposition game'. Every participant received a written proposition, based on the results of the study, on which they had to reflect for 5 minutes. In total there were 4 different statements. Afterwards every proposition was discussed in plenary meeting, where two participants had to start giving their opinion before opening the discussion to the rest of the group.

The propositions were the following:

1. There is a high degree of fragmentation and a lack of coordination present among the involved actors at Flemish and local level, which leads to inefficiency.
2. Enforcement on the ground forms a significant bottleneck in the flood policy of the City of Antwerp, e.g. the requirement of green roofs or the application of the permit conditions resulting from the Water Test.
3. The instruments offered by the Decree on Integrated Water Policy and more generally by the Flemish government are (in)sufficient in the framework of flood prevention in Antwerp.
4. Citizens should be more involved in flood management by:
 - Citizen participation in decision-making
 - Taking own protection measures
 - Participating as a volunteer during emergencies

After the proposition game, there was supposed to be time left for open feedback on the case study results but due to a lack of time in our schedule this had to be skipped. The participants have been given the possibility to submit personal written feedback by e-mail. The workshop ended with a presentation of the Environment Department of the City on their climate adaptation strategy and lunch.



Figure 2.1: Antwerp workshop at a glance (Source: Ann Crabbé)

2.2.2 Validation research results

2.2.2.1 Insights generated during the workshop

The workshop made us more aware of the discrepancy between the ambitions of the City to give space to water and the implementation of these ambitions. We already detected this problem at the private domain, namely in the context of the lack of enforcement of green roofs and the Water Test on the

ground. However, according to the participants of the workshop, the problem is even more persistent in the public domain. Antwerp wants to picture itself as a 'water city' but when one takes a look at concrete designs of public spaces, room for water is limited to a small number of pilot projects. Therefore, we can conclude that the discourse of providing space for water is not a general attitude of the project designers yet.

Whereas we assumed that the actors of the FRGA in general consider floods as a government responsibility, we had to nuance this assumption following the workshop and the outcome thereof. The discourse of government responsibility is indeed prevailing in the Flood Defence Arrangement but this is not entirely the case in the other sub-arrangements. We knew from our interviews that actors from the Flood Preparation Arrangement advocate a modest discourse of self-reliance but in the Urban Water Management Arrangement, namely the Arrangement encapsulating the strategies of prevention and mitigation, we had not heard any statements in that direction. On the contrary, most of our respondents were sceptical about including citizens in the decision-making process. But looking at the rules of the sub-arrangement, it is clear that many of them are to be implemented by private owners instead of by the government. Based on the above and following this line of reasoning, it could be noted even though the actors of sub-arrangement do not make clear statements on responsibilities and although they do not systematically want to include citizens in all levels of the decision-making process, they do see individual citizens as a responsible actor of the Flood Risk Governance sub- Arrangement.

2.2.2.2 Similarities and differences with research results

The results from the workshop largely confirmed what we had already discovered in our research: Antwerp disposes over considerable resources and expertise compared to an average municipality and applies a variety of strategies. As is the case in the entire Flemish flood risk governance, the high number of involved actors leads to inefficiency. Other bottlenecks are the lack of flood awareness and involvement of citizens in the FRGA and a lack of enforcement.

There was however a number of details that differed from what we had investigated in our research:

- During the interviews we received mixed messages on whether the City Government provided sufficient space for water in the public domain or not. Several respondents pointed this out as a problem but actors from two other departments declared the City does take it sufficiently into account. During the workshop at the other hand, everyone seemed to agree that the City could do more to provide possibilities for water infiltration and space for water at a concrete and practical level. The City has the right ambitions at a more abstract level but its implementation is staggering.
- Some of our respondents had indicated that not only among the water managers there is a high number of fragmentation but also within the City Administration competences are spread over many different departments. Within the workshop it was however not raised as a problem. According to a participant, the management within Antwerp is well-coordinated thanks to its horizontal governance structure.

2.2.3 Policy recommendations

There are certain preliminary lessons that we have drawn from our research in the context of the case study of the city of Antwerp.

One of the issues that we consider can be found at many levels both within the different echelons in Belgium as well as in other countries, relates to the fragmentation of actors and rules in the context of flood risk management. The issue of fragmentation can often not be solved in the short or even in the mid-long term. One of the remarks that was raised during the case study workshop is that the many borders, i.e. the Regional borders, the different categories of watercourses, etc., and the fact that competences are shattered should not constitute excuses to not cooperate.

What we can learn from this, is that, within a specific institutional setting wherein a small or large level of fragmentation exists, the need for structural cooperation and coordination mechanisms between the relevant groups of stakeholders is pivotal. This way, the fragmentation can be tackled without having to completely overhaul the institutional system. Reference can be made to the existing horizontal coordination within the relevant departments at the level of the City of Antwerp.

These coordination and cooperation platforms and mechanisms could be made more explicit, following a systematic review of the fragmentation existing at the different levels. Indeed, we consider fragmentation in the context of the Antwerp sub-FRGA to exist at four levels, i.e. at the level of the management of the water, at the level of the applicable legal instruments, at the level of the day-to-day operation of the different departments and at the level of the emergency management.

With regard to the fragmentation at the level of the applicable legal instruments, a possible solution could exist of a “one stop shop” through a portal website related to the legal framework for flood risk management in the City – so that citizens have access to the substantive and procedural rights and requirements that exist and that do not necessarily ensue explicitly from FRM, but touch upon it. The requirement of green roofs would then be listed as a measure in the context of FRM, which is also beneficial in light of climate change adaptation, and results in direct benefits for the citizen installing the green roof. It would be clearly set out why these green roofs are important, which would then feed into the initiatives of sensibilisation of citizens and the lack of enforcement. As it currently stands, the green roofs are listed on the website of the City of Antwerp as part of “premiums and subsidies”, with no link to FRM or climate change adaptation.¹

With regard to the fragmentation at the level of the departments of the city of Antwerp and the emergency management, solutions would be more situated in procedural requirements: information exchange and publication, prior notification when adopting measures, etc.

¹ This feeds back into the issue that Antwerp does not have a coherent FRM framework, but more “hidden” measures and bits and pieces that can be considered as forming part of FRM.

A second issue is twofold and can be tackled jointly, namely on the one hand sensibilisation and on the other hand enforcement. Our research has shown, and the case study workshop has confirmed, that a significant bottleneck is related to the lack of enforcement of some of the key instruments. The workshop has made clear that many stakeholders consider enforcement to go hand in hand with sensibilisation of the citizens. We can therefore recommend to tackle both issues in parallel. An evaluation could be carried out, reviewing where the enforcement loopholes exist, and where the possible solutions lie. Part of the suggested solution related to green roofs has already been set forth above (explaining citizens why green roofs are important but at the same time beneficial to them). Another aspect of the solution can consist of several options. The first option exists in reshuffling the resources at the level of the City of Antwerp with the aim of assigning more manpower to follow up on, control and enforce the provisions included in the Building Code on the field. The second option exists in integrating the follow-up of these provisions into already existing control mechanisms, for example, in the context of the issuance of the energy efficiency certificates, or in the periodic inspections on water discharge executed by rio-link, the entity that is responsible for the management of the sewerage systems in Antwerp. It should be noted, however, that the enforcement issue cannot be tackled at the level of the City of Antwerp alone. For example, the instrument of the water test is embedded into the Flemish legal framework, and its enforcement should therefore be improved at this level. Steps are being taken in this direction (e.g. the Flemish environmental enforcement court is integrating specifically the enforcement of the water test into its yearly assessment). Naturally, these measures should be followed up by the relevant civil servants in the City of Antwerp.

2.3 Case study workshop Geraardsbergen en Lessines

2.3.1 Workshop process

The workshop was organised by the STAR-FLOOD researchers involved from the University of Antwerp and KU Leuven. The event was financed by Grontmij Belgium, and a representative from this organisation was also present during the workshop.

2.3.1.1 Objectives

Similar to the workshop in Antwerp, the first aim of this event was to validate the findings from the case studies conducted in Geraardsbergen and Lessines, by presenting them to the interviewees of both cases. The workshop had however a second objective, namely to bring together all the relevant actors of flood risk management in the region, in order to stimulate the cooperation between them. Despite the fact that Geraardsbergen and Lessines are neighbouring villages and share the same watercourse (Lessines upstream, Geraardsbergen downstream), their flood risk governance arrangements are entirely distinct from one another. By organising this event, STAR-FLOOD wanted to strengthen the network between the actors involved.

2.3.1.2 Date, location and participants

Date: 19 January 2015, from 9.30 till 12.30

Location: Town Hall Geraardsbergen

The workshop was attended by 21 participants (see annex on p. 18 and following), with a well-spread mix of officials and citizens, participants from Flanders and Wallonia, and from all government levels and sub-arrangements.

Proceeding the workshop, all the participants had been interviewed by the STAR-FLOOD researchers. The citizen representatives made part of two organised stakeholder groups existing of flood-affected citizens. The only actors that were underrepresented were the navigable water managers. Neither W&Z nor DGO2 has responded to our invitation for the workshop. Their absence formed a barrier for the debate on the problematic decision-making process of the sluice renovation, since they are the key actors of this debate. In general however, we estimate there was enough diversification between the organisations present to allow for representative debates.

Since the workshop included participants from two Regions, a bilingual format was required. In their presentations, the STAR-FLOOD researchers switched between Dutch and French and the participants could follow the accompanying PowerPoint in their own language on two separate screens. During the discussion sessions, the participants were asked to talk in their own language and the researchers (and other participants) translated when needed.

2.3.1.3 Programme & activities

The workshop started with an introductory presentation of the STAR-FLOOD researchers to remind the participants of the aim and set-up of the project and to give an overview of the programme of the workshop. Afterwards, the participants were divided into 3 groups and were asked to make an evaluation of one of the sub-arrangements of the flood risk governance of the cases, being the urban water management arrangement, river management arrangement and flood preparation arrangement.² The evaluation concentrated on the following questions:

- Which changes have taken place in the sub-arrangement since 2010?
- What are the strengths and weaknesses of the sub-arrangement?
- Which changes should be made to prepare for the future, both on short and long term?
- Where can Geraardsbergen and Lessines learn from one another?

In general, the participants were assigned to the sub-arrangement they belonged to themselves but in every group some less obvious participants had been added in order to include an ‘outsiders’ perspective’. Besides, the group distribution aimed for a balanced spread of, on the one hand, Dutch and French speaking participants and, on the other hand, of officials and citizens.

In a second part of the workshop, the STAR-FLOOD presented their findings based on the case studies in Geraardsbergen and Lessines. Afterwards, the participants were again divided into 3 groups but with another composition than in the previous group exercise. This time, they were asked to debate a specific discussion topic, which was deducted from our case findings. The discussion topics were the following:

1. Should flood risk management be a shared responsibility between government and citizens?

² The urban water management arrangement includes measures to prevent damage caused by flooding within the city through spatial planning and mitigation measures, the river management arrangement focuses on the prevention of flooding through defence and mitigation infrastructure. Flood preparation contains measures of emergency planning.

-
- a. Is it, in certain cases, better to protect houses at an individual level?
 - b. Who is responsible for the costs and implementation of this type of individual protection?
 2. Is there a gap in the existing toolbox of spatial planning instruments for an effective flood risk management?
 - a. Does enforcement of regulation form an important bottleneck in the application of water advices?
 - b. Should the effectiveness of existing measures be raised through a stricter application of existing measures or by the introduction of new instruments?
 3. Do smaller cities dispose over enough financial means and expertise to enable an effective flood response?
 - a. Is an enlargement of scale in crisis response desirable?
 - b. Should the cooperation between government and citizens be intensified?

In a conclusive plenary session, each group gave a summary of the debate on their discussion topic. The workshop ended with a networking lunch.

2.3.2 Validation research results

2.3.2.1 Insights generated during the workshop

Whereas the multi-layer water safety approach presents flood risk management as a joined responsibility between governments and private actors, the participants of the discussion on topic 1 all agreed that if the government allows citizens to build somewhere it also has the responsibility to protect them from flooding. Consistently, VMM choose to fund individual protection measures itself in a first pilot project on the implementation of the FRMP-study.³ Within VMM, no official standpoint has been taken yet on whether the government will keep financing individual protection once the approach becomes generalised.

Neither officials nor citizens favoured the involvement of local inhabitants in the assessment and mapping of social vulnerabilities at neighbourhood level. According to the participants, it was more useful to make use of already existing services, such as the Public Centres for Social Welfare, family doctors, etc. Data of vulnerable citizens change continuously so it was not considered feasible to involve citizens in this process. On top, it could result in the active participation of the least vulnerable citizens on the expense of others.

Citizen involvement during flood crises was considered useful by the participants. One persistent bottleneck in the use of volunteers during emergencies is the question of liability. It is possible to insure volunteers on an ad hoc basis, as has been done in Geraardsbergen during the 2010 flood, but the disadvantage is that these volunteers also need to receive financial compensation.

A specific emergency plan on flooding at provincial level is not thought desirable by the officials present. The province must have primarily a supportive function for the municipalities in case of flooding.

³ Study carried out by the VMM in preparation of the Flood Risk Management Plans of 2016-2021.

A constantly returning debate is the apparent incapability of Flanders to implement the necessary flood protection infrastructure. It is confirmed that the decision-making procedures are very complex, but one participant believes this is more a matter of financial priorities. Another respondent questions whether the perceived difference in capacity to act of the Flemish and Walloon water managers is not simply based on perception. He points out that also in Flanders new infrastructure has been implemented, e.g. 3 retention basins. Also in this debate, no consensus could be found on whether the difference in action capacity was objective truth or subjective perception, and whether it was caused by legislative difference or financial priorities.

One example where the decision-making procedure in Wallonia differed from Flanders was given by a representative from DGO3. He explained how juridical proceedings for expropriation are avoided by concluding an agreement with the current landowners, whereby they can continue exploiting the land also after the expropriation has taken place. Actors from the Geraardsbergen arrangement showed themselves interested and confirmed there is nothing similar in Flanders.

Most importantly, the workshop demonstrated that coordination between the flood risk management arrangements on both sides of the linguistic barrier could still be improved. For most participants, it was the first time they met actors involved in flood risk management from other policy domains and regions. Also, the knowledge of actions and regulation developed in the other region appears to be small. It became clear both FRGAs had a lot to learn from each other in terms of best practices.

2.3.2.2 Similarities and differences with research results

The workshop has in the first place confirmed the findings from our interviews and document analysis. Besides, some additions were made which further refined the result of the case studies:

- People from city administrations pointed out that the follow-up of building conditions in the field is not only hampered by a lack of human resources, but also by cities not disposing of the necessary technical equipment for measuring.
- The participants of Geraardsbergen stress an effective communication structure with the affected population was created ad hoc during the flood of 2010. This was a more firm confirmation of what had been only vaguely mentioned during the interviews.
- The emergency planning official mentioned the City of Lessines is registered at IRM-Ethias, an alert system organised by an insurance company in cooperation with the royal weather institute. We had not come across this system in our research before. Next to that, the fire brigade officer regretted the flood warnings at infocruce.wallonie.be are updated only every 6 hours. Also this was new factual information.
- The participants on the session on the Flood Preparation Arrangement stated the contacts between the coordination committees of the two municipalities and between the provinces could be improved. Also in the prevention phase, more coordination would be desirable. This had not been raised so clearly during our earlier research.

One citizen of Lessines remarked that real estate announcements do not only give too little information but in some cases (of which he gave an example) the statements of flood vulnerability were simply false.



Figure 2.2: Geraardsbergen/Lessines workshop at a glance (Source: Ann Crabbé)

2.3.3 Policy recommendations

During our workshop, a number of policy recommendations were formulated which address policy-makers at different scales of government.

A first recommendation was made by participants in the debate on crisis management. Crisis managers confirm that cooperation between them and with water managers has improved after the 2010 flood but they remark that more pre-event coordination between safety cells would be useful. This applies for pre-event coordination between both crisis managers at municipal and provincial level. In periods when floods can be expected (between November and March), it would be interesting for municipal safety cells in the Dender basin to meet each other preventively.

Secondly, it was clear that there exists a lot of scepticism on the effectiveness and affordability of individual flood protection measures, both among water managers and citizens. All participants, however, have to admit that there is large lack of expertise on this topic. In some other European countries, e.g. UK, Germany,... this type of measures seem to be more generally applied. It would therefore be useful to have information exchange on this topic organised at a European level.

A general policy recommendation which can be derived from the workshop is that knowledge exchange between Flanders and Wallonia should be enhanced. The two regions stem from the same government structure but during the last 25 years, their approach towards flooding started to diverge significantly. As a result, there is a lot they can learn from each other. More opportunities should be organised for Flemish and Walloon flood risk managers to share best practices concerning spatial planning regulation, expropriation, crisis management, etc.

2.4 National workshop: Flood Risk Management in Flanders and Wallonia

2.4.1 Workshop process

The practical organisation of this workshop was done by Grontmij, in close cooperation with the researchers of KU Leuven and UAntwerpen. Concerning the actual content of the workshop, the academic partners took the lead.

2.4.1.1 Objectives

The principal aim of this workshop was knowledge dissemination to the main actors involved within the Belgian flood risk governance. Furthermore, by bringing them together, they could also reflect on the current strengths and weaknesses of flood risk management in Flanders and Wallonia and on how these strengths/weaknesses could be improved/overcome. By presenting the STARFLOOD-result to the principal actors, this workshop also allowed to test these results and to identify possible gaps in the research.

2.4.1.2 Date, location and participants

Date: 26 March 2015, from 12.15 till 18.00

Location: The Dutch Language House of Brussels

The workshop was a success with 81 registered participants. There was a well-spread mix of officials and citizens (see annex on p. 18 and following). Participants came from Flanders, Wallonia and Brussels, and from all government levels and sub-arrangements.

As can be noted from the list, the actors of the insurance sector were underrepresented. Despite various invitations, only one person of this sector attended the workshop. This low turn-out formed a barrier for a discussion on flood recovery arrangement, since they are key actors in this.

There was also a low turnout from actors of the Brussels-Capital Region. In general however, there was more than enough diversification between the actors present to allow for representative debates.

2.4.1.3 Programme & activities

The workshop started with an introductory presentation by Ann Crabbé: the STAR-FLOOD project was briefly presented and the results at the national and the case study level were amplified. More specifically, the trends and challenges were situated. In addition, practical information on (the course of) the workshop was given: the goal of the workshop, the speakers in the parallel sessions, directions to the various rooms, etc. This presentation was done in Dutch, with French translation available.

After this first introductory presentation, the programme continued with parallel sessions, for which the participants had to make their choice in advance. Two times two parallel sessions were organised.

1. Parallel sessions part 1:

- a. Flood risk governance with 3Ps, everyone prepared?
- b. The river basin approach and flood policy: does the shoe pinch?

(coffee break)

2. Parallel sessions part 2:

- a. The river basin approach in practise: learning from the river contracts in Wallonia
- b. Water and spatial planning, is there still room for improvement?

These sessions were done partly in Dutch, partly in French. The slides were provided in both languages.

After the parallel sessions, the workshop was concluded with a (English spoken) presentation by Dries Hegger on the similarities and differences in the STAR-FLOOD countries and with some closing words and acknowledgements by Ann Crabbé.

The parallel sessions:

➤ **Flood risk governance with 3Ps, everyone prepared?**

(Moderator: Hannelore Mees)

The goal of this session around crisis management was to see which contribution preparedness has to offer to flood management. Starting the session, Hannelore Mees presented the relevant findings of the STAR-FLOOD research. Subsequently, three guest speakers shared their experiences: (i) Aline Lacroix gave an explanation on the federal warning system BE-alert and on the first findings of a pilot study, (ii) Eddie De Block introduced the emergency committee of Merchtem by which citizens can be involved in emergency situations as volunteers and (iii) Joost Dewelde talked about the first experiences with water resisting building in a VMM-pilot project in Sint-Genesius-Rode and Beersel.

