

Project Report

Sustainable Distribution of Responsibility for Climate Change Adaptation

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Abstract: To gain legitimacy for climate change adaptation decisions, the distribution of responsibility for these decisions and their implementation needs to be grounded in theories of just distribution and what those affected by decisions see as just. The purpose of this project is to contribute to sustainable spatial planning and the ability of local and regional public authorities to make well-informed and sustainable adaptation decisions, based on knowledge about both climate change impacts and the perceptions of residents and civil servants on what constitutes a sustainable distribution of responsibility. Our aims are: (1) a better understanding of the practical implications of theories about just distribution of responsibility for the choice of local and regional climate adaptation measures; (2) knowledge about what residents and civil servants consider a sustainable distribution of responsibility for climate adaptation measures; and (3) a better understanding of conflicts concerning the distribution of responsibilities and systematic knowledge about the possibilities to manage them. In this interdisciplinary project, we study six municipalities and their residents, and two county administrative boards, all in Sweden, using mixed methods: value theory, document studies, interviews, focus groups, and surveys.

Keywords: climate change adaptation; distribution of responsibility; municipal planning; climate ethics; focus groups; mixed methods

1. Introduction

The distribution of responsibility for climate change adaptation is an increasingly important issue in the context of spatial planning. Over recent years, in Sweden and elsewhere, major climate-related events, such as flooding, have resulted in conflicts over what public authorities should do to protect citizens and property against the negative impacts of climate change, and what the private sector, including citizens, should do. With global warming increasing, negative effects on society will grow, and so will conflicts over who should assume responsibility to protect society against those impacts. Climate adaptation is a matter of political and ethical concern. It is therefore not sufficient to see it only as a planning issue that needs efficient solutions, as is the case in much of existing research and in a Swedish public investigation on responsibility for climate adaptation from 2017 [1]. Such an approach will lead to higher levels of societal conflict over climate adaptation and lower levels of legitimacy for climate adaptation measures. Issues regarding who decides what is worth protecting, who implements adaptation measures and who pays for them, as well as who decides what is not to be protected, are issues that need to be discussed transparently. Otherwise measures might not be seen as just by those affected and consequentially not become sustainable. Adaptation decisions, therefore, need input not only from those affected by negative impacts induced by climate change but also from those affected by adaptation measures. For the same reason, adaptation decisions also need input

from theories about what a just distribution of responsibility means. For society, this is a question of utmost importance. However, the normative base for this has not yet been developed sufficiently and public attitudes in Sweden have not been studied. The purpose of this project is to contribute to sustainable spatial planning and the ability of public authorities, especially municipalities and county administrative boards (CABs), to make well-informed and sustainable adaptation decisions, based on knowledge about both climate change impacts and the perceptions of residents and civil servants on what constitutes a sustainable distribution of responsibility. Our aims are:

1. A better understanding of the practical implications of theories about just distribution of responsibility for the choice of local and regional climate adaptation measures.
2. Knowledge about what residents and civil servants consider a sustainable distribution of responsibility for climate adaptation measures.
3. A better understanding of conflicts concerning the distribution of responsibilities and systematic knowledge about the possibilities to manage them.

In order to realize these aims, the project will study: the theoretical foundations for sustainable distributions of responsibility applied to climate adaptation (module 1); what is seen as a sustainable distribution of responsibility by Swedish local and regional stakeholders (module 2); and on the basis of the theoretical and empirical studies, analyze conflicting perceptions and possibilities to manage them in order to enable a just distribution of responsibility for climate adaptation (module 3).

The research project will contribute to the fulfilment of three of the UN sustainable development goals: sustainable cities and communities; climate action; and reduced inequality. It will also contribute to the fulfilment of two of Sweden's environmental objectives: reduced climate impact; and a good built environment. The project will do this by contributing knowledge about how cities and communities can work with climate adaptation in a sustainable and inclusive way. The project will further enhance awareness about these issues among citizens and policymakers.

The project is interdisciplinary and studies ethical, political, and organizational aspects of the distribution of responsibilities regarding local and regional climate change adaptation. This integration of perspectives is crucial to fulfilling the project's purpose and aims. The interdisciplinary character of the project is novel in this type of research and will enable the generation of more comprehensive knowledge of responsibility distributions for climate adaptation and support for policy-making that can be applied across spatial planning issues and geographical contexts.

2. Research Review

There is extensive research on climate adaptation (e.g., [2,3]). However, it is only over the past 15 years that research within social sciences and humanities has gained ground and it is now growing rapidly. A growing field is research on climate adaptation policies in different countries [4], many focusing on a European or industrialized country context [5,6]. They take stock of policies and explain differences between countries, to some extent including responsibility issues, and study the efficiency of these policies [7]. However, these studies pay limited attention to normative aspects [8]. Research on normative aspects of local adaptation is still rare [3,9]. Another growing field is research on local climate adaptation, predominantly in cities [10,11], with some studies focusing on normative issues, although limited to different groups in the city [12].

