

Cross-border Co-operation on Crisis Management for River Flooding



An Analysis of Cross-border Collaboration in the Dutch-German Border-region “Euregion Rhine-Waal”

Radboud University Nijmegen, the Netherlands
Nijmegen School of Management
Department of Geography, Planning and Environment

Bachelor-Thesis
Sonja Gosberg
June 2016



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Preface

This bachelor-thesis examines the importance of the subject of cross-border co-operation. Not only as a general subject, but rather specific within the Dutch-German border-region “Euregion” in the context of crisis management for river flooding.

Both countries share several river basins of which some belong to the most important waterways in Europe. The regions, which are located alongside these river basins, are vulnerable in many respects. One of them is high-water in terms of river flooding.

River flooding coincides with responsibilities concerning crisis management. Crisis management within one country already evokes barriers, which have to be diminished. If this issue is transferred to a cross-border region with different political systems, administrative structures, languages and even cultures, severe challenges are ahead of us.

Nevertheless, it is even more meaningful to cope with these barriers, especially in a century of changing climate. A flood is an unpredictable force of nature and requires a good collaboration, especially across borders.

The collaboration between Germany and the Netherlands within the Euregion is of special interest to me. Not only because of the significant waterways such as the Rhine, but also because I live within this region. As a German student I spent the past three years in Nijmegen and it became a second home away from home. My study and my experiences here showed me how prone this region and its inhabitants are to climate change and its effects. With this research I want to make a small contribution to the region that I call home.

I want to thank the people who supported me during this period of research. A huge thanks goes out to the people of my social environment who discussed the topic with me or patiently listened to my thoughts and ideas. I also want to thank my mentor who gave me a lot of freedom in research and writing from the very first moment. Her way of guiding me during this time gave me a lot of encouragement to find my own way of approaching this subject. Thank you, Marjolein. Finally, I want to thank the interviewees who made this bachelor-thesis possible. I experienced a lot of good will, openness and interest, which gave me joy doing this research. Thank you for this!

Sonja Gosberg

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Abstract

This abstract is meant for the Dutch readers. A German abstract follows.

Context

Het onderwerp grensoverschrijdend crisisbeheer voor rivier overstromingen is de laatste jaren in belang toegenomen. Dit gebeurde vooral door de klimaatverandering die wereldwijd tot extremere weersomstandigheden leidt, wat onder andere rivier overstromingen kan veroorzaken (Bollen & Van Humbeeck, 2002). Voorbeelden hiervan zijn onder andere de woeste overstromingen in Duitse stroomgebieden, zoals de Elbe, Donau, Mulde en Saale (Gennies, Funk, Schlegel & Gehmer, 2013).

De klimaatverandering en de weersomstandigheden vragen van de mens een bepaalde mate van aanpassing, vooral in de vorm van klimaatadaptatie (aanpassing aan effecten) en -mitigatie (vermindering van effecten) (IPCC, 2007). Beide concepten zijn van groot belang. Maar de bedreiging van een grote hoeveelheid water vraagt om aanpassing, daarom staat in deze thesis de adaptatie centraal.

Grensoverschrijdende samenwerking op meerlaagse veiligheid

Het water stopt niet op de grens, daarom is het op Europees niveau essentieel dat de landen aan deze vraagstukken samenwerken. In de literatuur wordt in deze context het concept “Meerlaagse veiligheid” genoemd. Hierbij worden op drie lagen preventie, adaptatie en crisisbeheer behandeld. Als de eerste twee lagen valen en er sprake is van een acuut incident wordt de derde laag van crisisbeheer toegepast (Rijksoverheid, 2013; Hoss, 2010). Nu bestaat er een kennisgebrek over de toepassing van crisisbeheer op een grensoverschrijdend niveau (Rosenthal & t’Hart, 2012). Het onderzoeken van het onderwerp in het kader van een bepaalde casus is daarom van belang, aangezien het zou bijdragen aan de academische discussie and het kennisgebrek zou kunnen verhelpen. De grensregio’s van Duitsland en Nederland hebben een lange geschiedenis in samenwerking, doordat ze meerdere grote rivieren delen (European Commission, 2012). De (geografische) regio Euregio Rijn Waal is betrokken met het onderwerp en heeft in 2015 besloten om de samenwerking aan overstromingen te intensiveren (Gelderse Commissie, 2015). Deze regio staat in deze scriptie centraal.

Doel van het onderzoek en methodieke aanpak

Het doel van dit onderzoek is om een betere inzicht te krijgen in de samenwerking aan crisis management voor rivier overstromingen tussen Nederland en Duitsland. Hieruit volgend werden een hoofdvraag en vijf deelvragen geformuleerd. Deze vragen worden door het toepassen van twee theorieën onderzocht. Dat zijn met name de beleidsarrangementen-benadering en een ontwikkelingsmodel dat de verschillende fasen van samenwerking weergeeft. De beleidsarrangementen-benadering bestaat uit de dimensies “actoren”, “regels”, “discoursen” en “middelen”. Door het toepassen wordt de actuele situatie in de Euregio Rijn Waal in beeld gebracht (Wiering & Arts, 2006; Verwijmeren & Wiering, 2007).

Methode

Met oog op de genoemde vier dimensies, het ontwikkelingsmodel en de onderzoeksvragen wordt een vragenlijst opgesteld. Zes diepte-interviews werden gehouden, zowel met Nederlandse als Duitse actoren. Daarnaast wordt er een documentenstudie uitgevoerd en worden er observaties verzameld. De resultaten van de interviews, documentenstudie en observaties leveren een duidelijk

beeld van de grensoverschrijdende samenwerking in de Euregio. De verzamelde informatie wordt per dimensie geanalyseerd. Eerst worden de landen apart van elkaar geanalyseerd en vervolgens onderzocht hoe ze coöpereren. Tot slot wordt een conclusie getrokken. In de volgende alinea worden de resultaten in het kort weergegeven.

Actoren

De analyse maakt duidelijk dat de samenwerking binnen de twee landen goed georganiseerd is met een duidelijke structuur en taakverdeling. Maar als het om samenwerking van beide landen gaat, zijn er echter nog zwakke punten. Redenen zijn structurele veranderingen in het systeem van crisisbeheer in beide landen. De actoren van het andere land hebben tegenwoordig moeite om de juiste gesprekspartner te vinden. Dit kan tijdens een incident waardevolle tijd verspillen. Een andere reden is dat een belangrijke neutrale actor, de (institutionele) Euregio Rijn Waal, vaak niet in grensoverschrijdende activiteiten betrokken wordt, terwijl ze de juiste vaardigheden en middelen hebben om de samenwerking te verbeteren. Daarnaast is er vaak sprake van een gebrek in communicatie, transparantie en continuïteit.

Regels

Beide landen hebben eigen verschillende wetten die crisisbeheer bepalen. De wetten van beide landen werden in de afgelopen jaren hergestructureerd, maar binnen de grensen lijken de actoren weinig moeite met de herstructurering te hebben. Echter dient de grensoverschrijdende samenwerking nog te worden verbeterd. De Duitse wetten leggen bijvoorbeeld niet vast dat data en informatie met de Nederlandse actoren moeten worden gedeeld. Op dit moment wordt de samenwerking alleen maar door overeenkomsten en afspraken bepaald. Daardoor worden soms alleen maar nationale taken uitgevoerd en er bestaat minder aandacht voor de grensoverschrijdende samenwerking.

Discoursen

De actoren van dezelfde nationaliteit hebben onderling niet met discoursen te maken, maar wel als de actoren over de grens samenwerken. Er is vooral sprake van een cultureel discours. De samenwerking wordt moeilijk wanneer de actoren zich niet van de culturele verschillen bewust zijn of er niet mee kunnen omgaan. Naast culturele verschillen werden er geen andere discoursen genoemd.

Middelen

De actoren hebben te maken met een tekort aan middelen zoals financiële middelen, tijd en personeel. Het lijkt paradoxaal dat de institutie Euregio Rijn Waal vaak niet wordt betrokken in het kader van projecten en activiteiten, terwijl ze de mogelijkheid hebben om subsidies voor grensoverschrijdende samenwerking te genereren. Daarnaast is het verrassend dat er al middelen gezamenlijk werden ingevoerd maar dat ze na afloop van een project niet meer gebruikt worden. Een voorbeeld hiervan is het FLIWAS, een informatie systeem voor overstromingen.

Fase van samenwerking

Er wordt duidelijk dat de actoren allemaal weten dat de samenwerking vaak nog niet goed verloopt en dat er dingen te verbeteren zijn, met name de communicatie en het gebrek van gezamenlijke regels. Er bestaat geen gezamenlijke basis waardoor het moeilijk is om te coöpereren.

Tegenwoordijk lijkt de oplossing in overeenkomsten en afspraken te liggen, die iets minder bindend zijn maar wel makkelijker op te richten.

Conclusie

Deze resultaten leiden tot de conclusie dat grensoverschrijdende samenwerking zonder een vaste juridische achtergrond moeilijk is te bereiken. Er moet duidelijk worden bepaald dat de actoren moeten samenwerken en ook hoe ze dat moeten doen. Daarnaast is continuïteit een belangrijk begrip en moet worden toegepast op het onderwerp. Een gebrek aan continuïteit leidt tot frustratie en onzekerheden.

This abstract is meant for the German readers.

Context

Das Thema der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen hat in den vergangenen Jahren an Bedeutung gewonnen. Das liegt vor allem am Klimawandel, der weltweit zu extremeren Wetterlagen führt, unter anderem auch zu vermehrten Flussüberschwemmungen (Bollen & Van Humbeeck, 2002). Beispiele hierfür sind die verheerenden Überschwemmungen in deutschen Flussgebieten, wie der Elbe, Donau, Mulde und Saale (Gennies, Funk, Schlegel & Gehmer, 2013).

Der Klimawandel und die Wetterlagen erzwingen ein gewisses Maß von Anpassung, vor allem in Form von Adaption (Anpassung an den Klimawandel) und Mitigation (Strategien zur Verminderung von Auswirkungen des Klimawandels) (IPCC, 2007). Beide Konzepte sind von großer Bedeutung, aber die Bedrohung, die große Wassermassen mit sich bringen, erfordert in erster Linie eine gute Anpassung. Darum liegt der Fokus dieser Arbeit auf Klimaadaptation.

Grenzüberschreitende Zusammenarbeit für Multi-Layer-Sicherheit

Das Wasser bleibt nicht an der Grenze stehen, darum ist es auf europäischem Niveau essentiell, dass Länder in Sachen Sicherheit und Krisenmanagement zusammenarbeiten. In der Literatur wird in diesem Zusammenhang das „Multi-Layer-Sicherheitskonzept“ genannt. Drei Niveaus behandeln die Prävention und Adaption sowie das Krisenmanagement. Wenn die ersten zwei Lagen nicht ausreichen und es zu einer akuten Überschwemmung kommt, tritt das Krisenmanagement in Kraft (Rijksoverheid, 2013; Hoss, 2010). Allerdings gibt es auf grenzüberschreitendem Niveau mangelnde Kenntnisse über die Ausführung des Krisenmanagements (Rosenthal & t’Hart, 2012). Daher ist es sinnvoll, um das Thema im Rahmen eines bestimmten Kasus zu erforschen. Die Grenzgebiete der Niederlande und Deutschland haben eine lange gemeinsame Geschichte in Bezug auf Zusammenarbeit, dadurch, dass sie mehrere große Flussverläufe miteinander teilen (European Commission, 2012). Die (geographische) Region Euregio Rhein Waal scheint sich über die Problematik bewusst zu sein und hat im Jahr 2015 beschlossen, die Zusammenarbeit in Bezug auf Überschwemmungen zu intensivieren (Gelderse Commissie, 2015). Auf dieser Region liegt in dieser Arbeit der Hauptfokus.

Ziel der Arbeit und methodischer Ansatz

Das Ziel dieser Arbeit ist es, eine bessere Einsicht in die Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden zu erlangen. Dazu wurden eine Hauptfrage und fünf Nebenfragen formuliert. Diese Fragen sollen durch die Anwendung zweier Theorien untersucht werden. Das ist zum Einen die sogenannte „Policy Arrangement Approach“-Theorie (=Maßnahmenbündel-Annäherung) und zum Anderen das Stufenmodell zur Entwicklung der grenzüberschreitenden Zusammenarbeit. Die Policy-Arrangement Approach-Theorie setzt sich auch vier Dimensionen zusammen, „Akteure“, „Regelgebung“, „Diskurse“ und „Ressourcen“. Durch die Übertragung der Theorien auf die Fallstudie, wird die Situation der Euregio Rhein Waal verdeutlicht und analysiert (Wiering & Arts, 2006; Verwijmeren & Wiering, 2007).

Methode

Mit Blick auf die zuvor genannten vier Dimensionen, das Stufenmodell und die entwickelten Haupt- und Nebenfragen, wurde ein Fragebogen erarbeitet. Damit konnten sechs tiefgehende Interviews gehalten werden, sowohl mit niederländischen als auch mit deutschen Akteuren. Außerdem wurde eine Dokumentenanalyse ausgeführt und Beobachtungen vor Ort gesammelt. Die Resultate der Interviews, Dokumentenanalyse und Beobachtungen sollen ein umfassendes Bild über die Umsetzung der grenzüberschreitenden Zusammenarbeit in der Euregio liefern. Die versammelten Informationen wurden für jede Dimension einzeln analysiert. Erst wurden die Länder getrennt analysiert und danach wurde untersucht, wie sie kooperieren. Am Ende konnte eine Schlussfolgerung formuliert werden. Im Folgenden werden die Resultate kurz wiedergegeben.

Akteure

Die Analyse verdeutlicht, dass die Zusammenarbeit innerhalb der beiden Länder gut organisiert ist und eine deutliche Struktur und Aufgabenverteilung vorliegt. Wenn es jedoch zur Zusammenarbeit zwischen beiden Ländern kommt, fallen noch Schwachpunkte auf. Gründe dafür sind strukturelle Veränderungen im System des Krisenmanagements beider Länder. Die Akteure des jeweils anderen Landes haben gegenwärtig Probleme, den passenden Gesprächspartner zu finden. Das kann während eines Unglücks zu einem Verlust wertvoller Zeit führen. Ein anderer Grund ist, dass ein wichtiger, neutraler Akteur, nämlich die (institutionelle) Euregio Rhein Waal, oft nicht in grenzüberschreitende Aktivitäten mit einbezogen wird, obwohl sie die richtigen Mittel und Fähigkeiten dazu besitzt, die Zusammenarbeit verbessern zu können. Des Weiteren ist die Rede von einem Mangel an Kommunikation, Transparenz und Kontinuität.

Regelgebung

Beide Länder haben eigene, unterschiedliche Gesetze, welche das Krisenmanagement bestimmen. Die Gesetze beider Länder wurden in den letzten Jahren umstrukturiert, allerdings scheinen die Akteure innerhalb des gleichen Landes nur wenig Schwierigkeiten mit der Umstrukturierung zu haben. Allerdings bedarf die grenzüberschreitende Zusammenarbeit auch in Bezug auf die Regelung einiger Verbesserung. Die deutschen Gesetze legen zum Beispiel nicht fest, dass Daten und Informationen mit niederländischen Akteuren ausgetauscht werden müssen. Gegenwärtig wird die Zusammenarbeit hauptsächlich durch Absprachen bestimmt. Dadurch werden teilweise erst nationale Aufgaben ausgeführt und die Aufmerksamkeit für die grenzüberschreitende Zusammenarbeit ist geringer.

Diskurse

Die Akteure derselben Nationalität haben untereinander mit geringen Diskursen zu kämpfen, jedoch vermehrt, wenn die Akteure grenzüberschreitend tätig sind. Es werden vor allem kulturelle Diskurse genannt. Die Zusammenarbeit wird erschwert, sobald die Akteure sich nicht über kulturelle Unterschiede bewusst sind oder nicht wissen, wie mit ihnen umzugehen ist. Überraschend ist, dass keine weiteren Diskurse genannt werden, wie Schwierigkeiten im Bereich der Problemdefinition.

Ressourcen

Die Akteure haben alle mit einem Mangel an Ressourcen zu kämpfen wie finanzielle Mittel, Zeit und Personal. Es erscheint paradox, dass die Institution Euregio Rhein Waal oft nicht in Projekte und

Aktivitäten mit einbezogen wird, obwohl sie die Möglichkeit hat, grenzüberschreitende Zusammenarbeit zu fördern, unter anderem durch Substitutionen. Außerdem überrascht es, dass Ressourcen teilweise schon gemeinsam geschaffen wurden, aber, dass sie nach Ablauf eines Projektes nicht mehr genutzt werden. Ein Beispiel ist FLIWAS, ein Flutinformations- und Warnsystem.

Level der Zusammenarbeit

Es wird deutlich, dass die Akteure alle wissen, dass die Zusammenarbeit oftmals noch verbesserungswürdig ist, insbesondere die Kommunikation und der Mangel an gemeinsamen Gesetzen. Es besteht keine gemeinsame Basis, wodurch es schwierig ist, zu kooperieren. Zurzeit scheint die Lösung in Übereinkünften und Absprachen zu liegen, die weniger bindend sind, jedoch leichter zu entwickeln.

Schlussfolgerung

Diese Resultate führen zu der Schlussfolgerung, dass grenzüberschreitende Zusammenarbeit ohne einen festen juristischen Hintergrund nur schwer zu erreichen ist. Es muss deutlich festgelegt sein, dass die Akteure verpflichtet sind, zusammenzuarbeiten und auch, wie sie zusammenarbeiten müssen. Des Weiteren ist Kontinuität ein wichtiger Begriff und sollte in Bezug zum Thema definitiv umgesetzt werden. Ein Mangel an Kontinuität führt zu Frustration und Unsicherheiten.

List of Abbreviations and Acronyms

IPCC	Intergovernmental Panel on Climate Change
EU	European Union
WFD	Water Framework Direction
FD	Floods Directive
MLS	Multi-Layer Safety
WAVE	Water Adaption is Valuable for Everybody
JAF	Joint Approach for Managing Flooding
WVER	Wasserverband Eifel Rur
AMICE	Adaptation of the Meuse to the Impacts of Climate Evolutions
FLIWAS	Flood Information and Warning System
RBMP	River Basin Management Plan
AMSL	above mean sea level
PAA	Policy Arrangement Approach
NL	The Netherlands
GER	Germany
NRW	North Rhine-Westphalia
LCMS	National Crisis Management System
VR	Veiligheidsregio
VRGZ	Veiligheidsregio Gelderland-Zuid
WVR	Wet Veiligheidsregio
GRIP	Gecoördineerde Regionale Incidentbestrijdings Procedure
ROT	Regional Operational Team
CoPI	Commando Plaats Incident
GBT	Gemeentelijk Beleidsteam
NCC	National Crisis Centre
GHOR	Geneeskundige Hulpverleningsorganisatie
MIK NRW	Ministerium für Inneres und Kommunales NRW
DLRG	Deutsche Lebens-Rettungs-Gesellschaft e.V.
BHKG	Gesetz über den Brandschutz, die Hilfeleistung und den Katastrophenschutz
WRRl	Wasserrahmenrichtlinie
MoWaS	Modulares Warnsystem
THW	Technisches Hilfswerk

1. Introduction

1.1 Situating the research: project framework

1.1.1 Climate change: a global mitigation and adaptation challenge

Climate change is one of the key challenges of recent decades. Changing climate conditions have a worldwide impact and therefore demand a special global attention (Bollen & Van Humbeeck, 2002; UNFCCC, 1979). The earth's climate has changed throughout history, yet the current warming trend is very likely human-induced. Until now, we have already seen and felt some effects, like more frequent droughts and floods, sea level rising, melting of glaciers and polar ice caps, global warming etc. Hence, a good climate change mitigation and adaptation is absolutely necessary (European Commission, 2016). The Intergovernmental Panel on Climate Change (IPCC) is one of the main actors, which stimulates the mitigation and adaptation on climate change. They publish the necessary information and policy frameworks and regularly hold congresses on this subject. According to the IPCC, countries worldwide need to adapt and mitigate to climate change to reduce the potential future impacts and to stabilise the concentration of greenhouse gases in the atmosphere (IPCC, 2013).

While dealing with climate change one often comes across issues regarding future scenarios in which changes and impacts are being discussed. With regard to climate governance, a distinction can be made between mitigation and adaptation measures. Climate mitigation concerns the reduction of global greenhouse gas emissions and to improve the storage of it. Its aim is to stabilize the global greenhouse gasses in the atmosphere and to reduce the rising global temperature (UNFCCC, 2016). The IPCC defines climate mitigation as "an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases" and climate adaptation as an "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2007). The UNFCCC defines climate change adaptation as follows: "Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change." (UNFCCC, 2016).

Hence, mitigation is a main issue as negative future scenarios and according negative outcomes want to be avoided. Arguably, mitigation depicts an important aspect in climate change. Recent research has shown, however, that it cannot reduce effects of climate change to a full extent. As the melting of the Greenland ice sheet and the hazard of the collapse of the thermohaline circulation are distinctive examples of repercussions are indeed irreversible (Adger, Arnell & Tompkins, 2005). Indication of such can be found in rising quantities. For instance, several countries deal with the negative effects of terrible weather events, which can be attributed to climate change. A very distinctive example of such a country is the island state Kiribati in the Pacific Ocean (Government of Kiribati, 2016). As it is surrounded by water it is very vulnerable to extreme weather events in relation to water. Floods have occurred temporally and one day they will be submerged entirely. Hence, Kiribati is one of the countries, which depends on climate change mitigation and adaptation measures. It can be seen as a positive example in terms of the implementation, also in vulnerable regions in Europe. More extreme weather conditions and events are expected to occur globally and in shorter intervals in the near future (IPCC, 2007). Among others the terrible droughts

in California and the widespread flooding in England can be named (BBC, 2016), as well as the floods around the river basins of the Elbe, Danube, Mulde and Saale in 2002 and again in 2013 (Gennies, Funk, Schlegel & Gehmer, 2013). Climate change adaptation measures can help to make countries like Kiribati, England or Germany less vulnerable and the situation less stressful for the inhabitants. It is decisive not only to mitigate on climate change and to reduce its impacts but also to deal with the effects, some of which we are already struggling with. Therefore, it is decisive to think about an adequate adaptation, which is suitable to the specific needs of the countries or regions.

Although there must be an awareness of the necessity of both concepts, the focus will be put on climate change adaptation in this research.