➤ **The river basin approach and flood policy: does the shoe pinch?**

(Moderator: Cathy Suykens)

This session examined the significance of flood risk policy on the scale of river basin districts and tried to identify the bottlenecks when bringing this approach into practise. Three speakers were chosen to give their insights on this topic. Jean Berlamont gave an introductory overview of the current flood problems and possible solutions. Cathy Suykens elucidated the provisions on organisation and cooperation resulting from the applicable legal framework, and also the (status of) their national implementation. Finally, Annie Vanslambrouck of Grontmij illustrated the study of the Molenbeek basin in Ronse as a practical example.

➤ **The river basin approach in practise: learning from the river contracts in Wallonia**

(Moderator: Hannelore Mees)

This session aimed to verify to what extent the river contracts succeed in bringing the river basin approach into practice, which bottlenecks thereby have to be overcome and which contribution they have to the flood risk policy. Firstly, Augustin Smoos (DGO3) and Carole Van Roy (CdR Senne) presented the functioning of the river contracts in practice. Afterwards, Hannelore Mees presented the evaluation of the STAR-FLOOD project made of the coordination mechanism and compared them with the basin boards in Flanders.

➤ **Water and spatial planning, is there still room for improvement?**

(Moderator: Jean-Christophe Beyers)

This session wanted to identify the current spatial planning instruments and bottlenecks in the Flemish and Walloon Region and see which lessons can be learned one from another. Bram Vogels gave an overview of the measures that have been taken in the Flemish Region since the entry into force of the Decree Integrated Water Policy, followed by a presentation of Jean-Christophe Beyers on the situation in the Walloon Region. Where relevant, a comparison with the Brussels-Capital Region was made. The session ended with time for debate, during which the attendees could give input to the researchers.



Figure 2.3: National workshop at a glance (Sources Ann Crabbé (1/2/3) and Jan Van den Bossche (4))

2.4.2 Validation research results

2.4.2.1 Insights generated during the workshop

➤ **Session: Flood risk governance with 3Ps, everyone prepared**

Several participants afterwards confirmed that the information they received in this session was new to them. Especially the first results of the VMM project on flood resilient building received a lot of attention. During the workshop, it became even more clear that the Flemish government has not a clear view yet on where they want to go to with their multi-layer water safety strategy. With their pilot project they gained a better view on the possibilities of flood resilient building, but it remains to be discussed which policy instruments should be developed to implement these measures and who is responsible for this type of protection. Unfortunately, there was no time for debate left to probe the reactions and suggestions of the participants.

➤ **Session: The river basin approach and flood policy: does the shoe pinch?**

After the session, certain attendees stated that they found the presentation by Jean Berlamont very useful, in the sense that it gave a clear and extensive overview of the problems and (possible) solutions concerning floods.

The presentation of Cathy Suykens firstly approached the aspect of the river basin approach from a European (and international) law perspective. This provided the participants with several insights to which less (or no) focus is put on in the STARFLOOD-research. Secondly, the (application of the) river basis approach was situated within the national boundaries. Although more or less known to most attendees, Cathy Suykens clearly identified the bottlenecks of the Flemish river basin approach, namely the lack of financial means, the dependency on administrations and the lack of personnel. Possible solutions for these bottlenecks were given. These bottlenecks and their solutions were in line with the recommendations formulated in the STARFLOOD-research. Unfortunately, there was no time for debate

left to discuss this further. In this session, reference was made to the subsequent session on the river basin approach, namely from a practical perspective.

➤ **Session: The river basin approach in practise: learning from the river contracts in Wallonia**

The information presented in the session was all known to the researchers but judging from personal responses, the system of the Walloon river contracts was not well known to most Flemish participants. Personal remarks after the session also confirmed more frankly what had already been observed during the research, namely that the river contracts in Wallonia are much better perceived than the basin boards in Flanders.

➤ **Session: Spatial planning and flood policy, is there still room for improvement?**

After the session, various attendees stated that the information given in the presentations was complete and clearly explained.

In his presentation, Bram Vogels indicated that the VMM is currently in conversation with the insurance sector (which is up to now less involved in the flood risk management) on how information can be exchanged. In addition, they also want to take other initiatives together, such as drafting a type of risk-score.

During the discussion, one participant brought up the idea of a rainwater tax on paved surfaces. According to him, this could be a strong financial instrument to counter the negative effects of hardening. He mentioned Germany as an example in this aspect. Another participant formulated reservation about the practical implementation of such as a tax.

2.4.2.2 Similarities and differences with research results

The workshop formed a valuable confirmation of the findings in the STAR-FLOOD research. This can be clearly illustrated by the evaluation of the coordination mechanisms at basin level in Flanders and Wallonia. The first observations during the STAR-FLOOD research were that there existed a lot of frustration about the malfunctioning of basin boards in Flanders, whereas the river contracts in Wallonia seemed to be perceived very positively. Later in the research this finding was nuanced a bit, since there seemed to be a lot of variation in the functioning of the different basin boards and river contracts. However, the workshop indicated that the first findings largely hold. The VMM's reputation of being a strictly hierarchical structure with little room for open debate was confirmed by some facts, namely the VMM wanted to be involved in the organisation of the session, its 'representatives' were asked to attend the workshop,... This reputation was also confirmed by several participants from water managers during informal conversations after the session.

2.4.3 Policy recommendations

The Walloon and Flemish Region face very similar challenges. Consequently, they can learn a lot one from another by sharing their best interests. This requires that one knows the best practices from the other Region. However, during the workshop (e.g. in the session on spatial planning and water), it became clear that for most participants information presented about the other Region was new. Therefore, it is valuable to organise this type of interregional events. It allows that policy makers and practitioners in the field get to know each other and can exchange their experiences and knowledge.

Concerning crisis management, many innovations are developed at local level, e.g. SMS system in Geraardsbergen, emergency committee in Merchtem, etc. Consequently, it would be desirable to have more information exchange between crisis managers on this type of initiatives. Also more support from the federal level could be useful, for example by providing a framework for flood preparation measures or by helping to organise this type of information exchange.

For Flemish basin boards to be a more effective organisation, they either need more human resources or a restructuring of their organisation. An example for the latter could be the river contracts in Wallonia, which are structured more flexible and locally-rooted with their legal statute as a non-profit organisation. A big difference between the two organisations is that basin boards have responsibilities in drafting the river basin management plans, whereas river contracts do not. Consequently, they do require a more formal, governmental organisation. However, if the basin boards want to take up, in addition to their role in the formal planning, a role of facilitator of local deliberation, they will need more resources in terms of staff and a more independent position.

A debate is needed on how to go on with sharing public and private responsibilities in flood risk management. A first step in this direction could be the CIW-Symposium of 16 November.

2.5 Summary, open issues & follow up

In a close cooperation between the academic researchers of KU Leuven and UAntwerpen and Grontmij Belgium, three workshops (two case study workshops and one closing workshop) were organised in Belgium.

The first case study workshop took place on 19 June 2014 and pertained to the case of the City of Antwerp. The first research results (see annex on p.18 and following) were presented to 8 officials, which largely confirmed them. Insights that were generated during the workshop were, firstly, that there is a discrepancy between the ambitions of the City to give space to water and the implementations of these ambitions and, secondly, that the assumption that governmental actors of the FRGA in general consider floods as a government responsibility should be nuanced. Also some preliminary lessons could be drawn from this workshop, e.g. within a specific institutional setting with a certain degree of fragmentation (as is the case in Antwerp) the need for structural cooperation and coordination mechanisms between the relevant groups of stakeholders is pivotal.

The second case study workshop, on 19 January 2015, covered the second and third case studies, namely Geraardsbergen in the Flemish Region and Lessines in the Walloon Region. It was thus an inter-regional case study workshop, i.e. involving 21 stakeholders both at the level of the Walloon Region and the Flemish Region. Similar to the Antwerp workshop, the first aim of this event was to validate the findings (see annex on p.18 and following). The workshop had however also a second objective: by organising this event, STAR-FLOOD wanted to strengthen the network between the Flemish and Walloon actors involved. During the workshop several insights were generated and a number of policy recommendations were formulated, e.g. that the knowledge exchange between Flanders and Wallonia should be improved. For most participants, it was namely the first time they met actors involved in flood

risk management in the other region. Consequently, a general consensus was that both regions could learn a lot from each other.

The final workshop, organised on 26 March 2015, was a national workshop, with stakeholders of the regional and federal level, with as primary goal the dissemination of the research results. This goal was achieved: the workshop was well attended with a good mix of officials and citizens. Since the aim of this workshop was knowledge dissemination, the researchers gathered no real 'new' insights. However, the workshop formed a valuable confirmation of the findings in the STAR-FLOOD research, e.g. several participants confirmed our evaluation of the coordination mechanisms at basin level in Flanders and Wallonia. During the workshop, it also once again became clear that for most participants information presented about the other Region was new. The value to organise this type of interregional events was thus once again confirmed.

An important issue to follow up is how the knowledge exchange between the Flemish and Walloon Region can be improved. Although both Regions are a part of the same country and face very similar challenges, it became clear during the workshops that the actors involved very often do not know much about the flood risk management approach in the other Region. Consequently, they can still learn a lot one from another by sharing their experiences and best practices, e.g. on the organisation of coordination at basin level (i.e. Basin boards in Flanders and River Contracts in Wallonia). Interregional events, such as the workshops in Geraardsbergen and in Brussels, allow that policy makers and practitioners in the field get to know each other. The fact that participants of the Geraardsbergen-Lessines workshop stated that they would do efforts to meet their colleagues on the other side of the language boarder on a more regular basis in the future, can therefore only be applauded.

Also on other levels, more information exchange would be desirable. It would for instance be interesting for safety cells in the Dender basin to meet each other preventively at the beginning of the period when floods can be expected. Another example would be the emergency committee in Merchtem, about which information could be circulated as an example of a best practice. In general, one can state that in the context of flood risk management, structural cooperation and coordination between actors is of vital importance.

Another issue that needs attention is the debate on public and private responsibilities in flood risk management. There is not always consensus on where the responsibility of the government stops and those of the citizens begins. Furthermore, during the workshops, it became clear that there still exists a lot of scepticism and lack of information on the costs and benefits of individual flood protection measures. This issue is also closely linked to sensibilisation of the citizens, which goes hand in hand with enforcement of (some of) the key instruments. Various solutions are possible for this, however, it is preferable that these issues are handled in parallel.

Finally, at the Antwerp workshop there was a presentation from the Environment Department of the city on their climate adaptation strategy. The evolution of (the putting in progress) of this strategy, together

with its link to flood risk management, is interesting to follow up. The same is true for the (enforcement of the) requirement of green roofs in Antwerp.

Annex. Participants

1. Workshop case study Antwerp

Participant	Organisation
Bram Vogels	VMM
Philippe Teughels	City Antwerp
Griet Lambrechts	City Antwerp
Marcello Serrao	City Antwerp
Katrijn Apostel	City Antwerp
Piet Van Laecke	City Antwerp
Heleen Geeraert	rio-link
Didier Soens	Province Antwerp

2. Workshop case study Geraardsbergen and Lessines

Participant	Organisation
Davina Vandebossche	City Geraardsbergen
Liesbet Van de Castele	City Geraardsbergen
Bert De Clercq	Fire brigade Geraardsbergen
Karel Leliaert	VMM
Inge De Jongh	VMM
Luc De Winne	Province East-Flanders
Elke Allaert	Emergency Planning East-Flanders
Riet Van Mieghem	Scheldt without borders
Moens	Scheldt without borders
Debby Hulshoff	citizen Geraardsbergen
Julien Van Den Bremt	citizen Geraardsbergen
Peter Van Israel	citizen Geraardsbergen
Rurik Van Landuyt	citizen Geraardsbergen
Guy Leerens	City Lessines
Virginie Fantoni	City Lessines
Jean Lecomte	DGO3
Julien Lecomte	Province Hainaut
Marie Amorison	CdR Dendre
Maxime Colin	CdR Dendre
Christian Marchand	citizen Lessines
Alex Vandenberg	citizen Lessines

3. National workshop

Participant	Organisation
Jean-Christophe Beyers	KU Leuven

Cathy Suykens	KU Leuven
Hannelore Mees	UAntwerp
Ann Crabbé	UAntwerp
Dries Hegger	U Utrecht
Jan Van Den Bossche	Grontmij
Annie Vanslambrouck	Grontmij
Ingrid Breugelmans	Grontmij
Anne Bergmans	UAntwerp
Leonardo Van de Wiele	UAntwerp
Valentina Belcheva	UAntwerp
Kristine Van Herck	KU Leuven
Jean Berlamont	KU Leuven
Herman De Bruycker	Polder van Belham
Katrien Coene	Polder Noordwatering Veurne
Heleen Geeraert	Rio-link
Ouédraogo	KBC Insurance
Wim van Gils	Natuurpunt
Kevin Moens	Palindroom
Griet Lambrechts	City Antwerp
Marcello Serrao	City Antwerp
Katrijn Apostel	City Antwerp
Bram Vogels	VMM
Sven Verbeke	VMM
Kris Cauwenberghs	VMM
Neel Devroede	VMM
Kristof Decoene	VMM
Filip Raymaekers	VMM
Katrien Thomaes	VMM
Karel Leliaert	VMM
Matthias Vanden Bulcke	VMM
Joost Dewelde	VMM
Tom Gabriëls	VMM
Bob Peeters	VMM/MIRA
Luc De Winne	Province East-Flanders
Malfroid Diederik	Province East-Flanders
Marijke Van Hoorick	Province Flemish Brabant
Mieke De Wilde	Province Flemish Brabant
Kathleen Van Dorslaer	Province Antwerp
Robin De Smedt	Spatial planning Flanders
Emilie Verwimp	Spatial planning Flanders
Bien Weytens	Spatial planning Flanders
Micheline Gruwé	W&Z
Annick De Winter	W&Z

Elizabeth Vogelaers	W&Z
Kathleen Fontaine	NV De Scheepvaart
Edward Van Keer	MOW
Toon Verwaest	MOW
Christophe Claeys	VVSG
Leen Boeckx	WL – HIC
Maarten Deschamps	WL – HIC
Evelyne Teugels	Emergency planning Province East-Flanders
Lars Van Kerschaver	Emergency planning Province East-Flanders
Marc Looze	Civil protection
Jan Geenen	Civil protection
Christoffel Merckx	Federal crisis centre
Aline Lacroix	Federal crisis centre
Eric de Deckere	Port of Antwerp
Eddie De Block	City Merchtem
Guy Leerens	City Lessines
Barbara De Maeyer	SPW
Fessel Benjelloun	SPW
Ancion Samuel	SPW
Didier Descamps	SPW
Augustin Smoos	SPW-DGO3
François Mayer	SPW-DGO3
Jean-Charles Horlait	SPW-DGO3
Audrey Lahousse	SPW-DGO3
Vincent Scuffleire	SPW – DGO3
Delphine Pontégnie	SPW-DGO2
Pauline Ducarme	CdR Senne
Sébastien Delferrière	CdR Senne
Bernard Balon	Province Liège
Bruno Khuat Duy	Province Liège
Frédéric Leroi	Walloon Brabant
Cristian Marchand	asbl Comité des inondes de deux acren et de l'entité
Pierre Robaye	Emergency planning province Namur
Catherine Baudinet	Emergency planning province Walloon Brabant
Michael Antoine	IBGE-BIM
Anne-Claire Dewez	IBGE

3 France

Jadot, J., Bauduceau, N., Schellenberger, T., and Larrue, C.

3.1 Introduction

One case workshop was organised in France. It was a full day meeting including the research team, dissemination partner and policy makers/practitioners from ministries, “deconcentrated” State, local authorities, private sector and associations.

Academic and dissemination partners decided to hold one workshop, a little bit before the end of the WP 3, after the national and the cases analysis already well progressed, in order to propose attractive contents to the participants and to leave enough time to take to include the workshop results in the research after the workshop.

The workshop consisted of presentations of the research results by the academic partner, presentations of the local situations from territory managers from the case studies, and discussion times with all participants. A large part of the day was dedicated to discussions.

3.2 Country and case study workshop in Paris

3.2.1 Workshop process

3.2.1.1 Objectives

The 4 main objectives of the workshop were:

- To present and discuss the case study and national analysis results with policymakers and practitioners.
- To develop a flood risk management network
- To validate the research results by exchange and discussions
- To formulate policy recommendations and highlight lessons for other regions.

3.2.1.2 Date, location and participants

The workshop was held in Paris on Thursday 2nd of April.

The workshop gathered 29 persons, 7 from the CITERES Laboratory from Tours University, 3 from CEPRI and 19 invited persons from different organisms, mainly from ministries, “deconcentrated” State, local authorities, private sector (insurance) and associations. The details of the participants are given in the list below.

Table 3.1: Participants to the workshop in Paris

NLast name	First name	Organisation
Bastaroli	Eric	Communauté d’Agglomération de Nevers
Bauduceau	Nicolas	CEPRI
Bouguyon	Léa	FNE
Broussillon	Medhy	EPTB Seine Grands Lacs
Brule	Claude	GIR Maralpin

Bruzzo	Silvia	UMR CITERES
Chenesseau	Marielle	Communauté d'Agglomération Orléans val de Loire
Diallo	Alpha	
Estoc	Mélanie	Ministère de l'Intérieur
Forite	Claire	AFEPTB
Fournier	Marie	UMR CITERES
Goetschel	Florence	Conseil départemental du Val de Marne
Gralepois	Mathilde	UMR CITERES
Griffon	Valérie	CEPRI
Guenon	Catherine	Ministère de l'Intérieur
Guezo	Bernard	CEREMA
Guillier	Flora	MRN
Jadot	Julien	CEPRI
Larrue	Corinne	UMR CITERES
Legros	Sébastien	DDTM Seine Maritime
Levy	Lisa	UMR CITERES
Marcovitch	Daniel	
Mengus	Christine	Ministère de l'Intérieur
Nussbaum	Roland	MRN
Robert	Sandrine	DRIEE Ile de France
Schellenberger	Thomas	UMR CITERES
Souriguere	Katia	Conseil départemental des Alpes Maritimes
Sroka-Picot	Malgorzata	CCR
Tremorin	Jean-Baptiste	UMR CITERES

3.2.1.3 Programme & activities

The day was organised in two parts, corresponding to two scales of study, the morning dedicated to the international and national levels and the afternoon to the local level.

National and international levels:

French national situation compared to other STAR-FLOOD countries

After a brief explanation of the work methodology, the five Flood Risk Management (FRM) strategies and the frame used for the analysis, Corinne Larrue presented the French national situation compared to the other countries participating in the project. Four main points were highlighted:

- the situations at local as well as at national levels and the different ways the flood risk is managed in each country vary a lot, for example in relation to past shock events, the way of working of the national and local authorities, the way the interactions between national, regional and local levels are traditionally organised, also the organisation of private-public partnerships.
- The problem has many representations, from Poland where flood risk is the main risk to Sweden where there is no real flood risk policy, with intermediary situations like in the Netherlands and Belgium where flood risk management is a question of water management and England, where it is a multi-dimensional problem linked to different policies.

- The objectives are different from one country to another, and can be characterised by 2 main tensions: 1) safety maximisation by increasing the protection levels (in Poland and Netherlands), in tension with the minimisation of vulnerability and 2) the principle of solidarity (in France) in tension with the notion of private responsibility (England and Sweden).
- Actions taken by the countries do not correspond to their discourses. In Poland, for example, the discourses support the solidarity principle, but the country does not have the means to fully implement such a solidarity policy.

The main characteristics of the French flood risk policy were introduced through three important questions:

1) Tools and resources: is integrated management the solution?

