Bachelor Thesis

The Implications of the Framing of Climate Adaption Policies

Robin Conrad (s2013452)
Public Governance across Borders
University of Twente
University of Münster

1st Supervisor: dr. Ringo Ossewaarde
2nd Supervisor: dr. Minna van Gerven

A Thesis submitted for the Degree of
Bachelor of Science
Word count: 15.090

02-07-2019

Table of content

1.1 Abstract:

Climate change is a fact and climate change is already happening. It is therefore imperative that we adapt to the changes in the future. This adaptation can be achieved through climate adaption policies. To construct and implement these policies effectively one must discuss the framing of said policies. This thesis has the aim to gain knowledge about the framing of local climate adaption policies. To do this, two climate adaptation regimes of two German regions have been analyzed. A text-based narrative case study was conducted. It was determined that the structure of a case and the background of its authors can have a major impact on the way a policy is framed. Authors with a background in social sciences tend to the risk or the hazard frame, while authors with a background in social sciences tend toward the vulnerability frame. The influence of the resilience frame was found to be very weak. While the risk and the hazard frame were strongly influential in the analyzed cases. It is important to be aware of these implications when constructing a climate change adaption policy.

2. Introduction into Climate Adaption and Description of the Scientific Gap

Climate change is a problem that we must face. Even if some politicians or even heads of state do not want to acknowledge it. Climate change is often discussed as a looming threat in the distance, but it is important to note that we already have an average global warming of approximately 1°C in contrast to pre-industrial levels. The IPCC report about the global warming of 1.5 °C from 2018 states that the likely range lies between 0.8 °C and 1.2°C. The average global warming will reach 1.5 degrees between 2030 and 2052. The report further discusses the already occurring adaption and mitigation efforts. Climate-related risks can be reduced with high confidence by incremental and transformative adaption policies. But there are nevertheless some losses on natural and human systems with under a global warming of 1.5 °C, this will increase with a higher global average warming.

The vulnerability to climate change varies from sector to sector, with some sectors that are highly vulnerable. To limit global warming to 1.5 degrees rapid and far-reaching actions would have to be enacted. Carbon emissions would have to be decreased by 45% from the levels of

2010 by 2030 to reduce warming to 1,5C °. Net zero emissions would have to be achieved by 2050. “Limiting warming to 1.5ºC is possible within the laws of chemistry and physics but doing so would require unprecedented changes,” said Jim Skea, Co-Chair of IPCC Working Group III. The United States of America left the Paris climate accord which states compulsory goals of carbon dioxide emission reduction. This is highly problematic because the United States is the 2nd largest CO^2 emitter after China. Other countries who are still in the Paris climate accord struggled heavily with reaching the agreed goals. Germany, for example, is another big CO^2 emitter, seems to miss its targeted emission decrease. An overshooting of CO^2 emissions, meaning a higher emission of CO^2, then the agreed upon target would mean a higher reliance on techniques that remove CO^2 from the atmosphere.

“The effectiveness of such techniques are unproven at large scale and some may carry significant risks for sustainable development” (IPCC 2018)

It seems that the efforts to limiting climate change are not on a promising path. Nevertheless, should the pursued of climate change mitigation further be strengthened, but the concepts of climate change adaption must be discussed as well. In the case that mitigation efforts are not be enough, an adaption to the inevitable problems is advisable. Climate change adaption originates form climate change research. Climate adaption has the presumption that the climate will change and that the world-wide efforts are not enough to stop these changes completely. With this assumption, the discussion changed from, how to stop climate change, to how to adapt to it. The focus of most of the research on climate adaption lies on the local level. The local level is regarded as the most important level for climate adaption (Vogel & Henstra, 2015). It is not regarded as the only important level, Huitema et al. (2016) argue that federal levels can create spillover effects, create cohesion, provide a long-term perspectives and provide public goods. This can all strengthen local government actions. But even in these cases, the local government is an important actor. The usage of these spillover effects is the role of local government. Political science research and policy research has shown that the way in which issues are defined can affect the nature of the public debate and the actual policy outcomes (Goetz, 2008). Framing can occur in different ways. Different rhetorical or stylistic devices may be used to influence the perception of the audience. The way in which a policy is presented, relates to the importance that the policy is given.

“When an issue is framed in more acceptable or positive terms, the public may consequently take a more favorable view of the issue itself, policy options surrounding it, or even a person or group referenced by the frame.” (Knoll, Redlawsk, & Sanborn, 2011).

Framing can have an impact on policy debates even when they are highly contested. Díez (2010) shows in his research how the framing of an anti-homophobia campaign in the context of an anti-discrimination policy in Mexico was able to influence the implementation of the campaign. Two different frames were deliberately chosen by policy entrepreneurs to overcome obstacles from state and non-state actors. Goetz (2008) shows that the way in which an issue is framed has impacts on public engagement with the issue. He analyzed the consequences of the framing of the issue of affordable housing, where he observed differences up to 36% in certain societal groups. All of these cases are stressing the importance of policy framing of a contested policy. With the high importance of climate adaption in the highly possible case that the world will not achieve its carbon emission goals, it is important to look at the framing of climate adaption policies. Different frames of climate adaption are suggested in the literature, but these are not extensively studied. It is not determined in these case studies, what implication these frames have. This study wants to seek this insight. The implications of a frame are important because frames can influence the outcome of a policy (Goetz, 2008). It is important to understand when which frame will be applied so that one can determine if the effects that relate to this frame are optimal for the concerned policy. A frame that is focused on one kind of problem would be a subpar choice for a policy overview, If the overview is designed to be objective. To gain this insight, the research question, which is established in the next section, will be answered.

2.1 Research Question

To better fit the policy dimension of climate adaption the theory of frames, which was first established by Goffman (1974), was used as a base, to create a theory of the framing of climate adaption. These framing theories of climate adaption are like climate adaption research itself a relatively new field. Some new theories emerged over the last years, these are not tested extensively. Climate adaption is a highly important policy field. The framing of a policy can influence the means, the scope, the direction and the context of a policy. It is important to know what implication certain framings of policies have, to determine which consequence is leading to which frame. This can help to evaluate climate adaption policies ex-post but can also help in predicting ex-ante the framing of a policy. To bring more light into this highly interesting

policy field the question: (1) “What are the (policy) implications of framings for local climate change adaption policies?” Will be asked. This question looks at the implications that framing can have. To answer this question, it will be first asked: (1.1.) Which types of frames can be observed? On the bases of these frames, the implication will be analyzed. The question: (1.2.) “Which implications do these different types of frames have?” Will be asked. To establish the research question three assumptions are made. These assumptions will be confirmed and discussed in the theory section of this thesis. A1 Policy entrepreneurs frame the policy. A2: The frame influences its surroundings e.g. the public. A3: The surroundings in return influences the consequences of the policy. The Assumptions will be discussed on the bases of existing and established theory. The research question will be answered by a narrative case study. Two typical cases will be chosen. A coding scheme will be constructed based on the frames that will be discussed in the theory. This coding scheme will operationalize the two cases. Based on this data a two-step analysis on the level of the coded frames and the codes them self will be conducted. This analysis will investigate, which implication can be observed by the different frames.

3. Theory:

The aim of this chapter is to make the research question measurable. To do this, this theory chapter will discuss the leading concepts of the research question: framing and climate adaption. It will further discuss the assumptions that were presented earlier, and which are the foundation of the research question. To do this, a literature review was conducted. The first section will discuss the term climate adaption policy, what definitions are presented in the literature and what definitions are competing. In the following, the theory of framing will be presented. It will be explained what framing is, what kinds of frames could be observed and how frames influence the audience. In this section, the assumptions will be discussed. The third section will combine the two concepts and will discuss the framing of climate adaption. Based on this the frames that will be analyzed in this thesis will be established.

3.1 Defining Climate Adaption

What does the construct of climate adaption policies entail? In the academic literature, the two concepts Climate Change Adaption (CCA) and the Vulnerability Centered Adaption (VCA) are central (Dupuis & Biesbroek, 2013). The CCA concentrates directly on the adaption to climate change. Its approach encompasses the measures that are taken to reduce harm created by a changing climate. This is done through future risk-reducing strategies, connected to climate modeling. At the core of CCA is that climate change is an anthropogenic creation, but it is also discussed whether climate adaption only encompasses the anthropogenic effects or also the natural variability of the climate. The VCA approach criticizes the climate centrism of the CCA approach. The VCA puts vulnerability to external threats in a wider debate. It is argued that a lot of different factors can lead to a vulnerability, of a community, to external threats, like climate change. It is also argued that a great amount of vulnerability of a community can be reduced by reducing poverty and insecurity and increasing fairness and justice. The VCA concludes that a general less vulnerable community is also less vulnerable to climate change. Sustainable development and poverty-reducing measures are the core of VCA approach (Dupuis, Knoepfel, & Society, 2013). The difference between the CCA and the VCA approach is that the CCA focuses more on the direct effects of a changing climate. The VCA focuses more on the straightening of society rather than on climate action. The VCA tackles a broad array of problems and not just climate adaption, but this is also a big down site it is very broad, general

and is not focused on the problem at hand. The CCA has a very narrow focus that might neglect problems. Dupuis and Biesbroek (2013) are using a definition for climate adaption, which is part of the CCA. This definition of climate adaption is:

“The process leading to the production of outputs in forms of activities and decisions taken by purposeful public and private actors at different administrative levels and in different sectors, which deals intentionally with climate change impacts, and whose outcomes attempt to substantially impact actor groups, sectors, or geographical areas that are vulnerable to climate change.”