1.1.2 Climate change and cross-border co-operation

The examples mentioned above indicate that even countries which normally enjoy a moderate climate, such as England, the Netherlands and Germany must be aware of extreme weather events due to climate change. Therefore, they should work on a sufficient adaptation to avoid crises. The effects of climate change do not stop at man-made borders, such as river floods or droughts. Therefore, an adaptation needs to be launched at multiple scales in a cross-border or transboundary setting (Van Eerd et al., 2014). According to that, it is crucial that regions bordering on foreign countries collaborate with their neighbouring regions. Until now, countries and regions have often worked independently. Sharing both information and other resources such as monetary funds and work forces, however, might lead to more effective measures when applied across borders. It can lead to “benefits for the river” but also to “benefits from the river” (Sadoff & Grey, 2002). This collaboration should involve several aspects, e.g. the adaptation of architecture and planning against potential natural disasters. “Room for the River” projects or houses, which are able to float, might count as examples (Roaf, Crichton & Nicol, 2009). A sole reliance on materialistic goods that can be applied when needed is therefore not a sufficient protection against climate change. In this study, cross-border collaboration will be the central focus.

1.1.3 Water management in Europe

As depicted, there are several countries worldwide, which need to collaborate with others on a transboundary level in dealing with climate change, because they share borders, rivers etc. The European Union (EU) made a step towards an integrated water management early on, e.g. by committing to agreements and contracts between different countries, which are sharing watercourses. One example is the agreement on the shared use to ship on the Rhine, which was signed in 1815 by the Congress of Vienna (Nunes Correia & Kraemer, 2013). Another is the International Commission of Protection of the Rhine (Dieperink, 2000). The establishment of the so called European Water Framework Directive (WFD) in the 90s, though, has been the most significant development in the EU in the context of integrated water management in the past twenty years. Its aim is to improve the chemical and ecological quality of water bodies in the European Community (Griffiths, 2002). Furthermore, the European Floods Directive has been introduced in 2007. This framework focuses primarily on dealing with water quantity issues and is of significant importance for cross-border co-operation; also in terms of crisis management (2007/60/EC). The crucial point of the FD of 2007 was that all countries of the EU had to figure out which regions might be potentially vulnerable to floods and draw up river basin management plans by 2015. These steps need to be synchronised with those of the WFD. The purpose of the FD is to reduce risks for humans and the environment and make regions less vulnerable to floods. The river

basin management plans (RBMP) can help to find out which regions need to co-operate with others due to reasons of shared watercourses etc. Furthermore, the FD asks all member states not to undertake any measures, which might have an impact on neighbouring countries in terms of water management, which again is a plea for co-operation (Bakker, et al., 2013). Both EU Water Directives gave a starting signal for the notion of cross-border co-operation in water management by trying to stimulate the collaboration of different countries or regions, e.g. by the introduction of specific water-related projects and common policies. The EU projects INTERREG I to IV contain, among others, approaches, which concentrate on stimulating cross-border co-operation for water management. These projects will be further described in the next paragraph (1.1.4).

1.1.4 The multi-layer safety concept and flood risk management

National as well as transboundary working groups have been set up, for example in response to the European requirements with regard to the WFD and FD. One of these groups is the Dutch-German working group on high-water. These groups again introduced several projects, which are often subsidized by the EU. The main regions of Germany and the Netherlands, which concentrate on cross-border collaboration are of course those, which are located closely to the border. These are in particular the Dutch provinces Limburg, Overijssel, Drenthe, Friesland and Gelderland and the German federal states North Rhine-Westphalia and Lower Saxony. We can distinct between three types of flood risk management applied in this region, following the FD's thoughts. These three types of measures are based on the theory of the multilayer safety (MLS) (Figure 1.1). Specific forms of cross-border cooperation can be found for each of the three layers of flood risk management.



Figure 1.1

Concept of Multilayer Safety. Reprinted from Rijksoverheid (2013). *National Coastal Strategy*. Delta Programme.

The policy concept is built upon the idea of flood protection in three different forms. The traditional form of flood protection in most countries is prevention. This is the first layer of the MLS-concept. Prevention means that there are measures which, if applied, avoid a flood from occurring. This could be initiated in terms of dikes or the nationwide “Room for the River” projects, which allow the river to spread out without endangering inhabitants or destroying the built environment (Rijksoverheid, 2013; Hoss, 2010). One cross-border collaboration project falling under this layer of

prevention has been called “FloodWise” and dealt with the trans-border risk management of high-water. Six countries were involved here and developed solutions. An example of such a solution is “Room for the River”, which is an adaptation measure to climate change effects. Another project related to this layer is WAVE („Water Adaption is Valuable for Everybody“), which was a similar project and ran until 2013. Five countries, namely Germany, the Netherlands, Belgium, France and England, worked on an analysis regarding climate change and risk. Such measure was undertaken in order to be able to prevent the extent of natural disasters and decrease the impact on inhabitants. Another purpose was learning how to deal with the issue of rising sea level and high-water. A further project is called Joint Approach for Managing Flooding (JAF). The water board Eiffel Rur worked together with water boards in the Netherlands (Dinkel, Vecht, Groot Salland and Velt) and England (Somerset) to improve flood protection, flood management and solve conflicts in water usage. Therefore, all participating actors exchanged experiences and communicated about high-water prevention and protection (WVER, 2016).

The second layer of the MLS-concept deals with the adaptation to flood events in terms of spatial solutions. As portrayed, layer one means to prevent a flood. In contrast, layer two means to adapt on the potential occurrence of a flood, because people are aware of the risk. Layer two has the aim to deal with a flood occurrence and tries to give the environment, human beings and animals the ability to cope with it. There are many ideas and projects which apply the concept of climate change adaptation. Some of these ideas need a technological development; others have a more spatial approach. Measures for uplifting houses or flood-proofing houses, which start floating in case of a flood or are elevated if necessary might count as examples. Another solution, which is often discussed, is the relocation of houses (Hoss, 2010). The “Room for the River” project should be mentioned here again. All of these adaptive measures must be seen as the second step in terms of flood risk management, uppermost is the prevention of such bad weather events (Rijksoverheid, 2013). A related project is named “Adaptation of the Meuse to the Impacts of Climate Evolutions” (AMICE). This one is distinctive in terms of international co-operation. Not only the Netherlands and Germany take part in it, but also Belgium and France with in total 17 water boards and organisations. This project concentrates on creating scenarios and in particular on the evaluation of vulnerability related to climate change. The fundamental idea is to collect information about climate change and other changes in the region being in state to develop future scenarios, which should be as accurately as possible. Planning agencies and water boards are able to determine their potential for prevention and how best to adapt to them (WVER, 2016).

Apart from the manmade creations of environmentally thought-through spheres, it is essential to consider an adequate international management for such matters. Its function would be allocated in conducting the action forces of all nationalities and facilitating in cross-border co-operation. The final layer focuses on crisis management in case of an acute or imminent flood. This layer concentrates on the measures, which have to be taken when the first two layers failed. Different kinds of measures are required here in contrast to the first two layers. It is crucial that all actors or all affected persons know how to operate in the case of emergency and also how their adequate skills operate. Hence, it is for example essential to train emergency personnel as well as inhabitants. They should be informed about the measures, which are taken in case of evacuation and they should be able to identify warning signals. Prior to this, a flood forecasting must be installed, which is related to a warning system. Furthermore, materials like sand bags must be provided in the nearby area (Raadgever, Hegger, Wiering, Gersonius, 2013; Hoss, 2010). The projects VIKING and VIKING X-regio are suitable examples for this framework put into practice. They

ran from 2009 to 2011 and united a couple of German and Dutch public actors. The aim was to set up a training plan, an information system and a database, which should support the operational forces in case of emergency when an evacuation is needed (Overmars, 2011). Furthermore, the communication between actors across the border and the decision-making processes was ought to be improved. One result of this collaboration was the introduction of the programme FLIWAS, which facilitates the communication and data exchange (Overmars, 2011). VIKING X-regio had the objective to transfer the results of VIKING to other public and private bodies locally such as locally set companies.

Even though it is important to apply all three layers for appropriate flood risk management, this study will put a focus on cross-border collaboration for the mentioned third layer of flood risk management as an aspect of climate adaptation governance. An interesting aspect to evaluate concerning this issue might be improvements that can be ascribed to former projects such as VIKING. Furthermore, it might also be of interest in how far crisis management across borders is still lacking behind in issues such as a flood occurrence.

1.1.5 The knowledge gap on “crisis management” for river flooding

As illustrated, this study focuses on the third layer of the MLS-concept in a cross-border context. However, projects concerning this layer are yet very sparse. The main focus of projects and research is often on prevention with regard to flood risk management, thus the first layer and, recently also on the second layer (Rijksoverheid, 2013, Hoss, 2010). Deriving from a critical literature study it appeared that the third layer has not been paid much attention so far, especially not on an international level (Rosenthal & t'Hart, 2012). Especially crisis management across the border has not been sufficiently researched yet; neither in theory nor in practice. Rosenthal and t'Hart state that there is a knowledge gap with regard to crisis management, especially across borders (2012). The thought that an adequate crisis management can be decisive in the situation of an occurring flood is rather new (Rosenthal & t'Hart, 2012). The question, which arises from the identified knowledge gap is the following:

How do the Netherlands and Germany collaborate on crisis management in the case of a transboundary flood occurrence and which influence has EU legislature regarding this matter?

1.1.5 Crisis management at the Dutch-German border

As mentioned before, the area under study in this thesis is the border region between the Netherlands and Germany. This thesis will concentrate on crisis management for river flooding in these two countries and how they collaborate regarding this matter. These countries are relevant because both share a long history of cross-border collaboration and sufficient information about former co-operation is accessible. The Boundary Water Commission can be regarded as an example. It was introduced in 1963 and has since then been working on water quality and quantity issues (Federal Ministry for the Environment, 2013). The countries collaborate on ground water problems, but also on surface water. The Netherlands are somewhat dependent on Germany when it comes to adaptation measures. Not solely, but gravely, because the geographic landscape forces important waterways and rivers first to flow through Germany and then upstream across the border into the Netherlands. The other way around, Germany benefits and suffers from measures taken in the Netherlands, simultaneously. If a measure is taken downstream or upstream, it can have an effect on the other area as well. For instance, the replacement of the Waal in Nijmegen in the

plans with specific measures have been developed for almost every river basin district (European Commission, 2012).

Not only due to their shared watercourses, but due to the stated argument, the focus is put on crisis management for river flooding in a cross-border manner.

1.1.6 Case study “Euregio Rhine Waal”

Due to the restrictions of a Bachelor-thesis, it is not possible to research the whole border-region of Germany and the Netherlands. Therefore, a specific case study had to be chosen. As this thesis deals with cross-border co-operation it is clear that the chosen case study has to be at bordering region as well. Furthermore, the region should face water-related issues, especially such as high-water. The Euregio Rhine-Waal meets these requirements. It covers several German and Dutch cities and regions, which are only separated by the Dutch-German border. The figure (3.1) shows the region of collaboration, consisting of four German sub-regions and four Dutch ones. The Dutch regions in this border-region are namely the Veluwe, Arnhem/Nijmegen, Achterhoek and Noordoost-Noord-Brabant. The German regions involved are the councils Kleve and Wesel and the municipalities of Duisburg and Düsseldorf.

Firstly, it is important to distinguish between the geographical Euregio Rhine Waal and the institution. Institution here and in the following: Euregio. Geographical region here and in the following: Euregio. The focus will be laid on the Euregio, because its geographical position virtually proffers a cross-border flood- management study. The institutional Euregio also claims an important function within this region. It will, however, be introduced in the paragraph, which deals with international actors (see 4.1.3).



Figure 1.3

The region of Euregio Rhine Waal. Reprinted from Euregio. (n.d.). Werkgebied Euregio Rijn-Waal.

The whole area has a surface of 8663km² and counts 4,2 million inhabitants. The main rivers, which cross the border in this region are the Rhine, Meuse, Waal, Lower Rhine and IJssel. A topographical map shows that the inhabited areas of Wesel have an altitude of 20-30 meters above mean sea

level (AMSL). Following the streams, the height above mean sea level decreases constantly. The eastern area of Kleve, which is located closest to the Rhine has an AMSL of 16, while the Dutch city Nijmegen is located around 9 meters AMSL (Autospur, 2016). The Netherlands would be affected by every high-water occurring in Germany. This fact, the size of the region and the division by a national border makes a co-operation with each other indispensable. As several streams and rivers cross the German as well as the Dutch part, there should be a co-operation in relation to water-management too, as pointed out earlier. This thesis aims to attract more attention to the issue of crisis management in cross-border regions. Shared waterways not only require a general co-operation across the borders, it is also necessary to think about an adequate crisis management on both sides and in relation to each other.

Next to the Euregion's geographical advantages, it also includes projects related to crisis management and high-water. The Euregion Rhine-Waal has thus invested in making progress. One of the worked on projects was Viking, which has been described earlier. Furthermore, an agreement was signed in December 2015, which stated that both countries were going to work out an emergency guide for floods in co-operation with each other (Gelderse Commissie, 2015). The idea to deepen the co-operation between both countries in the Euregion with regard to emergency measures and crisis management for flood occurrences came up in 2014 (Gelderse Commissie, 2015). The reason to make a new agreement might have been the discontinuing of projects VIKING and VIKING x-regio. A new agreement to collaborate across the border could prevent that the knowledge and experiences of the VIKING period will be forgotten. The actors are motivated to hold trainings, develop common signals and define keywords, so that a functioning communication across the border in the case of emergency would be guaranteed. The project is in its early stages, but is eager to improve cross-border crisis management. There is an urgent need for a shared crisis management for river flooding and there has not been done much research yet with regard to this region and crisis management. It is interesting to find out on which level they operate now and if the project Viking has left any significant improvements in terms of collaboration on crisis management for river flooding between Germany and the Netherlands.

1.2 Relevance

Every research has certain relevance to both, society and science. This chapter examines the relevance to this research. First, the societal relevance will be construed and secondly the scientific relevance will be highlighted.

1.2.1 Societal relevance

People who live in an area nearby rivers, lakes or oceans are more vulnerable to extreme weather conditions and consequently to weather events like floods. Floods have always been a threat to these people and have not only caused materialistic damage but also the loss of lives. An issue, known as climate change, has occurred in the past decades and has worsened the situation, (IPCC, 2013). As already mentioned, it is likely that extreme weather events such as river floods are going to occur more often and more extreme than nowadays (IPCC, 2007). Therefore, a better prevention, adaptation and crisis management is needed (Hoss, 2010). A lot of research and improvements in terms of flood prevention and adaptation has been done (Wiering & Arts, 2006). Nevertheless, it must be considered that these measures are not always sufficient. All involved actors, especially the inhabitants, need to be aware of initial measures in case of a flood and how they have to react

to be able to protect themselves and also their belongings. There must be an emergency plan, which covers all individuals. Especially elderly and children are vulnerable and need to get a specific attention in those plans. Furthermore, agricultural businesses need to know how to operate in the case of flooding, because they are responsible for their cattle. Thus, this research is strongly needed to verify that the safety of inhabitants, animals and materialistic belongings is guaranteed (Coombs, 2014).

As already stated before, this thesis will concentrate especially on cross-border crisis management for river flooding. The increased societal, national and international relevance of this aspect can be substantiated by a number of arguments. Firstly, crisis management in border regions requires extra measures and skills. One of many is the language barrier that emergency personnel have to face, apart from the fact that often country-related legislatures have to be overcome, before emergency help can be distributed. Secondly, key to emergency operations is the speed in which such measures can be carried out. Therefore, specific trainings for the operating personnel, faster networking in case of catastrophes across borders and a guarantee for a collaboration are essential. This research will improve the execution of given tasks ahead and (hopefully) achieve an unobstructed collaboration in crisis management.

1.2.2 Scientific relevance

The effects of climate change are already noticeable every day. Not every future environmental disaster can be prevented, of course. Recent weather events all over Germany demonstrated that the forces of nature are incalculable and that we have to prepare our living environment and ourselves accordingly. This involves high-water and floods and in relation to that also crisis management for river flooding, which is the central subject of this thesis. Attention towards crisis management for river flooding is increasing, yet the literature still exposes a knowledge gap in this regard. There has been done much scientific research on water management in Europe and also on the shift from the “battle against the water” to “living with the water” (Wiering & Arts, 2006). But the subject of crisis management has not been paid much attention yet in terms of scientific research. There are studies dealing with the decentralization of crisis management and crisis communication (Rosenthal & t’Hart, 2012). But studies, which concern crisis management across borders can hardly be found.

A good crisis management requires a good theoretical background, which can be put into practice. The multilayer safety approach offers a strong concept with three interacting layers, including crisis management (Rijksoverheid, 2013; Hoss, 2010). Although the idea of crisis management, which interacts with prevention and adaptation, seems to be more meaningful nowadays, it is still not established in every law concerning water management. The best theory cannot function when difficulties concerning the implementation are not identified and eliminated. The critical literature study gave the impression that the multilayer safety concept and especially crisis management is in its early stages and that there is not much empirical knowledge about the issue. This knowledge gap can be recognized not only in theory but also in practice. Recently there was a river flooding caused by the river Issel, which tangles Hamminkeln in Germany. The crisis communication appeared to be weak and especially the co-operation among the involved actors invoked problems (Der Westen, 2016). This demonstrated that it is crucial to test the notion of multilayer safety by using a related theory and find out how this theory conducts in relation to a specific case study. An empirical research will offer evidence about the functionality of cross-border crisis management for river flooding so that weaknesses can be filtered out. As a consequence,

these weaknesses can be erased by the right improvements. Theories have to be tested constantly and then put to praxis. Especially a theory, which describes the co-operation of different actors and the interaction of different aspects is ought to be working, because it can determine the severity of effects of an event. Furthermore, this research will make a contribution to the existing literature about co-operation on crisis management.

1.3 Research objectives

In this study, main objective is to gain a better understanding of the practices of collaboration on crisis management for river floods between countries or regions that share a border. This will be studied in particular in the Euregion. The crises under study are specifically related to river flooding, which furthermore concern both countries so that measures of international water and crisis management are required.

This research will apply the PAA (e.g. see Raadgever, Hegger, Wiering and Gersonius, 2013; (Hegger, et al., 2014) and the development model of cross-border co-operation (Verwijmeren & Wiering, 2007) to a case study. In doing so this might lead to improvements of certain practices and the better implementation of policies. The purpose is to get knowledge about the functionality of the third layer of multilayer safety from a cross-border perspective. Therefore, empirical methods shall be applied to solve the lack of knowledge on how the two countries implement the European requirement to collaborate on flood-related crisis management. These methods will be described in paragraph 3. The precise aim of this research is the following:

The central aim of this study is to acquire a better understanding of the practices of collaboration on crisis management for river flooding between Germany and the Netherlands. These objectives are formulated in order to be able to draw recommendations for further collaboration, particularly in the light of changing climatic conditions.

1.4 Research model

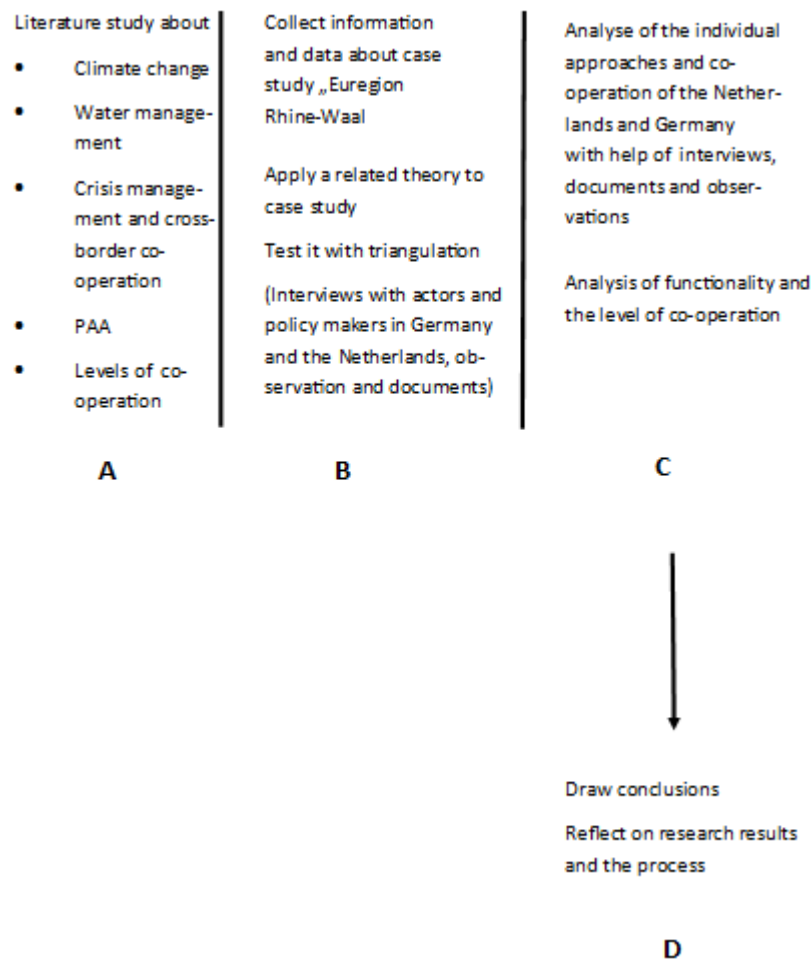


Figure 1.4
The different steps of this research (own figure)

This research consists of four different steps (A-D), which are schematically illustrated above. The first step (A) contained to research information and scientific literature about water management in general. Information about current issues or developments in the past were collected and a common knowledge about the topic was drawn up. As a consequence, a “knowledge gap”, i.e. the mismanagement between Germany and the Netherlands. The awareness of the problem led to the development of scientific objectives and related research questions. Following, relevant theories were chosen. These theories were namely the Policy Arrangement Approach and the development model, which enabled to measure the level of co-operation.

The case study has been chosen for step B. Data relating to the case was collected. Next, the theories, which covered the different aspects of the research objectives have been applied and tested (Step C). In order to make the application most viable, triangulation was used. It included in depth-interviews, observations and reading documents.

This information was analysed in the next step (D). First, the collected data was analysed separately for both Germany and the Netherlands. Afterwards, their co-operation was examined. The last step contained drawing conclusions and reflecting on the research results and its process.