The defence system seems to have a predominant role in the French flood risk management policy. Even if the central role of flood defence is questioned today, because of high maintenance costs of infrastructure, this strategy is still important in terms of legal responsibility and political legitimacy. In the 80's and 90's new tools have been introduced in this policy: preventive planning and compensation for the victims. But their importance appears to be limited compared to post-crisis management (Cat-Nat system), keystone of the French policy. While looking at the crisis management it seems to evolve on its own side, depending on the different catastrophic events.

The particularity of the French policy is that it revolves around a two-part organisation: prevention / compensation. In theory this organisation makes sense, but the structure of these two strategies faces implementation difficulties linked to different interests of private and public stakeholders.

The adaptation of the Cat-Nat system appears to be a central point in the general evolution of the system, in order to ensure its sustainability to face the increasing number of catastrophes and the increasing impact of major events. Numerous stakeholders consider that it is a necessary prerequisite in order to reinforce the prevention measures.

2) The question of “decentralisation”

In France, lots of actors are involved, at different levels, in flood risk management: ministries, every level of local authorities, water actors, research centres, private sector (construction sector, insurance) and the population. It induces complex relations between all these stakeholders mainly on the questions linked to competencies and responsibility. Since the European Floods Directive transposition in 2010 and the recent MAPAM law (*Loi de modernisation de l'action publique territoriale et d'affirmation des métropoles* / Law of modernisation of the territorial public action and reinforcement of the metropolis) , a reshuffle of responsibilities, defining a new equilibrium between national and local levels, can be observed. This raises some questions: how far should the homogenisation of the public action go, taking in consideration the wide variety of risk and stakes of local development? Will it be possible to give more responsibility to local actors without increasing their say in policymaking?

3) A merging question: what is the role of the citizen, flooded, at risk of flooding, inhabitants, riparian, in flood risk management?

Population involvement is a legal requirement but its level of implementation is low. Public information and public participation to decision processes can enhance the feeling of responsibility of citizens and ease the implementation of flood management policies. But a form of tension can be noticed. At the national level, the State wants a more active participation of the population but uses the same outdated tools as before. At the local level, local authorities initiatives face lack of interest of the population, which could be explained by the fact that the population is frequently solicited after the decision is taken, decreasing its interest to participate.

Local level

The local situations of three case studies were presented during the afternoon in order to share the results with the participants and to discuss local issues regarding flood risk management and governance. Unfortunately no representative from Le Havre could join our meeting, so the research team gave a presentation of the context of this case.

The presentation on **Nevers** was focused on the importance of a study: EGRIAN (Global Flood Risk in Nevers Agglomeration Study) held between 2007 and 2013. Its objective was to develop a strategy for flood risk management. This study also had an important part dedicated to information and communication to the concerned populations and other stakeholders. Nevers Agglomeration associated “deconcentrated” State services to the study and the results, which eased a lot the adoption of the strategy for this area with potential significant flood risks. The next step will be the implementation of this strategy through a PAPI (Programme d’Action de Prévention ds Inondations⁴).

For the **area of Nice**, the presentation showed that there is an historic water management gathering the different stakeholders concerned. They are acting with the concern of ensuring both economic development and sufficient space/protection for the water. There is a unique leader (Conseil départemental des Alpes Maritimes) both for water management and for flood risk management, who set up a flood risk management strategy in collaboration with Nice Côte d’Azur Métropole, Nice City, l’Établissement Public d’Aménagement de la plaine du Var, Gattières City and the “deconcentrated” State, implemented through a PAPI. For the down stream Var Valley, flood risk management seems to be well integrated with other local development issues, especially economic development. It is interesting to note that there is a willingness to set up a basin structure in order to manage, in the frame of the GEMAPI (Gestion de l’eau, des milieux aquatiques et prevention des inondations⁵), the issues linked to the small coastal rivers.

In **Le Havre** there is an important and historic tradition of industrial risk management which brought the local stakeholders to proactively take in consideration the flood risk. There was a good consideration of the flash-floods coming from the Chalk Plateau when the Floods Directive introduced the consideration of tidal floods, which were more or less not taken into account since the 1980’s. When the Floods Directive arrived there was a strong local organisation of the different stakeholders. They have the skill and knowledge allowing them to expertise the risk and to protect their interests. Facing these

⁴ Plan of action for flood prevention

⁵ Water and water environment management and flood prevention

stakeholders, the “deconcentrated” State services face important budget restrictions and difficulties to react in front of Le Havre city, Le Havre Agglomeration, and the harbour. This led to restricted agendas on the map production for the territories with potential significant flood risks. This led also to difficulties for the weakened “deconcentrated” State services to convince the local authorities to carry the local strategy.

Each presentation was followed by a discussion time which results are presented in the part 3.

3.2.2 Validation research results

3.2.2.1 Insights generated during the workshop

Although the practitioners are interested in the international comparison of the national contexts, the local level remains their main interest (for the local stakeholders). Maybe the central state (Ministry of Environment) would have other interests.

The 3 questions used to present the French national analysis are perceived as a relevant perspective by the participants of the workshop. They found them close to their own preoccupations.

The workshop highlighted that the set-up of relevant and consensual local strategies requests tools and time.

It has also be confirmed that the reduction of the State’s means impacts the implementation of the Floods Directive and in a more general way that it impacts also the balance in the existing relationships and power game between State and local authorities. This reducing of the State’s means (staff and skills, capability to produce information on the risk) began with the 1st decentralisation law in 1983. Progressively the local authorities increased their own capabilities and it can be considered that the State lost his dominant position in the early 2000’s.

The French landscape of flood risk management is characterized by its wide variety of strategies and is very fragmented in terms of responsibilities. This induces a lack of clarity of the flood risk management policy. What is more, this policy is set up on a fragile base of actors whose competences are not stabilised.

In fact and for the main points of flood management, France is a very low “decentralised” country, as shown by the CATNAT insurance system and the Floods Directive implementation. The successive “decentralisation” laws have created instability or a tension between different stakeholders. For example the GEMAPI law, dedicates the flood prevention to the municipalities and inter-municipal bodies while it was before handled by any level of the French “administrative mille feuilles” considering the subsidiarity principle.

The French CATNAT insurance system⁶ is a real strong point of French flood risk management which is considered to be the main strategy of the French flood management system. It has been noticed by the participants that other countries, like England, with a strict private insurance system, are now moving to a system based on solidarity and working as centralised mutualisation of insurance taxes.

3.2.2.2 Similarities and differences with research results

Through this workshop, the team is now able to confirm some research hypotheses, but also to question some of the findings in the light of the participants' contributions. The key assumptions were confirmed. No blind spot has been pointed out, but stakeholders' reactions showed that some particular conclusions have to be specified.

Similarities

Regarding the similarities between the research work and that of stakeholders, first, the methodological framework of our project has been globally confirmed. Indeed, the participants to the meeting consider the frame of the analysis through 5 strategies meaningful and consistent. For some strategies, *e.g.* mitigation, its meaning was not immediately clear to all participants. Nevertheless, in general the participants understood what the five strategies meant. The participants indicated that they were interested in the upcoming results of STAR-FLOOD's comparison of the French situation with that in other countries. This also applies to the research questions that were presented in three categories (*i.e.* integrated policy, decentralization and the involvement of the public). Stakeholders have confirmed that these issues were recurrent in their actions and that they are crucial to address flood management in France.

About decentralization, dynamics observed in the research work between national and local actors as well as the "water actors" at the basin scale, were confirmed. The current legislative reforms could lead to a reconfiguration of actors, but it remains uncertain and therefore creates questions and tensions. These uncertainties, especially in terms of power and resources, were explicit during the workshop. Similarly, the withdrawal of the state has also been evaluated in the light of the contributions and comments made by the participants. It is now possible to confirm that the state maintains a supervisory role and sometimes a coordinating role, but is less active and interventionist than before, for most strategies.

Discussions with stakeholders have also shown that the issue of liability is central. The issue seems critical to stakeholders for two reasons. First, legal liability was seen as an incentive to act for public authorities. Indeed, stakeholders wanted to know who is potentially liable in order to know who should act first. Second, the deterrent effect of liability was also expressed. Indeed, the legal liability may deter some stakeholders to take initiatives if that may cause their responsibility: "will I be responsible if I take this initiative"? Furthermore, a research assumption was that citizen involvement often results in

⁶ The French "Cat-Nat system" is a so far unique natural disaster insurance system that combines private insurance industry, a state-guaranteed public reinsurance and the Treasury.

individual responsibility of the inhabitants, and rather rarely by public participation in decision making. This assumption is now confirmed.

Exchanges about the rules of the game confirmed several findings. Indeed, some formal rules are not effective in practice. On the contrary, some informal rules have a very important practical significance. Thus, the latter may be key contributors to the interactions between the actors. In discussing the existence of the formal and informal rules, and their use by stakeholders, the existence of partnerships was confirmed, as well as coordination and negotiation dynamics in the field of flood management. For example in the case study of Le Havre, the formal role of the state (policymaker) for flood prevention tends to decrease due to the rise of intermunicipal structures, while the role of the latter is rather informal. This dynamic generates negotiations that change the constraining role of the state.

More generally, the workshop was an opportunity to validate the differences between national flood risk policy and the existence of a great variety of local situations, which some time are aligned with national framework and sometime very far from it.

Differences

Some differences mentioned during the workshop gave good analytical feedback on the research analyses and conclusions. First, our methodological framework was questioned by some, although marginally. For example, some participants found it not necessarily consistent to include both relief and preventive information in the preparation strategy, as these are very different actions.

Comments from stakeholders show that the findings could be specified, or that some underestimated aspects could be better developed. From a general point of view, the research work stressed the importance of decentralization, while some participants argued that preparation will always remain extremely centralized. Furthermore, it was recommended to emphasise that the CAT-NAT insurance system should function not only as a recovery mechanism, but that it at the same time should provide incentives for avoiding urban development in vulnerable areas. Indeed, the public-private insurance system CAT-NAT is only viable (economically) if an effective flood prevention policy is implemented at the same time. Repairing damages via the CAT-NAT system can be conditioned to certain preventive measures (no right to a refund if certain preventive measures are not fulfilled). According to some stakeholders, this debate should be open more often. The workshop suggests that the issue of reforming the CAT-NAT system is still relevant.

More precisely, it emerged during the workshop that the research work underestimated the economic aspects of some flood management dynamics. For some participants, the use and impact of certain tools (eg cost-benefit analysis, calculation of the risk and cost of insurance) were not deeply analysed, which could distort the analysis of the French policy on floods. Behind the cost analysis, there is the question of priorities and hierarchies that are determined in public policy (between regions, between defence infrastructures, between vulnerabilities...). The differential treatment between the territories is a relevant issue in France because it is a unitary state based on a tradition of equality. Economic analysis of certain tools and decisions would question this traditional French approach. Thus, this feedback could bring improvement to our analysis.

Finally, the workshop provided an opportunity to rebalance some views. For example, in the case study of Le Havre, the researchers emphasized the role of municipalities. However, discussions with representatives of the state have allowed for a better understanding of its role in the case of Le Havre. Instead of a confrontation between the state and municipalities (initially assumed), there would be rather an informal partnership on risk management.

3.2.3 Policy recommendations

A process of territorialization was observed, *i.e.* an appropriation of flood management by actors in each territory (and not a national management). In view of this workshop, a national flood risk policy without considering the territories is no longer conceivable. The exchanges with the participants showed that there is no flood without territories.

Flood risk is not a simple risk, the territorialisation process means that there are many different flood risks and it is necessary to consider them all. They do not always have the same place, same legitimacy, tools or history. Even the PAPIs remain a juxtaposition tool, not an integrative one, as has been noticed in the case studies.

Flood risk is part of a variety of risks that can affect an area. It is notably the case in Le Havre, which illustrates that, in France, flood risk is one risk among the others. In France, a multi-risk approach is favoured, contrary to our European neighbours. In France, flood risks are managed using a frame of reference not specifically fitted to the floods domain, but for “risk in general” (multi-risk approach). This means that flood management tools are not specifically designed to handle floods, but rather to deal with natural hazards in general.

Another recommendation is to look at the flood issue through the perspectives of land use and spatial planning. This has not the same meaning in Le Havre, Nice or Nevers. The development contexts are not the same and, the stakeholders acting, do not have the same motivations. An approach through the vulnerabilities and their hierarchy may be interesting with this relation between risk and territories in mind. Depending on the territory, some impacts are more sensitive than others: what, in that territory must be protected in particular? Flood risk is embedded in a territory appropriated by the stakeholders present. The goal of this approach is to link the risk and the territories.

Flood risk is embedded in systems of stakeholders, socio-politic systems, which are complex. Each stakeholder positions himself in front of the others and uses his own tools. What can be called “integration”, the link between tools and stakeholders, is not easy to set up and not always implemented in the territories. It can be noticed that in Nevers it works, but that it took time. It was also noticed that there is an imbalance between the stakeholders regarding the tools they have. At national and European level stakeholders seem unable to anticipate the complexity of territories and their different configurations. May the local strategies be considered as this link? Maybe, but this requires some more time.

In France, authorities are worried on how to approach the issue of public participation. Indeed, it was found that public authorities are reluctant to share decision-making with the public when their legal liability is significant, which is the case in the management of natural hazards. The effects of the public participation, notably on responsibility, are not anticipated enough: could the sharing of decision-making lead to a sharing of responsibilities? It would be very important to consider seriously this question, not only on a procedural way.

A question of scale impacting the willingness (and the capacity) of the local authorities to implement the local strategies: the scale of the areas with potential significant flood risk is rarely matching the administrative boundaries of the existing local administrations. This is notable in Le Havre case study. In places where the geographic territories of administrative boundaries are matching with those of the local strategy (or of the area with potentially significant flood risk), the choice of a local authority to implement the local strategy is generally easier.

The setting up of consensual and relevant local strategies requests time, as it is illustrated by the case of Nevers where it took 7 years to set up a collaborative strategy, but the Floods Directive demands to do it in a short time. It appears to be important to be modest regarding the expectations the European Commission and the French State can have in the frame of the first round of implementation of the Floods Directive.

Regarding the policy recommendations, it is important to keep in mind that the 3 French case studies are not completely representative of the French panorama. They are quite advanced territories in the process of developing their local strategies, and are all agglomerations which are slightly different from small river basin management syndicates.

3.3 Summary, open issues & follow up

One of the main goals of the workshop was to validate STAR-FLOOD's theoretical-empirical framework and the main results coming from the French case study. On this regard, one may consider that the project approach has been validated (no major objections, or criticism).

Moreover the comparison between the French situation and the one of other countries, which has been presented at the beginning of the workshop has been appreciated by the participants, as it has allowed them to better understand the specificity of the French situation.

More precisely, the organisation of the workshop itself (the elaboration of an introduction document of six pages, presenting briefly the project, the main results until now and a brief description of the situation of each consortium country) and our presentations during the workshop) has pushed the research team to identify some analytical elements (decentralization, integration and public participation) to discuss with the participants. More importantly this exercise has encouraged the team to come up with the elaboration of a first overall analysis of the empirical material.

One other main goal was to disseminate the information and knowledge produced by the project. This aim can be considered as achieved as the meeting gathered people from different professional horizons corresponding to the target of the dissemination activities. People have shown a real interest to the project results and the discussions brought interesting insights for the project.

After the workshop, the research team has in fact decided to integrate the three elements (the “three important questions” presented above) to the conclusions of the national analysis (of the deliverable) and to propose them as the main interpretative factors putting in connection (or not) the national case with the case studies and *vice versa*. The team also intends to produce some articles based on this work and to propose them for a special issue to a French journal specialized in management policies.

4 Poland

Prepared by: Adam Choryński, Jakub Lewandowski

4.1 Introduction

In order to confront the results undertaken research in Poland with FRM practitioners and other researchers specialising in the problem of floods and flood management there was one workshop conducted. The meeting was held in Poznań at the Life Science University on the 25th of November 2014, with representatives of the flood risk management sector in Poznań (main bodies active in FRM like RZGW and WZMiUW) and with researchers from the Poznań University of Life Sciences was organised as an opportunity to present activities to actors dealing with the issue of flood risk in the region of Wielkopolska Province aiming at receiving feedback on the presented research. The character of the meeting, as a cooperation between the IAFE PAS and the Department of Hydraulic and Sanitary Engineering of the Poznań University of Life Sciences, was focused on presentations given by invited guest (on their activities in the FRM field) and by STAR-FLOOD researchers explaining the results of the case study analysis followed by discussions. Researchers presented their findings what provoked exchange of opinions. Moreover, practitioners were also introducing their experience within the area of FRM.

An additional meeting was held in Wrocław before the workshop mentioned above. This gathering is not be treated as a workshop, but rather as a preparatory meeting, where some issues were raised that were to be analysed during the Poznań workshop. It was organised on the 20th of November 2014 in Wrocław as a supplementary session during the seminar of the International Commission on the Protection of the Oder against Pollution (ICPO). The session based on presentation given by the STAR-FLOOD researchers on the results of the country analysis and case studies followed by a discussion. The subsequent part were group discussions, where all participants from three countries: Poland, Germany and Czech Republic, could mark their opinions. The effects of discussions with a diversified audience in case of their professional background (but from the field of flood risk governance). The aim of the Wrocław meeting was to prepare more profoundly the workshop in Poznań, especially in the range of better understanding of the project results perception and delivering improved materials that are more accessible for the workshop participants.

The following chapters present more specific information on the workshop in Poznań. Section 4.2.1 describes the workshop process including the objectives of the meeting (section 4.2.1.1), data on the location and participants of the workshop (4.2.1.2), and on the programme of the gathering (4.2.1.3). Chapter 4.2.2 refers to research results validation. This section contains of parts devoted to the insights that were generated during the workshop (4.2.2.1) and describing similarities and differences with research results (4.2.2.2). This chapter is followed with policy recommendations section (4.2.3) and a summary with indication of open issues (section 4.3).

4.2 Workshop in Poznań

4.2.1 Workshop process

4.2.1.1 Objectives

The main aim of the workshop was to generate feedback to presented STAR-FLOOD project results at the country level. An additional goal was to induce interest of engaged parties in the process of flood risk management in the research on governance of flood risk management and to establish linkages between researchers and practitioners. The project results obtained until the moment of the workshop were presented to specialists. The largest emphasis was on the issue of change and stability of the flood risk governance arrangement in the country. Another point on the agenda was to pick up the key messages from the national level and to ask for validation of the participants of the workshop (the key messages are listed in Box 1).

Box 4.1 Key messages discussed during the workshop

- Flood Risk Governance in Poland relies on the defence strategy – challenged by prevention + nature conservation.
- Flood Risk Governance in Poland relies on the hydro-technical approach, discourse and expertise – challenged by the pro-environmental and non-structural measures approach
- Flood Risk Governance in Poland is organised sectorally, with little integration of administrative bodies, competition for resources, weak steering power of ministries
- Flood Risk Governance in Poland relies on short term, investment driven orientation, focused on budget maximisation, perversely – floods as windows of opportunity for investments.

4.2.1.2 Date, location and participants

The workshop was held on the 25th of November 2014. The location, Poznań University of Life Sciences, was selected on the basis of substantive and organisational issues. IAFE PAS organised the workshop in cooperation with the Department of Hydraulic and Sanitary Engineering of the Poznań University of Life Sciences. Thanks to the partnership of the University an increased number of participants could be gathered resulting in a broader range of expertise. Apart from scientists from IAFE PAS and the Department of Hydraulic and Sanitary Engineering, various practitioners from the FRM field in Poznań were invited. The list of institutions represented during the workshop is presented below (STAR-FLOOD researchers are not included) (Tab.1.). The language of the workshop was Polish and English (instant translation).