The definition of Dupuis and Biesbroek (2013) is especially interesting because it encompasses two additional criteria. The first answers the problem: Are policies that do not state that they are adapting to climate change, climate adaption policies? This is quite often the case. The field of climate adaption is quite new, but policies that are adapting to a changing environment are not. An example of this could be flood protection programs. These programs might help in the adaption to climate change but are older than climate adaption policies. The second criteria address symbol policies. Policies that stress that climate adaption is important, but do not have a substantial impact. These two criteria will be used in the decision of the cases that will be analyzed. The cases should be explicit climate adaption policies. This will prevent two problems: the possible area of observed policies will be limited and will be made more comparable. The second reason is that the observed policies will be concentrate on the problem that is created because of climate change and not on problems that have a different cause. The second criteria will be used in the case section because the implication of symbol politics varies from more direct approaches. This will help with the comparability of the cases and with the abstraction of the results of the analysis. The implications that will be observed should be clearly associated with non-symbol policies. In this section, the two main approaches for climate adaption that will guide the discussions about the framing of climate adaption were discussed. Besides that, two criteria for the case selection were established.

3.2 Framing and Frames

The last section has discussed what climate adaption is. This section defines what framing is, which will be combined in the last section of this chapter in the discussion about the framing of climate adaption. The theory of policy framing was created by Goffman (1974). To analyze

the debate that is connected to the implementation and construction of a policy he argues that one should examine "how actors construct their arguments, or storylines, in the pursuit of their policy choices through the use of discursive and rhetorical devices" (Díez, 2010). Framing is the influence that the lifeworld of each policy entrepreneur has on the presentation of a policy. A frame is the way in which the policy is presented. The frame then influences the way the audience processes that information, through the organization and structuring of the message (Davie, 2014). Social movement theorists have changed the actor and the subject of framing. They analyze how social actors are successfully placing their interest on the political agenda. This influence goes beyond resources and political opportunities (Díez, 2010). Issue framing focuses on the subject of framing. The goal of an issue framing analysis is to understate how the public, as well as policy entrepreneur, came to understand the issue under a certain frame (Gamson, Croteau, Hoynes, & Sasson, 1992). Issue framing analysis events which "appear in an ongoing strip, requiring continuing interpretation" (Gamson et al., 1992). Gamson et al. (1992) further concluded that issue frames can consist of different subframes. Luhtakallio (2012) further discusses the possible relationship between frames. While subframes are part of a bigger frame, he distinguishes between dominant and secondary frames. Luhtakallio (2012) describes these two frames as:

"Dominant frame is the primary analysis of a situation the image offers. Secondary frame is an alongside significance that directs and focuses – and sometimes transfers or even switches – the meaning created in the communicational process of looking at an image. The number of secondary frames may vary in principle from one to infinite, whereas there usually is only one dominant frame"

While a subframe is part of a bigger frame, the relationship between a dominant and a secondary frame is different. The dominant frame is certainly more influential than the secondary frame, but the secondary frame is still independent. The way a frame influences its audience can vary. The goal can be to change the connotation of a policy from a disfavorable view to a more favorable view. This can be achieved, through a multitude of tool e.g. images, metaphors or analogies to highlight a policy in a more positive light (Knoll et al., 2011). The goal can also be to change the causal interpretation or selected tools of a policy. Entman (1993) describes framing as the stressing of some aspects. "To frame is to select some aspects of a perceived reality and make them more salient in a communicating text" (Entman, 1993). This perceived different saliences on an aspect of an issue can have a major impact on a policy. The

causal chain that leads from a frame to the impact on the audience can be into split into four-part. First the problem is defined, it is then determined what causes the problem, then a moral judgment is made about the problem and finally, remedies are suggested (Entman, 1993). From this chain of effects, one can deduct answers for the suggested assumption. A1 is not related to this casual chain. If policy entrepreneurs are the cause of framing is for the causal relation of the chain not important. A2 is related to the first three effects. The problem defining, the causes determination and the moral judgement are all related to the influence that a frame has on its audience. In other words, A2: The frame influences its surroundings e.g. the public. The last step the suggestion of remedies is connected to the last assumption A3. The surroundings in return influence the consequences of the policy. Through the changing of the opinion of the public through step 1-3 the surrounding of the policy has change, which leads to the suggestion of change on the policy or change itself. One frame is rarely supremely dominate, in a debate. Most issues and political issues especially are often complex. Different sides of the argument are trying to establish their own frame in the argumentation. These frames then fight to convince the most people (Haider-Markel & Joslyn, 2001). The first assumption is that A1: Policy entrepreneurs frame the policy. Different studies about policy framing deduct that policy entrepreneurs frame their policy strategically. Díez (2010) confirms in his analysis about the framing of a Mexican anti-homophobia campaign a conscious framing of the campaign by political as well as administrative policy entrepreneurs. He concludes from this and other studies that "for a particular policy program to be adopted, elites tend to craft frames strategically, to develop policy frames, and to use them to legitimize their policy proposals" (Díez, 2010). A similar result can be deducted from Anthony, Heckathorn, and Maser (1994) and their work about the construction of the American constitution and from Fligstein and Mara-Drita (1996) and their work about the forming of the single market of the European Union. Mintrom (1997) also support this assumption. Frames have certain limitations. Not all frames are equal. Some frames will not become dominant, because of a collision with a more dominant frame but will have no effect on their own. This can be connected to the work of Luhtakallio (2012). Furthermore, some frames will only work if they are amplified, are under certain conditions or resonate with a characteristic and attitude. Frames can have furthermore different effects on different audiences (Knoll et al., 2011). This section has answered the questions what framing is, how framing influences an audience and what different kinds of frames exist. The effectives of frames further discussed in this section. The influence that

frames have was explained with Entman (1993) and his four steps. The types of frames that are most interesting for this study are the discussed dominate and secondary frames by Luhtakallio (2012).

3.3 The Framing of Climate Adaption.

The last two sections have discussed how climate adaption is defined and what framing is. This section will look upon how the different definitions of climate adaption are used to establish different frames of climate adaption policies. Dupuis et al. (2013) are using different IPCC reports to establish three different frames in which climate change adaption is approached. The climate change adaptation frame (CCA), the climate variability adaptation frame (CVA) and the vulnerability centered adaptation frame (VCA). These frames are quite similar to the discussed definitions of what climate change is, their definitions are strongly related. The CCA approach focuses on the anthropogenic effects of climate change that exceed the magnitude, intensity, or frequency of, natural variability. The CVA approach focuses on the effects of the changing climate that exceed the current norm, without taking the cause into account. The VCA definition of climate adaption is similar to the VCA framing approach. It looks more generally on the vulnerability to external stresses caused by a range of endogenous and societal factors (Dupuis et al., 2013).

Vogel and Henstra (2015) are taking the work from Dupuis et al. (2013) and other authors and develop four frames of climate adaption framing that are more emancipated from the definition of climate change adaption. The hazard frame is comparable to the CCA frame. The focus of this framing approach lies on the effects of climate change. Natural variabilities are not a concern of a hazard framed adaption policy and should be solved by disaster management programs. A risked framed adaption policy see climate change as a source of uncertain risk, that have to be calculated and managed (Vogel & Henstra, 2015). The vulnerability frame is comparable to the VCA frames. The focus lies on the reduction of vulnerabilities of a community. Climate change is seen as another stress that exploits the vulnerability of a community. The resilience frame concentrates on capacities that absorb the effects of climate change, reduce the recovery time of stresses and learn from experiences. It tries to combine climate change mitigation and climate change adaption to some degree. While these frames

are not strictly exclusive one has to note that there will be only one dominate frame. This thesis will use the concept provided by Vogel and Henstra (2015) as the base for its analysis.

What are the implications that the literature has contributed to the framing? Runhaar, Wilk, Persson, Uittenbroek, and Wamsler (2018) report that the framing of climate adaption policies can influence the range, the way it is guided and what solutions are used. They further argue that the used frame can stress the urgency in which the policy is regarded and can like Vogel and Henstra (2015) show, take the urgency away. Furthermore, it is argued that framing can influence the knowledge which is used in the construction and advertisement of the policy and that the interests that are mobilized around the policy are can be influenced (Vink, Boezeman, Dewulf, Termeer, & Policy, 2013). In this third section of the chapter the definitions of climate adaption, that were discussed in the first section, were taken and on their basis the framing of climate adaption was established. The four frames that will be the main concept of the analysis were established. These four frames are the: hazard frame, risk frame, resilience frame, vulnerability frame.

3.4 Theoretical Expectations

It is expected that differences in the influences will be present. It is further expected that a dominant and one to three secondary cases can be found. Both selected cases will be policy overview it can be assumed that every type of climate adaption should be represented to some degree. It is therefore likely that every frame is to some degree represented. It is further assumed that the authors are responsible for the influence of the frames. It will be investigated if it can be established which author tend to which frame. It will be further interesting to observe if other reasons influence the influence of a frame.