1.5 Scientific questions

Now the research objectives and the research models are clear. It is decisive to develop scientific questions. These questions are based on the research objectives and aim to approach the knowledge gap in the context of cross-border co-operation on crisis management for river flooding. At first, the main question is formulated then to be followed by several sub-questions. The latter will help to guide this research and for answering the main question eventually.

1.5.1 Main question

Which lessons can be learned from the Dutch-German cross-border cooperation with regard to crisis management for river flooding in the light of climate change?

1.5.2 Sub-questions

1. Which local, regional, national and international actors are involved and how do they co-operate in terms of acute cross-border crisis management for river flooding in the Euregion Rhine-Waal?
2. To what extent do regional, national and European regulations and rules-of-the-game affect the co-operation on cross-border crisis management for river flooding in the Euregion Rhine-Waal?
3. How do the different discourses of the co-operating actors influence the collaboration on cross-border crisis management for river flooding?
4. How are national resources and resources of the EU used for cross-border crisis management for river flooding?
5. To what extent is there a (fully) integrated co-operation between the Netherlands and Germany in terms of crisis management for river flooding?

2. Theoretical framework

Now that the scientific questions have been developed, it is decisive to trace the relevant thoughts and theories with reference to cross-border co-operation on crisis management for river flooding. First, the most important terms will be defined, which are crisis management for river flooding and cross-border co-operation. Following, the policy arrangement approach and the development model will be described.

2.1 Definition crisis management for river flooding

Scholars identify five different types of strategies in dealing with flood risk management. Hegger et al. call them “Flood defence”, “Flood risk prevention”, “Flood risk mitigation”, “Flood preparation” and “Flood recovery” (2014). These five strategies are equivalent to the concept of multi-layer safety (see paragraph 1.1.3), the one of Hegger et al. (2014) is just split up into five instead of three layers. Flood defence and flood risk prevention are equal to the first layer of prevention, flood risk mitigation to the second layer of adaptation, while flood preparation and recovery are related to the third layer of crisis management.

Crisis management for river flooding contains several concepts. Before starting with this research, an understanding of the term should be given. In literature, multiple definitions can be found. A viable one is by November, Delaloye and Penelas (2007): “Managing risks involves perfecting monitoring methods capable of providing precise information on the situation to be managed, so that managers can decide how best to intervene. In the case of a crisis, this implies that information can be transferred in an optimum manner.” This emphasizes that in the case of a flood or when a flooding event appears to be upcoming, information about the event itself and about the way to deal with it should be perfectly transferable. All involved persons must be able to get necessary information and to contact each other. This precondition is normally fulfilled due to the availability of modern communication technologies. However, it must be considered that there might occur a breakdown of all communication methods due to extreme weather conditions. In this situation crisis management must provide adequate information and a plan on how to act. This might happen through guidelines, policies and trainings. Another understanding is given by Hegger et al., who indicate that the development of flood warning systems, the preparation of disaster management and evacuation plans are main aspects of crisis management (2014). In case of an imminent crisis there must be an alert informing all involved actors. The literature states the following: “The alert is not only a question of techniques, sensors or alarms, but also the result of a process that creates a network of actors and cooperation among institutional and non-institutional authorities” (November, Delaloye and Penelas, 2007). Consequently, scholars state that not only technical alarms are necessary for a working crisis management, it is also crucial to have an adequate institutional basis with co-operations between actors. Their work provides the necessary information in order to identify a crisis and to decide on how to operate. The information can be put together and a system can be worked out with an alarm and a plan, including measures to be taken before and during a crisis. In this thesis a combined definition of Hegger et al. and November, Delaloye and Penelas is used. Both definitions contain aspects, which appear to be suitable to the context of this research. For instance: aspects of communication, planning and technological developments. The definition to be used is the following:

Crisis management for river flooding presumes the development of flood warning systems, the preparation of disaster management and evacuation plans. It involves perfecting monitoring methods capable of providing precise information on the situation to be managed, so that managers

can decide how to intervene best. In case of a crisis, this implies that information can be transferred in an optimum manner and action can be started.

2.2 Definition of cross-border co-operation

In this thesis there is another significant concept under study, namely cross-border co-operation. This concept needs to be defined as well. Firstly, it must be clear that there are different types of cross-border co-operation. One might evolve around trade agreements or emission trading between countries or regions (Ludema & Wooton, 1994). Others could be partnerships and informal agreements (Organisation for Economic Co-operation and Development, 2013).

In the chosen literature, several definitions of cross-border co-operation can be identified. One that seems appropriate with regard to the topic of this thesis is stated by Perkmann (2003). According to him, cross-border co-operation can be defined “as a more or less institutionalized collaboration between contiguous subnational authorities across national borders” (Perkmann, 2003, p. 156). He presumes the existence of cross-border regions for the establishment of cross-border co-operation (2003). He also mentions the case study of this thesis (Euregion Rhine Waal) as one of the most distinctive and historical co-operations in Europe. Furthermore, he states that nowadays there is almost no border region left in Europe, which does not co-operate with its bordering regions in any manner.

Another definition found is the one of Schmitt-Egner who states that cross-border co-operation involves “interaction between neighbouring regions for the preservation, governance and development of their common living space, without the involvement of their central authorities” (Schmitt-Egner, 1998, p. 63). In contrast Perkmann does not presume a common living space of the bordering regions, which is not always automatically given in terms of cross-border co-operation. The case study Euregion Rhine Waal does not contain a common living space either, although there is a cross-border co-operation. Perkmann takes into account that spatial developments can be necessary for a cross-border co-operation and that the process can take place on a sub-national or regional level. Therefore, his definition is the most appropriate one and will be used in this thesis.

2.3 Policy Arrangement Approach

In order to determine the framework around the notion of cross-border crisis management for river flooding, it is sensible to apply a theory that covers all of the important aspects of the third layer. An appropriate method to capture these aspects in one theory seems to be the Policy Arrangement Approach (PAA) (Wiering & Arts, 2006). First of all, it is essential to state what the PAA contains. Wiering and Arts describe a policy approach as “the way in which a certain policy domain – such as water management – is shaped in terms of organisation and substance” (Wiering & Arts, 2006). Hegger et al. define a policy arrangement as follows: “The constellation resulting from a dynamic interplay between actors and coalitions involved in all policy domains relevant for flood risk management – including water management, spatial planning and disaster management; their dominant discourses; formal and informal rules of the game; and the power and resource base of the actors involved” (Hegger, et al., 2014). This definition seems to be adequate and will be used in this thesis, as it covers several dimensions, which seem to be crucial for successful crisis management.

Thus, the indicators actors, discourses, regulations and resources are the main aspects of the policy arrangement. These four aspects form the basis of a liable understanding about the policy arrangement of crisis management for flooding.

The dimension actors and coalitions embody all kinds of actors who operate in terms of crisis management and are able to steer the process. This can happen formally as well as informally. Some might for instance be concerned with the legislative sphere, some work on the judicative or executive level. This indicator covers their roles, just as collaboration and conflicts between these actors. (Wiering & Arts, 2006)

The dimension “rules of the game” refers to institutional patterns, which contains both formal and informal rules. Examples are regulations, norms, procedures, legislation, covenants, plans and projects (Van Eerd et al., 2014). Regulations incorporate the policies, plans and programmes, which are related to the case. Legislature refers to the transfer from a policy to law, which is rather formal (Wiering & Arts, 2006). But regulations can also be projects or programmes, which are not necessarily formal and binding. Furthermore, regulations can be processes, which lead to a decision-making process (Wiering & Arts, 2006).

The next indicator, discourses, relates to the context of a specific phenomenon such as crisis management and therefore they always differ and need to be examined for each case study. According to Wiering and Arts, this phenomenon gets a certain meaning in reality, if “a set of ideas, concepts, buzzwords and stories” are combined (2006).

Resources involve all kind of means, which give power to the actors and which enable them to implement certain policy arrangements (Verwijmeren & Wiering, 2007). It is important to know that these resources are not equally distributed among the involved actors and that not all resources are as useful as others. This can lead to disparities in power relations (Wiering & Arts, 2006).

The figure below (2.1) examines the relation between the four dimensions.

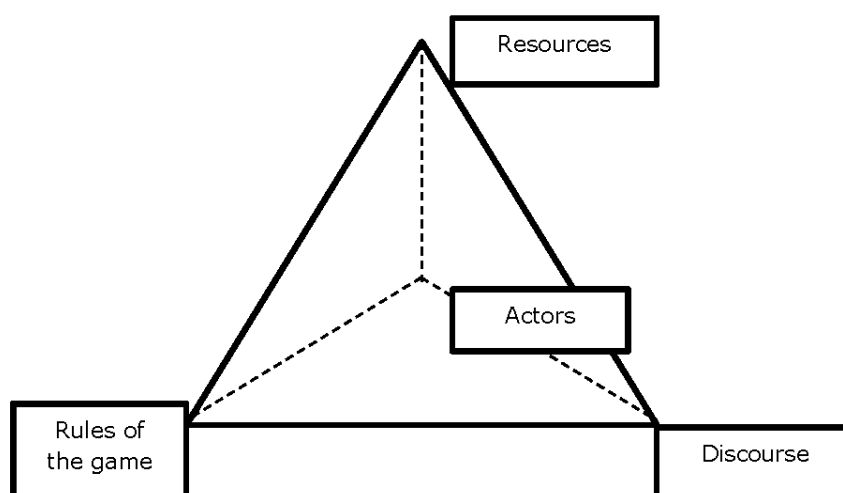


Figure 2.1

The relations between the four dimensions of the PAA. Reprinted from Intech. (2013). Policy Arrangement for Waste Management in East Africa's Urban Centres. Chapter 8.

All four aspects are depending on each other and affecting each other. As they have an impact on each other, it needs to be considered that it might be possible, that not all four aspects of a PAA are in balance. If the amount or constellation of actors changes, this will affect the common rules, resources and dimensions as well. Furthermore, it is possible that one aspect could be more important to one policy arrangement than to the other. Per exemplum, Germany's policy arrangements might be more focused in the asset of distributing resources evenly while the Netherlands might like to attain cross-border policies. For a successful collaboration on crisis management for flooding it is essential for both countries to use the same approach and wanting to achieve the same goals, but this is not naturally given (Verwijmeren & Wiering, 2007). It is necessary to find out which different actors or coalitions are involved in crisis management and how they interact with each other, especially when it comes to transboundary partners. It is decisive to have a further look at the regulations and policies on a local, national as well as international level, to gain an understanding of the operations, which are taken by the different actors. Furthermore, all different discourses need to be taken into account and studied, as well as the form and amount of resources, which are available. For this reason, both countries will be analysed individually with the theory of PAA at first. The aim is to get an overview on how the two countries approach the topic of crisis management and how the relationship between the four dimensions of the PAA functions on a national level. Afterwards there will be a comparison of both approaches and an analysis of the policy arrangement of co-operation of both countries. How this is going to be performed will be described in more detail in the methodology section of this thesis (see paragraph 3.). It is possible that both countries apply a similar method, but it has to be expected that the four aspects of the PAA will change significantly as soon as both countries work together. Their given parameters might alter.

Applying the PAA in this thesis will enable to gain an overall understanding of Germany's policy arrangements, the one of the Netherlands and potential common policy arrangements.

2.4 Operationalisation

Now that the conceptual model is constructed, it is important to think about a way to measure the individual aspects of this model. The election of indicators is an appropriate method to measure observations, which cannot be perceived with senses. In this section, all dimensions of the PAA will be operationalized.

According to the literature the PAA dimensions of actors and coalitions covers for example all people, organisations or institutions, which are involved in the process of crisis management (Hegger, et al., 2014). These actors are able to implement specific policies and can "steer" the process (Hegger, et al., 2013). It seems that actors can be private as well as public, therefore "public actors", "private actors" and "civil society" are determined as indicators for the dimension of actors and coalitions in this study. These terms will be later transferred into open questions in the interview guide, in order to determine the specific actors related to the research topic.

The second dimension "regulations" of the PAA, or rules-of-the-game, deals with the policies of a policy arrangement. As it is pointed out in the project framework, there are policies on different levels with regard to crisis management for river flooding, which have to be set side by side. It is important to compare the dimensions for both countries, since scholars argue that regional, national and international rules need to be in line with each other, otherwise a collaboration on crisis management between different countries is more difficult to achieve

(Verwijmeren & Wiering, 2007). There is a possibility that countries use different kinds of practices to integrate these policies. Hence, it is decisive to measure the national and international policies and in the following the integration of them. Next to this, there can be particular legislative instruments, which are used to check whether actions are legal or not and which determine how policies are implemented. Furthermore, regulations can include projects, plans and programs. In order to measure regulations, there will be made use of the indicators “regional legislation”, “national legislation”, “international legislation” and “legislative instruments”, “projects”, “plans” and “programs”.

The aspect “discourses” covers several aspects. Discourses should be seen in a larger context of the related case. A discourse can e.g. consist of problems concerning scientific paradigms, policy arrangements, historical narratives and values (Contestabile, 2014). Furthermore, Raadgever, Hegger, Wiering and Gersonius (2013) state that actors can have different perspectives when it comes to certain problems. Hence, it is decisive to have proper indicators for measuring these discourses. In this thesis they will be accounted for by the indicators “scientific paradigms”, “historical narratives and values” and “problem framing”, “visions”, “ideas” and “concepts”.

“Resources” is the last aspect of a PAA. Resources are especially linked to the actors, because resources give them the power to operate and influence the policy arrangement. Important resources in terms of crisis management for river flooding are financial resources, knowledge, informal political power, legislative power and third party assistance (Verwijmeren & Wiering, 2007; Raadgever, Hegger, Wiering & Gersonius, 2013). Thus, the indicators for resources will be “financial resources”, “knowledge”, “informal political power”, “legislative power” and “third party assistance”. The table below indicates all dimensions of the PAA with the associated indicators that are used for the empirical study (2.1).

Tabel 2.1
Aspects and indicators of the Policy Arrangements Approach

Actors	Discourses
Public actors	Scientific paradigms
Private actors	Historical narratives and values
Civil society	Problem framing
	Visions
	Ideas
	Concepts
Regulations	Resources
Regional legislation	Financial resources
National legislation	Knowledge
International legislation	Informal political power
Legislative instruments	Legislative power
Projects, programmes and plans	Third party assistance

2.5 Level of cross-border co-operation on crisis management for river flooding in the Euregion Rhine Waal

As given in the previous paragraph, it has been explored how the four dimensions of the policy arrangement of Germany and the Netherlands are related to each other and in how far cross-border policy arrangement of Germany and the Netherlands collaborate. This has been done by applying the PAA. If the results showed a certain level of co-operation between Germany and the Netherlands, then it would have been interesting to find out on which level they are operating at the moment. Therefore, the development of the cross-border co-operation was used. Verwijmeren and Wiering developed the so called development model of cross-border co-operation (2007) to determine different degrees of cross-border collaboration. This model consists of six phases (0 to 5), but one needs to be aware of the fact that not all co-operations stick to the linear structure of the model and that it is not necessary to go through all phases (Verwijmeren and Wiering, 2007). The different levels are illustrated in the figure below (2.2).

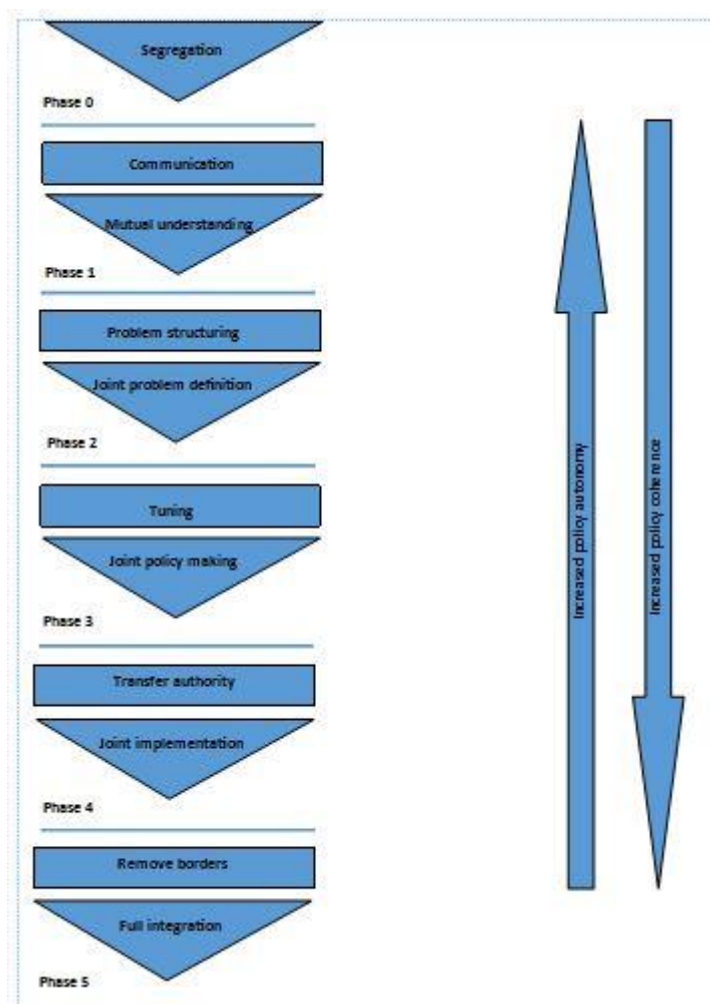


Figure 2.2

Development model of cross-border co-operation Adapted from Verwijmeren, J., & Wiering, M. (2007). Many Rivers To Cross: Cross Border Co-operation in River Management. Delft: Eburon Academic Publishers.

All phases are split up into a goal (triangle) and the related condition (rectangle), except of phase zero. Phase zero contains the situation of segregation. In this phase, the countries, which share watercourses are working independently during that time and there is no intention for co-

operation. Phase one encloses certain forms of communication, which are established to achieve the goal of a mutual understanding of each other's approaches. The next phase (2) requires the regions or countries to communicate about their problems concerning crisis management. This is a precondition for being able to set up a joint problem definition. The regions can go on to step three, given that they face shared problems. Phase three includes the joint policymaking. A joint organisation could facilitate the implementation of the shared policies. Phase four indicates a transfer of authority, resulting in joint policy making. The last phase embodies full integration of both regions and the borders are completely removed. If the actors follow these phases, they will achieve an increasing policy coherence. On the other hand, with each step they lose their policy autonomy. (Verwijmeren & Wiering, 2007)

This model is used to determine the degree of existing collaboration in the Euregion. The existing phase is determined in two ways. First, the development model of cross-border co-operation was shown to the respondents in the end of the interviews. They were asked to state their personal opinion on the level of co-operation and to assign it to one or more levels of the model. Second, the researcher also determined the stage of collaboration, based on her insights derived throughout the interviews, observations and document study.

2.6 Conceptual model

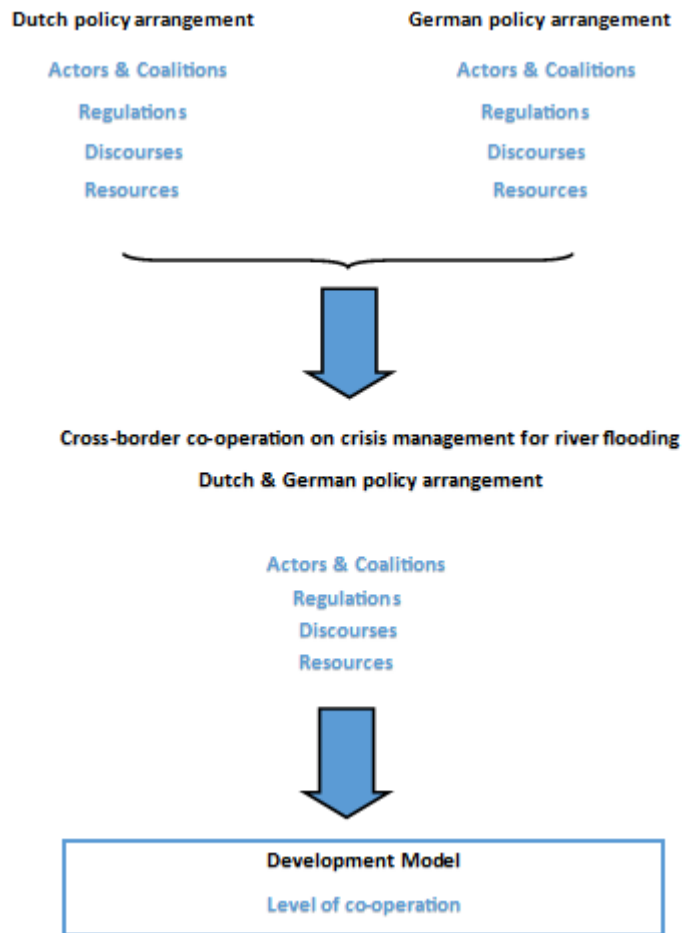


Figure 2.3
Conceptual model (own figure)

This model was developed in order to conceptualise the information of the theoretical framework. The conceptual model illustrates the relations between the EU, the policy arrangement of the Netherlands and Germany and how they are supposed to work on crisis management for river flooding individually and in co-operation with each other. The EU provides the general policies and resources in relation to crisis management and influences the legislature of both countries. At the same time, there is an influence on the collaboration of Germany and the Netherlands. The theory assumes that both countries have individual actors, regulations, discourses and resources, but the need to collaborate on crisis management demands a common policy arrangement as well. If they do so, collaboration on crisis management for river flooding will emerge. There are different levels of co-operation, like already mentioned in the theory. The way of co-operation and the willingness to transfer autonomy has an influence on the level of co-operation.

3. Methodology

In the previous paragraphs the context of this thesis' topic was given, furthermore the research objectives and research question were clarified. This chapter will elaborate upon how these main objectives will be obtained. Therefore, the applied research approach is discussed. Both the research strategy and the data collection will be described in paragraph 3.1 and 3.2. Paragraph 3.3 will contain more detailed description and substantiation of the case study, which was slightly introduced before.

3.1 Research strategy

At first a choice had to be made between qualitative and quantitative strategy, which both have their own advantages and weaknesses. The choice is made to base this research primarily on qualitative data collection methods and analysis. This is more useful for this research than a quantitative approach, because it gives the possibility to gain a deeper understanding of the issue at stake (Creswell, 2013). As already stated in the introduction, there has not been much research concerning the previous topic. For further development and improvement of cross-border crisis management, it is essential to find out to what extent it is applied in practice and how the co-operation works in detail. A quantitative approach is less appropriate than a qualitative one when referring to the research questions, because for this thesis it is decisive to discover, how the collaboration relations work between actors in both regions are working, which is rather complex. This aspect is rather complex to determine, as it can only sparsely be measured in numbers and figures. I.g.: I am interested in the complex interactions between actors and their actions and regulations in both countries, which makes it useful to apply a holistic and qualitative research method. This means that the object under study is seen as a whole and complex case. This qualitative approach offers the possibility to gain a more complete, integral image about the object under study and its situation (Verschuren & Doorewaard, 2015). How this method is applied will be further described in paragraph 3.2.