Table 4.1 List of participating actors in the workshop

Name of institution	Type of actor	Name and function
Provincial Inspectorate of Building Control in Poznań	Governmental (regional scale)	Jerzy Witczak, Provincial Inspector, head of the Inspectorate;
Provincial Authorities of Drainage, Irrigation and Infrastructure (WZMiUW)	Provincial government institution	Cezary Sieniecki, deputy director;
Regional Water Management Board (RZGW)	Governmental (regional scale)	Janusz Wiśniewski, director a.i.; Marta Włodarczyk, team member; Kinga Kalman, team member; Wanda Łukowska, team member;

		Daria Kmiecik, team member; Katarzyna Matysik, team member; Iwona Bednarz, team member; Marcin Napiórkowski; team member
Land Drainage and Environmental Engineering Design Office (BIPROWODMEL)	Private sector	Jerzy Zgrabczyński, chairman
Swedish Board of Agriculture	Governmental (outside the country)	Johan Walander Gwidon Jakowlew Tobias Markenstern Josef Nordlund Jennte Wallentin Martin Sjedahl
University of Life Sciences in Poznań; Department of Hydraulic and Sanitary Engineering	Scientific	Ireneusz Laks, researcher; Tomasz Kałuża, researcher; Michał Wierzbicki, researcher; Jacek Mądrowski, researcher; Katarzyna Kuźnicka, researcher; Dagmara Mikołajczak, researcher; Leszek Pawlik, researcher; Ryszard Błażejowski, researcher; Norbert Jasik, researcher; Jan Borowski, researcher

4.2.1.3 Programme & activities

The workshop was convened by a representative of the host institution of Poznań University of Life Sciences: dr hab. ing. Tomasz Kałuża and consisted of two sessions. The first one was devoted to presenting activities in the field of FRM of different participants invited to the workshop. Every presentation was followed by a discussion. The programme of presentations is presented in table 2. The second part was focused on materials prepared by STAR-FLOOD researchers related to stability and change factors of FRGA in Poland. Participants were exchanging their views on the project findings. In a discussion the results signalised in the STAR-FLOOD materials was presented to them, and they were asked to react on these findings based on their own experience (materials for discussion can be found in the Annex to this document). Workshop participants were asked as well to refer to the key messages from the country analysis presented in the first part of the meeting. Basing on a simple questionnaire they could indicate whether or not they agreed with the different statements on Polish FRGAs. Afterwards they were given the opportunity to voice their opinion in a discussion. The workshop took three hours.



Figure 4.1 Poznań workshop in a glance (source: A. Choryński).

Table 4.2 Presentations given during the workshop

Author(s) of the presentation	Institution	Title of the presentation
Johan Walander	Swedish Board of Agriculture	The Influence of Floods on Agriculture.
Gwidon Jakowlew	Swedish Board of Agriculture	Floods in Sweden. The example of the River Svartan.
Jerzy Witczak	Provincial Inspectorate of Building Control	Technical Activities in Direct Flood Defence in the area of Middle Warta River.
Janusz Wiśniewski	RZGW	The Causes of Floods in Poland including River Warta, the Issue of Flood Retention and the Jeziorsko Reservoir. Methods of Losses Prevention.
Ireneusz Laks	University of Life Sciences in Poznań	The Jeziorsko Reservoir during the Flood of 2010 in the Context of Golina Polder.
Jakub Lewandowski, Adam Choryński, Piotr Matczak	IAFE PAS	Flood Risk Governance in Poland. Presentation of STAR-FLOOD results.

4.2.2 Validation research results

4.2.2.1 Insights generated during the workshop

The first presentation part resulted in an agreement on the natural factors influencing flood generation. Increased frequency and stronger effects of the extreme weather events are seen as an issue that in some circumstances, like increase of urbanisation, can lead to larger flood risk. Moreover, as the experts were focusing on the Wielkopolska Province, they came to the conclusion that in the region, financial losses due to flooding events are rising. Nevertheless, some participants stated that flood modelling is a good adaptation option to the risk generated by extreme rainfall, so appropriate services (crisis management centres, fire departments) can prepare to the coming flood event (mobilise their forces, undertake evacuation actions). The representatives of the RZGW and WZMiUW were signalling during the discussion that there are also planning problems within water management including low cooperation between water and flood management institutions and environmental (but also governmental) actors. The example behind was the issue of locating NATURA2000 on the Jeziorsko reservoir which limits the flood risk management activities of RZGW. Another picked up issue was the case of poor coherence of water management. University representatives were of the opinion that a systemic approach to water management is lacking in Poland. Instead FRM is strongly fragmented.

During the second part of the workshop participants discussed whether there is a possibility to analyse the effectiveness of flood risk management activities. While exchanging the opinions between invited guests voices were raised on poor cooperation between institutions involved in FRM. Nevertheless, not all actors agreed with the issue of poor cooperation within FRM. Other matters were related to weak enforcement of spatial planning that is seen as a good solution for limiting the development on flood prone areas. This flood measure is assessed as weak mostly due to low amounts of areas covered by spatial plans and low will of municipal actors to introduce them (the reason behind is the strive for land sale for development). Poor legislation is provided as a cause for that. Piecemeal financial support provided by the State for those affected by flooding that were constructing buildings in flood prone areas has been mentioned. Moreover, flood defence assessment criteria are well established, while non-technical FRM measures (e.g. ecoservices, water retention) are still under development, making evaluation difficult

4.2.2.2 Similarities and differences with research results

Participants of the workshop in general agreed with the factors responsible for stability and change of the flood risk governance in Poland. The factors explaining stability mentioned during the discussion were as follows: depreciation of infrastructure, consequences of systemic transformation, fragmented management and successful action during the flood in 2010. The factors seen as the reasons for changes in the FRGA were: diversification of technical measures, decline in the number of hydro-technicians, accession to the EU, WFD, implementation of the Crisis Management Act and the flood event of 1997, as well as the presence of NGOs. Nevertheless, they also indicated that the situation may differ between case studies. Although the discussion focused on the national level analysis, actors agreed with the statement on fragmentation within flood risk management in Poland. Different actors realise their statutory duties lack a broader look at the integrated FRM system. The representatives of RZGW indicated though, that flood risk should be managed from the point of their (RZGW) institution. The issue

of division between two approaches (the one dominated by hydro-technicians and the second with the most prominent role of environmentalists towards flood risk management was discussed. Strong opposition of infrastructural defence measures supporters (as the dominating approach) and those who favour environmental solutions was acknowledged by the representatives of actors active in the field of flood defence. The exchange of opinions also confirmed the results of the project revealing the shape of FRGA with the most significant role of the structural defence sub-arrangement and limited influence on FRM of the environmentalists within the sub-arrangement. During the workshop the participants disagreed with the conclusion presented by STAR-FLOOD researchers concerning weakness of ability to adapt due to actors' path dependency and infrastructural defence overconcentration. What is important to mention here is the fact that in the workshop nine persons participated (one from WZMiUW and eight from RZGW), all mostly active in the defence strategy domain. Participants of the workshop were criticising the basic assumption of the project on the need of implementing diversified strategies in order to develop resilient and efficient flood risk management systems. Moreover, the division between strategies was seen as unfortunate, as they were wrongly classifying measures in the eyes of some participants. Another issue raised was the timeframe of the analysis. Some actors revealed their uncertainty whether is it not too early to undertake evaluations of the FRGA after the flood in 1997 and 2010.

4.2.3 Policy recommendations

During the workshop there were some issues raised that were seen as possibilities of flood risk management systems improvements. One was the problem of flood risk management and water management funding. It should be made clear how the funds are transferred as the fund flow transparency is a necessity to make the efficiency evaluation possible. The participants discussed the usefulness of the project, how the practitioners could benefit from the research. The results were seen as interesting, nevertheless, in the future, the participants revealed a desire to be included as experts to a project consortium before the research construction. With their participation the projects' shape would be formed in a way that the results become more valuable and more useful for the stakeholders. Furthermore there should be more focus on transboundary flood risk governance arrangement, not only national scale, because other countries are facing some similar problems (there was the example of Czech Republic and Germany and different approaches towards FRMS selection).

4.3 Summary, open issues & follow up

The workshop held in Poznań as well as the meeting in Wrocław were opportunities to discuss the results from the national level with actors directly involved in flood risk management in Poland. The presented key messages triggered a lively exchange of views. With some exceptions, the participants agreed with the outcomes of the research, as presented in the Box 1. Still, some points brought strong opposition and disagreement, especially, when the conclusions referred to the direct field of activity of an appropriate actor. What is important to indicate is the issue of overrepresentation during the workshop of actors from the flood defence area. There were no representatives of crisis management, NGOs or environmental organisations (the opposite discourse within the arrangement). Involvement in the workshop of mentioned above actors was impossible due to the formula of the meeting which was organised together with the Life Sciences University. The University agreed to invite actors who are most

frequently cooperating with them. This issue could err on the side of dominating opinions presented during the workshop. Nonetheless, it has to be signalised, that this type of actor, environmental NGO is less present within the FRM in Poznań. Moreover, the issue of participation of opposite actors, in case of strong division, as it is in Poland, becomes difficult to organise. For the future, more emphasis on participants selection should be made.

Annex Polish Flood Risk Governance – results from the analysis

Materials for discussion, STAR-FLOOD workshop, Poznań University of Life Sciences, 25.11.2014

		Benefits?	Disadvantages?
Key findings	1. Flood Risk Governance in Poland relies on the defence strategy – challenged by prevention + nature conservation		
	2. Flood Risk Governance in Poland relies on the hydro-technical approach, discourse and expertise – challenged by the pro-environmental and non-structural measures approach		
	3. Flood Risk Governance in Poland is organised sectorally, with little integration of administrative bodies, competition for resources, weak steering power of ministries		
	4. Flood Risk Governance in Poland relies on short term, investment driven orientation, focused on budget maximization, perversely – floods as windows of opportunity for investments		
Evaluation	5. Resilience <ul style="list-style-type: none"> - Polish Flood Risk Governance has capacity to buffer shock events (flood 2010) - Adaptive capacity weak - actors' path dependence, little innovation, standard measures - Recovery - EU funds invested in hydro-technical infrastructure 		
	6. Effectiveness <ul style="list-style-type: none"> - Polish Flood Risk Governance focuses on goal attainment rather than problem-solving - New developments on flood plain areas increase flood risk - No significant change in the actors behaviour during evaluation time (1990-2014) observed 		
	7. Efficiency <ul style="list-style-type: none"> - Lack of sufficient information to evaluate efficiency of arrangement (inadequacy and incoherence of data) - Cross competences of actors, acts regulations complicate tracking how the money is spent 		
	8. Legitimacy <ul style="list-style-type: none"> - Rules/laws system - unstable - New development in flood plain areas delegitimizing and undermining principles - Public consultations - check for potential opponents 		

5 Sweden

Ek, K and Ellwerth-Stein, E

The practical organisation of this workshop was done by Grontmij, in close cooperation with the researchers of Luleå University of Technology. Concerning the actual content of the workshop, the academic partners took the lead.

5.1 Introduction

In Sweden one workshop has been organised. The workshop was organised by Grontmij and LTU, Luleå Technical University. The aim of the workshop was:

- to gather stakeholders from different areas of flood risk management for a joint discussion on the topic of flood risk management in practice in Sweden;
- for participants to exchange experiences and discuss perceived strengths and weaknesses regarding the way Sweden works with flooding issues, in relation to measures related to each strategy as well as from an overall perspective, and
- to introduce the STAR-FLOOD project to the participants and to use the workshop as a check on the preliminary findings and conclusions of the work in the project so far.

5.2 Workshop

The workshop was held at Scandic Rubinen in Gothenburg on the 28th of February 2015, between 10.00 and 16.00. The location was chosen because it is located in the centre of the city of Gothenburg, which is a municipality in one of the most flood prone regions in Sweden regarding floods.

5.2.1 Workshop process

The workshop focused on discussing the perceived strengths and weaknesses associated with the flood risk management strategies. After a short introduction of the STAR-FLOOD project the major part of the time was used for group-discussions where participants could exchange experiences and deliberate over their different experiences. Discussion groups were set up so that each group consisted of officials representing different levels of authorities and/or companies. The group-discussions were followed up in a plenary session during the last 1.5 hours of the workshop.

5.2.1.1 Objectives

The main objectives were for participants to exchange experiences and discuss strengths and weaknesses regarding the way Sweden works with flooding issues, the aim was also to evaluate what changes, if any, in the present flood risk management in Sweden that may be considered desirable. An important objective for the Swedish team was to check whether the preliminary findings of the work within the project were supported by the discussions in the workshop.

5.2.1.2 Date, location and participants

The workshop was held at Scandic Rubinen (Kungsportsavenyen 24, 400 14 Göteborg) in Gothenburg on the 28th of February 2015. Workshop participants, in addition to the research team from Luleå University of Technology and the Grontmij team, primarily came from different public authorities; four municipalities in the Gothenburg region (five participants), the County Administrative Board, Västra

Göteborg, the Swedish Meteorological and Hydrological Institute (four participants), the Swedish Civil Contingencies Agency/Karlstad University (one participant) and the Swedish Transport Administration (one participant). In addition, one participant from the Insurance industry was present at the workshop. All FRG strategies were discussed to some extent, although people working actively with prevention (spatial planning) and preparation activities (rescue services) were few.

Table 5.1 List of participants

Name	Organisation
Magnus Johansson	Karlstad University, Centre for Natural Disaster Science and Swedish Civil Contingencies Agency
Erik Ellwerth-Stein	Grontmij
Robert Elfving	Grontmij
Madelen Can	IF Insurance Company
Torbjörn Köre	Kungälv municipality
Jonas Fägerhag	Lilla Edets municipality
Kristina Ek	Luleå University of Technology
Maria Pettersson	Luleå University of Technology
Elin Spegel	Luleå University of Technology
Susana Goytia	Luleå University of Technology
Marina Ädel	County administrative board, Västra Götalands county
Signild Nerheim	Swedish Meteorological and Hydrological Institute
Steve Berggreen-Clausen	Swedish Meteorological and Hydrological Institute
Linda Nylén	Swedish Meteorological and Hydrological Institute
Emil Söderström	Swedish Meteorological and Hydrological Institute
Ulf Moback	Gothenburg municipality, Urban Planning Department
Eva Liljegren	Swedish transport administration, climate adaptation
Mats Björk	Trollhättan municipality
Kristina Hedman	Vänersborg municipality
Lars Rudström	Vänersborg municipality

5.2.1.3 Programme & activities

The workshop was hosted by Kristina Ek, Elin Spegel, Susana Goytia Casermeiro and Maria Pettersson from Luleå University of Technology alongside with Erik Ellwerth-Stein, consultant at Grontmij.

After a short introduction from Erik Ellwerth-Stein, Elin Spegel and Kristina Ek introduced the STAR-FLOOD project and the organisation of the workshop. After that, each participant gave a brief personal presentation and the participants were then divided into 4 groups for further deliberations during the day. One person from the research team in Luleå was included in each, primarily to listen and ask clarifying questions when necessary, the researchers did however not participate actively in the discussions. The workshop ended with a plenary discussion where the strengths and weaknesses found to be most important and possible changes of how flood risk management in Sweden is organised on different levels were discussed.



Figure 5.1 Introduction of the STAR-FLOOD project

At the end of the day a wrap-up session took place and discussions continued in plenum.



Figure 5.2 Group discussions

5.2.2 Validation research results

An important objective for the Swedish team was to have an opportunity to assess to what extent their preliminary findings of the work within the project so far were supported by the discussions in the workshop.

5.2.2.1 Insights generated during the workshop

Significant issues raised during the workshop were *e.g.*:

- Overall, the responsibility for flood risk management in Sweden is perceived to be weakly structured, and scattered on many levels and organisations with few connections. Initiatives in the field primarily emerge from highly committed individuals.
- The national level (in particular the decision makers) is perceived to have a passive role. Municipalities, but also officials working at national level authorities request more active support, guidance, and even steering.
- There was also some ambiguity between, on the one hand, the demands for increased guidance from the national level and, on the other hand, the very strong support for the decentralised municipalities and the municipalities' planning monopoly.
- The conditions and possibilities to deal with expected challenges (*e.g.*, financial resources and access to knowledge) vary significantly across municipalities.
- Increased demand for structural defence measures (at least in the Gothenburg region) and the difficulties for single municipalities to be able to finance these very costly projects. Again increased support from the national level was requested.

5.2.2.2 Similarities and differences with research results

The perception of the flood risk management in Sweden as highly fragmented with a relatively passive national level supports the preliminary research results after having analysed documents and interviews. The demand for increased structural defence was however more significant at the workshop than we did expect. This differences may however, to some extent, be explained by the characteristics and specific needs in the municipalities that were represented at the workshop. The challenges associated with the funding of these measures is however likely to be significant, and even more so in smaller municipalities with trends declining population and incomes.

5.2.3 Policy recommendations

The outcome of the workshop highlights the importance of closing the gap between national and local level, both in terms of implementation and overall governance. Both municipalities and government agencies lack clear rules and guidance on prioritization and implementation, even though the actual implementation in principle must take place at the local level. Thus, it is important to clarify the division of responsibility between the state and the municipality, as well as between different municipalities in case of transboundary issues, particularly in matters that are scattered across different policy areas.

5.3 Summary, open issues & follow up

The Workshop held in Gothenburg gathered participants from different stakeholders in Sweden. Focusing on group discussions the workshop made possible to check whether the preliminary findings from the research were supported in different levels of the flood risk management society. The results

from the workshop could both confirm preliminary findings and generate new insights. The STAR FLOOD project moves forward with these results incorporated in ongoing research.

6 The Netherlands

Steenstra, M.K., Gilissen, H.K., Borghuis, G., Kaufmann, M., van Doorn-Hoekveld, W.J.

6.1 Introduction

In the Netherlands two case workshops were organised, both with a specific goal related to the research. The first workshop was organised to share and discuss the results of the case study Nijmegen. By doing so, the workshop generated new insights to further shape the remaining two case studies in the Netherlands.

The second workshop was organised together with the Ministry of Infrastructure & Environment. This workshop focused on risk and crisis communication, the responsibilities of involved organisations with regard to communication, and the communication strategies that governments are using. The workshop was organised because awareness of flood risks and possible consequences of a flood are in general low in the Netherlands. The government is working actively to raise awareness and to stimulate the self-sufficiency of inhabitants. As this is a relatively new and changing part of the flood risk management strategies applied in the Netherlands, this subject was chosen to generate more insight through discussion with a broad professional audience.

6.2 Workshop on the results of the case study Nijmegen

The first workshop was held at the regional water authority Rivierenland on September 9th 2014. The regional water authority Rivierenland is partner in the dike relocation project Lent, that was subject of analysis in the Nijmegen case. The regional water authority actively explores new strategies for water safety. Grontmij supports Rivierenland in exploring new strategies in the project 'Kop van de Betuwe'. Considering the high relevance of the research and discussion for their own use, the waterboard was willing to host the workshop.

6.2.1 Workshop process

6.2.1.1 Objectives

The first workshop focussed on the first of three case studies performed in the Netherlands: the case Nijmegen. The first objective of the workshop was to share and test the first results of the case analysis with an expert audience that can relate to the case. The second objective was to create interaction between researchers and practitioners through discussion of key topics relevant for Dutch flood risk management on a broader scale.

The workshop aimed to result in insights that sharpen the conclusions regarding the cases and also had the ambition to result in new angles and questions for research in the second and third case. The STAR-FLOOD project runs from October 2012 till March 2016. The first workshop was planned in September 2014, which made it possible to include the results of the workshop in further research.

6.2.1.2 Date, location and participants

The workshop took place on Tuesday September 9th 2014 at the Regional Water Authority Rivierenland Rivierenland, De Blomboogerd 1, Tiel.

The workshop was attended by thirty participants, of which nine were affiliated with the Dutch STAR-FLOOD research team and Grontmij Netherlands. Besides the research team a mix between represents of the government and the private sector, and between spatial planners, water safety specialists and emergency response experts was present. Part of the audience was directly connected to the case study Nijmegen, part of the audience came from other regions in the Netherlands.