4. Methods:

The goal of this chapter is to discuss the methods used in this thesis. These methods have the task to help in answering the research questions. This chapter is comprised of five main sections. It will be first discussed what methodological approach is chosen. The main point of this section is to explain why a narrative case study is the best possible approach to answer the research question. This will be followed by a discussion about the case selection. It will be outlined why the framing narratives of Hamburg and Ruhr are typical cases of a framing narrative of climate adaption in Germany. After that, a description of the data operationalization and the data analysis of the conducted text-based hermeneutic analysis will follow. One of the key cornerstones of scientific practice is replicability. Every scientific study should be replicable. This replicability enables that other scientist can recreate a study and test if the results stay constant. This practice prevents malpractice and strengthens the robustness of a scientific study. In the case of a text-based narrative case study like this study, one of the most important methodological steps is the translation from the theory to a coding scheme. This part of the study is the part with the most leeway on the author's side. The way an author codes a concept is always very subjective. For the sake of transparency and replicability. The logic behind the coding scheme that was used in this study and the way the scheme was applied in the study will be explained thoroughly. This chapter will conclude with a section that will summarize the most important points of this chapter.

4.1 Research Design

A narrative research approach was chosen to answer the research questions. To determine which implication the framing of climate adaption policies have, it is first asked, which frames are used in climate adaption policies. The independent variable in this question is the observed climate adoption policy and the dependent variable is the used frame. The correlation between a used frame and a policy cannot simply be observed. A hermeneutic approach namely the narrative research approach is used. A narrative approach focuses on the context of presented data, which parts of the data are highlighted, which are omitted and what is the intention behind a statement. In the context of this research, this means that it will be looked upon the way the two observed cases: The narrative of the framing of the climate adaption policies of

the region of Ruhr and Hamburg, are presented and structured, to determine which frame they belong to. This narrative analysis will be conducted as a text-based case study.

It will be evaluated, which frame the case belongs to and in a second step it will be looked at what implications emerge from the framing of the cases. The literature presents some implications, which this study uses, a complete open-ended approach was therefore not chosen. Some theories exist but none of them are strongly established. Therefore, a hypothesis testing research design is not chosen. The implication that Vogel and Henstra (2015) climate adaption frame causes were examined. This scientific gap will this study try to close. The frames by Vogel and Henstra (2015) will, therefore, be the key point of this analysis. In a second step, it will be analyzed which implications these observed frames create. It has to be also considered what potential threats to the validity of this paper are. A third variable that influences the relationship between the framing of a policy and the implication of this framing, would be a threat to the validity of the causal relation. The risk of this happening can be reduced through the selection of cases. This will be explained in a later section. Are there risks for the external validity of the paper? The case selection is small, but the results are generating theory for a field that is not strongly researched. The cases are also locally restricted to Germany. The degree of abstraction for Germany is therefore reasonable. However, the results are probably not worldwide applicable, because the degree of variation in development is too great. It would be interesting if the results are applicable for most develop countries or Europe, or if the implications are only focused on Germany.

4.2 Case Selection:

To answer the research questions, two cases were selected. These are the framing narratives of the climate adoption of the metropolitan areas of the Ruhr region and Hamburg. The climate adaption narrative of the Ruhr region focuses on the urban climate, which is also a focus of Hamburg, besides considerations of flood protection. Both metropolitan areas have presented a concept of how they will deal with the effects of climate change. These two cases were chosen due to a wide variety of reasons. This study is focused on Germany due to reasons of practicality. The two selected cases are the framing narratives of two bigger cities or regions. Both cases fit the criteria established in the theory section they are non-symbolic policies summaries. Concrete adaption measures are discussed, and they are both self-described climate adaption policy summaries that present options for action for climate adaption. Most

of the dedicated climate adaption policies in Germany are implemented through regional cooperation or by bigger cities. The case formulated by the Ruhr is related to regional cooperation. The case formulated by the City of Hamburg presented by a major city. Both cases are therefore typical cases for local climate adaption in Germany. Both narratives are therefore suitable to answer the research question. To negate the possible emergence of third-factor variables, both regions should be similar, while the framing of their climate adaption policy should be different. Both regions are somewhat comparable in size and population but are most importantly two of Germanys most populated areas. The areas are therefore comparable, and the observed implications should be relatable to the used framing regimes. Both cities have recently summarized their climate adaption regimes. The influence of a different time period as an interfering variable can also be excluded.

4.3 Data Collection:

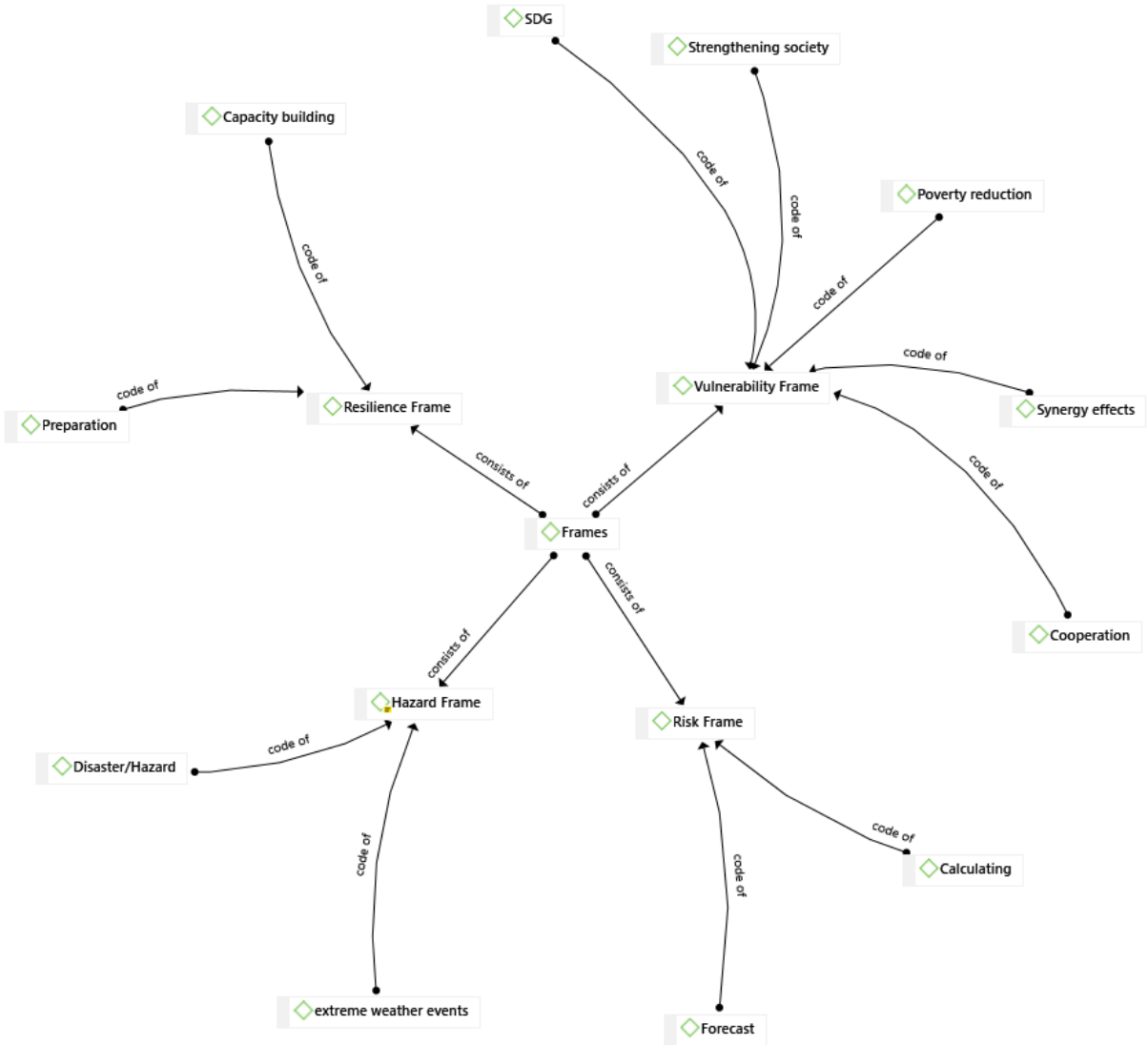
In the following section, the data collection will be discussed. To answer the research question, the data about the two selected cases has to be collected. This will be done through a qualitative data collection. Both regions of interested have published a summary of their climate adaption policies. The metropolitan area Ruhr has worked together with the ministry for the environment, nature protection and agriculture of the state of North-Rhine Westphalia to create a guide of measures and concepts for cities and metropolitan areas for the adaption to climate change the: “Handbuch Stadtklima: Maßnahmen und Handlungskonzepte für Städte und Ballungsräume zur Anpassung an den Klimawandel”, published in March 2010. The metropolitan area of Hamburg has the status as a federal state in Germany. The Handbuch is 68 pages long. It is subsided by the ministry for the environment to present possible adaption measures to cities and metropolitan areas. Similar to the Ruhr region Hamburg has also published a paper the: “Kursbuch Klimanpassung: Handlungsoptionen für die Metropolregion Hamburg”, which presents possible measures of climate adaption for the region of Hamburg. It is 148 pages long. The Kursbuch is subsided by the city of Hamburg and KLIMZUG-NORD, which is a project by the German national government. The case describes conducted adaption measures by the KLIMZUG-NORD and Hamburg. Similar to the Handbuch the Kursbuch also has the aim to present possible adaption measures for urban regions. The Kursbuch is newer than the paper presented by the Ruhr region, as it was published in 2014. Both papers were selected, because they provide a broad and comprehensive overview of the conducted and planned

measures of climate adaption and have a narrative that is in line with the associated organization, due to the nature of such overview projects, all parts of an organization should have been included in its crafting. The overviews provide, on the one hand, a list of conducted policies and programs and thereby their policy framing, and on the other a deliberate selection and/or stressing of certain policies and programs, which is framing in it of itself. Both show the narrative that is used in the climate adaption regimes of the two regions.