As mentioned above, the topic of cross-border crisis management for water-related issues has hardly been studied before. In order to gain a better and in-depth understanding of the empirical practices of cross-border crisis management, a case-study research is applied. More specifically a single instrumental case study is chosen. A single instrumental case study implies that the research deals with one specific issue, which is illustrated by one case study (Creswell, 2013). Furthermore, it indicates that this issue will be discussed in full detail (Verschuren & Doorewaard, 2015). This thesis deals with the issue of cross-border crisis management for river flooding in one specific region. In paragraph 1.1.6 the Euregion Rhine-Waal has been introduced. This case study appears to be adequate to be used as a single-case study, because this region faces similar problems like other border regions of the Netherlands and Germany such as high-water, water scarcity etc. According to the information of the Mission Paper of this Euregion, this region has a strong intention to improve crisis management for high-water across the border (Gelderse Commissie, 2015). Therefore, it is usable as a sample, which might be a role model for other Dutch-German border regions as well. The region will be further described in paragraph 3.3. . This bounded case is selected to clearly illustrate the issue under study. While research on single studies offers a greater depth in knowledge, results cannot easily be generalized. In which case broader research, though more superficial, might provide a satisfying solution (Vennix, 2011). Vennix argued further that especially social research is relying on generalisation and that single case studies do not enable the

researcher to generalize his or her outcomes. In this view, a single case study is not a suiting qualitative research method in terms of generalization (2011). Nevertheless, other well-known scholars argue that single case studies are appropriate research methods for a qualitative approach, because due to the holistic depth method it is easier to discover the so called “black swan”. Thus, they are adequate for applying falsification (Flyvbjerg, 2006). This underlines the choice made in this research to study one specific, unique case. Since, if no collaboration is found in this case, known as successful in other fields of water governance, it is very likely to not be found in other regions as well.

It is necessary to apply specific methods of data collection in order to achieve a deep understanding of the case and to make falsification possible. It is recommended by others to use several research techniques to enrich the viability and therefore the quality of the results. According to Creswell it would be best to examine all research strategies, but at least two of them should be applied. This thesis makes use of triangulation because it appears to be an appropriate method to enrich not only the viability but also the reliability. Triangulation contains the collection of relevant documents, doing observations and conducting interviews with actors. Triangulation offers evidence due to the three different approaches of research methods and is therefore an important tool to obtain valid results (Vennix, 2011). If only one approach was applied, there would always be the threat that the findings are biased or one-sided and therefore it would be more difficult to generalise. For example, interviews are, amongst others, depending on the mood, opinion and honesty of the person who is interviewed and it would be difficult to generalise to other cases. Being in state to deal with this threat, a comprehensive information-study about the background and motivation of the interviewees took place, so it was estimated whether the given information during the interviews were biased.

The second research technique that was used is rich and thick description. According to Creswell, this method allows an extensive description about the case and interviews (2013). These details can for example be provided by quotes, a physical description and an activity description. Furthermore, it has the advantage that the reader gets an overall and detailed view about the case study. Thereby, the reader is enabled to decide, whether the case study is transferrable to another case or setting (Creswell, 2013).

3.2 Research materials, data collection and analysis

This paragraph attributes attention to the applied data collection and the following analysis with regard to the single instrumental case study of this research. For this research in particular, it is important to notice that the researcher is fluent in both German and Dutch, making data collection in both border regions more convenient. Furthermore, a triangulation of research methods is applied, ranging from a desk-research, to interviewing and observation research. Rich and thick description will be applied in using quotations and descriptions of activities.

3.2.1 Desk research

As mentioned before, desk research was applied in this study. This implies that already existing information is collected and that the researcher does not conduct a practical study, i.e. fieldwork, by him- or herself (Verschuren & Doorewaard, 2015). A typical characteristic of desk research therefore is that the results are based on already existing findings and results. This information is compared and interpreted, but the researcher does not add a new value. The advantage of desk

research in the context of this thesis is that it enables the researcher and the reader to get a broad range of information about the actual situation of the topic before the empirical aspects of triangulation are implemented (Verschuren & Doorewaard, 2015). This desk research was applied at two moments in time: first to start up the research and second some additional research after the empirical study has been done.

First, a critical literature study was applied, which has been split up into two parts. At first reports, webpages, former studies and guidelines about cross-border co-operation on crisis management were collected, which has been done at the very beginning of this thesis and formed the basis for the further development of the research. The literature study started very broad with the issue of climate change. Scientific reports about this issue demonstrate the urgent need to improve crisis management, also across the border. One of them was the Intergovernmental Panel on Climate Change (IPCC, 2013). Furthermore, recent newspaper articles have been studied, which underlined the rising occurrence of extreme weather events such as floods across the globe and also in Europe (Governance of Kiribati, 2016; BBC, 2016; Gennies, Funk, Schlegel & Gehmer, 2013). Some reports dealt especially with crisis management on high-water such as the European Flood Directive (2007/60/EC), but others dealt with flood risk management as a whole such as the European Water Framework Directive (WFD). Academic literature emphasized the lack of research about the third layer of safety, namely crisis management (Van Eerd et al., 2014). Furthermore, websites of actors and institutions were studied in order to get an overview about recent or previous projects on crisis management for river flooding across the border. The water board Eifel Rur offered for example a broad range of information about projects such as FloodWise and VIKING (WVER, 2016, see paragraph xx). The literature offered information about discussions and aims, formed the basis for the development of the scientific questions and the interview guide, which were needed for the second part of triangulation.

Part two of the desk research has been done after conducting the interviews and focusing on the analysis of documents. These documents could for example deal with national laws or European guidelines. The reason to split the desk research into two parts was that I wanted to find out which documents and laws are used by the Netherlands and Germany and which they have in common by holding interviews. I assumed that if the different interviewees mentioned the same documents and laws, it would have been clear which were definitely relevant for crisis management for river flooding and thus should be studied in more detail for this research.

3.2.2 Interviews

Secondly, interviews were another important source of data for this study. These interviews have advantages as well as disadvantages in relation to qualitative research. They offer the possibility that interviewed actors can be questioned on their thoughts, feelings and wishes (Verschuren & Doorewaard, 2015). This is an advantage in order to meet the research objectives and to give an answer to the research questions. I would like to find out which lessons can be learned from the Dutch-German cross-border co-operation on crisis management for river flooding and having the possibility to learn about the actors' feelings, actions and thoughts is an important step. Preferably, all involved actors should be interviewed because this guaranteed a more completed picture of the situation and a higher validity. The disadvantage though, conducting interviews is very time consuming (Verschuren & Doorewaard, 2015). Hence, I tried to select the most important actors, which are directly involved in decision-making processes and who have a great expertise about

crisis management for river flooding in general and across the border. An overview of these is presented in table 3.1.

The interviews are based on semi-structured interview techniques in order to enable a higher depth (see interview guides in Appendix). Interviews, which are semi-structured offer the possibility to have an open communication between the interviewer and interviewee, but at the same time it is possible to intervene with key words and further explanations whenever needed. The guides ensure that all important aspects conceptualized and operationalized earlier have been mentioned (Swedlund, 2015). At first, there were some general questions asked to obtain an understanding about the background of the interviewees. This was necessary to make sure that the results were without any bias as mentioned in paragraph 3.1. The other parts of the interview guide were developed out of the information, which are given in the theoretical framework and the related conceptual model. It was crucial to include all relevant aspects of the theory to find out which actors were involved, which role they had, which resources and regulations there were and which discourses were given. Due to these criteria the interview guide consisted of these four key elements (actors and coalitions, regulations, discourses and resources) to find out how the actors interacted in forming a co-operation on cross-border crisis management for flooding. At last, there was one question addressing the interviewees personal opinion about the level of co-operation between the Netherlands and Germany in the context of crisis management for river flooding. The interviewees were shown the figure with the ladder of co-operation (paragraph 2.4, figure 2.2). This ensured that their opinions could be compared with each other. The interview guides were adjusted to the related organisation or actor, but always kept a similar design (see appendix).

As the case study of this thesis is the Euregio Rhine-Waal, the interviewees should be involved in crisis management for river flooding within the region. The interviewees were contacted first via e-mail or phone calls. The aim was to arrange some expert-interviews to get professional information about the background of former, ongoing and planned projects with relation to crisis management. It was aimed to contact a representative of the Euregio Rhine-Waal at first to get information about other involved actors. After a comprehensive interview with this representative, these actors were contacted too and in total six interviews were arranged. Hereby it was taken care that all relevant groups of actors were at least interviewed once, just as both German and Dutch actors were consulted. All interviewees, their affiliation and their function are listed in the table below (3.1).

Table 3.1
Information about respondents for interviews

Name	Organisation	Date and place	Form of interview
Heidi de Ruiter	Euregio Rhine Waal	May 3 2016, Euregio Rhine Waal in Kleve	Face-to-face
Sven Robertz	Sven Robertz Consultancy	April 19 2016, Radboud University Nijmegen	Face-to-face
Roel Kerkhoff/Marcel Meeuwsen	Veiligheidsregio Gelderland Zuid	April 20 2016, Veiligheidsregio in Nijmegen	Face-to-face
Martin Nieuwenhuis	Waterschap Rijn en IJssel	May 2 2016, Water board in Doetinchem	Face-to-face
Ulrich Rassier	Kreis Wesel	May 11 2016, Kreishaus Kleve	Face-to-face
Stefan Wagner	Kreis Kleve	May 18 2016	Written answers via mail

3.2.3 Observations

The third applied data collection method in this study consists of observations within the case study (Vennix, 2011). Observations face several advantages as well as disadvantages. It could be seen as a disadvantage that the information, which is obtained during the site visit, might be overwhelming (Creswell, 2013). Furthermore, the observer could forget to note relevant aspects. By writing down notes immediately and by taking photos, this has been prevented in this study. Another risk is that the observer discloses to the participants and cannot act objectively anymore (Creswell, 2013). Next to this, there is a possibility that the observed persons act in different way than they would, if the observer would not be present. This could have an influence on the results (Verschuren & Doorewaard, 2015). Observations also offer advantages. Firstly, interaction and reaction of participants are immediately visible. (Verschuren & Doorewaard, 2015). Secondly, it is possible to detect how the theory mentioned in the interviews is implemented into reality, for example how resources are stored and administrated.

It is valuable for the topic of this thesis to conduct observations, which are related to human interaction across the border and to materialistic preparation on crisis management for river flooding. This includes aspects such as the availability of sand bags or alarm installations. Hence, adequate persons were contacted, in order to help for these relevant observations. The “Waterschap Rijn IJssel” kindly offered a site-visit to their warehouse in Zevenaar. Moreover, they invited me to passively participate in a strategical training of all relevant actors in relation to crisis management for river flooding across the border. The findings of both observations will be described later.

Table 3.2*Information about observations and site-visits*

Occasion	Location and date	Activity
Strategical training off relevant actors from Germany and the Netherlands within the Euregion	Water board Rijn IJssel in Doetinchem May 18 2016	Joining discussions and a simulation of a calamity, taking notes of statements, thoughts and wishes of the participants, noting my own thoughts and feelings, taking pictures
Warehouse of water board Rijn IJssel	Zevenaar May 19 2016	Taking pictures, taking notes about given information by Martin Nieuwenhuis, thoughts, feelings

3.2.4 Method of data analysis

Once the data has been collocated, an adequate method of analysis needs to be applied. There are different kinds of scientific methods of analysis for qualitative research. For single case studies it is most appropriate to describe the findings and data of the case study. The interviews were recorded in order to be able to describe all relevant information in the analysis, for example by indirect quotations. The interviews were held in Dutch and German, but the thesis was written in English. Therefore, it is more useful to use indirect instead of direct quotations to increase understanding. The records of the interviews were typed out as soon as possible and coded in English, so that these codes could be used as keywords in the analysis (Creswell, 2012). The same was done with the relevant documents. Furthermore, the notes, which were taken during the observations were typed out and coded too. A code list was added to the appendix to increase the reader's comprehension.

The aim was to find out to what extent Germany and the Netherlands co-operate on crisis management for river flooding. The PAA has not often been applied in this regard and therefore it cannot be assumed a full coverage of all important aspects of crisis management beforehand. The information from interviews, desk research and observations were coded with the programme Atlas.ti. This was done rather abstractly and not too narrowly to the text. I.e. codes were divided into the four aspects of the PAA. There are for example codes about how the actors are co-operating and which problems occur. The occurrence of the same codes in different interviews will give information about the interaction of the four aspects actors, regulations, discourses and resources and about the level of co-operation. This method is called "intercode agreement" (Cresswell, 2012). The aim is to be able to give an answer on the main research question and all sub-questions.

4. Analysis

This chapter presents the empirical results of cross-border co-operation within the Euregion with the help of the policy-arrangement approach and the development model, which was explained in the theoretical framework. This will be dealt with by giving an answer to the five scientific sub-questions. They all refer to the case study which has been described before. Each sub-question will be dealt with in a separated paragraph and refers to the results of the desk research, the interviews and the observations. As there have been held interviews with both German and Dutch actors, the situation will be analysed per country at first, to be followed by a cross-border analysis and exposing possible problems. The information of the interviews, observations and desk research will be interwoven with each other in order to make the results of the analysis most viable. At last the level of co-operation across the border should be detected.

4.1 Collaboration of actors

This paragraph deals with the first sub-question. Hence, it describes how local, regional, national and international actors are involved in both countries (paragraph 4.1.1 and 4.1.2) and how they co-operate in terms of crisis management for river flooding (paragraph 4.1.3).

4.1.1 Dutch actors involved in cross-border co-operation

Firstly, the relevant Dutch actors are described. Following, mutual co-operation among actors will be investigated. The Dutch calamity control for flooding is organized in so-called GRIP-levels (=Gecoördineerde Regionale Incidentbestrijdings Procedure – Coordinated Regional Incident Control Procedure). These levels will be explained in order to provide a greater understanding of the Dutch calamity control system and to demonstrate how the different actors are co-operating. After that, the co-operation of involved actors will be examined.

Relevant Dutch actors and institutions

The Dutch structure of crisis control is heterarchical. This is illustrated by the independency of several actors relating to crisis management for river flooding, which are able to act autonomously (M. Nieuwenhuis, personal communication, May 2, 2016; R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016).

Three key actors for regional crisis management for flooding can be identified on the Dutch side of the Euregion. One of them is the water board. The water board has a broad spectrum of tasks concerning crisis management in case of flooding. They have an own crisis management and must always be in state to act operationally, not only strategically (M. Nieuwenhuis, personal communication, May 2, 2016). They are responsible for the preparation on possible future floods, which contains e.g. the storage of sand bags and the administration of pumps and other equipment. The water board Rijn en IJssel is part of the Dutch border region and has three storages spread across this area. The storage in Zevenaar is directly located next to a highway (Observation Zevenaar, May 19, 2016). The others are also well-located. More information about these resources will be given in paragraph 4.4.1. Another task of the water board is to give advice on whether an evacuation is necessary or not. The water board always needs to have an actual overview about the situation in their region and needs to share this information with the safety region. If the water board believes that it would be necessary to block dikes, they can arrange the police to do so (Training water board Rijn IJssel, May 18, 2016). Giving advices requires a good communication with

other actors. This communication and data sharing is organised via the new online platform “Landelijk Crisis Management Systeem” (LCMS), which means translated National Crisis Management System (LCMS, 2016; Training water board Rijn IJssel, May 18, 2016; S. Robertz, personal communication, April 19, 2016). All relevant actors of crisis management can log in to this platform. Further explanation about LCMS will be given in the paragraph about resources (see 4.4.1).

The second important autonomous institution in relation to crisis management for river flooding is the safety region. This is an institution, which coordinates the fire brigade and healthcare and which deals with all kinds of incidents or calamities. They were established in 2010 and have taken over the tasks from the provinces in relation to crisis management. The safety region Gelderland Zuid, which has been interviewed for this research, consists of 16 municipalities and operates in co-operation with the police and other instances (VRGZ, 2016). Furthermore, they house the local “meldkamer” (emergency room) and are also communicating via LCMS (WVR, 2010; R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016; S. Robertz, personal communication, April 19, 2016).

Local municipalities also have an important role in terms of crisis management for river flooding. The principle of every municipality is a member of the safety region and can therefore take part in decision-making processes about safety and disaster management (S. Robertz, personal communication, April 19, 2016). The principle of the biggest municipality is the chairman of safety region’s general administration (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016; WVR, 2010).

Calamities with an impact across the region require the participation of the provinces, the Commissioner of the King and the state in form of the ministry of security and justice. These instances only become involved, if the impact of the event is nationwide (WVR, 2010). The ministry is also responsible for the development of legislature, which affects crisis management on all scales, from national to local level.

Working on crisis management via the GRIP-structure

The actors, which shortly have been introduced in the previous paragraph, operate within a specific structure of calamity control. The structure is called GRIP and is divided into seven levels, which are visualised in the left side of figure 4.1. The structure is starting with GRIP 0, which means daily routine. Local institutions such as the fire brigade and ambulance are acting there, but do not necessarily need to interact with each other. Incidents of the daily routine are rather punctual and do not effect a broader area.

GRIP 1 is the first level, which asks for a multidimensional co-operation of actors, including the affected local authority. Furthermore, an organizational group is set up (Commando Plaats Incident – CoPI). This group consist of the leaders of the fire brigades, police and the GHOR who coordinates health-care in the event of a crisis. GRIP 1 is applied when an incident asks for co-operation within a municipality. An incident of this GRIP level affects an area, which is below the regional scope and therefore could for example take place within the Euregion.

The next GRIP level is reached with an incident, which has a bigger scope and involves additionally a Regional Operational Team (ROT). This group can contain leaders from organizations such as Rijkswaterstaat etc. as well, if necessary. An incident of this level would affect the whole region now and could occur in the Euregion as well, but the event’s impact is too small to call it a crisis or catastrophe.

GRIP 3 is the last level with a regional dimension; hence it is the last one, which could be applied to the Euregion. Furthermore, it is the first level, which deals with a crisis or calamity. Now a municipal policy team (Gemeentelijk Beleidsteam – GBT) is convened, aside from the local authority, CoPI and ROT.

If an incident affects more than one region, all involved local authorities must be included into the operational team (GRIP 4). The difference to the first three GRIP levels is that now more than one municipality is included to the Coordinated Regional Incident Control Procedure.

GRIP 5 also is on a supra-regional scale like GRIP 4. But now the scope of the incident is too wide to include all local authorities. Therefore, they are replaced by the affected safety regions, which can operate in the name of all municipalities.

GRIP Rijk is the highest level and is used for calamities, which have an impact on the whole state or wide parts of the state. It differs from GRIP 5 in form of another organizational team. The National Crisis Centre (NCC) are now replacing institutional leaders.

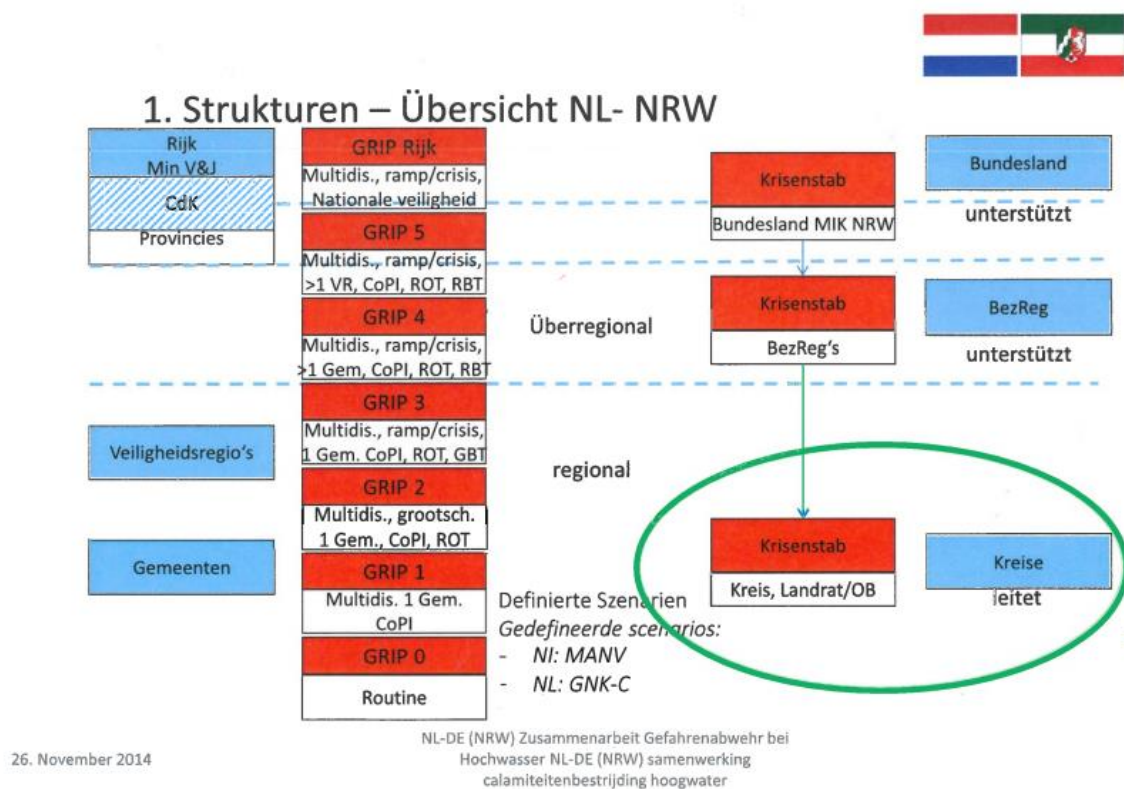


Figure 4.1
GRIP levels. Reprinted from Gelderse Commissie. (2015, November). *NL-NRW samenwerking rampenbestrijding extreme waterstanden en incidenten op het water.*

Multidisciplinary working and coalitions

The GRIP-structure indicates that the Dutch actors at least theoretically know how to work in co-operation with each other. Each level includes at least one organizational group with members of all kinds of institutions, among others the fire brigade, police, GHOR, safety regions, water boards, Rijkswaterstaat, municipalities, provinces and ministries. In case of a calamity all important actors work multidisciplinary and get together in specific groups, such as the ROT. This distinguishes the Dutch calamity control in terms of high standard of quality and expertise, because representatives from all disciplines collaborate with each other and are allowed to speak out in congresses and

during an acute crisis (H. De Ruiter, personal communication, May 3, 2016). This offers a wide range of knowledge and skills and improves the co-operation on crisis management for river flooding. It is also noteworthy that these representatives are real experts within their discipline, because most often they have a background as an active of the fire brigade etc. or have an academic expertise in terms of calamity control (S. Robertz, personal communication, April 19, 2016).