Table 6.1 Participants to the workshop on 9 September

Name	Organisation	Type
Aline te Linde	Twynstra Gudde	Consultancy
Bas Kolen	HKV	Consultancy
Eline Bötger	Twynstra Gudde	Consultancy
Ellen Kelder	Municipality of Dordrecht	Government
Ellen Vonk	Regional Water Authority Rivierenland	Government
Evert Hazenoot	Regional Water Authority Rivierenland	Government
Hanneke Schrage	Grontmij	Consultancy
Henriette Nonnekens	Regional Water Authority Rivierenland	Government
Herman Kasper Gilissen	Utrecht University	Research Institute/University
Inez Wissingh	Regional Water Authority Rivierenland	Government
Jannes van Hove	Regional Water Authority De Stichtse Rijnlanden	Government
John van Tilburg	Regional Water authority Brabantse Delta	Government
Louis Broersma	Grontmij	Consultancy
Madeleen Helmer	Klimaatverbond	Government
Maria Kaufmann	Radboud University	Research Institute/University
Mark Wiering	Radboud University	Research Institute/University
Marleen van Rijswick	Utrecht University	Research Institute/University
Marloes Bakker	Utrecht University	Research Institute/University
Martijn Steenstra	Grontmij	Consultancy
Mathijs van Vliet	Wageningen University	Research Institute/University
Meine Jacobi	Safety and health region Gelderland Midden	Government
Myra Kremer	Regional Water Authority Rivierenland	Government
Pieter-Jan Hofman	Province of Zuid-Holland	Government
Rieks Bosch	EcoCoast Consultancy	Consultancy
Rob Koeze	Regional Water Authority Waternet	Government
Robert Verhoeven	Safety Region IJsselland	Government
Ton Verhoeven	Municipality of Nijmegen	Government
Willem Jan Goossen	Ministry of Water and Infrastructure	Government
Willemijn van Doorn-Hoekveld	Utrecht University	Research Institute/University
Wout de Vries	Infram	Consultancy

6.2.1.3 Programme & activities

The workshop was hosted by Regional Water Authority Rivierenland. Rene Cruijssen, Boardmember at the regional water authority Rivierenland, welcomed the participants and expressed his hope for useful results as also the water board is looking for other ways to deal with flood management.

Moderator of the day was Louis Broersma, consultant at Grontmij. He welcomed participants on behalf of STAR-FLOOD and introduced the goals of the workshop.

Willemijn van Doorn-Hoekveld, researcher at University of Utrecht, and Maria Kaufmann, researcher at Radboud University Nijmegen, presented on behalf of the Dutch academic STAR-FLOOD team. Their presentation consisted of an introduction on STAR-FLOOD and the framework for analysis. In the national analysis it was identified that a broadening of Flood Risk Management Strategies (FRMSs) is taking place in the Netherlands – to a certain degree. The consequence is a broader spectrum of actors involved in Flood Risk Management (FRM). The workshop addresses the issue of integration between FRM and spatial planning in more detail.

The case Nijmegen-Lent is an illustrative case regarding the integration of water and spatial planning and was therefore chosen as a case in the STAR-FLOOD research. The core of this project is the widening of the river bed near Nijmegen where the Rhine passes through a bottleneck. In doing so a new island is created in the river where residential developments will take place. Exemplary is the way in which spatial planning and water management are integrated in this plan and in the extent to which the local municipality was involved in flood prevention measures. The presentation closed with examples of instruments that are used in other countries related to the integration of water and spatial planning. These included the ‘water test’ in Belgium, building bans in flood prone areas in France and the instrument of the Strategic Flood Risk Assessment in England.



Figure 6.1: Impression of the workshop on the case Nijmegen (Source: Martijn Steenstra, Grontmij)

After the presentation a round table discussion was started around three propositions from the workshop organisers. These propositions were based on the results of the case analysis and are

presented in paragraph 2.2.2, including the main replies by the experts around the table and the public. The propositions had the specific aim to trigger an interesting discussion. The moderator started the discussion of each statement by interviewing the panellist at the table on their views after which the members of the audience were involved.

The following people participated in the round table discussion:

- Dr. Mark Wiering, Radboud University Nijmegen
- Drs. Ton Verhoeven, Municipality of Nijmegen
- Prof. Dr. Marleen van Rijswick, University of Utrecht
- Willem Jan Goossen, Msc. , Ministry of Infrastructure and Environment
- Ellen Vonk, Msc. , regional water authority Rivierenland

The afternoon was closed with a brief reflection from the researchers.

6.2.1 Validation research results

6.2.2.1 Insights generated during the workshop

Here the results of the workshop are presented. These results mainly consist of statements posed by the participants and the outcomes of discussions.

Proposition 1: Water is a guiding principle in spatial planning, but spatial planning should also be a guiding principle for water management. Water managers should take spatial planning more into account.

- The quality of the built environment is important when designing dikes. However, safety should remain the most important factor in spatial planning.
- Water management in general always has followed spatial planning. The statement is true when related to designing dikes. In the case of Lent in Nijmegen, the regional water authority was not happy to mainly have a role in quality control instead of design.
- Municipalities are better able to include the wishes of the people living close to the dikes in the process of designing a dike. So when municipalities take the role of initiator of a dike project, this can lead to less objections and therefore faster procedures: an effect that can also be positive for the regional water authorities.
- Regional water authorities might be more focused on cutting costs than on spatial quality as safety is their main responsibility and realising spatial quality is not. Their financial means can also be invested in realising more safety for people on other locations.
- Is this proposition mainly an issue on who is investing now? No, it is about connecting opportunities and creating win-wins. If you do not take advantage of an opportunity that exists now, this may 'lock' a situation for the coming 50 to 100 years.
- STAR-FLOOD has taken the case study Nijmegen as a regional example. During the discussion it was stressed that Nijmegen is a very special case and only to a certain degree illustrative of the national level. The researchers are aware of this fact, the beforehand conducted national analysis allows the researchers to set the regional case studies in context. It is highly unusual that a municipality is the

initiator of a dike relocation project. Moreover, the case was quite specific and based on the legal arrangements of (about) 10 years ago. Here this arrangement worked out very well.

- Political behaviour is highly influenced by economic interests. The Delta Programme wanted to develop a map with 'signal areas' where spatial planning authorities were supposed to consider flood risk more explicitly. Regional water authorities agreed, but the general democracy, *i.e.* the province, did not.
- In England it is clearly marked in spatial plans where development is at risk of flooding. Development in flood zones with a higher flood risk is only allowed by fulfilling certain conditions.
- In the Netherlands the safety standards are very high, in principle the government sends the message that it is safe enough to build everywhere within the dike rings. If a lot is built in a dike ring, standards will be raised at some point. Making a map indicating where not to build will therefore make little difference. The paradox is that therefore looking at other strategies makes little difference.
- An interesting area to do research is along the Meuse River. There are locations with small inundation depths that are outside the current dike rings. Choices still have to be made. However, it seems that the province is not considering a change of strategy.
- Since the 1950s the influence of flood risk on choice of building locations seems to be decreasing → Before then, farm houses and building locations usually were built on high ground. Since about the nineteen fifties, less favourable areas from a floods perspective, where ground was cheapest, became popular as investment locations. Local governments saw this opportunity and assumed these areas were safe enough to be developed without taking into account the higher flood risks in these locations. Regional water authorities played only a minor role in this process.
- The government has for the past years not communicated much about inundation risks. An advice that has been suggested in discussions on this topic was to include the topic of inundation in the buying contract for houses, this was however not made obligatory.

Proposition 2: Cooperation between institutions leads to more diffuse responsibilities in water safety management. Water safety is too important and should therefore be clearly arranged with one institution responsible.

- Cooperation and shared responsibility regarding flood safety is only possible if all parties involved are well aware of their own AND each other's roles and responsibilities. In urban areas, not all responsibilities are completely clear to all involved parties.
- Working with case studies in STAR-FLOOD has the disadvantage that not all results can be generalised. Participants call attention to the fact that there are also floods in the Netherlands around the smaller rivers, *i.e.* along the Mark, de Aa and the Vecht. The situations of floods in these areas resemble more the situation in England, similar strategies may be useful. However, within STAR-FLOOD it was decided to focus on the primary water systems, which get the main national attention.
- An important question is related to the possibility to change strategy. Now, the regional water authorities are concerned with the dikes and the municipalities develop the spatial zoning plans (to be approved by the city/local council). The municipalities and security regions mainly deal with disaster management (including evacuations for which, depending on the scale of the disaster a

mayor or the chairman of the safety region gives the order). Institutional division might hamper developing strategies in which several strategies are combined and/or the possibility to change strategy as this would also require a new task division between institutes.

- In Limburg, there is an interesting case: the province developed a risk zoning plan, but later planned a development in the zone that was most at risk. This example illustrates the position of flood risk in the spatial planning process.
- The obligatory water test instrument (*watertoets*) might be terminated. Regional water authorities expect that if this is the case, this will have a negative influence on their role in spatial planning. There still is the option to formally object against plans or withhold approval. Participants discuss that it is probably a cultural thing that in the Netherlands this option is avoided as much as possible.

Proposition3: The safety regions should be more involved when developing zoning plans, they should be consulted and their advice should have a binding status.

- A participant brings in that we should count our blessings: a lot is already changing regarding the role of the safety regions in the Netherlands. The worlds of the safety regions, the regional water authorities and the municipalities are being brought together. Maybe this change is already happening at its maximum speed right now. Getting to know and understand each other and gaining experience is now considered the most important as current capacity within the safety regions regarding flood risks is still limited. Maybe after that, next steps can be taken.
- Only when a real flood occurs we will know how well we are organised. However, simulation does help and we can gain a lot of experience from other countries. The USA has a lot of experience in risk communication, *e.g.* regarding hurricanes.
- The safety regions are doing a lot of work to get to know more about flood risks, preventive measures that facilitate evacuation and to be able to calculate with this. There is still a lack of knowledge and instruments in this field to be able to give well founded advice. There is a trend that the safety regions are becoming a more integral part of the water safety management.
- Spatial planning is an integral process in which trade-offs are unavoidable. The water safety arguments are being overruled at times.
- Participants consider it unlikely that the safety regions can be held accountable for the results of a flood or their role in crisis preparation. Although it is also stressed that safety regions are responsible for their own actions if they fail to properly execute their responsibilities.
- One of the outcomes of the Delta Programme is that the goal of a Local Individual Risk (LIR) of 10^{-5} per year will be the basis for the formulation of the standards for all dike rings. If this is the case, some participants argue that the multi-level safety principle, and specifically the spatial planning measures, will reside more to the background.
- The percentage that is being evacuated from a particular dike ring has a lot of influence on calculating the LIR. Safety regions cannot be held accountable for achieving the percentage of evacuation that they assume for a specific dike ring. They mainly are responsible to do what is in their power in case of an emergency. But they still have to prepare appropriately and if they do not do this, then they are responsible.

- New studies have brought to light that something has to be done regarding commando structures for the evacuation of dike rings. Now, often, several safety regions share responsibility for the evacuation of one dike ring.
- The standards for dike rings based on the LIR 10^{-5} per year will take into account socio-economic development. When developments continue the safety standards of the dikes will have to be raised.
- In planning for multi-level safety, the role of spatial planning remains somewhat unclear. It has not been decided in what legal form, spatial planning and building measures can replace the principle strategy based on defence (which is anchored in legal norms). Authorities therefore remain obliged to meet the legal norms and raise dikes when necessary. This topic is currently under discussion.

Concluding remarks

- The case study Nijmegen is an illustration of the so called paradigmatic shift in the Netherlands, from flood defence via structural measures, towards a more system-based approach that is characterised by a broader consideration of environmental and spatial values. From a governance point of view, the case study illustrated the consequences of this shift: the shift in roles of involved parties, *e.g.* more active role of municipality, the translation of water safety in the spatial zoning plans (*bestemmingsplannen*) and the fact that the environmental agencies (*milieudiensten*) advice on external safety in zoning plans but have no role in water safety.
- Provinces have an important role in this field as they have responsibilities in both water safety and spatial planning.
- In water policy making, water safety is always priority number one. In spatial planning it is not, safety provided by dikes is seen more as a boundary condition. If we want flood mitigation measures to be given a high priority in spatial planning, this should be better legally anchored.

6.2.2.2 Similarities and differences with research results

The discussions during the workshop confirm to a large degree the research results presented. The discussion sharpened the arguments of the different actors involved and helped to embed the case study Nijmegen and the challenges for integration of spatial planning, water management and emergency management in a broader national context. The case study illustrated that there are still uncertainties in the consequences of Multi-layered safety for the cooperation of these three policy sectors. Also the legal responsibilities with regard to flood risk management are unclear, especially for the emergency managers. It is for example unclear to what extent they can be held accountable for the actions they take, or do not take, in crisis situations. The tension between water safety and other issues in spatial planning (economic growth, spatial quality, social and environmental issues) for spatial planners was repeatedly stated as important. The workshop also made clear that the increase of awareness of citizens about flood risks and risk communication are very relevant issues. However, these are not organised enough yet.

6.2.3 Policy recommendations

The following recommendations can be extracted from the discussion:

- Especially in urban areas it can be better to give municipalities the lead in water safety projects (*i.e.* dike improvement projects) as they are better able to capitalise opportunities and add quality to the

urban environment. A final check on effectiveness regarding water safety should still be done by the responsible authority for water safety.

- The water test as a procedure to bridge the gap between water safety policy and spatial policy should be preserved. Only keeping open the possibility of juridical appeals to formal plans will not create the same effect as the water test as these juridical appeals are not perceived to fit well in the Dutch cultural setting.
- Measures aimed at flood preparation and flood recovery should be better integrated in spatial planning and therefore safety regions should be included in the spatial planning process. This does require capacity/resources within the safety regions to be in the position to participate in the process.
- A low awareness of flood risks is expected to lead to a less effective response of citizens in case of a flood. During the discussion it was suggested to include the topic of inundation in the buying contract for houses, like in Belgium.
- Development of strategies that are integrating different aspects of water safety (*i.e.* integrate flood prevention, flood defence and flood mitigation) might now be hampered by institutional divisions (*i.e.* between regional water authorities and municipalities). As these institutional structures are not expected to change, the already existing bridging mechanisms, *e.g.* Water Test, Steering Groups, *etc.*, should be strengthened to improve the integration of flood prevention, flood defence and flood mitigation measures.

6.3 Workshop on raising risk awareness amongst civilians

The second workshop was organised together with the Ministries of Infrastructure and Environment (I&M) and Safety and Justice (V&J). The ministry of I&M is currently executing a project aimed at creating awareness regarding floods risks amongst civilians. Awareness of flood risks is generally low in the Netherlands as shown by the OECD in its study 'Water governance in the Netherlands: fit for the future?' (2014). The ministries are actively working on raising awareness and therefore willing to host the workshop.

6.3.1 Workshop process

6.3.1.1 Objectives

The second workshop in the Netherlands focused on risk and crisis communication, and more specifically, related to the responsibilities of organisations in this field. Preliminary research results from the different STAR-FLOOD countries are available and show that risk and crisis communication regarding floods risks are subjects that require attention in the Netherlands. Not all is clear yet on who is responsible for communication, what should be communicated and what are the legal consequences of communicating.

The first objective of the workshop is to share the results of the STAR-FLOOD research and generate new results specifically focussing on risk and crisis communication. The second objective is to disseminate results by creating interaction between the STAR-FLOOD researchers and the practitioners, through a discussion focusing on the topics of communication and responsibility, as well as vertical evacuation. The workshop is also used as input for the practitioners guide currently under development.

6.3.1.2 Date, location and participants

The second workshop took place at the Ministry of Infrastructure and Environment, Koningskade 4, The Hague, on the 26th of May, 2015.

The workshop was attended by in total 43 participants of which seven were affiliated with the Dutch STAR-FLOOD research team and Grontmij Netherlands. Besides the research team a mix between represents of the government and the private sector, and between spatial planners, water safety specialists, emergency response experts and communication experts was present. Considering the topic about half of the participants had a background in communication.

Table 6.2: Participants to the workshop on 26 May

Name	Organisation	Type
Anne Karien Rutten	Rijkswaterstaat	Government
Annika Trignol	Port of Rotterdam	Government
Auke Raaff	Safety Region Noord Holland Noord	Government
Barbara Groenendijk	Regional Water Authority Waternet	Government
Bas Kolen	HKV Lijn in Water	Consultancy
Chris Dekkers	Safety region Zuid-Holland Zuid	Government
Caroline Coolen	Province of Noord-Holland	Government
Caroline Moore	Regional Water Authority Waternet	Government
Dixie Hoek	Municipality of Rotterdam	Government
Dorien Paans	Regional Water Authority Waternet	Government
Danielle Keukenmeester	Safety region Haaglanden	Government
Niels Robbemont	Regional Water Authority Hollandse Delta	Government
Eddy van Well	Safety Region Zuid-Holland Zuid	Government
Ellen Vonk-Jurgens	Regional Water Authority Rivierenland	Government
Esther van Dijk	Ministry van Infrastructure & Environment	Government
Eva Baron	Ministry van Infrastructure & Environment	Government
Gerda Dinkelman	Province of Noord-Holland	Government
Gerlo Borghuis	Grontmij	Consultancy
Helga Walinga	Regional Water Authority Schieland en Krimpenerwaard	Government
Herman Kasper Gilissen	University of Utrecht	Research Institute/University
Ingrid van den Berg	Safety Region Holland Midden	Government
Jos van Alphen	Staff Delta Commissioner	Government
Judith de Jong	Union of Regional water authorities	Government
Julie Köler	Ministry van Infrastructure & Environment	Government
Klaas Koster	Ministry van Infrastructure & Environment	Government
Lianne Roza	Regional Water Authority Schieland en Krimpenerwaard	Government

Ligthart	Ministry of Safety&Justice	Government
Maria Kaufmann	Radboud University	Research Institute/University
Mark Wiering	Radboud University	Research Institute/University
Marko Cortel	Regional Water Authority Hollands Noorderkwartier	Government
Marleen van Rijswick	University of Utrecht	Research Institute/University
Martijn Steenstra	Grontmij	Consultancy
Mathijs van Vliet	Movares	Consultancy
Melanie van Jaarsveld	Rijkswaterstaat	Government
Wnedy van Nassau	Regional Water Authority Rijnland	Government
Pieter-Jan Hofman	Province of Zuid Holland	Government
Rob Koeze	Regional Water Authority Waternet	Government
Robert Verhoeven	Safety Region IJsselland	Government
Sylvia Lafourcade	Regional Water Authority Rijnland	Government
Thomas Jansen	Municipality of Dordrecht	Government
Tina van Leeuwen	Port of Rotterdam	Government
Tom Raadgever	Grontmij	Consultancy
Willemijn van Doorn	University of Utrecht	Research Institute/University

6.3.1.3 Programme & activities

Klaas Koster of the ministry of I&M acted as host of the meeting and started the workshop with a short welcome speech. He welcomed all participants and expressed he was expecting a lively discussion that would generate new insights in flood risk communication.

Moderator of the day was Martijn Steenstra, consultant at Grontmij in the field of water and spatial planning. He welcomed the participants and explained the programme and the goals of this workshop. The programme started with two introductory presentations, followed by a panel discussion on several propositions combined with a discussion with the audience.

Willemijn van Doorn-Hoekveld, researcher at University of Utrecht, and Herman Kasper Gilissen, researcher at University of Utrecht, present on behalf of STAR-FLOOD. Their presentation consisted of an introduction to STAR-FLOOD and Flood Risk Management Strategies, mainly from a legal perspective. They also stated that flood risk management is a shared public responsibility. The state/government is always restricted in its flood risk managing abilities, for instance by personnel capacity and financing. This implies that a country can never be a hundred percent safe from floods, there is always a residual risk. In the Netherlands, this residual risk is not acknowledged by the general public, as OECD research showed. Citizens therefore also take limited actions to prepare themselves for a flood, making them less self-reliant. It is therefore important to inform the public of these risks and thereby increase resilience. This leads to the questions: 'Who informs the civilian with what, when and how?' and 'What is the difference between scaring and intimidating civilians and effective risk communication?'