4.4 Data Analysis

In this section, data analysis will be discussed. To answer the sub-question of the research question about the frames that are used in climate adaption, the collected data has to be made observable. The collected data is text-based. A hermeneutic coding scheme will be used to operationalize the data. More precisely a concept-driven coding approach will be used. The core of this analysis are frames of climate adaption policies. The concept is, therefore, the frames provided by the theory. Each of the four framing approaches by Vogel and Henstra (2015) will be coded. The coded words will be based on the definition presented by Vogel and Henstra (2015). The constructed code will be used to operationalize the two presented key policy proposals by the regions of Hamburg and Ruhr. Some rules were established to ensure that the operationalization of the date is done equally for both cases. The coded words could be presented directly or indirectly by synonyms or paraphrases. When the same word/code is used in the same sentence or in the same thought the code/word will not be coded a second time. This rule is, the rule that is most heavily affected by the judgment of the author. To establish comparability, the author decided that in cases of doubt the coded will be counted only once. It was further determined that the table of content is part of the test on which the coding scheme is applied. The same is applicable for the chapter titles in the test. It is not applicable to chapter names besides page numbers on every page. This would distort the results for two different reasons. Firstly, some cases use this kind of presentation and some not. Secondly, certain codes would be overemphasized, because of the high degree of repetition of this singular find. Repeating tables with different arrangements or orders were decided to be part of the text that is analyzed. These tables are important because the degree of significates for different groups towards different adaption factors is enumerated. Each table has its own message. This is not the case for the repetition of titles next to a page number. The

Appendix is also part of the analyzed test. Which sources one chooses can reveal a lot about the frames one is influenced by. The same is not necessarily applicable for the glossary, here the focus lies more on a technical or complex term that is possibly in need of explanation. The glossary is therefore not part of the operationalized text. With these rules in mind, the two cases will be operationalized. After this, the coded data will be used to label the cases. To help with the operationalization, the program Atlas Ti will be used. The code itself will be made in German, due to the nature of the analyzed documents. In the following, the coding scheme is present in an English translation:



What does this pretty picture mean? In the center one can see “Frames”, which is the central concept of this thesis research question. In the Theory section, it was established that climate

adaption policies can be framed in four different ways. These frames are arranged around the central concept of this research all frames. The connection between the general frames and specific frames is marked with the words “consist of”. The four specific frames are coded. These codes are connected to their respected frame and are marked with the words “code of”. These codes are derived from the definition of Vogel and Henstra (2015).

The “Resilience Frame” is coded “preparation” and “capacity building” The resilience frame concentrates on capacities that absorb the effects of climate change, reduce the recovery time of stresses and learn from experiences. To code the focus that the resilience frame has on preparing society for climate change effects, “preparation” was chosen. The focus on strengthening of capacities or building of such capacities that absorb the effects of climate change was coded with “capacity building”.

The “Hazard Frame” is coded with “Disaster/Hazard” and “extreme weather events”. The focus of this framing approach lies on the effects of climate change. Natural variabilities are not a concern of a hazardly framed adaption policy and should be solved by disaster management programs. The frame focuses on Hazards that are connected to climate change. Therefore, the code “Disaster/Hazard” was chosen. The most talked about of these are “extreme weather events”. In this code of extreme weather events, torrential rains and heat waves are integrated as the most commonly occurring ones in Germany. Extreme weather events are different from extreme periods. These periods are concerned with longer weather-related changes. Especially heatwaves and droughts are a concern. These phenomena are no short-term disaster. They are more a persistent long-term change in the climate and are therefore not coded under the disasters. They are no singular events but periods that are an accumulating of a weather type and are therefore not coded under extreme weather events.

The “Risk Frame” is coded with the codes “Calculating” and “Forecast”. A risked framed adaption policy sees climate change as a source of uncertain risk, that has to be calculated and managed. Forecast was chosen to highlight the focus of the risk frame on the prediction of future events. This prediction or forecasting has the goal to make the uncertain risk more certain and identifiable. The second chosen code calculating was chosen to highlight the focus management and calculation of these predicted future scenarios. This entails the development of so cold vulnerable areas. These areas are areas were calculations have shown that the effects that a changing climate has will lead to problems. These areas are mostly focused on one aspect

like rising sea levels or heavy rain vulnerabilities. Disaster control services and risk maps could also be considered part of the calculation code. In this thesis, they are classified under the Disaster/Hazard code, due to their close connection to disasters. Both codes are of course only applicable in the context of climate adaption. A calculation on the acceptance of a project would not be counted. The codes of Forecasting and calculation are in some cases closely connected. The difference in this thesis lies with the difference of possible effects of climate change in the forecast code and the determining of the consequences of these effects with the calculating code.

The “Vulnerability Frame” is coded with “SDG”, “Poverty reduction”, “Strengthening society”, “Synergy effects” and “Cooperation”. The vulnerability frame focuses on the reduction of vulnerabilities of a community. Climate change is seen as another stress that exploits the vulnerability of a community. The community in the vulnerability frame is seen as a system and climate change as a threat to the system as a whole. The codes “SDG” and “Poverty reduction” were used because they are very imported elements of the IPCC Special Report on Global Warming of 1.5ºC (2018) in the context of climate adaption. In this report, the strengthening of vulnerability and the subsequent adaption to climate change are related to the sustainable development Goals (SDG) and the reduction of poverty. The Sustainable Development Goals are not coded separately. It is looked for connections to sustainable development in general. “Strengthening society” was coded to highlight the focus strengthening society as a whole and not certain parts. To highlight this sector connecting approach the code “Cooperation” was coded. Cooperation is only coded in the context of climate adaption. It is also only applicable in the context of cooperation between sectors. This cooperation can happen on the administrative level between agencies that are responsible for different sectors, on the level of businesses from different sectors or on the academic level with cooperation between different disciplines. Not applicable would be cooperation between different counties if cooperation in the sense of citizen participation. “Synergy effects” was coded because it is a common way to describe and advertise cooperation. Like cooperation, synergies effect must also be found in the context of cross-sector relations. Not applicable, for example, would be synergy effects between different adaption measures.

These codes will be applied to the two selected cases so that the cases are operationalized. But how will this operationalized data be analyzed to answer the research question? The data, which is created by the application of the coding scheme will be analyzed in two steps. Both

these steps have a quantitative well as a qualitative part. Firstly, a quantitative analysis will be conducted, in which the frequency of the used codes of each coding frame will be compared. Through this comparison, it can be determined which frame has the most mentioned codes and is thus the most influential. After this quantitative analysis, a qualitative analysis will be conducted that will determine why the frames are as influential as they are. Based on this it will be looked upon the implications that are responsible for this influence. The second part of the analysis will be again first a qualitative analysis. It will be looked upon the representation of the codes separated from their frame group. This will be like the first part of the analysis followed by a qualitative analysis, which tries to explain why these codes are as influential as they are. The first sub-question of this thesis will be answered by the quantitative part of the first part of this analysis. The second sub-question will be answered by the second part and the qualitative part of the first part. To make the research reproducible the coding scheme will be made public. The constructed code is constructed in strongly based on the definition by Vogel and Henstra (2015). The frequency test is easily reproducible. The construction of the coding scheme is open to more interpretation. To enable high transparency in this step, the construction of the scheme was ruthlessly documented.

4.5 Concluding Remarks of the Methods

This thesis will answer its research question with a narrative case study on the climate adaption narrative frames. A text-based hermeneutic analysis on two key policy overviews will be conducted. The constructed coding scheme for this analysis is based on the work of Vogel and Henstra (2015). The following data analysis will be conducted two folded. The first step will focus on the results of the data about the influence of the four frames. The relative mentions of the frames will be compared. It will be looked upon the spreading of the mentions of the code words. Are patterns observable? In the second step, the frames will be broken down to their codes. The influence of these codes will then be separately analyzed. It will be looked if one code of a frame is dominant so that only one aspect of the frame is represented. It will also be investigated if patterns in the spreading of the codes in the cases can be observed.

5. Analysis

This thesis seeks to analyze the narrative of local climate adoption policies. Which frames have the strongest influence on policies and which implication do these influences have? These two sub-questions will be answered in the following chapter. To answer these two questions, the analysis has two levels of analysis. The first on the level of agglomerated codes, the level of frames and second on the level of separated codes. Firstly, a general discussion of the results that were produced, will be discussed through a code-document table. Through this discussion of the absolute and relative frequencies of the codes, the first question about the influence of certain frames can be answered. After this general look upon the results of the analysis, the influence of the two strongest frames will be explained. This explanation of the influence will be conducted on the level of the frames. The codes that are combined into a frame will not be looked upon separately. This will change with the following section, the third section of this chapter. Here the results of the codes will be looked upon separately. The second sub-question concerning the implication of the influence of the frames will be further answered in this section. The sub-question will be concludingly answered in the last part of this chapter.