In the event of an incident all information is collected in one central “meldkamer”, which means that all telephone or emergency calls are redirected to the central emergency room. This makes it easier to work efficiently, because the person in charge can inform different institutions at once, which saves time (S. Robertz, personal communication, April 19, 2016).

It is important to recognize that the GRIP levels were not specifically developed for water-related incidents; they are established for all kind of calamities: one of which is water. Next to this, there is a coalition of a couple of actors, namely the “Gelderse Commissie”. This commission deals specifically with water-related risks such as high-water, river flooding and dike breakdowns in form of the working group high-water (M. Nieuwenhuis, personal communication, May 2, 2016; S. Robertz, personal communication, April 19, 2016). The members of this commission consist of representatives of the water boards, safety regions and Rijkswaterstaat. Another coalition identified is a collaboration between Rijkswaterstaat and the water boards. The Rijkswaterstaat’s tasks contain, checking the water level and administrating. This information is forwarded to the water boards, who are responsible for holding back the water (Personal communication, May 18, 2016). This demonstrates again that the Netherlands are making use of expertise of different fields and combine them.

Strikingly, there is no direct involvement of citizens. They are informed about potential risks but they do not have a say in decision-making processes or do not participate in trainings (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). This observation is contrary to the theory (Verwijmeren & Wiering, 2007; Raadgever et al., 2013). The way in which the inhabitants are informed will be approached in paragraph 4.4.

According to the interviewees there are rarely high-water incidents, which would demand for a collaboration of actors on a higher GRIP level, but all actors are theoretically well-prepared for a potential incident and they regularly train and simulate these situations. The safety region for example trains the forming of the crisis control group, the communication, information management and plan making (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). The water board also holds trainings on a regular basis. For example, they practise how to fill, transport and place sand bags (M. Nieuwenhuis, personal communication, May 19, 2016). The operational crafts such as the fire-brigade hold regular trainings as well, for example by simulating an evacuation or fire brigade (S. Robertz, personal communication, April 19, 2016; H. De Ruiter, personal communication, May 3, 2016).

4.1.2 German actors involved in cross-border co-operation

Now the Dutch collaboration in terms of crisis management for river flooding has been analysed, it is also decisive to have a further look at the German counterparts. The relevant actors, institutions and coalitions will be firstly described, followed by an analysis of their collaboration with each other in the German border region.

Relevant German actors, institutions and coalitions

A part of North Rhine-Westphalia belongs to the Euregion under study. Therefore, the structure of this federal state needs to be observed while analysing its crisis management. The structure can be described as hierarchical (S. Robertz, personal communication, April 19, 2016; U. Rassier, personal communication, May 11, 2016; H. De Ruiter, personal communication, May 3, 2016). In the following the different actors will be introduced with respect to the structure in NRW.

The lowest level occurs at the scope of the municipalities. They are at the bottom of the hierarchical system (U. Rassier, personal communication, May 11, 2016). Their task is to coordinate the fire-brigade and other aid agencies and to safeguard their operational readiness (MIK NRW, 2016). Other aid agencies in the form of public bodies are the „Arbeiter-Samariter-Bund“, „Deutsches Rotes Kreuz“, „Johanniter Unfallhilfe“, „Malteser Hilfsdienst“ and „DLRG“. They have the responsibility in terms of health-care and to hold back the water or soil in case of a relatively small flood, for example by using sand bags and pumps. Furthermore, they need to evacuate inhabitants and livestock and take care of the first aid if required (MIK NRW, 2016).

The “Kreise” (counties) take over the responsibility of these actors, if the dike corporations and municipalities cannot handle the situation on their own anymore. For example, when there is an indication that a dike break is imminent (U. Rassier, personal communication, May 11, 2016). According to Ulrich Rassier the counties also get involved, when a higher number of people is affected by the incident and if there is a need for evacuation (Personal communication, May 11, 2016). In other words, the counties have the main responsibility when a crisis occurs. They are responsible for the organisation of the calamity control on a bigger scale, the regional one. In case of the Euregion, the counties of Kleve and Wesel would host the Krisenstab. If more than one municipality is affected by a disaster and there is a need of co-operation, the county will set up a so called “Landrat”, which consists of commissioners who are engaged for the county itself. They coordinate the aid agencies and can also involve other experts, for example of calamity control or water management (Training water board Rijn IJssel, May 18, 2016).

On the next scale there is the “Bezirksregierung” (district government). They get involved when the calamity is supra-regional and take over the county’s responsibility (U. Rassier, personal communication, May 11, 2016). From that moment on, it is their duty to coordinate all emergency crafts. With regard to this study, the district government of Düsseldorf is of special importance. They are located within the Euregion.

Water boards and dike corporations are regulated by public law and subordinated to the district government and the Ministry for Climate Protection, Environment, Agriculture, Conservation and Consumer Protection of the State North Rhine-Westphalia. They have no political power but have the main responsibility in terms of dike maintenance, dike control and flood alleviation (Environmental Ministry NRW, 2016; U. Rassier, personal communication, May 11, 2016).

At the top of the hierarchy, there is the Federal Ministry of Internal and Communal Affairs (Ministerium für Inneres und Kommunales des Landes NRW – MIK NRW). If an incident has an impact on the whole federal state or on large parts of it, they get active. The higher authorities such as the district government and the ministry only get involved, if really necessary.

Structure of “Krisenstäbe”

The structure of Krisenstäbe is visualised in the right side of figure 4.1. The Landrat, which was introduced in the previous paragraph, declares the state of emergency in case of a serious high-water or flood risk. Afterwards a “Krisenstab” has to be convoked (BHK, 2016; Training water

board Rijn IJssel, May 18, 2016). This is the German counterpart of the GRIP-levels, which can be translated as crisis management groups (MIK NRW, 2013). Krisenstäbe are, in case of a crisis, taking over the former task of the fire-brigade to manage a calamity. This structure has been introduced in 2004 and is juridical defined since 2013 (MIK NRW, 2013). More actors are involved this way, depending on the scope of the Krisenstab. The German system only consists of three levels. The first one has a local and regional scope and includes the counties and its commissioners. The commissioners are among others representatives from administrative bodies of the county such as disaster management and regulation of public security (S. Robertz, personal communication, April 19, 2016). Relevant actors such as representatives of the dike associations and water boards can also be included to the Krisenstab, if necessary (Training water board Rijn IJssel, May 18, 2016). They have the best knowledge and information about the dike and its actual condition. This kind of Krisenstab could be applied to the Euregion.

The Krisenstäbe of the higher authorities apply the same method of operation, just on a bigger scale. The Krisenstäbe would be hosted by their facilities in case of a supra-regional calamity (refer to schema samenwerking calamiteitenbestrijding hoogwater). Following from that the Krisenstab would be hosted at the district government or at the federal state, if the crisis affected more than one region (BHKG, 2015).

Multidisciplinary working

The German actors of crisis management are interacting, but seem to be more restricted in their role due to the strong culture and structure of hierarchy. Some actors are not necessarily part of the Krisenstab and need to be invited by the Landrat (Training water board, May 18, 2016). Of course, there are also persons engaged who are working for administrative institutions of disaster management etc. like explained in the previous paragraph. But it is possible that decisions are made by people who cannot oversee the whole situation. Therefore, an important fact is to involve experts from relevant fields such as representatives of the dike associations or water boards (Training water board Rijn IJssel, May 18, 2016). On May 18th 2016 there was a training with many relevant German and Dutch actors at the facilities of the Dutch water board Rijn en IJssel. In paragraph 4.1.3 more information will be given about this training. For now, it is important to mention that there was a discussion, whether experts from dike associations etc. should be invited to join the Krisenstab, which is hosted by the county's Landrat. At the end there was an oral (informal) agreement that the dike association would also be involved, in case of a high-water calamity (Training water board Rijn IJssel, May 18, 2016). According to the document *"Krisenmanagement durch Krisenstäbe im Lande Nordrhein-Westfalen bei Großschadensereignissen, Krisen und Katastrophen"*, experts of third parties such as dike associations are included to the Krisenstab depending on the event (MBL NRW. Nr. 27, 2013). But there is no juridical determining that they are definitely included. This example demonstrates that Germany's system is hierarchical and that important experts are not involved to a calamity control group by law, because they are at a lower level of the hierarchical system compared to the Landrat. On the other hand, there have some improvements been made in terms of communication though. The new system including the Krisenstäbe requires communication on a vertical and horizontal level. If there is more than one active Krisenstab, it is determined by law that these Krisenstäbe communicate with each other, even if they operate on a different level (MIK NRW, 2013).

Institutions, which are not per se included into the Krisenstäbe such as water boards, dike associations and fire brigades have no autonomous position and are subordinated to ministries and

during a crisis to the Krisenstab. Hence, they cannot operate independently in terms of calamity control (Training water board Rijn IJssel, May 18, 2016; MIK NRW, 2013).

4.1.3 Cross-border collaboration of actors

In the previous paragraphs it has been analysed how NRW and the Netherlands individually are operating in terms of crisis management for river flooding. In particular: key actors involved and their tasks, responsibilities and collaboration between them was addresses. In this paragraph, an analysis is made about how these national actors and their coalitions function on a cross-border manner in the region of the Euregio.

In the beginning I want to emphasize that all interviewed actors affirmed to be willing to engage in cross-border co-operation on crisis management for river flooding to a certain degree.

The last decade has been revolutionary in terms of crisis management between NRW and the Netherlands. According to the literature there was no clear-cut course for crisis management for crisis management before the new millennium, especially not across the border (Raadgever, Hegger, Wiering, Gersonius, 2013). The interviewees validated this statement (H. De Ruiter, personal communication, May 3, 2016). Especially the years 2004 – 2011 have been significant in order to gain more attention for this issue. During that time there was a project called VIKING, which is an INTERREG project (see 1.1.3). It had the aim to improve the high-water information systems and the co-operation between actors from Gelderland and NRW (S. Wagner, personal communication, May 18, 2016). According to the interviewees there were improvements recognizable on a strategical and operational level of cross-border crisis management. Some examples of advantages for the strategical level, which arose from VIKING are the water management system FLIWAS, an evacuation calculator, planning and calculation modules and a flooding atlas (S. Wagner, personal communication, May 18, 2016). The operational crafts made progress by joint trainings, e.g. carried out by the Dutch and German fire-brigade (S. Robertz, personal communication, April 19, 2016; S. Wagner, personal communication, May 18, 2016). Furthermore, schemas and lists have been set up to clarify the relations between German and Dutch institutions and to explain who needs to contact who in case of a crisis (Training water board Rijn IJssel, May 18, 2016). All actors confirmed during the interviews that this was useful and an advantage, because it would save time during an emergency.

The past projects and activities of cross-border co-operation for crisis management in river flooding were also maintained by two individual actors who actually do not have an operational task in crisis management. They act as supervisors, sponsors or advisor. One of them is the Euregio Rhine-Waal, by which the institutional Euregio is meant. The Euregio Rhine-Waal is first of all a public body, where 55 Dutch and German municipalities, regional governments and chambers of commerce are included. Great parts of the Dutch province Gelderland are covered within the Euregio. Furthermore, parts of the provinces North-East Brabant and Limburg are included, too. In Germany the councils Kleve and Wesel and the municipalities of Duisburg and Düsseldorf belong to the Euregio. This platform is acting as a link between actors and institutions in both countries and tries to improve cross-border collaboration on a social and economic scale. The Euregio has a long history and there are a number of significant successful projects between Germany and the Netherlands, which have been generated and supported by the organization itself (Euregio, 2016). According to a representative of the Euregio, they do not have a great duty and responsibility in terms of crisis management for river flooding. But they do support activities concerning security within the region of which flooding and high-water is a small part. Their duties comprise acting as

sponsor with European subsidies and as a connector, but they are not active on an operational level (H. De Ruiter, personal communication, May 3, 2016; S. Robertz, personal communication, April 19, 2016). The other actors appreciate that the Euregio operates as a stimulator of cross-border co-operation and has the ability to inform the Dutch and German actors about structural changes and to offer new contact information after personnel changes.

The other actor who acts individually and who is not engaged within the context by law is Sven Robertz. He has a consultancy, which is giving advice to other actors in terms of cross-border crisis management in this region. These advices for example deal with organisation and management (S. Robertz, personal communication, April 19, 2006). Sven Robertz is the only actor within the Euregio who could be seen as a private actor (R. Kerkhoff, M. Meeuwesen, personnel communication, April 20, 2016; M. Nieuwenhuis, personnel communication, May 2, 2016). This is contrary to the information out of the literature, in which was indicated that the actors would be public and private actors and coalitions (Verwijmeren & Wiering, 2007; Raadgever, Hegger, Wiering & Gersonius, 2013). Sven Robertz is not hired due to guidelines or laws, but because of his expertise and capabilities in terms of cross-border crisis management. He is an important person in the context of stimulation of cross-border crisis management for river flooding. Referring to his own words he has a great network with relevant actors and institutions, he has worthy skills of organizing und structuring things and a good knowledge about the topic, the structure of both countries and about cross-border co-operation. He is an actor who has been engaged in this context for years and has taken part in the relevant projects of the recent years such as VIKING (see 1.1.3) (S. Robertz, personnel communication, April 19, 2016). Strikingly, there are no other relevant private actors what is contrary to the literature (Verwijmeren & Wiering, 2007; R. Kerkhoff, M. Meeuwesen, personnel communication, April 20, 2016; M. Nieuwenhuis, personnel communication, May 2, 2016). There might be some engineers who could be seen as some private actors, but they are engaged with building dikes. Thus, they deal with the first layer of multi-layer safety, which has been emphasized earlier (Rijksoverheid, 2013; Hoss, 2010). There are no private actors for strategical or operative issues in terms of crisis management (M. Nieuwenhuis, personnel communication, May 2, 2016). Hence, in this region, it appears important that once actor, with appropriate networking skills and expertise acts as a policy entrepreneur, can stimulate cross-border co-operation.

So, the Euregio and Sven Robertz try to stimulate the collaboration of the Dutch and German actors, which have been described before. They are also engaged in forming coalitions across the border in terms of crisis management for river flooding. There are already cross-border activities on an operative level such as trainings of the fire-brigade. This is a positive effect of the run out project VIKING and X-Regio. All fire-brigades in the border region have by now a connector, which links water hoses (H. De Ruiter, personnel communication, May 3, 2016). The water hoses are different in both countries and hindered a co-operation during trainings or emergencies in the past. Recently the Euregio started to support the ambitions of Kleve's and Millingen's fire-brigade to form a common fire department across the border (H. De Ruiter, personal communication, May 3, 2016). The operational actors seem to collaborate well across the border. They know how to reach each other and train with continuity (R. Kerkhoff, M. Meeuwsen, personnel communication, April 20, 2016; H. De Ruiter, personnel communication, May 3 2016; S. Robertz, personnel communication, April 19, 2016).

There are not only supposed to be coalitions on the operational level, it is also desirable to expand the acquirements, which were made on the strategical level during VIKING (Training water

board Rhine IJssel, May 18, 2016). There are no direct coalitions across the border right now, but the Dutch actors formed the so called Gelderse Commissie, which intends to stimulate strategic cross-border co-operation between Gelderland and NRW (S. Robertz, personnel communication, April 19, 2016; H. De Ruiter, personnel communication, May 3, 2016; S. Wagner, personnel communication, May 18, 2016; U. Rassier, personnel communication, May 11, 2016; R. Kerkhoff, M. Meeuwsen, personnel communication, April 20, 2016; M. Nieuwenhuis, personnel communication, May 2, 2016). The Dutch actors wish that the German actors join this commission. Sven Robertz and the Euregion are trying to accomplish that. They communicate constantly with all actors and argue for cross-border co-operation (M. Nieuwenhuis, personnel communication, May 2, 2016; H. De Ruiter, personnel communication, May 3, 2016; Sven Robertz, personnel communication, April 19, 2016). The so called "Mission Paper" was set up in autumn 2015 with the purpose to include the German actors (Gelderse Commissie, 2015). Not all actors were willing to join the commission and therefore did not sign the paper. The county of Kleve at the moment is not involved in the Gelderse commission. There were a number of reasons why not all relevant actors gave in their adhesion. The main reason seemed to be a missing continuity in terms of cross-border co-operation on crisis management for river flooding. After the ending of VIKING, the contact between the actors again became less. Plans, programmes and systems are not used anymore. This goes back to a structural change in the Netherlands, what led to a shift in responsibilities. Even the contact information changed and networks, which have been set up during the seven years of VIKING and do not exist anymore. Continuity is absolutely necessary for a further development of cross-border co-operation. Not only continuity between the participating actors should be given, but also in form of support from higher instances such as ministries and the state. The paper seems to be complex and demands for a high level and long-term engagement. This leads to doubts and hesitations because the actors also have other national duties, which are of a higher priority than cross-border co-operation on crisis management for river flooding. The doubts could be that the activities, which are related to the Mission Paper could lead to a use of time and resources, which would be beyond the capabilities (S. Wagner). A sentence, which was often stated by from Dutch as well as German actors was: "Not another project!" (Training water board Rijn en IJssel, May 18, 2016). Projects demand for a high form of presence, which is difficult to fulfil, because of all the other sovereign responsibilities, which by law have to be of a higher importance. This is not easy to manage and leads to frustration, because some actors appear to be more active than others, just because of the restrictions in time, resources and manpower. Another statement, which I heard from most interviewees and also during the training at the water board Rijn IJssel (May 18, 2016) was that projects are not a necessity for cross-border work and that it can be performed in a different form as well.

Furthermore, all interviewed actors agreed that the structural changes led to communicational misunderstandings and the rejection of cross-border activities on a strategical level (Training water board Rijn en IJssel, May 18, 2016). Not all interviewed people were aware of who is the right contact person across the border because of the different institutional systems. As already mentioned, Germany appears to be hierarchical, whereas the Netherlands are more heterarchical. This is demonstrated on a level of the safety regions in figure 4.2.

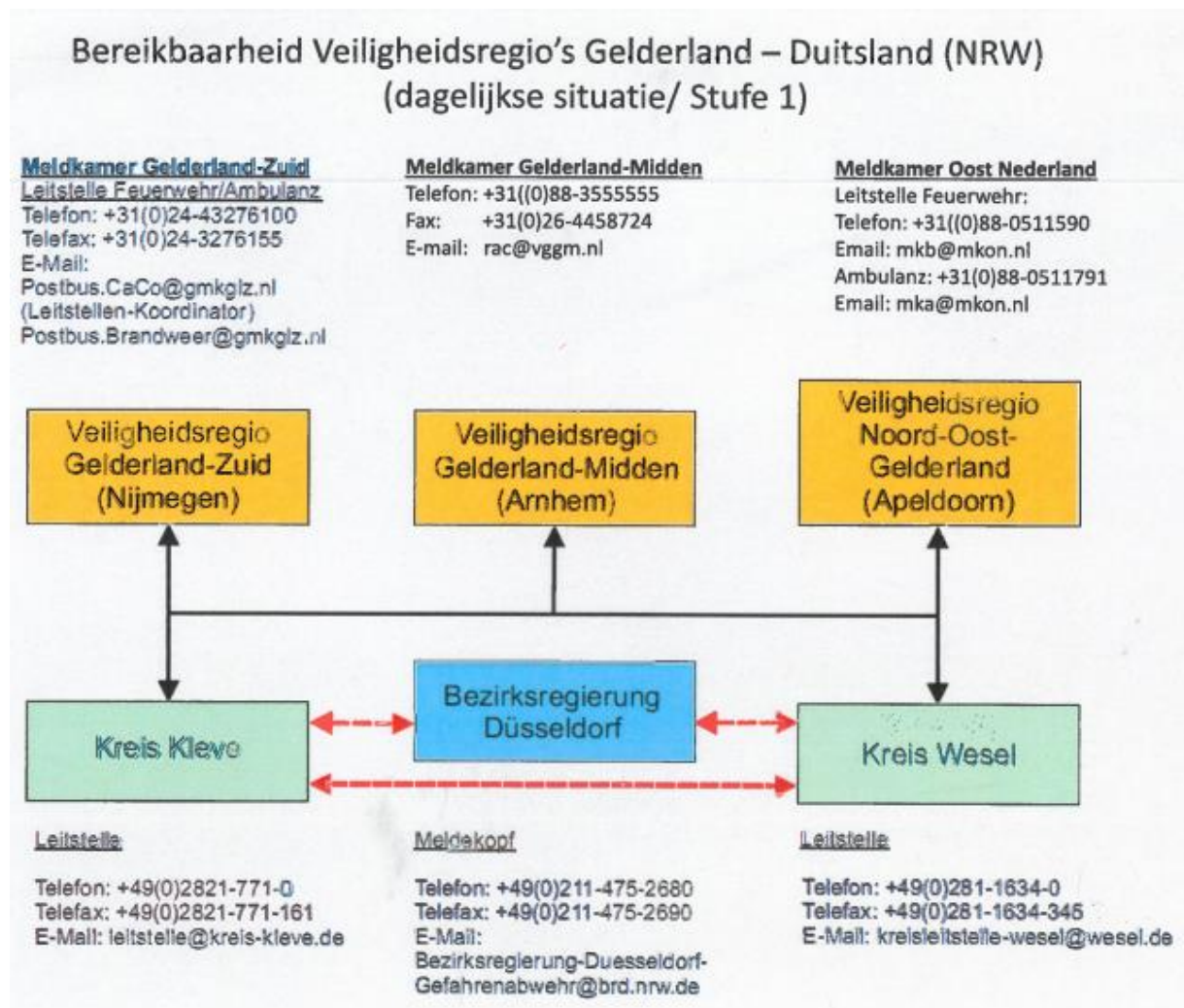


Figure 4.2

Communication lines across the border on a regional scale. Reprinted from Gelderse Commissie. (2015, November). NL-NRW samenwerking rampenbestrijding extreme waterstanden en incidenten op het water.