Klaas Koster gave a presentation on the project ‘Module Evacuation during Heavy Floods’, developed by the ministry. This programme was developed after the minister of Infrastructure and the Environment, Melanie Schultz van Haegen, stressed that The Netherlands is not well enough prepared for the consequences of a heavy flood. The aim of this programme is therefore to inform civilians, and create awareness. This is done through a website as well as an app. These website and app show the water levels at a certain postcode area during the most extreme flood event. Further, information on evacuation and emergency preparation is provided so that citizens are in the possibility to prepare themselves. An important question raised is ‘should I stay, or should I go?’ in the case of a flood. Advantages and disadvantages of evacuation from the area vs. evacuation to the second or third floor are mentioned.



Figure 6.2: impression of the workshop on the role of civilians in crisis management (Source: Gerlo Borghuis, Grontmij)

After these presentations, a panel discussion was started, based on three pre-prepared statements on flood risk communication and vertical evacuation. All participants were invited to join the discussion, and actively joined during the discussion.

The panel consisted of:

- Robert Verhoeven, Msc., Veiligheidsregio IJsselland
- Dr. Mark Wiering, Radboud University Nijmegen
- Dr. Bas Kolen, HKV Lijn in Water
- Drs. Klaas Koster, Ministerie Infrastructuur & Milieu
- Prof. Dr. Marleen van Rijswijk, University of Utrecht

The workshop was closed with a small reflection of each panel member.

6.3.1 Validation research results

6.3.2.1 Insights generated during the workshop

Here the results of the workshop are presented. These results mainly consist of statements posed by the participants and the outcomes of discussions.

Proposition 1: 'In the Netherlands too little information is provided to civilians concerning water safety'

- We do not supply too little information, but we do supply the wrong information. On the one hand we say that the whole Netherlands delta is safe from floods, the safest in the world. On the other hand we say that the system is robust, but not entirely safe and that people do have a responsibility to prepare themselves for a flood. This is a confusing message to our citizens.
- We do give too little information about action perspectives. People should be more informed about what to do when a flood occurs. People should for instance only leave their house if they are absolutely sure they can get to a safe place. Otherwise it would be safer to stay in their homes.
- Only 5% of the civilians in the IJsselland safety region (which is flood prone) think that water safety is a relevant theme to be informed about.
- It is important to research how information supply by the government influences the awareness of civilians and businesses. Is the communication effective? The Ministry of I&M is currently researching this, together with the University of Twente.
- People can fend for themselves better than we often think. When they are supplied with the right information this capacity is enhanced.
- There are examples where evacuation went relatively smooth. An area around Woltersum in Groningen had to evacuate in 2012 due to fear of a dike breach along the Ems Canal, and in the UK last year even the elderly were evacuated without too much involvement of the government.
- In flood risk management communication it is important to supply information to specific target groups. Which groups need what information? What is important to people and when should they be provided with certain information?
- The acceptance of flood risks is much higher than for other disasters, for instance a nuclear reactor.
- Civilians do not understand the probabilities of flood occurrence. In order to raise awareness, it may be a good idea to switch from communicating the 1/100 chance system towards the 1% chance system, that is already used in the USA.
- The communication of risks can work confusing, maybe it is more useful to communicate action perspectives.
- Risk communication in the Netherlands is like a 'hot potato' that is passed around from organization to organization. Nobody wants to take the responsibility. The regional water authority does not want to talk about it, since that undermines their own activities, they are responsible for the safeness of the system. According to the safety region, it is also not their responsibility. And the municipality also thinks it is not their responsibility. In other countries (for instance UK, USA) all involved parties share the responsibility.
- The effects of a flood are concerning a lot more parties than only regional water authority, municipality and safety region. In case of a flood for instance all health facilities, traffic systems and energy grids are affected. The flood in itself is only a small part, and recovery is also a very important

process. This starts with risk awareness, so actions can be made in order to reduce these risks and flood damage and easing the recovery process. This is not only the responsibility of the regional water authority, but also of other authorities and the private sector.

Proposition 2: 'Communicating about disasters with a low probability is just scaring off civilians'

- Communication is not scaring people. People want to know more about actual risks, therefore transparency is a positive development. The app and website developed by the ministry provide relevant, factual information. The ministry receives positive feedback on providing this information, not the reproof that the ministry is scaring people.
- Communication about risks can influence the settlement of companies in certain location. Companies do not always think about these flood risks themselves. Therefore it is very important to communicate to companies, especially the ones in dangerous sectors, for instance chemical plants. If these companies are informed about a flood beforehand, they can take preparation measures. Raising the floor with one metre represents only a small cost if it safeguards a multi-million euro chemical installation. But the company does need to know that that makes sense in a specific situation.
- Maybe spatial planners should take more responsibility regarding flood risks by regulating the use of higher risk areas for vulnerable land uses like chemical industries. In example through building codes or zoning plans.
- Big companies do make their own risk calculations when it comes to flood risks and comparing locations. They will search for relevant information to make a comparison and governments do need to be able to provide this.
- We do not want to worry about the probability too much, but about the whole water safety chain. It is possible to cope with higher probabilities if the whole information and warning system functions well.

Proposition 3: 'Informing about risks and the creation of an action perspective increases the responsibility of the government'

- The government is indeed responsible for providing information and is responsible for the quality of the information it provides. The government can also be held accountable when it does not provide information and lacks action. However, much is unclear on which governmental organisation has to provide exactly what information.
- The website and app provide factual information, *i.e.* on what are consequences of staying at home or leaving the area during a flood. It does not provide an explicit advice on what to do: this decision is up to people themselves. Providing this advice before a flood actually happens means that the government also takes a responsibility (does it provide the right information, and does the government provide this information at the right moment?).
- The government should make clear that citizens also have responsibilities: the government does not take care of everything. Communications should be: this is arranged, and after that people are on their own. In the Netherlands the government usually takes the task of trying to arrange for

everything and in this case that works counterproductive as you want people themselves to take action.

- The responsibility of providing information could also be given to the private sector. For instance by adding a water paragraph in a rental/buying contracts of properties. This is already done in Belgium. However, without regulations transferring this obligation might prove to be a nothing more than a pretence.
- When people are aware of flood risks they can take action. The possible actions they can take encompass all five flood risk management strategies described by STARFLOOD. People can take action to prevent risk, defend against floods, mitigate flood risks, prepare for floods and facilitate their recovering from floods.
- The government should only communicate facts. The basis should be that civilians fend for themselves, with maybe some help of the government. However, this should be communicated very clearly, otherwise claims will follow after a flood event.
- With relation to the previous point, it could also be argued that the government does have considerable responsibilities regarding to control risks and take action during a disaster. Citizens can expect quite a lot from the government but should be aware that at some point the government will not be able to take care of them in the way they might be expecting. To some extent they will be on their own.
- Evacuation can be dangerous as well, especially for vulnerable groups.
- Many civilians do not know anything about flood risks. Apart from the communication of facts, it is also important to try and create a dialogue, to answer the questions of the public.
- The regional water authority cannot take the entire responsibility for risk communication. Currently there is a water safety process going on, in which regional water authorities work together with safety regions to create a communication strategy.

Concluding remarks:

- There is not much information available on how civilians perceive flood risk management, and flood risk communication. This should be investigated further. 40, 50 years ago, people were much more aware of flood risks. Nowadays they think they are safe, and completely rely on the government. This process, from awareness to ignorance, should be researched. If this process can be identified, it can be reversed and used to increase awareness.
- Government should not be afraid to experiment, but this should always be communicated to the civilians.
- People should be able to fend for themselves and the government does everything in its ability to assist. The current situation is completely opposite, people rely solely on the government for help, even though the government does not have the capacity to save everybody in case of a flood. This should be honestly and properly communicated in order to make people aware of the situation.

6.3.2.2 Similarities and differences with research results

As risk/crisis communication and awareness raising are relatively underdeveloped issues in the Dutch discussion on flood risk management (both in practice and science), the focus of the workshop was

rather on gathering information and fostering discussion (*i.e.* generating research results), than on validating research results. The workshop provided useful state of the art insights into national, regional and local developments regarding risk/crisis communication, good practices, and possible pitfalls. It also gave a clear view over uncertainties and ‘white spots’ in practice, especially concerning the division of responsibilities. An example is the question who is most suited for risk communication: the municipality, the safety region or the regional water authorities. The municipality is closest to the citizen and the security regions are responsible for emergency management both lack knowledge in the realm of flood risk management. The water authorities have the knowledge but are more remote from the citizen and not the main responsible for emergency management. It can be concluded that no clear and univocal policy regarding risk communication is available in the Netherlands yet, and that there are dilemmas for risk communication in the Netherlands. One example is the question how to communicate the lack of absolute safety in a way that people indeed will take the right actions in a crisis situation, the wrong information could cause panic. Another dilemma is how to communicate the lack of absolute safety without questioning the legitimacy and capabilities of the Netherlands, which could cause economic damage (damaging the investment climate). This proves to be in line with the expectations of the researchers and their research results.

6.3.3 Policy recommendations

The following recommendations can be extracted from the discussion:

- Responsibilities regarding communication on flood risks should be more clearly assigned to specific governmental bodies. At this moment the topic is not addressed sufficiently.
- The government should provide high quality and factual information regarding flood risks and how they could respond in case of a flood. Providing this information does not lead to fear amongst citizens and should therefore be promoted as it is expected to improve people’s response in case a big flood does occur. Yet, authorities should be careful in giving explicit advice on what to do, as this makes them again responsible and potentially accountable if the advice turns out to be wrong. In addition the right advice will be very much depending on actual circumstances and therefore cannot be provided in advance.
- In flood risk management communication it is important to supply information to specific target groups, *i.e.* specific communication on flood risks to vulnerable functions (chemical companies, hospitals *etc.*) might be rewarding. With relatively small investments risks can be greatly reduced, but only when companies and institutions are aware of risks.
- The perception of flood risks and the information demand by citizens should be further studied. At this moment too little information is available on this topic and the effects of current efforts to raise awareness should be subject to research. Research may help to create a dialogue, to explore the perspectives and answer the questions of the public.

6.4 Summary, open issues & follow up

In close cooperation between the academic researchers of Utrecht University and Radboud University and Grontmij the Netherlands, two workshops were organised in the Netherlands.

The first workshop took place in Tiel at the Regional Water Authority Rivierenland on September 9th 2014. The results of the case studies were presented to an audience of thirty people from various backgrounds (government, consultancy, research) after which a discussion on the integration of water management and spatial planning in water safety projects was held. Many valuable examples were given in the session: regarding the roles of involved parties, that translation of water safety in the spatial zoning plans and the fact that the environmental agencies (*milieudiensten*) advise on external safety in zoning plans but have no role in water safety. Another conclusion was that in water policy making, water safety is always priority number one. In spatial planning it is not. If we want it to be the case, than it should be better legally anchored. The goals of the workshop (to share and test the first results of the case analysis and to create interaction between researchers and practitioners through discussion of key topics) is considered to be achieved.

The second workshop took place at the Ministry of Infrastructure and Environment in The Hague, on the May 26th, 2015. This workshop focussed specifically on risk and crisis communication: a topic that is very much under development in the Netherlands recently. Conclusion of the workshop is that responsibilities on risk communication is not that clear in the Netherlands and the topic is passed on between organisations. New initiatives do exist, like the website www.overstroomik.nl. Information on the effects of communication is still lacking as not much research has been done on how civilians perceive flood risk management, and flood risk communication. The goals of the workshop (sharing and discussing research results and dissemination of results through creating interaction between the STAR-FLOOD researchers and the practitioners) are considered to be achieved as a lively discussion took place.

7 England

Micou, P., Alexander, M., Priest, S., Lewis, D. and Pender, D.

7.1 Introduction

In England, two workshops were conducted during the research process. The first one took place on 14th November 2014 at the Flood Hazard Research Centre, London. This was a small workshop involving two academic experts, a retired senior actor within the Environment Agency and the STAR-FLOOD team. This workshop focused on the results obtained through national level analysis and reported in the national report (*A multi-level analysis and evaluation of flood risk governance in England – opportunities and barriers in the pursuit of societal resilience* by Priest *et al.*, 2015). The second workshop was conducted at Grontmij Offices in the City of Leeds on 23rd April 2015. In this case, the purpose of the workshop was to present the results of national and case study research to a wider audience, involving, but not limited to, flood risk management practitioners who had participated in the interview process. This workshop facilitated knowledge exchange to corroborate, refine and extend research findings and recommendations. Details on each of the workshops are provided in Section 7.2 and 7.3, respectively.

7.2 Workshop 1: STAR-FLOOD Expert Workshop

7.2.1 Workshop process

7.2.1.1 Objectives

The aim of this workshop was to discuss and refine the preliminary findings from the national-level analysis. The topics for discussion included i) the national Flood Risk Governance Arrangement (FRGA) and sub-FRGAs identified from the Policy Arrangements Approach (PAA); ii) explanatory factors accounting for governance dynamics; and iii) evaluation of flood risk governance and Flood Risk Management (FRM) in England, with reference to the evaluation criteria (*resilience, effectiveness, efficiency and legitimacy*). This was conducted alongside broader discussions about the strengths, weaknesses, opportunities and barriers to moving forwards and enhancing societal resilience to flooding. The objectives of this workshop can be summarised as follows:

- I. To validate preliminary results
- II. To identify gaps or errors in the research
- III. To test the characterisation of the national Flood Risk Governance Arrangement and sub-arrangements
- IV. To elicit views on governance dynamics, including factors driving change and stability in flood risk governance
- V. To evaluate the national approach to FRM and flood risk governance
- VI. To discuss case study research (including preliminary results and the third potential case study)

The workshop was organised through a range of short presentations delivered by STAR-FLOOD researchers and open discussions to prompt knowledge exchange. In contrast to the second workshop, invited experts were provided with a draft version of the national report in advance, thus the discussion

were able to focus in detail on specific aspects of the report. Moreover, the participants were able to provide specific feedback and recommendations for revising the national report.

7.2.1.2 Date, location and participants

This workshop took place on Friday 14th November, 2014 at the Flood Hazard Research Centre (FHRC), Middlesex University in London. All policy and legal researchers involved in the STAR-FLOOD project attended this event (including Dr Sally Priest, Sue Tapsell, Dr Meghan Alexander, Dr Paula Micou, Dr Stephen Homewood and Professor Colin Green). Also invited to the workshop were two academic experts, both external to the STAR-FLOOD project and with 80 years combined experience in flood research. To accompany this academic expertise, the workshop was also attended by the former Director of Flood and Coastal Risk Management at the Environment Agency.

7.2.1.3 Programme & activities

Table 7.1: Agenda for Expert Workshop: Flood Risk Governance in England

11.00 – 11.05	Welcome by Sue Tapsell
11.05 – 11.20	Presentation by Dr Meghan Alexander - Introduction to STAR-FLOOD and Overview of England's Flood Risk Governance Arrangement
11.20 – 12.10	Discussion: What is the national governance arrangement for flood risk management in England? Do we agree with the conceptualisation proposed by FHRC?
12.10 – 12.20	Presentation by Dr Sally Priest - Overview of governance dynamics
12.20 – 1.00	Discussion: How have national governance arrangements for flood risk management changed or remained stable over time? What explanatory factors can be attributed to this?
1.30 – 1.45	Presentation by Dr Meghan Alexander - Introduction to evaluation criteria
1.45 – 2.30	Discussion <ol style="list-style-type: none"> 1. What are the strengths and limitations of our current approach to FRM and governance? 2. To what extent does the current governance arrangement enable or constrain societal resilience to flooding? 3. How 'future proof' is the current flood risk governance arrangement
2.30 – 2.45	Summary and close

Introduction to STAR-FLOOD and Overview of English Flood Risk Governance Arrangement

Dr Meghan Alexander first introduced the objectives of the workshop, followed by a presentation of the STAR-FLOOD project, explaining its theoretical framework and objectives. The English Flood Risk Governance Arrangement (FRGA) was explained and two diagrams were presented: one that illustrated the FRGA in 2014 (including eight sub-arrangements), and the other one which illustrated the position of the FRGA in relation to other policy domains (*e.g.* climate change, civil contingencies, *etc.*; see Figure 7.1). A list of questions was introduced to guide the discussion about the conceptualisation of national flood risk governance in England, as follows;

- I. What are the bridging mechanisms between sub-FRGAs?
- II. What is the dominant sub-FRGA? Strategy in FRM? How do we evidence this?
- III. Is there an urban vs rural divide in flood risk governance?
- IV. To what extent do we see synergies between sub-FRGAs?
- V. To what extent do we see diversification of FRM strategies/measures?



Figure 7.1: Conceptual diagram discussed during Workshop 1 depicting the relationship between the national Flood Risk Governance Arrangement (FRGA) and relevant policy domains

Overview of governance dynamics

Dr Sally Priest presented a diagram to illustrate how English flood risk governance has evolved through four snapshots in time (1935, 1975, 1996 and 2014). This was followed by a discussion of the explanatory factors driving stability and change at the national level, including exogenous and endogenous factors (*i.e.* those external or internal to the flood policy domain, respectively). From this, macro-level factors

were discerned (such as the privatisation of the water industry). The following open discussion was steered by a number of questions;

- I. **How has the national governance arrangement for FRM changed or remained stable over time?**
 - a) Do you agree with the key factors we have identified as ‘macro-level’ changes on governance? Have we missed something?
 - b) What do you think about the snapshots of the governance arrangements and their dates?
 - c) Are internal or external factors more important in changing governance at the national level?
 - d) Is there another way of conceptualising/identifying overarching governance changes at the national level?
 - e) Are we able to identify any other overarching shifts in governance?

- II. **What explanatory factors can be attributed to this?**
 - a) Do you agree with the explanatory factors we have identified? Are we missing any key explanatory factors?
 - b) Is there any better way of attributing these to changes in governance? How should we better evidence these changes?
 - c) What are the key driving factors? (*e.g.* actor led, rule-led, resource-led changes)

Introduction to evaluation criteria

The conceptual framework for evaluating flood risk governance developed within STAR-FLOOD was introduced by Dr Meghan Alexander. At this stage in the project this include four evaluation criteria; namely *resilience*, *effectiveness*, *efficiency* and *legitimacy*. Preliminary results were presented and the following questions posed to the participants of the workshop:

- I. What are the strengths and limitations of our current approach to FRM and governance? (*e.g.* Is the division of responsibility across multiple agencies problematic? Is the legal framework in England constraining?)
- II. To what extent does the current governance arrangement enable or constrain societal resilience to flooding?
- III. How ‘future proof’ is the current flood risk governance arrangement?
What should future governance look like?