5.1 General discussion of the results

In this analysis, a hermeneutic analysis of the of two policy overviews the “Handbuch Stadtklima” of the Ruhr region and the “Kursbuch Klimaanpassung” of the metropolitan area of Hamburg was conducted. This narrative case study analyses the two cases to determine which of the four discussed frames have influenced the two cases. The sub-question “Which types of frames can be observed?” will be answered. To answer this question the two cases were operationalized with the discussed coding scheme. To determine the influence of each frame, it was decided to compare the number of references to the number of references for each frame. The operationalized data was therefore used to add up the references in the two cases. This sum was then again added up to the sum of the codes of each frame. The result can be seen in the following table:

	Handbuch Stadtklima		Kursbuch Klimaanpassung		Totals
	Absolut	**Column-relative**	**Absolut**	**Column-relative**	**Absolut**
Hazard frame	74	57,36%	67	25,48%	141
Resilience Frame	5	3,88%	9	3,42%	14
Risk Frame	27	20,93%	102	38,78%	129
Vulnerability Frame	23	17,83%	85	32,32%	108
Totals	129	100,00%	263	100,00%	392

Before the relative results will be discussed, a few words should be said about the absolute results. One of the first thing that is striking of the results is the big difference between the total mentioned references for each case. The "Handbuch Stadtklima" in the following just the Handbuch, has a lower number of the total code mentions, with 263 in comparison to the "Kursbuch Klimaanpassung" in the following just Kursbuch with 392. This can be explained quite easily. The length of the papers varies. The Kursbuch has 142 pages while the Handbuch has 68 pages. This is an average of 2,8 codes per page in the Kursbuch and 3,9 codes per page in the Handbuch. The Handbuch is thus the case with a higher concentration of code references. While looking at the results of the first analysis one can see that in both cases a dominant, as well as secondary frames, have emerged. Luhtakallio (2012) has argued for this distinction between frames. He refers to the central frame as the dominant frame. This dominate frame is the frame that influences the case the most. The secondary frame directs focus transfers or switches the image that the case wants to create (Luhtakallio, 2012). Luhtakallio (2012) further argues that more than one frame can be a secondary case, this can be confirmed. In the case of the Handbuch, the frame with the most mentioned codes is the hazard frame. 57,36% of the mentioned codes in the case are connected to the Hazard Frame. The Risk frame is the frame with the second most mentioned codes 20,93% of all mentioned codes are connected to the risk frame. Shortly followed by the vulnerability frame with 17,83%. In the case of the metropolitan area of Hamburg, the risk frame is with 38,78% the strongest frame. In comparison to the dominant frame of the Handbuch, the risk frame is weaker in its domination. The vulnerability frame is the frame with the second most code mentions with 32,32 % in the

Handbuch. The difference between the vulnerability frame and the risk is with 6,46 percentage points in comparison to the Kursbuch were the difference is 36,43 percentage points not wide. The weakest frame in both studies is the resilience frame with 3,88% in the Handbuch and 3,42% in the Kursbuch respectively. This is in compression to the other results a low number. It seems that the Kursbuch is not as dominated by one frame as the Handbuch. The Hazard frame as the third mentioned frame in the Kursbuch with 25,48% of the mentioned codes is stronger than the risk frame in the Handbuch as the second strongest frame. Both secondary frames are compared to the secondary frames in the Kursbuch much weaker. This further stresses the dominant position of the hazard frame in the Handbuch. The position of the risk frame as the dominant frame of the Kursbuch is not as strong. In the Kursbuch the strongest three frames are comparatively strong. They vary from 38,78% to 25,48% this is a difference of only 13,3 percentage points within a pool of 4 possible values. The difference between the first two frames in the Kursbuch is more than twice as wide. One can observe two different frames as the most influential in the two cases. While the hazard frame in the Handbuch is a very dominant frame, its counterpart in the Kursbuch is less so. The supporting frames in the Kursbuch have a more influential role than in the Handbuch. Why do we see a more one-sided frame distribution in the Handbuch? The explanation could be that the Hazard frame in the Handbuch is very influential or that the risk and vulnerability frames are weak. The distribution we see would suggest that the hazard frame is supremely dominant. It was already mentioned that the proportion between code mentions per page is higher in the case of the Handbuch then it is in the Kursbuch. This shows that the influence of frames, or in other words the amount of mentioned codes, on the Handbuch is in general higher than in the Kursbuch. If the two secondary frames in the Handbuch would be weak and the hazard frame just averagely strong, this general influence of the frames would be lower. The opposite is true the general influence is strong which leads to the conclusion that the hazard frame is very dominant. One can conclude, that the expectations, that a difference between the influences of the frames will be present, is true. It can further be confirmed that in both cases a dominant and two secondary cases can be found. The expectation that every frame is to some degree represented can also be confirmed, but only barely. The resilient frame is very weak. It will be interesting to discuss why this is the case. The question emerges: why are these frames as influential as they are? This will be answered in the following part.

5.2 The Impact of Structuring on the Influence of Frames.

The case of the Handbuch has some very interesting introductory remarks. These remarks paint a picture of the structure and goals of the case. One could expect that these remarks represent this dominated distribution of the hazard frame. This is interestingly not entirely the case. The two most dominant frames the risk and the vulnerability frame are represented, but not the third, the hazard frame. The hazard frame has two mentioned codes in the remarks. The risk frame has one. Out of the three paragraphs long introduction, one paragraph discusses the possible disasters, that are more likely to occur through climate change. The Handbuch argues that:

“with the more and more occurring and suddenly appearing storms and heavy rains, more damage is caused to the urban infrastructure”

This is clearly influenced by a hazard frame. Half a paragraph discusses the identification of regions that are strongly affected by climate change. The Handbuch argues that this is a problem which will be addressed.

“It will be explained, how regions can be identified, in which special problems, that are caused by climate change are more likely to occur.”

This is clearly influenced by the risk frame. But interestingly the third most mentioned frame the vulnerability frame is not mentioned in any way. Why this discrepancy? The hazard frame is clearly the dominant frame of the case it would, therefore, be logical that the hazard frame can be found in the introduction. But the risk frame is not nearly as influential as the hazard frame. It would be consequent that the influence of the risk frame and the vulnerability frame as a similar weak frame is not trackable. Or that both cases are trackable, but like the risk frame not to such a high degree as the hazard frame. This is not the case; the risk frame is traceable and the vulnerability frame not. How can this discrepancy be explained? The answer to this question is related to the structure of the case of the Handbuch. The influence of the frames in the Handbuch can be related to certain parts of the Handbuch. Until page 21 the Handbuch tries to identify regions that will probably be strongly affected by a changing climate. This is in line with the introduction and is strongly influenced by the risk frame. On pages 21 to 55, the

paper discusses possible adaption measures, with a strong focus on extreme weather events. This is the main part of the Handbuch, which is in also in line with the introduction, with its strong focus on extreme weather events and results of this study. The last three pages of the Handbuch are discussing the possible synergy effects with other sectors. The approach of this section is technical, the main focus lies in spatial planning and building modification, with practical implication for other sectors. This section is not concerned with general questions, but with concrete effects on other sectors. The reason behind this approach is explained as:

"The realization of measures of climate adaption is easier if a double function and an observable additional benefit are present."

The underlying question of these three pages seems to be: Which measure can create benefits for a connected sector? This is done to help with the implementation of adaption policies. it is not a requirement of the adaption policies itself. The part that is influenced by the risk frame is looked upon as a requirement for the bigger and more dominant part that is influenced by the hazard frame. To prevent and manage disasters, it is important to know, when and where they are happening. This can be seen in the already mentioned quotation from the introduction.

"how regions can be identified, in which special problems, that are caused by climate change are more likely to occur"

The focus lies on the identification of disasters. It is not talked about the general problem that climate change will cause it is looked upon the special problem that climate change will cause. The focus on hazards, that the hazard frame has, can be observed. Interestingly the quotation is from a part of the case that is coded as influenced by the risk frame. This is in line with Luhtakallio (2012) and his description of the dominant and the secondary frame. The secondary frame, in this case, the risk frame which directs and focusses the image that is created by the hazard frame. This also shows that the risk frame and the prediction of the future is important and necessary for the hazard frame. It, therefore, it is mentioned in the introduction of the Handbuch this is not the case with the vulnerability frame. The part that is influenced by the vulnerability frame is not necessary for the hazard frame, therefore, it is not mentioned. If the focus lies on the mitigation prevention or moderation of disasters it is not necessary to look upon the society as a whole and determine the effects of adaption for different sectors. The part that is influenced by the vulnerability frame seems to be an afterthought. It is presented as bullet points and positioned after the recommendation for urban developers, the conclusion

of the Handbuch and in its length is only three pages. This positioning of the parts that discuss vulnerability at the sidelines can also be explained by Entman (1993). Entman (1993) argues for a four-step theory about how frames influence an audience. First the problem is defined, it is then determined what causes the problem, then a moral judgment is made about the problem and finally, remedies are suggested. In the case of the Handbuch, the problem are extreme weather events and especially heavy rains. To determine that extreme weather events are a problem, the influences of the risk frame are used. What causes the problem is clear; climate change. The moral remedies are clear humans will suffer under the effects of these extreme weather events. The fourth step is the step where the weak influence of the vulnerability frame can be explained. The hazard frame argues for a solution to the problem that focuses only on extreme weather events. The vulnerability frame has a different solution for extreme weather events. Society, in general, should be strengthened to be less vulnerable against all effects of climate change. The solution that is favored by both frames is opposing. With the dominant influence of the hazard frame, a weakening of the opposing vulnerability frame must be expected. Are there other reasons why the vulnerability frame has such a low influence in the Handbuch? This will be answered by looking at the other analyzed case the Kursbuch and through answering the question: Why do we find a stronger vulnerability frame in the Kursbuch then in the Handbuch?