The Dutch actors interviewed have agreed that this structural difference can lead to confusions, because communication across the border needs to be executed in a diagonally way and not horizontal. The responsibilities in Germany are on a higher level than in the Netherlands, where a water board is working autonomously while it is subordinated to the district government and ministries in Germany. This shows that the counterparts of Dutch and German actors are not clearly apparent, nor assessable due to institutional discrepancies.

On the other hand, the Germans agreed that overlays in technical innovations can lead to disparities and can be counterproductive. Germany and the Netherlands have been working on a common water management system during VIKING called FLIWAS. The Netherlands cancelled their involvement later and developed their own system called LCMS. Further information on these technologies will be given in the paragraph about resources (4.4). This experience led to an insecurity about continuity of activities, which are not determined by law. Another important reason that should not be disregarded is the scarcity of time, manpower and money. This will be further explained in paragraph 4.4.

Nevertheless, disregarded the problems, which can arise from cross-border co-operation on crisis management for river flooding in this region, it is still a desire to all of the actors to stay in contact with each other to keep this collaboration. Language barriers, for example, will always be an obstacle but are not the main factors hampering cross-border work. It must be clear that no actor involved in this study experienced a real conflict between German and Dutch institutions and that the mentioned problems are not seen as negative, but as a naturally given, which can arise when two countries try to collaborate across the border. All actors agreed that these “problems” can be dealt with and have never been a reason to withdraw cross-border co-operation. The contrary is the case. Anyway, the actors also mentioned positive aspects. Especially the projects on a smaller scale such as X-regio have been kept alive after the ending of VIKING and had some remarkable results. There were e.g. plans made on how to protect machines and goods of firms and industries in case of a dike break. One firm in Kleve has installed some appliances, which allow them to lift up all machines six meters in case of flooding (H. De Ruiter, personal communication, May 3, 2016). These plans are shared with other firms as well, also across the border. The exchange of information seems to be better in the Euregion than in the average border region between Germany and the Netherlands (S. Robertz, personal communication, April 19, 2016). Sven Robertz attributes this to meetings, which take place regularly for the last three years again. He states that in the past year there were three congresses of relevant actors engaged with high-water, one in Wesel, one in Doetinchem and one at a water board. This led to a good exchange of information (Personal communication, April 19, 2016). Furthermore, the Mission Paper, which was mentioned earlier, could be seen as the intention to deepen cross-border co-operation in terms of crisis management for high-water (S. Robertz, personal communication, April 19, 2016; H. De Ruiter, personal communication, May 3, 2016). As mentioned earlier, the safety regions, water boards and the Kreis Wesel already signed the paper (Gelderse Commissie r, 2015; S. Robertz, personal communication, April 19, 2016). According to the interviewees it has also advantages. It appears to be positive that the collaboration across the border gets a juridical background by signing the paper, because it respects all existing rules and laws from both Germany and the Netherlands (S. Robertz, personal communication, April 19, 2016). It offers the security, that actors will not change their minds and resign from cross border activities because they would be bound to the Mission Paper. Again, all actors are positive about an engagement in cross-border crisis management for high-water, but want to keep it simple and within possibilities. They ask for an exchange of information, this means they want to achieve a strategical co-operation, but not necessarily in forms of new projects. Transparency and a rapid information flow are the most urgent things, which were required by all interviewed actors.

4.2 The influence of laws and rules

In this paragraph the question will be examined to what extent the co-operation on cross-border crisis management for river flooding is affected by regional, national and international (EU) regulations. This question is related to the regulations dimension of the PAA. First, the relevant Dutch laws and rules-of-the-game will be accessed, after it the German ones, to be followed by a cross-border analysis of applicable laws and rules-of-the-game. Moreover, relevant instruments will be explained. I did not receive any information concerning the indicator “projects, programmes and plans”. As mentioned in the paragraph about the actors (4.1), there are no relevant plans for future projects or programmes at the moment. As said, there is an intention noticeable to establish cross-

border co-operation, for instance by maintaining the Mission Paper, but right now there are no concrete plans or agreements. Therefore, there this indicator will not be stressed in a separated paragraph.

4.2.1 Influence of laws and rules on Dutch actors for crisis management

According to the interviewed Dutch actors, there are mainly laws, which are important in terms of crisis management two key laws, which are important for crisis management for river flooding in the Netherlands. The water policy (Waterwet) and the policy for safety regions (Wet veiligheidsregio's - WVR).

Waterwet

The Waterwet is a more common policy, which covers mostly water quality and quantity issues of the first two layers of multi-layer safety, namely prevention and adaption. There are for example paragraphs in the Waterwet on how to prevent damage which is caused by water surplus (Waterwet, 2009). Furthermore, it deals with the Delta Program, which is meant to adapt to climate change effects and prevent floods (Waterwet, 2009). However, there is only one article in this law which directly mentions crisis management, article 5.29 (Waterwet, 2009). It states that all involved executive actors, such as water boards, are obliged to hold trainings in crisis management and orchestrate calamity plans in co-operation with those of safety regions (Waterwet, 2009). This appears to be very broad and gives the water boards a lot of room for individual crisis management plans. The content of the plans is not determined by law. These plans have to be sent to the safety regions for inspection. Hence, a co-operation among Dutch actors is required and determined.

In case of an acute crisis, compensation can only be granted if triggered by operations of executive actors. If a house owner or individual has suffered from a naturally occurred flood, only private insurance companies need to compensate but not the national financial grants (Waterwet, 2009).

Wet Veiligheidsregio's (WVR)

The WVR directly deals with crisis management in contrast to the Waterwet. This means that it refers primarily to the third layer of multi-layer safety. The law defines a crisis as an event, which affects or endangers a big part of the society. It is not literally mentioned but river flooding is seen as a crisis too (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). The law says that the safety regions have to draw up risk profiles, which determine all kinds of possible risks within the region. These profiles must be attuned to the profiles of other safety regions and to the ones of the water boards (WVR, 2010; R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). Furthermore, the safety regions have to ask police officers, ministers, and water boards for a statement regarding their point of view about the risk profiles (WVR, 2010). Even the Minister of Safety and Justice is allowed to set objectives in terms of crisis management. This requires a high willingness for communication and co-operation. The determination by law that several actors are concerned about crisis management have to co-operate could have a positive impact on the collaboration during an acute crisis, because the actors know each other and are used to communicate with each other.

The safety regions get financial contributions from the minister to guarantee that they can cope with their duties. If the incident takes place on a larger scale and other institutions such as the

water boards are also involved, they are also allowed to ask for financial compensation (WVR, 2010). This can be seen as a driving force for co-operation among the Dutch crafts.

Risk profiles

In the previous paragraph was stated that safety regions have to develop and administrate risk profiles and related risk maps. An example of a risk map will be demonstrated in this paragraph. It illustrated the risks of the “Waalkade” in Nijmegen, which is located directly next to the river Waal and is a part of the Euregion.

The map below shows all kinds of risks, of which one is flooding (figure 4.3). The inhabitants of Nijmegen and all other regions in the Netherlands can check whether they live in a vulnerable region by approaching this risk maps. They only have to type in their postcode or area and get a detailed overview about potential hazards.

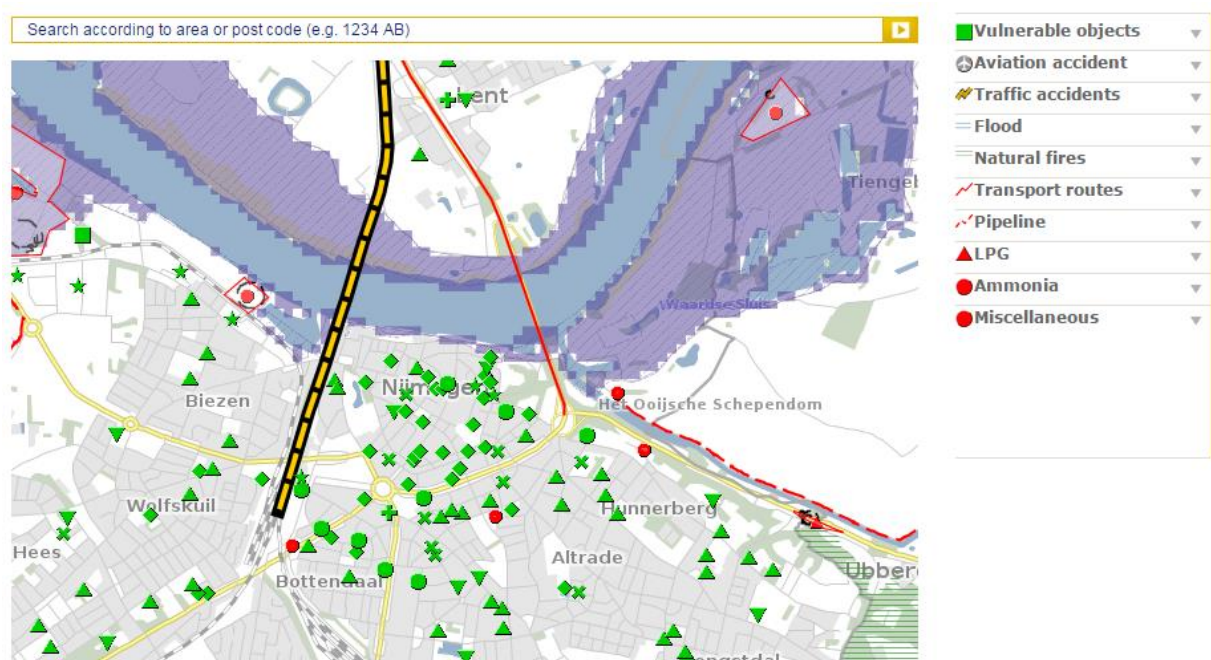


Figure 4.3

Risk map of the Waalkade in Nijmegen. Reprinted from Risicokaart. (n.d.). Voorvertoning Overzichtskaart.

The development of these maps is determined by the WVR but can be seen as an unformal aspect of the PAA’s dimension laws and rules-of-the-game. They are instruments, which aim to enhance the safety of the inhabitants and rises the awareness for potential risks.

4.2.2 Influence of laws and rules on German actors for crisis management

The German crisis management is strongly influenced by the Directive „Krisenmanagement durch Krisenstäbe im Lande Nordrhein-Westfalen bei Großschadensereignissen, Krisen und Katastrophen“ (MBL NRW. Nr. 27, 2013) and the law „Gesetz über den Brandschutz, die Hilfeleistung und den Katastrophenschutz“ (BHK, 2015). Both will be explained in this section.

„Krisenmanagement durch Krisenstäbe im Lande Nordrhein-Westfalen bei Großschadensereignissen, Krisen und Katastrophen“

The Directive determines the organizational structure of the “Krisenstäbe” concerning crisis management in Germany. It deals with measures for prevention, recognition, coping and post processing of a crisis (MBL NRW. Nr. 27, 2013). Hence, it covers the third layer of multi-layer safety. The idea behind the establishment of “Krisenstäbe” was to enable coordination among the different actors and to facilitate co-operation (MBL NRW. Nr. 27, 2013). According to the “Gefahrenabwehrbericht”, this seems to work out (MIK NRW, 2013). It reports the number of operations, which took place in co-operation with different councils or federal states. For example, the federal state NRW sent thousands of operational forces to incidents in Sachsen and Sachsen-Anhalt during an acute crisis (MIK NRW, 2013). Furthermore, the formation of the Krisenstab was defined.

„Gesetz über den Brandschutz, die Hilfeleistung und den Katastrophenschutz“

The BHKG (2015) was developed as a reaction to the directive concerning crisis management (MBL NRW. Nr. 27, 2013). The guidelines of the directive are now determined by law. It deals with protection but also crisis management. It says that incidents, which are defined as a crisis or catastrophe are taken care of by the councils. They have to develop “Katastrophenschutzpläne” (plans for protection in case of a catastrophe; BHKG, 2015). The district government needs to set up own crisis management plans for incident of a higher scale and has to host its own Krisenstab (BHKG, 2015). The formation of Krisenstäbe like already mentioned in the BHKG and the directive have already been described in detail in paragraph 4.1.1.2. Both, the directive and the law require a high grade of communication among the actors, because all kinds of plans such as crisis management plans need to be shared with each other and be developed in co-operation (MBL NRW. Nr. 27, 2013; BHKG, 2015). Hence, both documents contribute to the improvement of co-operation among German actors on crisis management for river flooding.

The German operational forces or volunteers get a financial compensation, if they suffer any damage that traces back to their engagement in terms of crisis management for river flooding (BHKG, 2015). The communes where the incident occurs are responsible for the compensation.

4.2.3 Influence on cross-border collaboration of actors for crisis management

As examined in the previous paragraph, the co-operation among Dutch operational forces and among German ones is required and has been improved by related regulations in the past years. Now it has to be found out whether co-operation across the border is required and supported as well.

It was mentioned in the introduction that the European Union might have an influence on cross-border co-operation on crisis management for river flooding because of their international legislation in terms of laws and agreements. Surprisingly, this influence was rather small. At least at the regional level, on which this thesis is located. The regional actors were not aware of relevant European legislation or did not mention it. Apparently, European legislature is more relevant for the higher levels and institutions. EU legislature has an influence on national laws and is reflected in it. Hence, national institutions such as ministries have to deal with these European guidelines. As stated in the introduction paragraph, the EU determined that all countries had to develop river basin development plans, which facilitate water management (WRRL, 2000; WFD, 2007). These plans directly refer to water management, but there is hardly any legislature, which determines

crisis management on an international level. The EU's influence on regional crisis management was less than expected though.

The situation is different on national level. According to the German laws, cross-border co-operation on crisis management is allowed but not demanded (BHK, 2015). The emergency institutions have to contact the authority, if they receive a request of support from the Netherlands. The authority decides whether cross-border co-operation is sensible and necessary. Once again, this demonstrates the hierarchy of the German system, which has already been addressed in paragraph 4.1.2. In contrast, the Dutch law determines that safety regions have to share their information and plans with German actors and institutions (WVR, 2010). It is striking that the Waterwet, apart from the safety regions, does not require the water boards to co-operate with bordering countries such as Germany. However, although the laws do not bind the actors to co-operate across the border, there are some agreements, which want to achieve cross-border co-operation on crisis management. The first agreement between the Netherlands and Germany was made in 1988 (Genscher Abkommen, 1988). It determined that both countries would help each other in case of a crisis, if it is required and necessary. The responsible actors were located on a national scale though and it did not directly concern the councils and provinces. On the German person in charge was the Minister for Interior Affairs of the involved federal state and the Dutch one was the Commissioner of the Queen of the involved province (Genscher Abkommen, 1988). This agreement was renewed in 2014 by the Ministers Jäger and Opstelten (Minister for Safety and Justice & Minister of the Interior, 2014). The responsible institutions are now the councils and the safety regions, thus the local or regional actors are now also included. Nevertheless, the communication still takes place between the Ministers and is not required from the local actors (Minister for Safety and Justice & Minister of the Interior, 2014). These two agreements show that there is a certain degree of cross-border co-operation and that it is required by the authorities. Nevertheless, according to the interviewees, crisis management across the border is rather unspecified (for example S. Wagner, personal communication, May 18, 2016). For this reason, it is still difficult to maintain continuous cross-border co-operation on crisis management and there are no relevant projects, programs or plans at the moment. As already mentioned in paragraph 4.1, there have been intentions to establish projects, programs or plans in relation to cross-border crisis management, but so far without success.

4.3 The effect of discourses

This paragraph deals with the question how the different discourses of the co-operating actors influence the collaboration on cross-border crisis management for river flooding. This chapter is not approaching the Dutch and German discourses separately at first, because the respondents stated none on a national scale. The relevant discourses are between Dutch and German actors but not among them. Furthermore, there are less indicators on a cross-border scale than given in the literature (for example Wiering & Arts, 2006). It was stated that a discourse could be about scientific paradigms, historical narratives and values, problem framing, visions, ideas and concepts (Wiering & Arts, 2006; Van Eerd et al., 2014). Apparently, none of these indicators are of importance in case of the Euregion Rhine Waal. For instance, the respondents neglected there to be scientific paradigms (for example R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). Another indicator of discourses seemed to be more significant, which has not been mentioned in literature: cultural differences.

4.3.1 Dutch-German discourses

The actors in principle described the cultural difference as the main discourse, which influences the cross-border co-operation on crisis management for river flooding. They all agreed that there are no scientific paradigms, which might have an impact and that the relevant discourse would take place on an interpersonal level (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016; M. Nieuwenhuis, personal communication, May 2, 2016; S. Robertz, personal communications, April 19, 2016; H. De Ruiter, personal communication, May 3, 2016; S. Wagner, personal communication, May 18, 2016); M. Nieuwenhuis, personal communication, May 2, 2016; U. Rassier, personal communication, May 11, 2016). According to them, there are differences in the way of working. Dutch actors work more pragmatic than Germans and can deal with it, if the reality differs from the plan. Germans are used to structure and hierarchy and need to think through the next steps before taking them. This can be an advantage as well as a disadvantage, depending on the situation and none of the two working-cultures is per se better than the other (H. De Ruiter, personal communication, May 3, 2016). Nevertheless, it somehow influences the way of working and the result. The worst case would be when the actors of both nationalities go home frustrated at the end of the day because there has been no significant progress. On the other hand, it could influence the co-operation in a positive way because these two cultures are good to combine (S. Robertz, personal communication, April 19, 2016). It is good that the German actors keep an eye on the structure and care for bureaucracy, but it is also necessary to take the first step in the right time. Both cultures combined could lead to good results and already have led to good results in the past (S. Robertz, personal communication, April 19, 2016). According to Heidi De Ruiter, it is decisive to be aware of this differences, because this makes co-operation easier (H. De Ruiter, personal communication, May 3, 2016).

4.4 The role of resources

This paragraph will provide a response to the fourth sub-question, related to the fourth dimension of the PAA. Meaning, this analyses, how national resources and resources of the EU are used to improve the cross-border crisis management for river flooding. Again, first the Dutch situation is described, second the policy arrangement in Germany and lastly the cross-border case is described. In the context of Dutch resources, only the water board and the Veiligheidsregio will be approached. They are the main actors, who have operational forces and operational resources in terms of crisis management.

4.4.1 Resources of Dutch actors

The two interviewed main actors in terms of crisis management, namely the water board Rijn en IJssel and the Veiligheidsregio Gelderland-Zuid, both stated being public corporations with a certain autonomy (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016; M. Nieuwenhuis, personal communication, May 2, 2016). Both corporations among others are financed by taxes. The citizens of the catchment area have to pay a certain financial contribution, utilized for administration of the manpower and materials. Their contribution forms the largest financing for the water board. The state is more involved in financing the first and second layer of multi-layer safety, for example by building new dikes (M. Nieuwenhuis, personal communication, May 2, 2016). Next to financial resources, they also have a great expertise in terms of water management and crisis management. Moreover, the water board are equipped with materials such as sand bags,

water pumps and a vehicle fleet. As already mentioned in paragraph 4.1, the warehouses of the water board Rijn IJssel store about 10000 filled sand bags, which are ready for immediate transport. Additionally, there are about 15000 empty bags, which can be easily prepared by a filling machine within a short period of time (Observation Zevenaar, May 19, 2016). Furthermore, they have different kind of vehicles, which are among others used to mow dikes, but also for transportation in case of an incident. The pictures below show some impressions and were taken during the observation.



Figure 4.1
Filled sand bags
(own figure)



Figure 4.2
Filling machine for sand bags
(own figure)



Figure 4.3
Empty bags ready to be filled
(own figure)

Second main actor, in terms of crisis management for river flooding, are the safety regions. They are financed by taxes like the water boards and have also an autonomous status. The difference is that the municipalities pay a certain contribution per citizen. So, it is not directly paid by the citizens. It is important to mention that crisis management is only a small part of their duties. Crisis management for river flooding is an even smaller part and their finances are used to improve this part whenever necessary, but there is no pot, which is explicitly used for river flooding and crisis management (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). Next to financial resources they stated to have resources in form of a network and expertise (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). All safety regions of the Netherlands are connected with each other and can easily communicate or make decision in case of a crisis. Technological materials such as the communication platform LCMS, mapping material, evacuation simulators or flooding simulators are an important factor for the improvement of crisis management for river flooding. LCMS has been introduced six years ago and all institutions, which are involved in crisis management such as the safety regions are connected to this platform. According to the actors, LCMS has many advantages compared to other conventional technologies such as google maps. LCMS can gather more information and materials, for example about damages (Training water board Rijn IJssel, May 18, 2016). Furthermore, co-operation and communication is easier and faster and can be done via this system (S. Robertz, personal communication, April 19, 2016).

Next to LCMS there is another technology called NL alert, which transfers alert messages during a crisis. It will be installed in addition to sirens, TV and radio. According to the interviewees, it is guaranteed that every new smartphone receives the alert (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016). The advantage is that the message specifies the incident and the measures that has to be taken. Every incident requires other actions, but when the siren rang it has always been the same message: Go inside, close doors and windows (R. Kerkhoff, M. Meeuwsen, personal communication, April 20, 2016).

4.4.2 Resources of German actors

Now, the information about German resources for crisis management for river flooding will be analysed. As already stated earlier, the structure of the German crisis management system is completely different in comparison to the Dutch. The same applies to their resources available. Institutions such as water boards and dike corporations are autonomous like in the Netherlands, but they are not funded by tax. They are financed by the communes, councils, district governments and federal states. They regulate the finances, which are used for crisis management. The federal state would for example determine how much money the dike corporations receive to fulfil their duty to administrate the dikes. The councils receive their financial resources for crisis management from the “Landrat”, meaning that politicians decide over the amount of financial support for crisis management. According to Ulrich Rassier, so far this was never a problem because the politicians understand the issue of flood risk and the related crisis management. Therefore, the council of Wesel already received money in the past, for example for the project of VIKING (U. Rassier, personal communication, May 1, 2016). Furthermore, the financial resources being used to prepare and perform trainings and simulations (U. Rassier, personal communication, May 11, 2016). German actors also have resources in form of materials and expertise. They have their own maps and can use a flood and evacuation simulator (Training water board Rijn IJssel, May 18, 2016). Some regions in Germany are using the system FLIWAS, which is the counterpart of LCMS. This would facilitate the communication of German actors, because it bundles all kind of information and can be used as a common platform. But this system will be further developed, only if all relevant actors in NRW agree on using it (Training water board Rijn IJssel, May 18, 2016). Another technological support in transferring alert messages is MoWaS (Modulares Warnsystem – modular warning system). It is used to share alert messages with the inhabitants. The messages are transferred to institutions, sirens, TV, radio, Deutsche Bahn, smartphones with an app and in the future even to mobile phones without the app and smoke detectors (MIK NRW, 2013).