7.2.2 Validation research results

7.2.2.1 Insights generated during the workshop

There were a number of points of convergence as well as divergence during the workshop discussions. However, in general most of the findings reported in the national report were confirmed and supported by the invited experts. As described in Section 7.2.1.3, the workshop was structured in three main discussions:

Discussion 1: *What is the national governance arrangement for flood risk management in England? Do we agree with the conceptualisation proposed by FHRC?*

There was a general agreement amongst participants regarding the conceptualization of the national governance arrangement (Figure 7.2). However, some suggestions were given for revising and developing the English FRGA diagram further:

- Link the FRGA more explicitly to the disaster management cycle
- Position flood risk governance alongside other policy domains relevant for understanding resilience (*e.g.* welfare provisions, critical infrastructure resilience *etc.*)
- Recovery is wider than insurance/reinsurance. It should also circle emergency management
- Consider illustrating the bridging mechanisms between sub-FRGAs
- Consider re-scaling sub-FRGAs to illustrate shifts in the importance of these depending on the phase of the 'disaster cycle'
- Consider whether to re-split the sub-FRGA for flood emergency management into the sub-dimensions of planning, response and recover
- Illustrate growth in the national flood policy domain

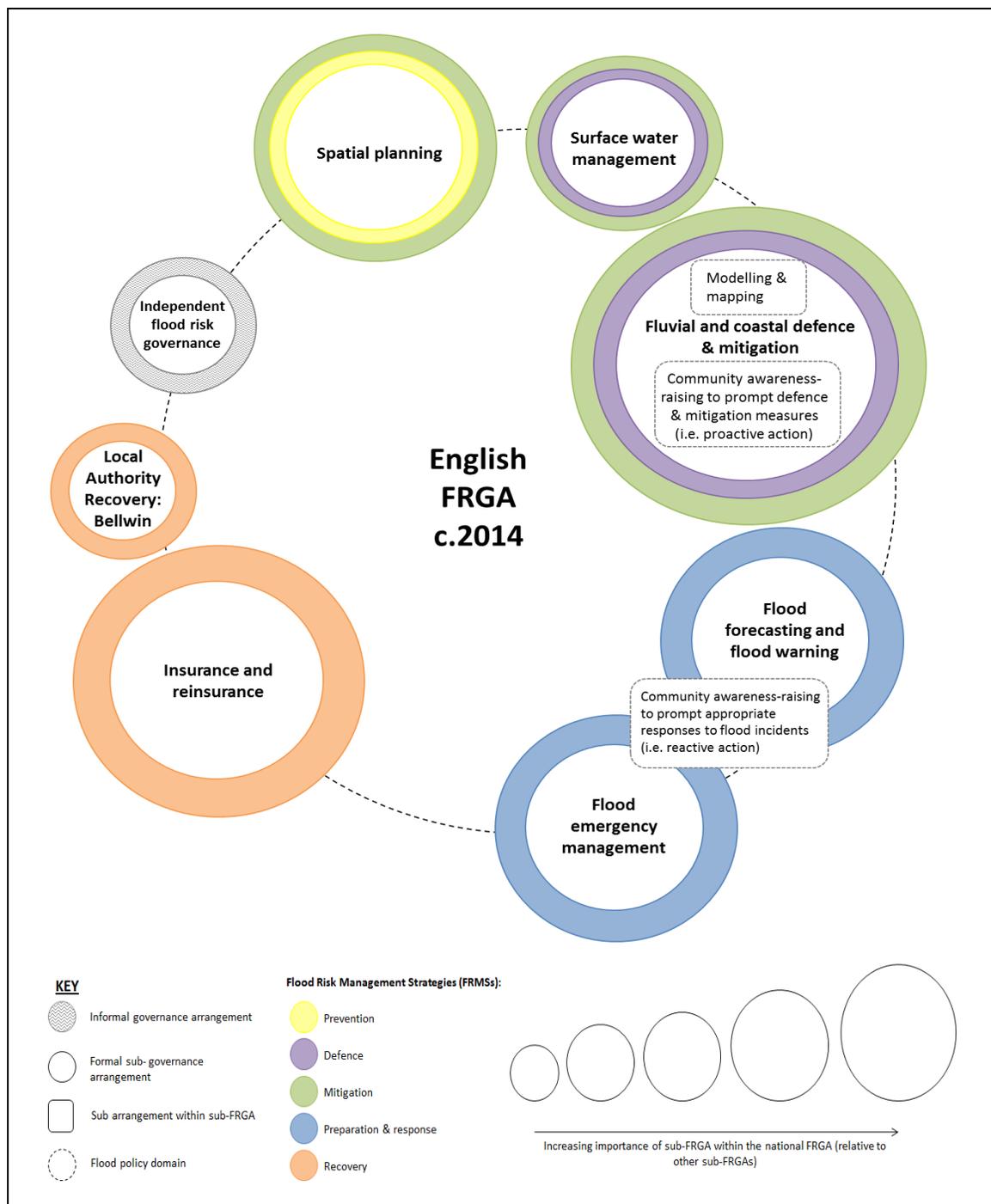


Figure 7.2: Conceptual diagram discussed during Workshop 1 depicting the national Flood Risk Governance Arrangement (FRGA) and sub-FRGAs. The proportion of the sub-FRGA overlapping the flood policy domain indicates the relative importance of flooding within other policy domains (i.e. minimal overlap indicates low importance).

Discussion 2: How has the national governance arrangement for flood risk management changed or remained stable over time? What explanatory factors can be attributed to this?

A host of explanatory factors were discussed and there was a general consensus about the factors identified in the national report. Although time was limited, the following factors featured in this debate;

- The demise of the agricultural lobby, alongside associated shifts in ideology and the importance of the changing coalitions
- The influence of environmental movement and legislation in the 1980s/1990s
- Technological advancement, in particular in relation to flood forecasting and warning
- Floods were considered to be triggers for change but often in combination with other factors
- Importance of independent committees, post-event reviews and public scrutiny
- Changes in the public acceptability of risk

Discussion 3: What are the strengths and limitations of our current approach to FRM and governance?

During this section of the workshop the group focused on the strengths and limitations of the English system. This was an important source of data underscoring our SWOT analysis (strengths, weaknesses, opportunities and threats) within the national report. Table 7.2.2 lists some of the limitations and strengths that were discussed during the day.

Table 7.2: Strengths and weaknesses of the English FRM system

Strengths	Weaknesses
A multi-actor approach is adopted in England and the importance of coordinated, integrated working is emphasised in national/local policy and practice.	Under the Partnership Funding approach, there are potential concerns about the ability to raise money at the local scale, which has the potential to delay approved projects and enable other schemes to ‘queue-jump’
In contrast to other countries, there is a dedicated budget for FRM	Budgets for capital and revenue spending continue to be treated on separated timelines; <i>i.e.</i> a 6 year programme vs an annual programme, respectively. How to commit maintenance budgets in the partnership-approach appears to be challenging.
All FRM Strategies (FRMSs) have been implemented for a considerable period of time and synergised in a risk-based approach, such that each FRMS is regarded as equally important in addressing flood risk.	There are shortcomings in the Cost Benefit Analysis (CBA) formula (although these do not exceed the value of using the CBA approach)
Flood forecasting and warning arrangements can be regarded as world-leading. A universal warning system is in place, with multiple communication pathways for dissemination.	Although flood warning is highly developed, appropriate behaviours from the public cannot be guaranteed.
Flood risk is embedded in spatial planning, with mechanism in place to minimise the exposure of people and property (<i>i.e.</i> sequential and exception tests)	Enforcing decisions in spatial planning continues to be a challenge.
There is a high penetration of private-market insurance to cover flood damages	The role of the proposed Flood Re insurance system in mitigating damages remains unclear and underdeveloped. There is also a need to be critical of the representatives of the Association of British Insurers (ABI) of the insurance industry in England.
FRM, alongside goals of resilience and adaptation,	With the consolidation of engineering firms, there is

are established in national policy and successfully translated to the local scale meaning there is a strong degree of consistency across the country	an emerging gap in the market for the management of small scale projects.
There is political will to deliver successful FRM and Governments which are responsive to flood events when they occur, thus providing the steering capacity to improve aspects of FRM	The highly politicised flooding in Winter 2013/14 has established precedence which contradicted national policy at the time. The impact of this is yet to be fully realised.
In contrast to other countries, England has an established, formalised approach to public participation to enhance legitimacy in FRM decision-making, facilitate risk awareness and promote responsibility at the community scale.	
The English system is very flexibility & adaptive	
England has long adopted a catchment management approach in FRM	

These factors were regarded as features of flood risk governance that enhance or constrain societal *resilience*, and influence the *efficiency*, *effectiveness* and *legitimacy* of flood risk governance. However, this also prompted a debate about the evaluation framework itself, especially the application of ‘*resilience*’ as both a desired outcome of governance and evaluation criterion. As the evaluation framework was the responsibility of the Flood Hazard Research Centre within Work Package 2, this led to major revisions in the framework employed within the STAR-FLOOD project (see Alexander *et al.*, 2015).

7.2.3 Implications for national level analysis of flood risk governance in England

Acting upon the feedback from this workshop, amendments were made to the national report for England. A series of suggestions were proposed for revising the conceptualisation of the national flood risk governance arrangement and the intersection between flood policy and other policy domains. Although not every suggestion was acted upon, these figures have since been revised accordingly. Within the written analysis there is now greater consideration of the influence of the welfare state, critical infrastructure, urban-rural divides in FRM and the role of emergency management in initial recovery efforts. In terms of governance dynamics, this workshop confirmed the preliminary interpretation about change/stability factors, the nature of incremental change and inherent flexibility in the English system. On the basis of this discussion it was decided to remove a section from the report which tried to identify overarching macro-level factors shaping change and stability in flood risk governance. Instead, we acknowledge that the complexity of the English system and the interaction of multiple factors acting upon sub-FRGAs at different points in time, make it impossible to distinguish single higher-level drivers of governance dynamics. There was also a collective agreement that all FRM strategies have been in existence for ca. 65 years and no one strategy has dominated the approach to FRM in England (in contrast to other STAR-FLOOD countries).

An important part of the workshop included the discussion of the structure, extent and contents of our report. Some recommendations for improvement included the need to strengthen the discussion on other policy domains relevant for understanding FRM and societal resilience to flooding in England; such as agriculture, welfare and critical infrastructure. It was also suggested that the evidence-based for the

analysis needed to be strengthened within the report. These suggestions were implemented in the revised version of the national report.

This workshop also raised significant implications for the STAR-FLOOD project more broadly in terms of the evaluation framework. Acting upon this external peer-review, it was decided to implement significant changes to the evaluation framework (previously developed in Work Package 2). The project has now adopted the stance that flood risk governance should achieve three desired *outcomes*; it should enhance societal *resilience* to flooding and do so in an *efficient* and *legitimate* way. In order to evaluate the extent to which these outcomes have been met by current FRGAs a range of criteria and indicators to measures these criteria were developed; these are reported in Alexander *et al.*, 2015).

7.3 Workshop 2: STAR-FLOOD knowledge exchange event (23rd April, 2015)

7.3.1 Workshop process

The second workshop was framed as a knowledge exchange event between STAR-FLOOD researchers and a range of professional stakeholders in FRM; involving, but not limited to, flood risk management practitioners who had participated in the interview process. This event focused on the results obtained through national and case study analysis.

7.3.1.1 Objectives

There were two central objectives to this workshop. Firstly, this event enabled the STAR-FLOOD researchers to present and disseminate the research findings from national and case study analysis to a wide audience of flood related practitioners. Secondly, the workshop served as a means of facilitating knowledge exchange in an interactive way, with the view of corroborating, refining and extending the research findings, especially in regards to the recommendations for strengthening flood risk governance in England.

7.3.1.2 Date, location and participants

This workshop was conducted at Grontmij Offices in the City of Leeds on Thursday 23rd April 2015, providing a central position to the three case studies of Kingston-upon-Hull, the City of Leeds and the Lower Thames. Those invited to the workshop included some flood risk management practitioners who had participated in the interview process, supplemented by specialised practitioners who would be able to provide informed and expert commentary on the work. A total of 19 people attended this event. A range of actor groups were represented in the workshop, including Local Authorities, the Environment Agency, Department for Environment, Food and Rural Affairs (Defra), National Flood Forum, a former senior representative for Department for Communities and Local Government (DCLG), consultants and academics.

7.3.1.3 Programme & activities

The workshop was steered through a number of short presentations by STAR-FLOOD researchers and a key note speaker (Phil Rothwell) to stimulate group-based discussions. Table-top exercises were used to facilitate discussions and included two excises. The first, required participants to write the strengths, weaknesses, opportunities and barriers on the table cloth (divided into quarters) and then report back to

the group at large (Figure 7.3). The second task, encouraged participants to debate a timeline identifying the key changes in FRM identified by this research, consider what might be missing and discuss the factors driving periods of change and stability in each of the sub-FRGAs. The complete agenda for the workshop is presented in Table 7.3.1.

Table 7.3: Agenda for Workshop 2

Welcome and introductions <i>Dr Doug Lewis</i>	10.00 – 10.15
Introduction to STAR-FLOOD – Insights from national and case study research <i>Dr Sally Priest and Dr Meghan Alexander</i>	10.15 – 10.45
Key note by Phil Rothwell on the Strengths and Weaknesses: Opportunities and challenges for FRM in England	10.45 – 11.00
Group exercise - SWOT analysis: What are the strengths and weaknesses of England’s current approach to flood risk governance? What are the opportunities and threats to moving forwards and enhancing societal resilience to flooding? <i>Presentation by Dr Meghan Alexander</i>	11.00 – 12.15
Explaining change and stability in flood risk governance over time <i>Presentation by Dr Sally Priest</i>	13.00 – 14.15
Moving forwards - Suggestions for strengthening flood risk governance in England <i>Presentation by Dr Paula Micou</i>	14.30 – 15.20
Close & Way Ahead	15.20 – 15.30



Figure 7.3: Highlights from STAR-FLOOD knowledge exchange event

Introduction to STAR-FLOOD: Insights from national and case study level analysis

The workshop started with Dr Sally Priest, Middlesex University, providing an i) introduction to the STAR-FLOOD project, including an overview of the Flood Risk Management Strategies (FRMS) considered within the project and the methodological approach; ii) identification of the national Flood Risk Governance Arrangement (FRGA) and sub-arrangements; and iii) framework for evaluating flood risk governance. This was followed by an overview of the National Flood Risk Governance in England and insights into *resilience*, *legitimacy* and *efficiency* of FRM in England. Dr Meghan Alexander, Middlesex University, then introduced the emergent findings from case study analysis, including;

- **Kingston upon Hull:** *Exploring efforts to integrate surface water mitigation within a defence-dominated regime*
- **City of Leeds:** *Localised strategic cooperation and innovative measures within an adaptive management approach*

-
- **Lower Thames and the River Thames Scheme:** *Exploring the implementation of a multi-scale flood risk management scheme within the context of Partnership Funding*

The key conclusions from these case studies were noted as follows:

- Several examples of good practice (*e.g.* partnership working) and innovation (*e.g.* River Aire Flood Alleviation Scheme) are evident at the local scale;
- The National FRGA constrains certain aspects of local flood risk governance. These constraints occur through *e.g.* requirements for Sustainable Urban Drainage Systems (SUDS) in schemes; lack of funding availability which is split between new projects and maintenance requirements; difficulties in securing partnership funding; limitations in Cost Benefit Analysis; and conflicts in modes of governance between Risk Management Authorities (RMAs);
- Concerns are raised at the national scale regarding the ‘funding gap’ and lack of private sector investment. Hull and Leeds case studies highlight the importance of combining the agenda to enhance societal resilience to flooding with the promotion of economic development/regeneration;
- There are a number of ways in which the legitimacy of FRM is enhanced (*e.g.* public participation, transparency, accountability *etc.*); this is a particular strength of English flood risk governance.

Keynote Address by Phil Rothwell – The strengths and weaknesses, opportunities and challenges for FRM in England

A key note address was delivered by Phil Rothwell (Former Head of Strategy and Engagement for Flood and Coastal Erosion Risk Management within the Environment Agency). This presentation argued that England is not ‘future proof’ for a number of reasons. The combined impact of events (*e.g.* the Pitt Review into the Summer floods in 2007) and reports (such as The Foresight Future Flooding report by Evans *et al.*, 2004; 2008), provides a strong database to build policy and investment procedures for the future. Our understanding of the required interventions has greatly improved. However, enhancing societal resilience in the context of uncertain futures fundamentally requires a fiscally stable long-term view, yet we continue to be constrained by financial uncertainty.

Phil considered that we have a good national FRM strategy, good data, better forecasts, diversity of plans, all leading to a robust set of National FRM strategies. Regular testing and exercising of forecasting and response systems works well and helps the public to have confidence that systems are in place that work. There are however significant gaps, such as the need to implement combined flood mitigation mechanisms from rural and urban sources.

Phil reflected on the varied nature of public sources for funding. The move towards *Partnership Funding* (implemented in 2012) has undoubtedly facilitated the diversification of funding sources, but this often appears to be a ‘recycling’ or reallocation of public money. Contributions from the private sector are noticeably lacking. There is also a lower national priority for flood risk areas where some private sector money is made available, and there is the need to guard against low priority (poorer) areas not benefitting.

It was also argued that the Defra Pathfinder Scheme to fund innovative responses to increase flood resilience at the local level is very important. Such initiatives have the potential to help communities to help themselves, however this is not always seen as a priority. There is the need to provide resources to encourage local ownership, which is also difficult under current shrinking budgets.

Local FRM plans and strategies are a reasonable approach set within a national framework. The National Planning Policy Framework (NPPF) is seen by many as weakening spatial planning with regards to FRM, with developments continuing on the floodplain and escalating risks that will need to be managed in coming years.

As for the way forward, Phil considers that the insurance industry has doggedly pressed government to fund FRM. However the industry has not done as much as it could and needs to be more active in providing insurance cover options. Personal protection measures for households are an efficient means of prevention, but the floods market remains small. Government needs to invest in research and development (R&D programmes) and in local responses to enhance this offering. There is also a failure to join up thinking between FRM and other catchment-based decisions; indeed flooding continues to be seen as a discrete problem, rather than in relation to spatial planning and other relevant policy domains. In general, we have many plans but there is a need to better connect these plans and move towards a catchment-based model of decision-making. It is also likely that we are missing economic and investment tricks which would provide better solutions. In summary we have an existing system that works well but there is still more that can be done.

Session 1 - Strengths, weaknesses, opportunities and threats: Insights from group-based SWOT analysis

A group exercise analysed current FRM in England in terms of the strengths and weaknesses of the current approach, alongside the opportunities and threats to developing FRM and enhancing societal resilience to flooding. The room was divided into four groups and asked to write their views on the table cloth (Figure 7.3). The results of this exercise are discussed in Section 7.3.3.1. After the table-top discussions, Dr Meghan Alexander of Middlesex University presented the findings of the researchers SWOT analysis of FRM in England based upon research findings (Figure 7.3).



Figure 7.4: Summary of strengths and weaknesses of flood risk governance in England

Session 2 - Explaining change and stability in flood risk governance in England

An overview of governance dynamics was provided by Dr Sally Priest. This was visualised through four snapshots in time, from 1935, 1975, 1996 to the present day, 2015. Change and stability are witnessed within sub-FRGAs at different points in time. Over time we see the emergence of distinct sub-arrangements to the current eight sub-FRGAs we have today. Although there are linkages between some of these, in general most have remained independent entities; albeit in recent years (and in particular since the Flood and Water Management Act 2010) there has been a greater alignment of sub-FRGAs.

Overall English flood risk governance has evolved in an incremental and piecemeal way; there are no distinct, abrupt departures from the past, but in fact a high degree of stability. Stable features of flood risk governance include for example, the continued use of economic prioritisation, legal responsibility residing with the individual and the presence of a consistent private mechanism for individual flood recovery. However, shifts are evident in the modes of governance employed within sub-FRGAs – with more recent efforts to develop forms of public-private governance (especially with the Implementation of *Partnership Funding* in 2012); as well as decentralised approaches in surface water management and in efforts to engage local communities. A crucial point to emphasise is that changes in FRM do not necessarily require a fundamental shift in governance *per se*; for instance, changes in practice and policies often occur without the need for radical changes in the legislation or overarching governance structure. This indicates an in-built flexibility and adaptability of the English system, which is particularly advantageous when it comes to thinking about strengthening and improving the approach to flood risk governance.

There are a number of overarching features which have influenced the flood policy domain and have had an influence on a number of sub-FRGAs (summarised in Table 7.3.2). Factors leading to more significant change are generally exogenous (*i.e.* external to the flood policy domain), such as privatisation of the water industry, centralisation and localism. In contrast, factors leading to stability as well as incremental change are generally endogenous to the flood policy domain (*e.g.* so-called catalyst floods). Although change is complex, agency (*i.e.* the influence of actors) appears to be more important than structure (*i.e.* rules, institutional change or changes to socio-economic context) in *driving* changes to the sub-FRGAs (albeit laws and policies may be used to consolidate/reinforce change).