The answer lies in the way the Kursbuch is structured. The Kursbuch has a different structure than the structure of the Handbuch. While the Handbuch tells one story with an introduction part which is influenced by the risk frame, the main part that is influenced by the hazard frame and an afterthought that is influenced by the vulnerability frame, the Kursbuch is separated into subcases, in which each case has its own structure similar to the structure of the Handbuch with an introduction the main part and a conclusion. These subcases are chapters and focus on one measure of adaption, one local region or one problem that is caused by climate change. Structure of these sub-cases varies, but generally, each of these stories discusses adaption and forecasting to some degree. The cooperation and synergies with other sectors are not excluded in a differ chapter like in the case of the Handbuch. The benefits and conflicts of adaption measures for other sectors are discussed in the context of each case. This structural difference to the Handbuch leads to a spreading of the influences of the frames. This change in the structure is the first reason that leads to a higher influence of the vulnerability frame in the Kursbuch in comparison to the Handbuch. The influence of structure seems to be an answer to

the expectation of other sources that influence the influence of a frame. The second reason leads to the second question about the implications of the frames. The influence of the two cases has resulted in the establishment of the hazard frame as the dominant frame in the case of the Handbuch. The secondary frames are in the Handbuch in a weak position. The opposite is true for the Kursbuch, where the dominant frame is comparatively weak, and the supporting frames are strong. The resilience frame is in both cases very weak. This answers the sub-question which frames can be observed. To answer the second sub-question, we will look upon at the second reason for the influence of the vulnerability frame and in the next part at the result of the coding level. The second reason is the difference in the used approaches and thereby connected authors who wrote the two cases. The team that worked on the Kursbuch is bigger and more diverse than the team that worked on the Handbuch. This is again due to the structure. The Handbuch which has one main story has a few main authors, the Kursbuch has for each of its story's different authors. The smaller a group is the more it tends to be homogenous, the bigger it grows the more it tends to be heterogenic. The mechanism behind this concept can be explained quite well by a thought experiment. Imagen a group of people that must vote for a party. People in this group have different party preferences. If one would hold one election with one winner, the party with the most preferences in the community would win. If one would divide the group of people into different sub-groups, which holed their own election, the result could change. The ratio between the preferences in one subgroup could be different then the ratio between the preference of all people. One sub-group could, therefore, vote for another party, then the party which would win the election, that is hold with all people. The same underlying principle can be applied to the influence, that the structure of a case has on the domination of a frame. It can also be applied to the sources that are used. While the Handbuch has sources for its main story with a difference in its introduction and main part, the Kursbuch has for each of its story's different sources. The results of this more diverse structure can be seen in the code SDG. The code SDG, which focuses on connections to the sustainable development goals can be found in the Kursbuch, but not in the Handbuch. The influence of the code is very small with 1,24% but it exists. One of the rare occasions were the influence of the SDG code can be seen is:

"To face the consequences of climate change in an appropriate manner, knowledge from discipline-specific technical, natural as well as social sciences is required, especially form cross-disciplinary and activity orientated sustainability concepts."

From this quotation one can observe the strong interweaving of the different codes. The code SDG as well as the code cooperation. The different structures and the different in author with their chosen sources are responsible for the different influences of the frames. This validates the expectation that authors are responsible for the influence of the frames. With this section, the first part of the analysis on the level of frames is finished. But which kind of authors are influencing the case with which frame? It could be seen that it helps to look at the codes separately. So, to answer this question, it will be looked at the results of the analysis in more detail, particularly on the results of the codes its self, in the second part of this analysis.

5.3 The Impact of Authors on the Influence of Frames

To begin with the analysis of the codes itself it is important to first discuss the results on the code level. These results can be seen in the following table:

	Handbuch Stadtklima		Kursbuch Klimaanpassung		Totals
	Absolute	**Column-relative**	**Absolute**	**Column-relative**	**Absolute**
1. Calculating	10	7,19%	59	18,32%	69
2. Capacity building	0	0,00%	2	0,62%	2
3. Cooperation	13	9,35%	60	18,69%	73
4. Disaster/Hazard	15	10,79%	37	11,49%	52
5. Extreme weather events	59	42,45%	30	9,32%	89
6. Forecast	27	19,42%	102	31,68%	129
7. Poverty reduction	0	0,00%	0	0,00%	0
8. Preparation	5	3,60%	7	2,17%	12
9. SDG	0	0,00%	4	1,24%	4
10. Strengthening society	0	0,00%	1	0,31%	1
11. Synergy effects	10	7,19%	19	5,90%	29
Totals	139	100,00%	321	100,00%	460

While the most mentioned code in the Handbuch is the “extreme weather events” the most mentioned code in the Kursbuch is “forecast”. These are in line with the most mentioned frames. In the case of the Handbuch the code “extreme weather events” is of all 12 tested codes mentioned 42,45% of the time. This number seems high. The most mentioned code in the case of the Kursbuch is only mentioned 31,68% of the time. It is also interesting to note that the code “Poverty reduction” is not mentioned in neither of the papers. The related code of the SDGs. Was not mentioned in the Handbuch and eight times 1,24% in the Kursbuch. The poverty and SDG codes are quite weakly represented. This is unexpected because the frame to which they are connected is the second respectively third largest. How could one explain this discrepancy? The low ratings in the Handbuch can be partly explained by the results of the first analysis. The structure of the Handbuch treats the vulnerability frame as an afterthought, it is not necessary for the focus of the Handbuch which is strongly linked to the Hazard frame. This suggests that only parts of the vulnerability frame are important for the hazard frame. But the question remains why are the other codes of the vulnerability frame mentioned but the poverty and the SDG not or only rarely the case of the Kursbuch? The answer lies in the approaches that are used. The Handbuch is the more drastic of the two cases. It tries to find problem regions and then a technical solution for the problems in these regions. The Handbuch argues:

“Superior issues for almost all adaption measures are the control about the technical feasibility of measurement and the creation of a (political) awareness about the willingness to implement measures of adaption to climate change.”

One can see in this quotation the practical orientation of the Handbuch. It is not looked upon what would be the most efficient measurement to implement, but rather what would the measurement with a high probability of implementation from a technical as well as a political point of few. The focus on technical solutions as such can also be observed. The question about the technical feasibility implies a technical solution. But where lies the difference between the Handbuch and the Kursbuch so that one is more technical focused and the other less so? To answer this question the discussed theory can help. Díez (2010) argued that when one wants to analyze a frame one has to look at:

“how actors construct their arguments, or storylines, in the pursuit of their policy choices through the use of discursive and rhetorical devices.” (Díez, 2010).

This helps to realize that actor in this case the authors are responsible for the influence of the frames. The question, therefore, should be, who wrote the Handbuch? The Handbuch has six main editors. For the sake of anonymity, I will not publish their names, only their main qualification will be looked upon. The 6 editors have a Ph.D. in geography, a Ph.D. in climatology, an engineering degree with a focus on water management, an engineering degree with a focus on environmental protection and an engineering degree with a focus on urban studies. Besides the focus on engineering, the main thing that is striking is a focus on natural sciences and the complete lack of any social sciences background. Even backgrounds in business or law are not represented. Due to these backgrounds translate to the sources that are used? or what sources are used in the Handbuch? The Handbuch distinguishes between literature and information sources, but altogether it uses 43 sources. Out of these 43 sources, 21 are scientific or policy papers on spatial planning. 16 are related to climate research. Most of them have a focus one urban climate research. These sources are in line with the main editors. A strong focus is put upon natural sciences and very little regard is but upon social science. But is this technical approach really created through the authors and the sources or are there possible third factors. To answer this question, it helps to look upon the Kursbuch. The structure of the Kursbuch divides the case into different sub-cases. If one of these sub-cases would have authors that are more related to social science, the vulnerability frame should be stronger. It will be especially interesting if the weak code SDG can be found in a chapter that was written by authors with a different background. The code SDG is mentioned four times in the Kursbuch. Two of those times are in the appendix. The two reminding mentions are in different chapters. It will be looked upon the first of those two: 4.2 communication and education – tracking down the climate. This chapter is two pages long and has four mentioned codes. Two are linked to the cooperation code and one to the SDG code. Both codes are linked to the vulnerability frame. The influence of the vulnerability frame is therefore quite strong. So, who wrote this chapter? I will again not publish the names of the authors only their main qualifications. The three authors of the chapter have a Ph.D. in business administration, a Ph.D. in psychology and a Ph.D. in Biology. One can see that the authors have very different backgrounds than the authors of the Handbuch. Two of the three authors have a background in social sciences in contrast to the zero in the Handbuch. This translates to the codes that are mentioned, the vulnerability frame is stronger because more of its codes are represented. One can conclude that the authors do have an influence on the influence of the frames and that

natural scientist and social scientist prefer different frames. A natural scientist may view an urban area as a system. It may see the system as threatened by a changing climate and have as such a view that is framed by a vulnerability frame. But it will not address social problems like poverty reduction, or sustainable development in a not technical way. It is therefore reasonable that the influence of the vulnerability frame is smaller in the Handbuch then in the Kursbuch. The technical approach of the Handbuch may regard certain codes of the vulnerability frame as important, but not all of them. The Kursbuch with its more diverse structure regarding authors is more open to the influence of different codes, which strengthens the influence of the vulnerability frame. This answers the question/expectation if it can be established which author tends to which frame.