Other materials contain a certain amount of sand bags, which must always be prepared. The council of Wesel does not store them in a separate warehouse, but has an agreement with a local manufacturer of sand bags. It says that the manufacturer must always guarantee that the sand bags are ready for use and transportation. Furthermore, organisations such as THW have sand bags and other materials as well (U. Rassier, personal communication, May 11, 2016). The councils also have some soft skills such as a knowledge base, which for example consists of experiences and trainings. But it is important to understand that experts with a knowledge about the constitution of the dikes are not directly working for communes or councils but for the dike associations and water boards.

4.4.3 International resources

The Euregio and Sven Robertz are actors and institutions who have resources, which can be used from German and Dutch actors with regard to crisis management for river flooding. Both have primarily resources in form of knowledge, a network and organisation or management skills (H. De Ruiter, personal communication, May 3, 2016; S. Robertz, personal communication, April 19, 2016). According to other actors, Sven Robertz has a significant meaning and position in terms of crisis management for river flooding, because there are not many people within this field who are able to speak German and Dutch fluently and have the necessary knowledge about both juridical and structural backgrounds. Conferences or trainings such as the one at the water board would need to be held in English, if a person like Sven Robertz would not be able to translate the conversation (Training water board Rijn IJssel, May 18, 2016). A direct translation into the mother tongue of all involved actors makes the communication easier and the outcomes better. Hence, his language skills can also be seen as a resource, which improves crisis management for river flooding. The Euregio and Sven Robertz use their networks to bring the relevant actors together and arrange “round tables” and trainings to improve the communication among all actors (S. Robertz, personal communication, April 19, 2016; H. De Ruiter, personal communication, May 3, 2016). The Euregio also has another significant resource, European funding in form of subsidies. Half of the subsidies are offered by the EU in the context of the cross-border program INTERREG. This means that 220 million Euro can be used for projects and activities across the border. The other half is paid by the ministries, all provinces and federal states, which have a border region and the state. These actors can decide about how and where their money is used (H. De Ruiter, personal communication, May 3, 2016). These resources can be considered international and are distributed equally, if the actors ask for it or are willing to use it. This seems to be a crucial factor again, because according to the Euregio and some other actors, the subsidies are being rarely used (H. De Ruiter, personal communication, May 3, 2016; S. Robertz, personal communication, April 19, 2016; R. Kerkhoff, M. Meeuwssen, personal communication, April 20, 2016). Furthermore, it is important to mention that the budget of German and Dutch water boards is not used for cross-border co-operation, but for national duties (M. Nieuwenhuis, personal communication, May 2, 2016). The relevant actors voted for each country to pay its own activities but not per se a project, which has an impact across the border.

According to the actors of both nationalities, they have access to an evacuation simulator, evacuation plans and flooding scenarios, which simulate the situation across the border. This system has been worked out during VIKING. Strikingly, there were huge difficulties at the training at the water board, because the program of the German actors stopped at the border and could not simulate the situation in the Netherlands. The Dutch actors had the same problem the other way around (Training water board Rijn IJssel, May 18, 2016). That hindered the co-operation and it took a while until a solution was found. Furthermore, the system FLIWAS was developed in co-operation with the Netherlands during the activities of VIKING as well. Nowadays it is mostly used by German actors, the Dutch crafts switched to their own system LCMS like given in paragraph 4.4.1. FLIWAS would facilitate the communication and the decision-making processes during an acute crisis because all operational forces in NRW and the Netherlands would have access to the same information on the water level, decisions, organisation, resources and plans of action (Training water board Rijn IJssel, May 18, 2016). Though, the progresses in terms of cross-border co-operation on crisis management, which have been made during the years of VIKING do not seem to last and need a resurgence.

4.5 The level of cross-border co-operation

After analysing all dimensions, we can determine the level of cross-border co-operation in this region. The level of cross-border co-operation between German and Dutch actors in terms of crisis management for river flooding was also determined by showing each interviewee the same schemata. In the end of the face-to-face interview they had to assign the cross-border co-operation in the Euregio to one or more levels of the development model of cross-border co-operation (see figure 2.2). The one respondent who was not interviewed face-to-face was asked to assess the level of co-operation across the border, but without showing him the schemata.

Sven Robertz assessed the situation to level 1 or 2. He thinks that there is no joint policy making yet, at least not with regard to crisis management for river flooding. But there is definitely a joint problem structuring and a mutual understanding and communication. Joint policy making, from his point of view, is difficult to accomplish due to the different structures and because laws have never an impact across the border (S. Robertz, personnel communication, April 19, 2016).

The Euregio thinks that it depends on the situation. When there is an acute incident the level is between 3 and 4. This means that there is tuning and joint policy making and also a transfer of authorities and a joint implementation. Thus, Heidi De Ruiter evaluates the situation a bit better and sees joint policies depending on how acute the situation is. An example of hers was the agreement between the Dutch Ministry of Safety and Justice and the German Ministry of the Interior, which states that emergency personnel is allowed to go across the border and support the operational forces, when it is required by the other state (Minister for Safety and Justice & Minister of the Interior, 2014). Thus, attention and awareness to the need for co-operation can be seen as a trigger for the development of cross-border co-operation.

The safety region evaluates the level of cross-border co-operation to have a mutual understanding and communication. In some cases, there might be joint problem structuring or a problem definition, but that is not always the case. This means that they would evaluate the level of co-operation to be on level 1 and in some cases on level 2.

Martin Nieuwenhuis from the water board Rijn en IJssel also thinks that the level of co-operation across the border on crisis management for river flooding depends on the situation. When there is a joint project the level is always higher than without a project or past personnel changes. During this time, it goes back to level one, to communication as basic activity. But as an overall assessment he says that it is at level 2. The aim is always to attain joint policy making, but that is hard to accomplish and is the crucial point.

Stephan Wagner from the council Kleve assesses that the situation could be improved. The structural changes in the Netherlands led to an identification stage and to a stagnation of the co-operation and communication across the border. From his point of view, it would be useful to start communicating across the border again, being able to evaluate the situation and assess which steps and improvements are necessary. If this opinion is transferred to the development model, it would mean that the level of co-operation is on level 0.

Ulrich Rassier from the council Wesel thinks that cross-border co-operation on crisis management for river flooding is right now at level 3. Otherwise trainings such as the one at the water board Rijn en IJssel would not exist. From his point of view there are no joint policies, because this is difficult to realise across the border, but there are agreements, which are binding as well. These agreements are often referring to European guidelines. Both countries set up their own laws but with a similar or almost identical content, because they all refer to the same European guidelines.

Based on the outcomes of this study, the level of cross-border co-operation on crisis management for river flooding within the Euregion Rhine-Waal is not determined to one fixed level. There are two factors, which influence the grade of co-operation. First, the situation will be different, if there is an acute crisis. The actors might depend on each other, if the crisis has an impact across the border. This would lead to a higher level of cross-border co-operation. Approximately, the co-operation would be on level 3 or 4, depending on the severity of the crisis. If operational forces are sent across the border, they are subordinate to the forces of the other country. This means that there would take place a transfer of authority (level 4). The existence or absence of projects is also a factor, which influences the level of co-operation. The level would be higher when it comes to projects, than during a period without any activities across the border. In periods without any projects, it is likely that the communication among actors gets less (level 0, maybe 1). It would be fine to reach a continuous mutual understanding, communication and joint problem definition (level 3), to make cross-border co-operation more effective. Moreover, it is desirable to reach joint implementation during an acute crisis. Joint policy making at the moment seems to be difficult to reach. Perhaps this becomes possible, if the influence of the EU rises. However, it is not necessary to reach the highest level of co-operation. Based on the findings, a complete removal of borders (level 5) is rather unlikely. The Netherlands and Germany remain two individual countries and a removal of borders is difficult to reach. The borders cannot be removed within the Euregion and remain in the other border-regions. Besides, if both countries operate within the same legislative framework due to the EU's influence, a complete removal of borders is not necessary.

5. Conclusion and recommendations

The previous analyses dealt with the five sub-questions, which can be answered now. First, all sub-question will be repeated to be followed by a sub-conclusion. After that, the main question will be answered. This paragraph will end with recommendations for further research in terms of cross-border co-operation on crisis management for river flooding within the Euregio and other border-regions.

5.1 Co-operation of local, regional, national and international actors

The results, which have been given in paragraph 4, show that the German and the Dutch actors are interacting within their country, but that the co-operation of actors across the border still forms an obstacle in some cases. What became clear is that after the end of VIKING project and after the structural changes of the safety regions in the Netherlands there were some problems to carry on co-operation across the border in terms of crisis management for river flooding. Plans and networks, which have been worked out broke up again or are not used anymore. The actors of both nationalities show intentions to improve the collaboration again, but often do not know how to handle problems. Differences in the institutional structure seems to be the main problem and has been mentioned by every interviewed person. This should be a reason to involve the Euregio in either case, but surprisingly this is not the case. As given above, the Euregio has the abilities and expertise to mediate and negotiate between actors of both countries, because of their knowledge about rules and structure. Furthermore, they can offer resources such as money, which often was mentioned as a reason against cross-border collaboration because it is sparse for all actors. It appears incomprehensible why the Euregio is not consequently involved in activities. They did for example not take part in the training, which was hold at the water board Rijn IJssel.

Furthermore, it seems to be useful if all relevant actors would organise a meeting or congress, where they could negotiate on the form of cross-border co-operation. To me this seems to be necessary, because I heard from many actors that they are willing to co-operate but without a new complex project. They just seem not to be aware about it that other actors have the same thought. Thus, a congress where it is simply discussed what the several actors and institutions would like to achieve and how they want to accomplish that, could be a crucial point for new cross-border co-operations on crisis management for river flooding. If the Euregio is involved too it there could be given an evaluation, whether the planned achievements are reachable because of subsidies. The main factors, which still hamper cross-border co-operation on crisis management for river flooding seem to be communication, transparency and continuity.

5.2 The effect of national and international regulations

In order to give an answer to the question to what extent national and international laws have an effect on cross-border co-operation on crisis management for river flooding, it is decisive to say that both countries have restructured their crisis management system in the past few years. Both systems are characterized by a high grade of communication, horizontal as well as vertical, although it is more hierarchical in Germany. Furthermore, both systems are highly influenced by European guidelines, but are still attached to their own national laws too. This validates the information, which was given in the literature (Verwijmeren & Wiering, 2007; Raadgever, Hegger, Wiering & Gersonius, 2013).

Nevertheless, there are still measures to take in order to improve crisis management across the border. It forms a restriction if German institutions do not need to share their files or information with the ones across the border. Some institutions are communicating and sharing information even if there is no direct juridical request (U. Rassier, personal communication, May 11, 2016). But others will work on other national priorities first, which might be requested by law.

It might be an improvement if the politicians recognized the importance of cross-border co-operation in relation to crisis management for river flooding and determined an exchange of experiences, general information, contact data, files and documents and order trainings and on a strategical as well as operational level across the border. It is important to know each other, to understand the structure and system and to be used to communicate with each other, especially after years of restructuring in both countries. Right now the laws do not pay much contribution to an improvement of cross-border crisis management for river flooding. Although there have been some agreements across the Dutch-German border for almost 30 years, there is still no routine in terms of cross-border co-operation on crisis management.

Next to this, it was notable that neither the German nor the Dutch laws were adapted to the case of a flood. They contain paragraphs about crisis and catastrophes, but it is never determined how to react and interact in case of a flood. This seems to be especially striking as the Netherlands is a country with large parts below the sea level and with a couple of river basins, whose origin is located in another country. The effects are incalculable and a hazard, if there is no communication between the nations. This would make a determination by law even more meaningful.

5.3 The influence of discourses

According to the interviewees, the actors of both countries have to deal with a discourse, but not on a scientific level. Rather on a social and cultural level. Surprisingly, none of the interviewed actors stated an indicator of a discourse, for example different kinds of problem framing in both countries. They seem to have the same objectives and define the same problems, but the approach how to work on it might be different. The absence of other indicators next to cultural differences is contrary to the literature (Verwijmeren & Wiering, 2007; Raadgever, Hegger, Wiering & Gersonius, 2013). This discourse could hinder the co-operation of actors, if they are not aware of the differences and do not know how to deal with it. But there is a great chance to get results of high-quality, if the actors can accept and tolerate the cultural differences. They need to recognize the value of the other culture and the even higher value of a collaboration of both.

5.4 The usage of national and international resources

According to the interviews, the actors of crisis management for river flooding possess certain resources, but it became clear that these resources are limited and that there are still problems to generate resources across the border. All actors stated that resources such as manpower, money and time are rare and that this can hinder cross-border co-operation on crisis management for river flooding. It is paradox that the Euregio on the other hand states that their European subsidies and their expertise in form of networks and organisational skills are barely used. If the Euregio would be involved in all cross-border activities in terms of crisis management, they could offer what the individual institutions are lacking in terms of money and time for organisation.

Furthermore, it was striking that Germany and the Netherlands actually already have been co-operating on a common information system (FLIWAS) and also on scenarios and calculators, but seem to have lost the results and are now working with different resources again. Next to this, it was remarkable that the Netherlands might have an advantage in terms of communication and time efficiency, because they all use the same crisis management system (LCMS). Moreover, the storage and usage of resources such as sand bags seems to be better organised in the Netherlands, because the corporation, which administrates these materials, has a certain autonomy. This is not the case in Germany and this could hinder crisis management. All in all, it seems as if the usage of resources needs to be rethought to make it more efficient in Germany and across the border.

5.5 The level of co-operation

The evaluations at the end of the interviews made clear that the actors have a different perception about the situation and they are all aware that cross-border co-operation on crisis management for river flooding is not doing well until now and needs improvement. The crucial point seems to be again missing communication and joint policy making. It appears that joint policy making and implementation would be a positive point to deepen cross-border co-operation, because it is binding them and both countries are working within the same framework. This makes things easier. At the same time all actors are aware about the difficulties to reach joint policy making, such as sovereignty. The solution for the moment seems to be to work with agreements, but for the future it would be useful, if European guidelines determine the national laws more than they now do, because of the common framework.

5.6 Lessons to be learned from Dutch-German cross-border co-operation

Now the sub-questions have been answered, it will be given an answer to the main question, which deals with the lessons, which can be learned from the Dutch-German cross-co-operation with regard to crisis management for river flooding in the light of climate change.

The critical literature study showed that the attention for crisis management is rather poor and that projects concerning this topic have only for the first time been introduced in the new century. The findings of the interviews and observations revealed that the Euregion is aware of the hazards, which accompany with climate change and therefore deals with the subject crisis management. Moreover, they approach the subject across the border. There are definitely weaknesses and a common base has to be figured out, but there are the right intentions to deepen the collaboration across the border. What became clear is that it is difficult to work on this issue without a legal background, for example by laws, which require crisis management not only on a national level, but also across borders. Without this legal background all actors will have to concentrate on other national duties at first, which are defined and recorded by law.

Additionally, it should not only be defined by law *whether* the Dutch and German actors co-operate on crisis management, but also *how* they are supposed to do that. The structural differences between the two countries lead to uncertainties in terms of communication. It must be clearly determined which actors have to contact each other during a crisis or also in the preoperational period. Some actors were aware of their counterparts, but the uncertainty was clearly noticeable. Crisis management across the border needs to be structured and clearly determined.

Furthermore, it became clear that continuity is absolutely necessary in order to maintain cross-border co-operation. It is frustrating, if a project, plan or program is developed for years but in the end it is not used or not accessible anymore. For instance, FLIWAS was developed in co-operation but is not used within the whole Euregio now. This leads to uncertainty about the continuity and reliability in the context of future projects or activities.

Next to continuity and a juridical background, they lack manpower, subsidies and time. Concluding institutions such as the Euregio Rhine Waal need to be more involved in this context, because they can offer European subsidies. These subsidies could for example also be invested in manpower, which saves time.

Another aspect is that cross-border co-operation not per se has to be binding. From that follows that it is not necessary to set up a complex project, which costs a lot of money and time but to collaborate in a relaxed way. An example for this is the training, which was held at the water board Rhine en IJssel. The input appears to be comprehensible and the output is highly valuable. This lesson is contrary to the one, which recommends a clear determination of crisis management by law. Both lessons have their own advantages. A more binding context can lead to continuity and certainty, a less binding one gives space for creativity and enthusiasm. The disadvantages are that less binding co-operation can lead to separation, if there are no enthusiastic actors. Binding international co-operation on the other hand, can lead to additional pressure next to the high amount of national duties.

A very positive lesson, which can be learned from cross-border co-operation on crisis management within the Euregio, is the actor's willingness to exchange experiences and knowledge and their handling with national differences, such as culture and language. The actors are aware of the differences but impressed by tolerance and interest.

5.7 Recommendations

This paragraph gives recommendations, which are based on the results of this research. First, recommendations will be given for further research and second, for the applied theories PAA and the development model of cross-border co-operation.

5.7.1 Recommendations for further research

In the context of the interviews, I was told that the politicians in Germany do not think that it makes sense to improve cross-border crisis management on river flooding. The hazard of an extensive flood is seen to be of rather insignificant influence as there have not been severe floods within the Euregio in the past years. One of the dike rings, which would affect the Euregio, was in danger of breaking due to the recent storms and heavy rainfalls in Germany (Der Westen, 2016). Furthermore, the crisis communication appeared to be weak and needs some improvements (Der Westen, 2016). This happened only a couple of days after I received the information that crisis management is not a priority. This event should be seen as a hint that crisis management is essential, especially in a century of extreme weather events. However, low-water of the Rhine is identified as a much bigger hazard of our time than high-water because of the warmer climate, which goes back to climate change. Of course, it is likely that the river will be at low-water more regular, but with regard to climate change there are not only droughts more likely to happen. Like already mentioned in the introduction, extreme weather events are expected in shorter intervals. Heavy rainfall is a hazard, which must not be underestimated and which can lead to floods although the climate is warmer

and the river has been at low-water status before. The recent events of heavy rainfall demonstrate that floods will come up within a very short, incalculable time and that measures must be taken beforehand. An improvement of crisis management across the border is an important part of these measures. All actors must be prepared as good as possible and be aware of the hazard.

This thesis has been restricted in time and word count. Therefore, not the full extend in research of crisis management could be gathered. It was focused on the role of directly involved actors concerning cross-border co-operation on crisis management for river flooding. It might be of decisive insight if actors in politics and other legislating positions could be interviewed in order to challenge assumptions in crisis management across borders.

Furthermore, the European legal background should profoundly be approached. The influence of the European Union remains unclear. An extensive study of the European legislature is necessary to gain a full understanding of the EU's impact and of their intention with regard to the development of future cross-border crisis management.

Moreover, the case study should be transferred to another region along the Dutch-German border or even to another border-region within Europe. This would enhance the viability of the results of this study or would supplement them.

5.7.2 Recommendations for the applied theories

Two theories have been applied in this thesis. Some strong points but also weaknesses appeared during the period of research.

The policy arrangement approach appeared to be a very complex theory, which tries to cover all important aspects of policy arrangements. The advantage is that an extensive image about policy arrangements was gathered, which was very detailed and enhanced the understanding about separated or joint policies. On the other hand, it is impossible to give one fixed definition of this theory. As soon the case study changes, the dimensions might remain the same, but the indicators probably would change. For instance, in this thesis, the discourse dimension has been mainly influenced by a cultural indicator. This is in contrast to the literature and demonstrates that this theory needs to be flexible. The indicators do not only depend on the case study but also the respondent. For instance, all respondents struggled with the term "scientific paradigm". They were not aware of any scientific involvements and therefore not of scientific paradigms either. This indicator would have been more useful, if an interview was arranged with a scientist but not in this context.

The development model had similar weaknesses. The different levels of co-operation are clearly determined and do not offer the possibility to combine several levels. It turned out that some of the respondents would assign the actual co-operation to several levels, for instance level 1 and 3 at the same time. This suggests that the levels are too vertical or hierarchical. Perhaps the classification needs to be done in a horizontal way.

6. Reflection

After doing my first scientific research I am aware of its weaknesses, but also some strong points. Therefore, there will be a reflection on the final version of the thesis and after it a reflection on the research process.

6.1 Restrictions of the thesis

Due to the restrictions of a bachelor-thesis I could not apply and process all information, which I was given by the interviewees. The focus had to be on this kind of information, which allowed me to give an answer to the research questions. Otherwise I would have exceeded the time and word limit. This led to a restricted amount of interviews that is why I did not have the chance to talk to all actors, which might have been relevant in the context of this thesis. To enrich the validity of this thesis I should have talked to more parties such as dike associations and representatives of ministries.

Furthermore, there is a focus on the public actors. This happened due to the information that there no, or almost none, relevant private actors. But it would have been interesting and a contribution to the results of this thesis, if I would have talked to private actors such as the civil society. Their point of view on the actual situation in terms of crisis management would have been stimulating. Especially after the recent events of high-water in Germany and also at some Dutch places they might have been in state to evaluate the functioning of crisis management for river flooding.

Another restriction is the amount of case studies. It would have been interesting and valuable to test the findings of the Euregio in another region. The problems and weaknesses, which I discovered in the Euregio might not per se appear in another region as well. On the other hand, analyzing a second case study would have meant that the findings of both case studies would have been more trivial due to the lack of time in this period of research.

Positively, this thesis is based on triangulation. That means that it was possible to collect a broad range of data. I executed a literature study, an analysis of documents and additionally I was able to make observations in the fields. The information, which I gathered by doing the observations were highly valuable for the results of this research.

6.2 Restrictions of the research process

Besides the restrictions, which were already mentioned, there have also been restrictions concerning research processes. The subject was approached too narrowly, which at first concluded in a one-sided view on collaborations. While projects across borders are surely part of it, even an exchange in information can be defined as such already.

In dealing with cross-border collaborations, I set my aim to the improvement of such measures. This might have overshadowed already existing, positive aspects regarding this issue. This forms a restrictive aspect of my thesis.

A minor aspect, I would have depicted the Euregio Rhine Waal to be the leading actor in cross-border co-operation. This seems to have been a misconception. While it inhabits an important role, it is not the main coordinator.