Table 7.4: Example of factors shaping change and stability in flood risk governance

	Factors explaining stability	Factors explaining dynamics
Endogenous factors (from within FRGA)	<ul style="list-style-type: none"> ▪ Significant flood events (<i>e.g.</i> Winter floods 2013/14) can enforce stability by promoting the continuation of a specific measure (<i>e.g.</i> dredging in the case of Winter 2013/14 floods) ▪ Past investment in flood defence infrastructure ▪ Policy inertia and impact of precedence 	<ul style="list-style-type: none"> ▪ Significant flood events (<i>e.g.</i> 1853 and 2007) ▪ Role of reviews, committees and public enquiry ▪ Technological advances ▪ Wider inclusion of actors and flood management community ▪ Policy entrepreneurs
Exogeneous factors (from outside FRGA)	<ul style="list-style-type: none"> ▪ Policy-making culture in England ▪ Legislative process ▪ Presence of insurance system 	<ul style="list-style-type: none"> ▪ Political ideology (<i>e.g.</i> increasing centralisation; privatisation; localism) ▪ Technological advances ▪ Economic shocks (<i>e.g.</i> financial recession) ▪ Rise of environmentalist movement, sustainability and climate change agenda ▪ Normative shifts in attitudes towards participation and inclusion of multiple actors

Following this presentation, groups of participants were asked to reflect on the following questions (the results of which are discussed in Section 7.3.3):

- I. What do you think about the timeline highlighting the key shifts in governance? Does it capture the key changes you recognise?
- II. Do you agree with the explanatory factors we have identified? Are any key explanatory factors missing?
- III. Do you agree with the key factors identified as ‘macro-level’ influences on governance? Is anything missing?
- IV. What are the key driving factors for change and stability? (*e.g.* actor-led, rule-led, resource-led changes).

Session 3 - Moving forwards: Suggestions for strengthening flood risk governance in England

This final session was a plenary session presented by Dr Paula Micou, Middlesex University. Recommendations are required to improve how we deal with flood risk in urban areas at different scales (national, regional and local). This open discussion requested the participants to give suggestions/recommendations for improvement, including how to translate any broad recommendations into targeted suggestions. The outcomes of this discussion are elaborated in section 7.3.3.

7.3.2 Validation research results

7.3.2.1 Insights generated during the workshop

Session 1 - SWOT analysis

The dynamic nature of the SWOT analysis session led to wide variety of insights from participants detailing their opinions on the state of FRM in England. All opinions, for each element, across the workshop are provided in the Table below.

Table 7.5: Results from SWOT analysis table-top exercise

Strengths	Weaknesses	Opportunities	Threats
Comprehensive flood forecasting and warning system	Lack of public awareness and ownership of responsibilities	Enable more community ownership of flood resilience	Political caution due to a poor understanding of technical evidence
Reactive and proactive emergency management	Lack of investment in FRM	Investment in FRM education	Media agenda when reporting extreme floods
Wide range of FRM tools and training available	Local Authorities do not always work together	More emphasis on Blue-Green Cities	Poor maintenance of existing flood defence assets
6 year capital investment programme	Overall FRM system is not widely understood	Private sector funding	Over-reliance on the government to solve problems
Ease of access to high quality data - e.g. EA's online flood maps	Lack of public involvement in flooding discussions	Engagement of communities	Lack of transparency in how FRM funding is allocated
Local oversight – e.g. Regional Flood and Coastal Committees	Lack of public understanding in the flood warning system	Planning authorities should be legally accountable for poor planning decisions	Local government structure can influence decisions
Cost-Benefit Analysis is an effective tool	Lack of clarity in data available to the public	More focus placed on implementation of SUDs	Short-sighted ambition – e.g. fixed-term parliament
Strong national strategy and hierarchy of plans and policy	Lack of public understanding of technical language – e.g. probability of flooding	More transparency on FRM at all levels.	Short-term research funding
Action from local communities can influence FRM decision making and policy	More investment in integrated catchment management is required	Input from insurers in the planning application process	Lack of planning enforcement

National prioritisation of flood defence schemes – <i>e.g.</i> accounting for socially deprived areas	Politicising of extreme flood events	Improve the ways in which flood risk is communicated to the public	EA are resistant to change how they communicate with the public – <i>e.g.</i> 1:100 year event <i>etc.</i>
The Pitt Review was a success	No obligation to publish findings	International competition in the insurance market	Financial uncertainty effects a long-term investment programme
Lots of available documentation	Large gulf in public and professional understanding of flood risk	Encourage sharing of expertise across Local Authorities	No obligation to publish findings
Partnership funding of flood defence schemes	Implementation of FRM is slow and complex	Multi-disciplinary research projects	No timeline for section 19 reports
Knowledge gains and experience can allow for evidence-based policy and practice to develop	Poor integration of SUDs and water quality. Compliance with the WFD	Use of social media as a data sharing tool	Lack of consistency in economic approaches across sectors – <i>e.g.</i> forestry, farming, flooding <i>etc.</i>
	Lack of investment in skills, particularly de-skilling in LAs	Investment in integrated catchment management	Spatial variation in skill and knowledge levels
	Inequalities (north vs south; rural vs urban)		DEFRA emphasises on protecting people and properties. This needs to be broader
	Lack of a long-term strategy – <i>e.g.</i> understanding of risk vs. short-term fixes		No enough collaboration between FRM and Spatial Planning departments within Local Authorities

Session 2 - Stability and Change

Even though the study of stability and change of flood risk governance in England for the STAR-FLOOD project covers an eighty year period, it is important to highlight here that the scope of this session focuses on recent changes (ca, past 15 years).

Participants believed that extreme flood events are still a key driver in promoting the need for FRM. In recent years the large uptake in social media, especially Twitter, means that the impact of flooding (large or small) can now be communicated globally by anyone. This, in addition to the shift in the media (*i.e.* 24-hour real-time news channels) was highlighted as one of the main influences in increasing the rate of information provided to the public. Whilst all floods may not previously have resonated on the national scale, the ease of communication now means that smaller flood events receive more publicity and can influence the progression of defence/mitigation activities at the regional and local scale. However on their own, they are not the only factors driving change.

The Pitt Review (commissioned off the back of the 2007 floods) was agreed as one of the key factors in driving FRM in recent years. Additionally, the view amongst participants was that the 2007 events increased the political interests in flooding. Although flooding has risen on the political agenda,

participants voiced their concerns that the politicising of flood events can be detrimental and result in short-sighted knee-jerk reactions rather than focusing on long-term strategies. The Winter floods 2013/14 were a good example of this.

A discussion on the Floods Directive and Water Framework Directive revealed both positive and negative impacts. On one hand, these Directives promote joined up thinking (*i.e.* a catchment scale response), but on the other, the requirement to report to the EU has led to many 'tick box exercises' and development of documents that are not easily understood by the public.

The group considered that the EA should not have a silo mentality as the sole agency responsible for flooding as there are considerable overlaps with other areas of environmental management which have to be accounted for.

Other factors that were highlighted by participants as influencing change in FRM and could be added to the timeline diagram:

- Creation of the Institute of Hydrology (ca 1960s) which influences the sharing and access to data;
- The EA mandate for the inclusion of a climate change allowance in flood risk studies;
- The financial crash in 2008 has resulted in loss of Local Authority expertise;
- The privatisation of water companies. It was discussed that water companies can easily declassify sewers and transfer responsibility to other parties. Also, there is no duty to integrate with the relevant Risk Management Authorities;
- The new approach to implementing SUDS through the planning process could lead to inconsistencies and disjointed approach; although the inclusion of LLFAs in the planning process is an attempt to mitigate this. The recent changes with SUDS could also cause a significant increase in the number of actors involved.

Session 3 – Recommendations for moving Forwards

The moving forward session allowed the workshop participants to outline the key directions that they believed FRM should be heading in the future. The key findings from this session are summarised below.

- There was an overall belief among the participants that the complexity of Flood Risk Management Plans is such that they have become incomprehensible to the public. Not only should these be made more accessible to less-informed members of the public, but it was suggested that the public should be more actively engaged in the formation of local FRM strategies (beyond the consultation exercise we see today).
- In line with the above point, there was emphasis placed on the requirement to increase public awareness in FRM and the responsibilities of certain actors (including the individual themselves). To implement this, it was acknowledged that substantial investment in education and engagement activities is required. It was suggested that engagement has to be more innovative and also contextualised alongside other local concerns.

- One of the major barriers to delivering effective and sustainable FRM is the integration with other policy domains. Catchment-based decision-making is a necessary step forward.
- It was widely believed that insurance companies should take more of a pro-active role in promoting property-level resistant and resilient measures. Suggestions on this ranged from financial incentives for domestic flood mitigation to more input into the planning application processes within areas at risk of flooding.
- Floods can occur infrequently, thus there is a need to consider means of preserving ‘flood memories’ and cultivating awareness of flood risk. The use of visual cues was one suggestion – *e.g.* lines on the roads, depths on lamp posts *etc.* However, it was recognised that this may be contested by those residing in such areas, for fear that this ‘advertises’ flood risk and may have a detrimental impact on property prices.
- There is a need to invest in a marketing strategy for communicating flood risk to the public. To support this, we need to review how flood science is translated to the public (*i.e.* return periods and scientific uncertainty). Moreover, there is a need for a cohesive and strategic strategy across Risk Management Authorities to ensure that risk communication is consistent.

Substantial investment is required to develop a long-term strategy for FRM. Revenue (maintenance) budget should be treated as equally important as the capital budget for new projects.

7.3.2.2 Similarities and differences with research results

Throughout the sessions there was a general agreement between participants and STAR-FLOOD researchers, and feedback in general was very positive. Many similarities were found, especially during the SWOT analysis and a general consensus was evident during the last session on recommendations. However, new aspects and issues also emerged and will be integrated within the final research findings. This section highlights some of these points of convergence and divergence within our findings.

Session 1 - SWOT analysis

- **Flood insurance** – The insurance system was seen as a strength of flood risk governance in terms of enhancing the capacity to recover. However, there was a consensus that the insurance industry promotes the ‘return to normal’ and could be more proactive in incentivising and normalising flood resilient/adaptive behaviour.
- **Partnership working** – Confirming the research results, the strong emphasis on partnership working in FRM in England was highlighted as a particular strength (and indeed necessary given the complex actor arrangement in flood risk governance). There is an opportunity to further strengthen mechanisms for bridging actors groups.

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- **Flood warning** – Flood forecasting and warning was emphasised as a key strength and regarded as one of the best systems in the World. However, the effectiveness of flood warning is dependent on the actions that people take next; arguably more information is required within our current warning codes/approach to provide better direction on appropriate actions. More broadly, there is a view amongst participants that the public are too expectant and reliant on State intervention, no doubt created through centralisation of FRM in the past. This point links to the bigger challenge to facilitate ownership of responsibility at the household/community scale and the need to normalise resilient behaviour.
 - **Public engagement** - Different opinions emerged regarding public engagement. Following the researchers conclusions, public engagement in FRM in England is one of its strengths and there have been considerable efforts to facilitate public participation and ownership of flood risk (*e.g.* Defra Pathfinder Scheme). There are many examples of good practice and success stories, but this is not consistent across the country. One of the issues raised during the workshop was about the lack of resources to support community engagement activities (*e.g.* local FRM strategies tend to be developed through public consultation rather than participation). Another issue highlighted was the difficulty of sustaining public interest and being more inclusive and representative.
 - **Social acceptance of flood risk or risk awareness** – Confirming the research findings, there was a shared view amongst participants that social acceptance and tolerance of risk had eroded. There is a need to manage societal expectations and gradually reduce reliance on the State – however, this is arguably one of our biggest challenges.
 - **Bridging mechanisms** – Bridging mechanisms were identified as an opportunity for tackling the diversity of actors. It was acknowledged by all that the actor arrangement has become steadily more complex, but there seemed to be some consensus that the answer is not to simplify the actor network but strengthen the bridging mechanisms that facilitate joined-up working. There has been considerable progress in recent years to achieve this and clarify roles and responsibilities. However, how this is communicated and understood to the public remains an issue.
 - **The need for integrated water management** – Confirming the research results, there was general consensus during the workshop that the lack of integrated water management is a weakness and threat. Broadly, it was argued that there is a need to improve integration of different policy domains and bridge urban-rural divides to deliver an integrated catchment approach to decision-making. Although our planning documents in FRM are on a catchment/river basin scale, this is still disjointed from other policy domains. Integration could lead to efficiency savings and deliver a more sustainable and appropriate multi-solution approach. However, there is a need for further research to demonstrate this.

- **Normalising flood resilient behaviour** – It is essential that resilient/adaptive behaviours become normalised in society. A range of strategies were discussed to facilitate this. The media emerged during these discussions as both a threat and an opportunity to educate people. The media can be detrimental in terms of attributing blame, fuelling flood politics and undermining safety messages (*e.g.* recurrent images of politicians and others standing in flood waters). At the same time, the media offers incredible potential to normalise resilient/adaptive behaviours (*e.g.* portraying images of people who have successfully employed property level measures; or helping to communicate flood policy). Another way in which behaviours can be become normalised is through the education system and this was also discussed during the workshop (*e.g.* adding FRM to the national curriculum).

- **Transparency in the system** – In general English flood risk governance can be characterised as highly transparent; however there remain areas of decision-making which are less visible (*e.g.* the allocation of certain funds within FCERM, such as the River Thames Scheme). This undermines accountability.

- **Inequalities** - Inequalities within the country (north – south) and between the rural and urban areas were highlighted as problematic. This will be unpicked further during our evaluation of the legitimacy of flood risk governance in England.

- **De-skilling within Local Authorities** – A variation across the country is felt in terms of skills and knowledge within the Local Authorities. This is problematic given that the roles of LAs have broadened.

- **FRM on the political agenda** - Participants reflected on how FRM has risen on the political agenda, whilst at the same time resources have become heavily constrained, especially at the local level. LAs must still perform their other statutory duties and distribute resources according to local priorities (of which flooding is one issue only). Moreover, there are limits on how much council tax can be raised, which constrains the extent to which FRM can be resourced at the local scale.

Session 2 - Stability and change session

- **The role of flood events as drivers for change** - In relation to the role played by significant flood events, it was the general opinion that certain flood events have been key drivers and can lead to pronounce changes in governance (*e.g.* 1953, 2007). Some floods play a role in reinforcing the lessons learned from previous events, whilst others may prove more influential at the local scale in terms of advancing defence/mitigation works.

- **Flood risk is rising on the political agenda** – The view amongst participants is that the political interest in flooding has increased, especially post 2007. Parliamentary time is key.

Additions to the timeline – A number of additions were proposed for the timeline illustrating governance dynamics, including; i) the creation of the Institute of Hydrology ca. 1960s; ii) the moment the EA started to integrate climate change into the design of defence/mitigation measures ca. 2000; iii) the inclusion of other flood events (*e.g.* early 1960s, 1985 and 2000); iv) the acceptance of computing modelling; and v) the publication of the Foresight project.

7.3.3 Governance recommendations

The aim of the last session of the second workshop was to discuss recommendations for improving FRM and flood risk governance. The session involved a presentation of some of our preliminary suggestions, followed by an open discussion on specific challenges about how to deliver these recommendations. Many interesting aspects emerged.

A recurrent point of discussion was the need to continue to enhance the inclusion of communities in FRM decision-making. Engaging people was found to be critical, but there is a need for being more innovative and frame flooding within the context of other local issues to improve the connection to the issue. Moreover, in order to attract and sustain the interest of community groups, research has shown that flooding needs to be positioned within the context of other local concerns and cannot be treated in isolation. Community engagement and participation are an important means through which resilience and adaptive behaviours could become normalised in civil society; however this is currently constrained by a lack of resources and funding to support such activities. Another approach to consider is the use of visual markers and cues to indicate areas exposed to flooding (*e.g.* water marks from previous flood events); this could be particularly helpful in the communication of surface water risk, which is often hidden from view (Alexander, 2014). Other strategies for normalising resilient behaviours could include education programmes in schools and the national curriculum; the growth of market flood products in high street DIY stores; and the communication of ‘success stories’ through the media.

The communication of flood risk is another aspect that warrants attention. Currently national flood policy and public expectations appear to be at odds; thus public-facing actors need to be honest and open about the ‘living with floods’ agenda. One recommendation is to develop a flood risk communication strategy to provide a strategy approach and ensure consistency in risk messages between Risk Management Authorities and other relevant actors. This requires further attention to the semantics of language currently used in FRM (*e.g.* return periods, property level protection measures) to ensure that flood science and uncertainty are fully understood. Investment in marketing is also required. In comparison to the marketing campaigns employed for fire safety, flood safety is significantly under-resourced, yet more people are exposed to flood risk.

The insurance industry should arguably play a more proactive role in incentivising resilient behaviour (*e.g.* such as awarding property resistance/resilience measures through lower insurance premiums). There was a shared opinion at the workshop that the insurance industry is not being as proactive as they could, and could play a very important role in promoting resilient/adaptive behaviours in the future.

Another point discussed during the meeting was the continued development on the floodplain and lack of enforcement in spatial planning. Development on the floodplain does not have to be problematic, providing that flood risk and climate change are fully considered in the design of the development. There is a need to strengthen enforcement mechanisms in spatial planning to ensure that (re)developments are appropriately designed so that risk is not simply escalated in the future. Possible enforcement mechanisms might include on-site inspections (akin to that used to enforce building regulations) for example, or legal enforcement mechanisms; for instance, the developer might be tried for negligence if they fail to adequately deliver what was promised. Blue-green infrastructure should be promoted where possible and SUDS retrofitted in urban centres. This is not only a matter of mitigating flooding, but should also be conceived within the remit of integrated water management.

The need to develop catchment-based decision-making was a recurring theme during this workshop. There was a consensus that FRM needs to be implemented within an integrated approach to water management, but there is a lack of research to demonstrate the benefits of integrating FRM and efficiency savings that could be made, or indeed methods for performing cross-sector cost-benefit analysis. There is a need to strengthen the evidence base for this recommendation.

7.4 Summary, open issues & follow up

Both workshops facilitated knowledge exchange between the STAR-FLOOD team and a variety of actors involved in FRM, from senior academics to practitioners at the local and national level. These events provided a valuable opportunity to corroborate, refine and extend our research findings. Efforts will be made to maintain this network (*e.g.* dissemination of the STAR-FLOOD newsletter, policy briefs and future seminars beyond the STAR-FLOOD project). An important issue raised through these workshops is how to disseminate and encourage the uptake of our findings in FRM practice and policy. On this matter, we will continue to present our research at national and international conferences and seminars to support the legacy of STAR-FLOOD. A policy brief is currently being developed to highlight our key findings and recommendations for strengthening flood risk governance and enhancing societal resilience to flooding in England.

7.5 List of abbreviations

ABI	Association of British Insurers
CBA	Cost-Benefit Analysis
CCA 2004	Civil Contingencies Act 2004
CCA Regulations 2005	Civil Contingencies Act 20004 (Contingency Planning) Regulations 2005
CCC	Committee on Climate Change
CCS	Civil Contingencies Secretariat
DCLG	Department of Communities and Local Government
Defra	Department for Environment Food and Rural Affairs
EA	Environment Agency
FRGA	Flood Risk Governance Arrangement
FRMMs	Flood Risk Management Measures
FRMSs	Flood Risk Management Strategies
FRR 2009	Flood Risk Regulations 2009
FWMA 2010	Flood and Water Management Act 2010
LA	Local Authority

LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
Pitt Review	Independent Government Review into the 2007 floods undertaken by Sir Michael Pitt.
RMA	Risk Management Authorities (as identified under the Flood and Management Act 2010)
SAB	SUDS Approving Body
SOP	Standards of Protection
Sub-FRGA	Sub-Flood Risk Governance Arrangement
SUDS	Sustainable Urban Drainage Systems

7.6 References

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