5.4 Concluding Remarks of the Analysis

The aim of this analysis chapters was to answer the sub-questions of the research question in relation to the two selected cases. The two sub-questions were: Which types of frames can be observed? And: Which implications do these different types of frames have? This part will sum up all the results of the analysis chapter and answer these questions. The first part of the analysis focused on the first sub-question. The frame with the smallest influence on the two cases is the resilience frame. The frames with the most influential are the hazard frame for the Handbuch and respectively the risk frame for the Kursbuch. The codes that are linked to the hazard frame are in both cases often linked to heavy rains. The last frame the vulnerability frames is moderately strong in both cases more so in the Kursbuch. This answers the first sub-question. The implications of the influence of the discussed frames will now be discussed. The hazard frame has a very dominant influence on the Handbuch. This is due to two factors. The first is the highly technical approach that Handbuch uses. This technical approach is linked to the authors who wrote the Handbuch. The backgrounds of the authors of the Handbuch are all connected to natural sciences. Half of them have backgrounds in engineering. They consequently focus on technical solutions for problems. Codes of the vulnerability frame are linked to more social problems and are therefore not as strongly influential under this technical approach. Problems under the hazard frame e.g. extreme weather events are very technical

problems and are therefore fitting under this technical approach. The second reason for the influence of the hazard frame is the homogenous structure that the Handbuch employs. The Handbuch is structured with one-storyline. With and problem identification part one main part and a conclusion. This leads to a strengthening of the dominant frame, in this case, the Hazard frame because other frames do not have much room for their influence. The narrow spreading of the influence of the first three frames on the Kursbuch is due to the opposite reasons. The heterogeneous structure of the Kursbuch with its independent subs cases makes it different for the dominant frame to have a strong influence. The more cases the higher the trend to a more heterogenic distribution. The approach of the Kursbuch, therefore, does not help in fostering the influence of the strongest frame. The authors are similarly different to the authors of the Handbuch. The author structure of the Kursbuch is more open to social scientists. These social scientists influence the chosen approach. The approach of the Kursbuch is less technical. This approach then enables the emergence of more social-focused codes like the SDG code. These codes then strengthen the influence of the vulnerability frame. The two most important implications are firstly the influence of the author backgrounds. Natural scientists prefers the risk or hazard frame and social scientists the vulnerability frame and secondly the influence of the structure of the cases on the frame selection. The Kursbuch with its subcases weakens the dominant frame and strengthens all other frames. The opposite is true for the structure of the Handbuch which supports the influence of the strongest frame.

6. Conclusion

The aim of this research was to better understand the framing local of climate adoption policies in Germany. Climate change is inevitable, and it is therefore imperative to adapt to it. (IPCC 2018) The understanding of climate adaption policy should help in the implementation and construction of measures of adaption. To help in this endeavor this study analyzed the framing of climate adaption policies. This thesis concentrates on the framing of climate adaption policies because the framing of a policy is an important part of every policy. A frame can influence the means, the scope, the direction and the context of a policy (Davie, 2014; Díez, 2010; Goetz, 2008). The Framing of climate adoption policies is a relatively new scientific field, some theories have emerged in the last years. Especially the four frames proposed by Vogel and Henstra (2015) are very interesting but they are not tested extensively. This thesis does that. To accomplish this the research question: What are the (policy) implication of framings for local climate change adaption policies? was asked. This question will be answered in the following chapter. To answer the research, question a narrative case study was conducted two cases of local climate change adaption were selected as typical cases. The frames proposed by Vogel and Henstra (2015) were translated into a coding scheme. This coding scheme was applied to the two selected cases. The results of this analysis have shown three main areas of implications. The first was on the structural level of the cases. The second was related to the authors of each case. And the third was a discrepancy on the coding level.

The first implication was observed in the structure of the cases. The causal direction of this observation is not quite clear. A case with a very dominant frame was structure in a very straight forward way. The case identifies the problem, it presents solutions tests them and based on this makes recommendations. On the bases of this analysis, it cannot be predicted with certainty if the dominant frame was so dominated that the cases were influenced by it in a way that translated into this structure or if the structure helped the frame to become as dominant as it is. The relations ship between the structure of a case and its degree of strong domination of one or more frame was further strengthened by another case. This case had a very heterogenic structure with different sub-stories. The degree of distance between the influence of the different analyzed frames was in this case small. A relationship between the structure of a case and the degree to which one or more frames dominate a case is therefore probable.

The second implication is concerned with the authors that are responsible for their respective cases. The analysis showed that the background of the authors has an influence on the degree to which some frames are dominant. This effect is even stronger when it is viewed on the level of simple codes. It was observed that the hazard and the risk frame were preferred by natural scientists, while social scientists were more concerned with the vulnerability frame. This relationship can be explained quite easily. The hazard frame is mostly concerned with the increased occurrence of natural disasters. The adoption of such natural disasters can be done to a high degree through technical means. Some social aspects are relevant as well, for example in the case of evacuation, but these problems are related to technical solutions as well. The risk frame is concerned with the prediction of climate change and the calculation of its consequences. This is at the core a field of natural science. Social problems are relevant too, especially if one is not only concerned with the calculation of the direct effects of climate change, but its indirect ones. The vulnerability frame is concerned with the consequences of climate change society at large. This is at the core a field of social science. Questions about the consequences of external threats for society and the best way to adapt to these threats as a society, are clearly social science questions. The connection of the hazard and the risk frame to natural science and the connection of the vulnerability frame are therefore quite clear.

The third implication, that was observed in the analysis, is concerned with the distinctions between the codes in the vulnerability frame. The codes that were more related to social science, were little or not at all represented in the observed cases. The codes that were more neutral and not clearly related to social science were strongly represented. This discrepancy led to the result that the vulnerability frame was quite influential but not in its entirety, only partly. The focus in the cases that were observed lies on the code cooperation. Much less influential were the codes of poverty and SDG. This is quite strange because the IPCC report of 2018, uses both these codes heavily and connects different climate adaption policies to the Sustainable Development Goals and poverty reeducation. The context in which these codes are used in the IPCC report is important. They are mostly related to developing countries. This context is not applicable to Germany as a developed country.

In the first part of the analysis, the influence of the four discussed frames was compared. The frame was the weakest in both cases was the resilience frame. This was unexpected. The concept of resilience got more prominence in the discussion of climate change. The IPCC, for example, promotes the concept of climate-resilient pathways.

“Climate-resilient pathways are development trajectories that combine adaptation and mitigation to realize the goal of sustainable development. They can be seen as iterative, continually evolving processes for managing change within complex systems.” (Denton et al., 2015).

The core of the concept of resilience is the connection between climate change mitigation and climate change adaption. It is argued that the concept cannot be viewed as separate but have to be viewed as connected. A more effective climate change mitigation would result in less stress on climate adaption measures. The same is true for the opposite relation. A less effective climate change mitigation would result in more stress for climate change adaption measures. For the concept of the climate-resilient pathways, this is as well very relevant.

“Prospects for climate-resilient pathways are related fundamentally to what the world accomplishes with climate change mitigation, but both mitigation and adaptation are essential for climate change risk management at all scales.” (Denton et al., 2015).

The concept of resilience is also promoted by the OECD. The OECD promotes the concept of resilient infrastructure. This “Infrastructure should be consistent with low-GHG transitions, but also resilient to the impacts of changing climate” (OECD, 2018). The concept of resilience can be connected to the SDGs and the concept of vulnerability. The OECD argues that:

“Climate-resilient infrastructure can also support efforts to achieve a number of the Sustainable Development Goals and the implementation”

It is interesting that the concept of resistance was not mentioned in both cases in any way and that the connected frame was very weak. Even though the concept could be connected to the concept of vulnerability which is in one case at least influential. The reason for this phenomenon has probably to do with the split influence of the vulnerability frame. Only parts of the vulnerability frame are influential namely the parts that are technical. The non-technical codes like the SDG or poverty reeducation codes were not influential. But especially these codes are connected to the resilience concept.

7. Implications for policy entrepreneurs.

This chapter will discuss the implication of the findings of this thesis for policy entrepreneurs. The structure will be oriented on the structure of the previous chapter. The implications for policy entrepreneurs will be based on the implication of framing discussed in the conclusion.

The discussed structures of a case can entail both positive as well as negative aspects. A more straightforward structure helps to focus more on a few issues. The degree to which these few problems can be processed is higher than in a more spread out approach. The downside, of course, is that different problems are not discussed. The opposite is true for a more heterogeneous structure. Here the focus is more spread out. It is easier to create an overview of different problems. It was observed in the analysis that the first structure is more used to focus on a problem the second is more used to focus on a region. The structures can be some degree viewed as vertical and horizontal. While one looks at a problem in all its forms in a vertical way the other looks at different problems, so more horizontal.

A connection of the hazard and the risk frame to natural science and a connection of the vulnerability frame can be observed. What does this concretely mean for adoption policies? The distinction between cross-disciplinary studies with a researcher from both natural science as well as social science and studies with a focus on only natural or social science is like the distinction, a consequence of the two discussed structures. While a focus on one of the two is more appropriate when the case is concerned with one aspect of a problem, a cross-disciplinary approach is more appropriate when one wants to engage a problem from different sides or different problems. A risk that can emerge when the focus lies on only one of the two scientific directions will be discussed in the following implication.