Moreover, I underestimated the time that was needed for interviewing and collection of data. Though I did not face any restrictions concerning time, a more thorough planning for interviews and such will be an objective of future research.

Finally, when researching, drafting and expressing an issue that is close to one's interests, it is hard to have or maintain an objective view on certain aspects of a study. This is not to rectify given misconceptions, but to depict the struggle I have faced when writing my Bachelor thesis. It is something I have definitely learned for my future career and research and I will continue henceforth.

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Appendix

Interview guide Euregio

Ik ben student Geografie, Planologie en Milieu aan de Radboud Universiteit Nijmegen en ik schrijf momenteel mijn bachelor scriptie. De thesis gaat over grensoverschrijdende samenwerking in crisis management binnen de Euregio Rijn Waal in het geval van rivier overstromingen. Ik onderzoek vooral de betrokken actoren, de beschikbare middelen, de nationale en internationale regelgeving en de achtergronden van de twee landen om te kunnen analyseren hoe grensoverschrijdende samenwerking in crisis management tot stand komt, hoe ze in elkaar zit en op welk level ze zich tegenwoordig bevindt. Aangezien u zelf betrokken bent binnen de Euregio zou ik u graag een aantal vragen willen stellen met betrekking tot het onderwerp.

Algemene vragen

1. Wanneer bent u voor de laatste keer actief betrokken geweest met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
2. Wat is uw persoonlijke motivatie om op dit gebied werkzaam te zijn?
3. Hoe zou u de actuele situatie met betrekking tot crisis management voor rivieroverstromingen tussen Nederland en Duitsland inschatten?
4. Wat zijn precies de taken van de Veiligheidsregio Gelderland Zuid in het kader van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland (bv. projecten, doelen, activiteiten etc.)?
5. Wat zijn uw taken in deze context?

Actoren

1. Welke publieke actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen de Euregio betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
2. Welke privé actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen de Euregio betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
3. Welke coalities hebben zich tussen deze actoren op de verschillende niveau's ontwikkeld?
4. In hoeverre is de bevolking betrokken?
5. In hoeverre is er een wisselwerking en interactie tussen de actoren en vormt er grensoverschrijdende samenwerking?
6. In hoeverre mogen de actoren binnen de Euregio individueel opereren?
7. Welke problemen of conflicten treden er op?

Regelgeving

1. In hoeverre wordt grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen in de Euregio beïnvloedt door regionale, nationale, internationale wetten?
2. Welke verschillen in de wetgeving zijn er tussen Duitsland en Nederland met betrekking tot grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
3. Wordt de samenwerking door deze verschillen beïnvloedt?

4. In hoeverre worden er nieuwe wetten in samenwerking van Duitse en Nederlandse Länder en provincies binnen de Euregio?
5. Hoe worden instrumenten van de wetgeving ingezet om nieuwe wetten te ontwikkelen en te onderbouwen (bv. milieu-effect rapportage)?

Discoursen

1. In welke omvang wordt de grensoverschrijdende samenwerking door wetenschappelijke paradigma's beïnvloedt?
2. In hoeverre zijn er verschillen tussen Duitse en Nederlandse gebieden binnen de Euregio met betrekking tot wetenschappelijke paradigma's?
3. Hoe wordt de samenwerking door historische achtergronden en waarden van de twee landen beïnvloedt?
4. Hoe wordt deze door hedendaagse waarden beïnvloedt?
5. In hoeverre heeft dit een invloed op de probleemontwikkeling van de Duitse en Nederlandse actoren?

Ressourcen

1. Van welk soort resources maakt de Euregio gebruik? (doorvragen: financieel, kennis, politieke macht, legislatieve macht)
2. In hoeverre maakt de Euregio gebruik van lokale, regionale, nationale en internationale resources?
3. Hoe worden deze binnen de Euregio verdeeld? (verschillen tussen NL en D, geen verschillen, geen opdeling)
4. Op welke manier wordt beslist welke resources gebruikt worden en hoe deze worden ingezet?

Persoonlijke mening

1. Hoe zou u de functie en het niveau van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen binnen de Euregio Rijn Waal inschatten?

Interview guide Sven Robertz

Ich bin Studentin an der Radboud Universität Nimwegen im Studiengang Geographie, Raumplanung und Umwelt und schreibe zurzeit meine Bachelorarbeit. Im Rahmen dieser Arbeit untersuche ich die Entstehung und Funktion von grenzüberschreitender Zusammenarbeit im Krisenmanagement bei Flussüberschwemmungen. Ich möchte dieses Thema in Bezug zu einer bestimmten Fallstudie setzen, die der Euregion Rhein-Waal. Das Interview wird aus sechs verschiedenen Unterthemen bestehen: einige allgemeine Fragen, Akteure, Regeln, Diskurse, Ressourcen und der Stufe der Zusammenarbeit.

Allgemeine Fragen

1. Wann waren Sie zuletzt aktiv an einem Projekt beteiligt, das im Bezug zu grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen stand?
2. Was ist Ihre persönliche Motivation, um in diesem Bereich zu arbeiten?
3. Wie würden Sie die derzeitige Situation in Bezug auf grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden bewerten?
4. Was genau sind Ihre Tätigkeiten im Rahmen der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden?
(z.B. Projekte, Ziele, Aktivitäten etc.)

Akteure

1. Welche öffentlichen Akteure sind in grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen involviert, auf lokalem, regionalem, nationalem und internationalem Level?
2. Welche privaten Akteure sind in grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen involviert, auf lokalem, regionalem, nationalem und internationalem Level?
3. Welche Koalitionen haben sich zwischen diesen Akteuren auf den verschiedenen Levels gebildet?
4. In welchem Maß ist die zivile Bevölkerung an der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen beteiligt?
5. Wie interagieren diese verschiedenen Akteure und formen grenzüberschreitende Zusammenarbeit?
6. In welchem Maß dürfen die Akteure individuell und selbstständig agieren?
7. Welche Art von Konflikten oder Problemen treten auf?

Regeln

1. Inwiefern wird grenzüberschreitende Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen durch regionale, nationale, internationale Gesetze bestimmt?
2. Welche Unterschiede in der Gesetzgebung gibt es zwischen Deutschland und den Niederlanden in Bezug auf grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen?
3. Beeinflussen diese Unterschiede die Zusammenarbeit?

4. In welchem Maß werden neue Gesetze entwickelt in Kooperation zwischen den deutschen und niederländischen Bundesländern/Provinzen innerhalb der Euregion?

Diskurse

1. In welchem Ausmaß wird die grenzüberschreitende Zusammenarbeit durch wissenschaftliche Paradigmen beeinflusst?
2. Inwiefern gibt es Unterschiede zwischen deutschen und holländischen Gebieten innerhalb der Euregion in Bezug auf wissenschaftliche Paradigmen?
3. Wie beeinflussen die historischen Hintergründe und Werte der beiden Länder die Zusammenarbeit?
4. Wie wird diese durch heute Werte beeinflusst?
5. Inwiefern hat das einen Einfluss auf die Problemanalyse der deutschen und holländischen Akteure?

Ressourcen

1. Von welcher Art von Ressourcen macht die Euregion Gebrauch? (weiter fragen, falls notwendig: finanziell, Wissen, informelle politische Macht, legislative Macht)
2. Inwiefern macht die Euregion Gebrauch von lokalen, regionalen, nationalen und internationalen Ressourcen?
3. Wie werden diese innerhalb der Euregion verteilt? (Unterschiede zwischen NL und D? Keine Aufteilung, alle Ressourcen fair verteilt?)
4. Wer entscheidet über die Art der Ressourcen und wie diese genutzt werden?

Persönliche Meinung

1. Wie würden Sie die Funktionalität und das Level der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen innerhalb des Gebietes der Euregion Rhein-Waal einschätzen?

Interview guide Waterschap Rijn en IJssel

Ik ben student Geografie, Planologie en Milieu aan de Radboud Universiteit Nijmegen en ik schrijf momenteel mijn bachelor scriptie. De thesis gaat over grensoverschrijdende samenwerking in crisis management binnen de Euregion Rijn Waal in het geval van rivier overstromingen. Ik onderzoek vooral de betrokken actoren, de beschikbare middelen, de nationale en internationale regelgeving en de achtergronden van de twee landen om te kunnen analyseren hoe grensoverschrijdende samenwerking in crisis management tot stand komt, hoe ze in elkaar zit en op welk level ze zich tegenwoordig bevindt. Aangezien de Waterschap Rijn IJssel deel uitmaakt van den Euregion zou ik u graag een aantal vragen stellen.

Algemene vragen

1. Wanneer bent u voor de laatste keer actief betrokken geweest met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
2. Wat is uw persoonlijke motivatie om op dit gebied werkzaam te zijn?
3. Hoe zou u de actuele situatie met betrekking tot crisis management voor rivieroverstromingen tussen Nederland en Duitsland inschatten?
4. Wat zijn precies de taken van de Waterschap Rijn IJssel in het kader van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland (bv. projecten, doelen, activiteiten etc.)?
5. Wat zijn uw taken in deze context?

Actoren

1. Welke publieke actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen het gebied van de Euregion betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
2. Welke privé actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen het gebied van de Euregion betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
3. Welke coalities hebben zich tussen deze actoren op de verschillende niveau's ontwikkeld?
4. In hoeverre is de bevolking betrokken?
5. In hoeverre is er een wisselwerking en interactie tussen de actoren en vormt er grensoverschrijdende samenwerking?
6. In hoeverre mogen de actoren binnen de Euregion individueel opereren?
7. Welke problemen of conflicten treden er op?

Regelgeving

1. In hoeverre wordt grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen in het gebied van de Euregion beïnvloedt door regionale, landelijke, nationale, internationale wetten?
2. Welke verschillen in de wetgeving zijn er tussen Duitsland en Nederland met betrekking tot grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
3. Wordt de samenwerking door deze verschillen beïnvloedt?

4. In hoeverre worden er nieuwe wetten in samenwerking van Duitse en Nederlandse deelstaten en provincies binnen de Euregion opgericht?
5. Hoe worden instrumenten van de wetgeving ingezet om nieuwe wetten te ontwikkelen en te onderbouwen (bv. milieu-effect rapportage)?

Discoursen

1. In welke omvang wordt de grensoverschrijdende samenwerking door wetenschappelijke paradigma's beïnvloedt?
2. In hoeverre zijn er verschillen tussen Duitse en Nederlandse gebieden binnen de Euregion met betrekking tot wetenschappelijke paradigma's?
3. Hoe wordt de samenwerking door historische achtergronden en waarden van de twee landen beïnvloedt?
4. Hoe wordt deze door hedendaagse waarden beïnvloedt?
5. In hoeverre heeft dit een invloed op de probleemontwikkeling van de Duitse en Nederlandse actoren?

Ressourcen

1. Van welk soort resources maakt de Waterschap Rijn IJssel gebruik? (doorvragen: financieel, kennis, politieke macht, legislatieve macht)
2. In hoeverre maakt de Waterschap Rijn IJssel gebruik van lokale, regionale, nationale en internationale resources?
3. Op welke manier wordt beslist welke resources gebruikt worden en hoe deze worden ingezet?

Persoonlijke mening

1. Hoe zou u de functie en het niveau van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen binnen het gebied van de Euregion Rijn Waal inschatten?

Interview guide Veiligheidsregio Gelderland-Zuid

Interviewguide

Ik ben student Geografie, Planologie en Milieu aan de Radboud Universiteit Nijmegen en ik schrijf momenteel mijn bachelor scriptie. De thesis gaat over grensoverschrijdende samenwerking in crisis management binnen de Euregio Rijn Waal in het geval van rivier overstromingen. Ik onderzoek vooral de betrokken actoren, de beschikbare middelen, de nationale en internationale regelgeving en de achtergronden van de twee landen om te kunnen analyseren hoe grensoverschrijdende samenwerking in crisis management tot stand komt, hoe ze in elkaar zit en op welk level ze zich tegenwoordig bevindt. Aangezien de Veiligheidsregio Gelderland-Zuid deel uitmaakt van den Euregio zou ik u graag een aantal vragen stellen.

Algemene vragen

1. Wanneer bent u voor de laatste keer actief betrokken geweest met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
2. Wat is uw persoonlijke motivatie om op dit gebied werkzaam te zijn?
3. Hoe zou u de actuele situatie met betrekking tot crisis management voor rivieroverstromingen tussen Nederland en Duitsland inschatten?
4. Wat zijn precies de taken van de VRGZ in het kader van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland (bv. projecten, doelen, activiteiten etc.)?
5. Wat zijn uw taken in deze context?

Actoren

1. Welke publieke actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen het gebied van de Euregio betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
2. Welke privé actoren zijn op lokaal, regionaal, nationaal en internationaal niveau binnen het gebied van de Euregio betrokken met grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen tussen Nederland en Duitsland?
3. Welke coalities hebben zich tussen deze actoren op de verschillende niveau's ontwikkeld?
4. In hoeverre is de bevolking betrokken?
5. In hoeverre is er een wisselwerking en interactie tussen de actoren en vormt er grensoverschrijdende samenwerking?
6. In hoeverre mogen de actoren binnen de Euregio individueel opereren?
7. Welke problemen of conflicten treden er op?

Regelgeving

1. In hoeverre wordt grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen in het gebied van de Euregio beïnvloedt door regionale, landelijke, nationale, internationale wetten?

2. Welke verschillen in de wetgeving zijn er tussen Duitsland en Nederland met betrekking tot grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen?
3. Wordt de samenwerking door deze verschillen beïnvloedt?
4. In hoeverre worden er nieuwe wetten in samenwerking van Duitse en Nederlandse deelstaten en provincies binnen de Euregion opgericht?
5. Hoe worden instrumenten van de wetgeving ingezet om nieuwe wetten te ontwikkelen en te onderbouwen (bv. milieu-effect rapportage)?

Discoursen

1. In welke omvang wordt de grensoverschrijdende samenwerking door wetenschappelijke paradigma's beïnvloedt?
2. In hoeverre zijn er verschillen tussen Duitse en Nederlandse gebieden binnen de Euregion met betrekking tot wetenschappelijke paradigma's?
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5. In hoeverre heeft dit een invloed op de probleemontwikkeling van de Duitse en Nederlandse actoren?

Ressourcen

1. Van welk soort resources maakt de VRGZ gebruik? (doorvragen: financieel, kennis, politieke macht, legislatieve macht)
2. In hoeverre maakt de VRGZ gebruik van lokale, regionale, nationale en internationale resources?
3. Op welke manier wordt beslist welke resources gebruikt worden en hoe deze worden ingezet?

Persoonlijke mening

1. Hoe zou u de functie en het niveau van grensoverschrijdende samenwerking in crisis management voor rivieroverstromingen binnen het gebied van de Euregion Rijn Waal inschatten?

Interview guide Kreis Kleve

Ich bin Studentin an der Radboud Universität Nijmegen im Studiengang Geographie, Raumplanung und Umwelt und schreibe zurzeit meine Bachelorarbeit. Im Rahmen dieser Arbeit untersuche ich die Entstehung und Funktion von grenzüberschreitender Zusammenarbeit im Krisenmanagement bei Flussüberschwemmungen. Ich möchte dieses Thema im Bezug zu einer bestimmten Fallstudie setzen, die der Euregio Rhein-Waal.

Um verstehen zu können, welche Gründe es für eine grenzüberschreitende Zusammenarbeit gibt und wie diese sich zusammensetzt, ist es genauso wichtig zu hinterfragen, welche möglichen Gründe es gegen eine Zusammenarbeit gibt und welche Probleme auftreten können. Da der Kreis Kleve zurzeit meines Wissens nicht an einem grenzüberschreitenden Projekt mit Bezug auf Flussüberschwemmungen teilnimmt, möchte ich Ihnen gerne einige Fragen stellen.

Allgemeine Fragen

1. Wann waren Sie, bzw. der Kreis Kleve, zuletzt aktiv an einem Projekt beteiligt, das im Bezug zu grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen stand?
2. Wie würden Sie die derzeitige Situation in Bezug auf grenzüberschreitende Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden bewerten?
3. Was genau sind Ihre Tätigkeiten beim Kreis Kleve?
4. Welchen Bezug hat der Kreis Kleve zur Euregio Rhein-Waal im Rahmen der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden?

Zusammenarbeit in der Vergangenheit

Die folgenden Fragen stehen unter der Voraussetzung, dass der Kreis Kleve in der Vergangenheit bereits an grenzüberschreitender Zusammenarbeit im Krisenmanagement bei Flussüberschwemmungen beteiligt war.

1. Was waren in der Vergangenheit die Tätigkeiten des Kreises Kleve im Rahmen der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden? (z.B. Projekte, Ziele, Aktivitäten etc.)
2. Mit welchen anderen öffentlichen und privaten Akteuren, sowohl niederländische als deutsche, hat der Kreis Kleve in dem Kontext zusammengearbeitet? (auf lokalem, regionalem, nationalem, internationalem Niveau)
3. In welchem Maß war die zivile Bevölkerung des Kreises Kleve an der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen beteiligt?
4. Welche Probleme oder Konflikte hat es in der Vergangenheit gegeben?
5. Welches Fazit hat der Kreis Kleve aus der vergangenen Zusammenarbeit in diesem Kontext gezogen?

Zusammenarbeit heutzutage

1. Besteht gegenwärtig ein Projekt in Bezug auf grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden, an dem der Kreis Kleve beteiligt ist?
2. Falls ja, welches Projekt ist das und in welcher Form ist der Kreis Kleve daran beteiligt?
3. Sollte der Kreis Kleve an keinem Projekt beteiligt sein, was sind die Gründe dafür?
4. Inwiefern hängt die Entscheidung des Kreises Kleve, nicht an einem grenzüberschreitenden Projekt im Krisenmanagement für Flussüberschwemmungen teilzunehmen, mit den Resultaten oder Abläufen von früheren grenzüberschreitenden Projekten zusammen?
5. Welche Probleme und Konflikte gibt es heutzutage zwischen dem Kreis Kleve und anderen Akteuren in diesem Kontext?

Zusammenarbeit in der Zukunft

1. Inwiefern hat der Kreis Kleve die Intention, um sich in der näheren Zukunft wieder an grenzüberschreitenden Projekten im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden zu beteiligen?
2. Sollte der Kreis Kleve sich an keinem Projekt beteiligen wollen, was sind die Gründe dafür?

Interview guide Kreis Wesel

Ich bin Studentin an der Radboud Universität Nijmegen im Studiengang Geographie, Raumplanung und Umwelt und schreibe zurzeit meine Bachelorarbeit. Im Rahmen dieser Arbeit untersuche ich die Entstehung und Funktion von grenzüberschreitender Zusammenarbeit im Krisenmanagement bei Flussüberschwemmungen. Ich möchte dieses Thema in Bezug zu einer bestimmten Fallstudie setzen, die der Euregion Rhein-Waal. Da der Kreis Wesel meines Wissens in der Zusammenarbeit sehr aktiv ist, möchte ich Ihnen einige Fragen zur Entstehung, Funktion und Stufe der Zusammenarbeit stellen. Das Interview wird aus sechs verschiedenen Unterthemen bestehen: einige allgemeine Fragen, Akteure, Regeln, Diskurse, Ressourcen und der Stufe der Zusammenarbeit.

Allgemeine Fragen

1. Wann waren Sie zuletzt aktiv an einem Projekt beteiligt, das im Bezug zu grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen stand?
2. Was ist Ihre persönliche Motivation, um in diesem Bereich zu arbeiten?
3. Wie würden Sie die derzeitige Situation in Bezug auf grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden bewerten?
4. Was genau sind die Tätigkeiten des Kreises Wesel im Rahmen der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen zwischen Deutschland und den Niederlanden?
(z.B. Projekte, Ziele, Aktivitäten etc.)
5. Was genau sind Ihre Tätigkeiten in diesem Kontext?

Akteure

1. Welche öffentlichen Akteure sind in grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen involviert, auf lokalem, regionalem, nationalem und internationalem Level?
2. Welche privaten Akteure sind in grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen involviert, auf lokalem, regionalem, nationalem und internationalem Level?
3. Welche Koalitionen haben sich zwischen diesen Akteuren auf den verschiedenen Levels gebildet?
4. In welchem Maß ist die zivile Bevölkerung an der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen beteiligt?
5. Wie interagieren diese verschiedenen Akteure und formen grenzüberschreitende Zusammenarbeit?
6. In welchem Maß dürfen die Akteure individuell und selbstständig agieren?
7. Welche Art von Konflikten oder Problemen treten auf?

Regeln

1. Inwiefern wird grenzüberschreitende Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen durch regionale, nationale, internationale Gesetze bestimmt?

2. Welche Unterschiede in der Gesetzgebung gibt es zwischen Deutschland und den Niederlanden in Bezug auf grenzüberschreitender Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen?
3. Beeinflussen diese Unterschiede die Zusammenarbeit?
4. In welchem Maß werden neue Gesetze entwickelt in Kooperation zwischen den deutschen und niederländischen Bundesländern/Provinzen innerhalb der Euregion?

Diskurse

1. In welchem Ausmaß wird die grenzüberschreitende Zusammenarbeit durch wissenschaftliche Paradigmen beeinflusst?
2. Inwiefern gibt es Unterschiede zwischen deutschen und holländischen Gebieten innerhalb der Euregion in Bezug auf wissenschaftliche Paradigmen?
3. Wie beeinflussen die historischen Hintergründe und Werte der beiden Länder die Zusammenarbeit?
4. Wie wird diese durch heute Werte beeinflusst?
5. Inwiefern hat das einen Einfluss auf die Problemanalyse der deutschen und holländischen Akteure?

Ressourcen

1. Von welcher Art von Ressourcen macht der Kreis Wesel Gebrauch? (weiter fragen, falls notwendig: finanziell, Wissen, informelle politische Macht, legislative Macht)
2. Inwiefern macht der Kreis Wesel Gebrauch von lokalen, regionalen, nationalen und internationalen Ressourcen?
3. Wie werden diese innerhalb der Euregion verteilt? (Unterschiede zwischen NL und D? Keine Aufteilung, alle Ressourcen fair verteilt?)
4. Wer entscheidet über die Art der Ressourcen und wie diese genutzt werden?

Persönliche Meinung

1. Wie würden Sie die Funktionalität und das Level der grenzüberschreitenden Zusammenarbeit im Krisenmanagement für Flussüberschwemmungen innerhalb des Gebietes der Euregion Rhein-Waal einschätzen?