Is it possible to use the codes SDG and poverty not in the same context as in the IPCC report? The code poverty, for example, is regarded in developing country often as absolute poverty, in the context of developed countries often as relative poverty. This can be relevant to developed countries. To use an example of one of the cases the heavy rain management. One of the cases is heavily focused on heavy rains. It discusses the rising likelihood of them appearing, their consequences, dangers as well as possible adaption measures. The presented adaption measures are to a very high degree, technical. These measures are implementable on the level of real estate owners or own the level of urban planning. A question that is in this context

important is the question: who pays for these measures. When they are on the level of real estate owners the real estate owner must pay for them. Some programs of funding exist, but they are almost neglectable. This leads to a situation where more wealthy real estate owners can adapt to climate change and less wealthy people less so. This can be especially problematic in the context of affordable housing. If the price of affordable housing rises, poorer people will be especially affected if more expansive housing adapts and less expansive housing not, the likelihood for poorer people living in not adopted housing rises. This in return raises the possibility of poorer people to be hit by a disaster. A discussion to solve this catch 22 problem would be recommendable. The relationship between poverty and the consequences of climate change is important. The fact that the code poverty was not used ones in both cases is concerning. Concludingly one can say, that a conscious choice concerning the structure and the background of the authors of a case, should be made. These choice have a direct effect on the framing of a climate change adaption policy.

8. Limitation of this Study

This research contributed to the understanding of the framing of climate adaption research. This field has been studied on a theoretical level, but not extensively narratively on a policy level. This thesis has shown that correlations between the backgrounds of authors and the framing of a case can be found. A tendency of natural scientists towards a technical approach and the hazard as well as risk frame and a tendency of social scientists towards a non-technical approach and the vulnerability frame was observed. It was also observed that the structuring of a case as one whole story or different smaller stories can have an impact on the influence of frames. These findings are based on a narrative case study in which the influence of four theory-based frames are measured. The measurement of these four frames was done through a coding scheme that operationalized the cases. These codes were selected to fit the definition of the theory given frames in the best possible way. This was done under the scrutiny of the author and within his discretion. It is always hard to find the best possible code words while coding. This study provided an explanation for every code and the way the code was applied, but some researches may nether the less disagree with the selection. The code disaster/hazard, for example, encompasses codes that are related to the field of disaster predictions, it could be argued that this is more related to the code prediction, which is part of a different frame. This study decided to locate the field towards disaster/hazards because the focus of the prediction lies not on disasters that are a direct consequence of climate change, but on all disasters. The operationalization itself was done via Atlas Ti and can be checked and redone quit easily. The coding itself is harder to replicate. The analysis was conducted with two cases. This case selection is quite small. This is not very uncommon for a qualitative study; the possible representativeness is nether the less quite small. Both cases were located in Germany.

It was done because the cases were selected as typical cases and the fact that they are both located in the same state helps in the recognition of trends and implications that can be drawn. The context is here the imitating factor. Similar contexts to the context of the two cases will probably lead to the same implications. These contexts are like Germany develops western states. Very different context, for example, a developing African state would have probably framed their climate adaption policies differently and would, therefore, have different implications to the frames of those that are observed in this thesis. It can be argued that this study is Eurocentric. It could even be the case that some observed implication like the focus on

technical solutions and the strong representation of natural scientist and especially engineers as authors is specific to Germany and could be not found in for example France. This requires further research. It could also be argued that the selected cases are somewhat older. One case was published in 2014 and one was from 2011. The reason, these cases were chosen and not some newer ones, was that they are typical and comparable as well as overviews of possible or conducted implantation measures. Still, the argument could be made that the framing of adaption could have been changed in the years after these cases were published. To answer, if this is the case, further research would be required. This could be done with a similar or even the same coding scheme applied to a different case. It would be especially interesting to look into possible trends that happen over time. Finally, one can say that further research into the framing of climate adaption research would be valuable. The understanding of the framing of climate change adaption policies, helps in the construction of effective climate adoption policies.

9. Endnotes:

Both cases that were analyzed in this thesis were written in German, but the thesis was written in English. It was, therefore, decided to translate all citations into English. For the sake of transparency, all these citations will be listed with their translation. This can help to verify the used citation of this study.

Citations from the Handbuch:

„with the more and more occurring and suddenly appearing storms and heavy rains, more damage is cause to the urban infrastructure"

Bei den immer häufiger und plötzlich auftretenden Stürmen und Starkregenereignissen kommt es zudem zu schweren Schäden an der städtischen Infrastruktur.

"It will be explained, how regions can be identified, in which special problems, that are caused by climate change are more likely to occur."

Es wird erläutert, wie Bereiche identifiziert werden können, in denen aufgrund des Klimawandels mit besonderen Problemen zu rechnen sein wird

"The realization of measures of climate adaption is easier if a double function and an observable additional benefit are present."

Die Umsetzung von Maßnahmen zur Anpassung an den Klimawandel ist wesentlich einfacher, wenn eine Doppelfunktion und ein sichtbarer Zusatznutzen vorliegen

"Superior issues for almost all adaption measures are the control about the technical feasibility of measurement and the creation of a (political) awareness about the willingness to implement measures of adaption to climate change."

Übergeordnete Aspekte für fast alle Anpassungslösungen sind die Überprüfung der technischen Machbarkeit von Maßnahmen und die Schaffung eines (politischen) Bewusstseins für die Umsetzungsbereitschaft von Anpassungsmaßnahmen an den Klimawandel.

Citations form the Kursbuch:

“To face the consequences of climate change in an appropriate manner, knowledge from discipline-specific technical, natural as well as social sciences is required, especially form cross-disciplinary and activity orientated sustainability concepts.”

Um den Folgen des Klimawandels angemessen begegnen zu können, bedarf es neben fachspezifische technische, natur- oder sozialwissenschaftliche Kenntnisse insbesondere auch fachintegrierender und -übergreifender sowie handlungsorientierter sog. Nachhaltigkeitskompetenzen.

10. References

Anthony, D. L., Heckathorn, D. D., & Maser, S. M. (1994). Rational rhetoric in politics: the debate over ratifying the US Constitution. *Rationality and Society, 6*(4), 489-518.

Denton, F., Wilbanks, T. J., Abeysinghe, A. C., Burton, I., Gao, Q., Lemos, M. C., . . . Wright, S. B. (2015). Climate-resilient pathways: Adaptation, mitigation, and sustainable development. In (pp. 1101-1131).

Díez, J. (2010). The Importance of Policy Frames in Contentious Politics: Mexico's National Antihomophobia Campaign. *Latin American Research Review*, 33-54.

Dupuis, J., & Biesbroek, R. J. G. E. C. (2013). Comparing apples and oranges: the dependent variable problem in comparing and evaluating climate change adaptation policies. *23*(6), 1476-1487.

Dupuis, J., Knoepfel, P. J. E., & Society. (2013). The adaptation policy paradox: the implementation deficit of policies framed as climate change adaptation. *18*(4).

Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of communication, 43*(4), 51-58.

Fligstein, N., & Mara-Drita, I. (1996). How to make a market: Reflections on the attempt to create a single market in the European Union. *American journal of sociology, 102*(1), 1-33.

Gamson, W. A., Croteau, D., Hoynes, W., & Sasson, T. (1992). Media images and the social construction of reality. *Annual review of sociology, 18*(1), 373-393.

Goetz, E. G. (2008). Words matter: The importance of issue framing and the case of affordable housing. *Journal of the American Planning Association, 74*(2), 222-229.

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*: Harvard University Press.

Haider-Markel, D. P., & Joslyn, M. R. (2001). Gun policy, opinion, tragedy, and blame attribution: The conditional influence of issue frames. *Journal of Politics, 63*(2), 520-543.

Huitema, D., Adger, W. N., Berkhout, F., Massey, E., Mazmanian, D., Munaretto, S., . . . Termeer, C. (2016). The governance of adaptation: choices, reasons, and effects. Introduction to the Special Feature.

IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press

Knoll, B. R., Redlawsk, D. P., & Sanborn, H. (2011). Framing labels and immigration policy attitudes in the Iowa caucuses:"Trying to out-Tancredo Tancredo". *Political Behavior, 33*(3), 433-454.

Luhtakallio, E. (2012). *Practicing democracy: Local activism and politics in France and Finland*: Springer.

Mintrom, M. (1997). Policy entrepreneurs and the diffusion of innovation. *American journal of political science*, 738-770.

OECD. (2018). Climate-resilient infrastructure. doi:doi:https://doi.org/10.1787/4fdf9eaf-en

Runhaar, H., Wilk, B., Persson, Å., Uittenbroek, C., & Wamsler, C. J. R. e. c. (2018). Mainstreaming climate adaptation: taking stock about "what works" from empirical research worldwide. *18*(4), 1201-1210.

Vink, M. J., Boezeman, D., Dewulf, A., Termeer, C. J. J. E. S., & Policy. (2013). Changing climate, changing frames: Dutch water policy frame developments in the context of a rise and fall of attention to climate change. *30*, 90-101.

Vogel, B., & Henstra, D. J. G. E. C. (2015). Studying local climate adaptation: A heuristic research framework for comparative policy analysis. *31*, 110-120.

Cases:

KLIMZUG-NORD Verbund. (2014). KURSBUCH Klimaanpassung: Handlungsoptionen für die Metropolregion Hamburg. Retrieved form https://klimzug-nord.de/file.php/2014-03-20-KLIMZUG-NORD-Verbund-Hrsg.-2014-Kursbuch-Klimaanpassu on 26th February 2019

Ministerium für Klimaschutz Umwelt, Landwirtschaft, Natur- und Verbraucherschutz des Landes Nordrhein-Westfalen. (2010). Handbuch Stadtklima: Maßnahmen und Handlungskonzepte für Städte und Ballungsräume zur Anpassung an den Klimawandel. Retrieved form https://www.metropoleruhr.de/fileadmin/user_upload/metropoleruhr.de/01_PDFs/Regionalverband/Umwelt_Freiraum/Klima/MUNLVRVR-Handbuch_Stadtklima.pdf on 24th February 2019.