There are many Swedish case studies on climate adaptation [13–18], of which some focus on normative questions, but not on responsibility. Some discuss the distribution of responsibility, but without considering normative aspects [19,20].

Normative aspects of the distribution of responsibility concerning climate change have mostly been studied in the context of mitigation and as an international issue concerning the distribution among countries or generations [21–25], often with literature on environmental justice as a starting point. This literature deals with a desirable distribution and a just distributive process [26], yet, with some exceptions [21,27,28] gives less attention to local and regional decision-making. Some have discussed

differences between mitigation and adaptation, and what it implies in terms of just distribution of responsibility [29,30].

Some researchers study how responsibility for climate adaptation is distributed today, with focus on who has responsibility, and to some extent on what grounds [8]. This research is prominent in the Netherlands [31], with fewer case studies from other countries [32], or comparisons between countries [33,34]. These studies focus on the distribution of responsibilities between public and private actors, and between different political levels, with the conclusion that public-private alternatives are necessary for effective adaptation. They also study what happens with the existing distribution of responsibility when the climate is changing, in terms of both conflicts and principles for decision-making.

Principles for the distribution of responsibility are located in international agreements, national (predominantly Dutch) law, and environmental research [8,35]. A recent study investigates the normative perspectives in UK citizens' perceptions of climate adaptation, but focuses only partly on responsibility distribution [9]. We will draw on this literature, but provide a more thorough understanding of normative principles for just distribution and how they can be applied to local and regional climate adaptation, coupled with knowledge of perceptions of Swedish stakeholders, which so far is lacking.

3. Project Design

The project has three modules (see Table 1 for an overview of tasks within each module).

Table 1. Project tasks.

	Tasks
Module 1	<ul style="list-style-type: none"> - List adaptation measures from the literature and analyze who could be responsible for which category of responsibility - Apply normative principles to adaptation measures and categories of responsibility
Module 2	<ul style="list-style-type: none"> - Document studies and interviews at the municipalities - Document studies and interviews at the county administrative boards - Survey - Focus groups
Module 3	<ul style="list-style-type: none"> - Analyze conflicts among resident and civil servant perceptions - Investigate possible ways to manage conflicts, building on the normative principles

3.1. Module 1

Module 1 is focused on fulfilling aim 1.

Responsibility can be understood in many different ways. The literature on responsibility abounds with different taxonomies (e.g., [36–38]). Many of these focus foremost on what is often called retrospective responsibility (e.g., [38]). This type of responsibility is connected to accountability, answerability, and liability. Responsibility here means to answer for something after it has happened, either on legal or on moral grounds. In this project we are not interested in retrospective responsibility. Instead, we focus on what Cane [37] calls prospective responsibility—a forward-looking responsibility of, for example, ensuring that decisions are made and action taken. There are substantial overlap between the two types: if you have a prospective responsibility, you could be held accountable if you do not succeed. However, a prospective responsibility does not have to imply this. For example, scientists can be said to have a prospective responsibility for communicating knowledge, but are usually not seen as accountable or liable for their advice.

The question of just distribution is discussed in the literature in relation to several issues, including the distribution of rights, wealth, and responsibility. The question of what constitutes a just distribution is basically the same in the different cases, though the way it is discussed differs slightly depending on

whether the distribution is assumed to have a positive value or a negative value. Responsibility in the context of climate adaptation is an example of the latter.

The standard division of theories of just distribution is based on five main categories: equality, guilt/merit, ability, need, and efficiency [39,40]. This division mirrors different normative principles, where the first and fifth aim at realizing certain values (equality and maximizing good respectively), while the other three are centered on purportedly relevant features/roles in acting individuals (or legal persons) [22,40,41]. These five basic distributions can be further divided into sub-categories and combined in different ways. We assume that justification of decisions regarding the distribution of responsibilities for climate adaptation will have to consider all of the above principles to some degree.

We will apply these principles to actual adaptation measures. The aim is to provide a better understanding of the practical implications of normative principles for the choice of local and regional climate adaptation measures.

We will first identify a range of climate adaptation measures in the academic and grey literature [42] applicable to the Swedish context. For these adaptation measures, we will systematically analyze what the application of each of the normative principles implies for the distribution of responsibility over four categories: initiative/decision, implementation, payment, and residual risk [43]. See Figures 1 and 2 for illustrations of this analysis. The in-depth normative understanding of the distribution of responsibility can be used across spatial planning issues and geographical contexts.

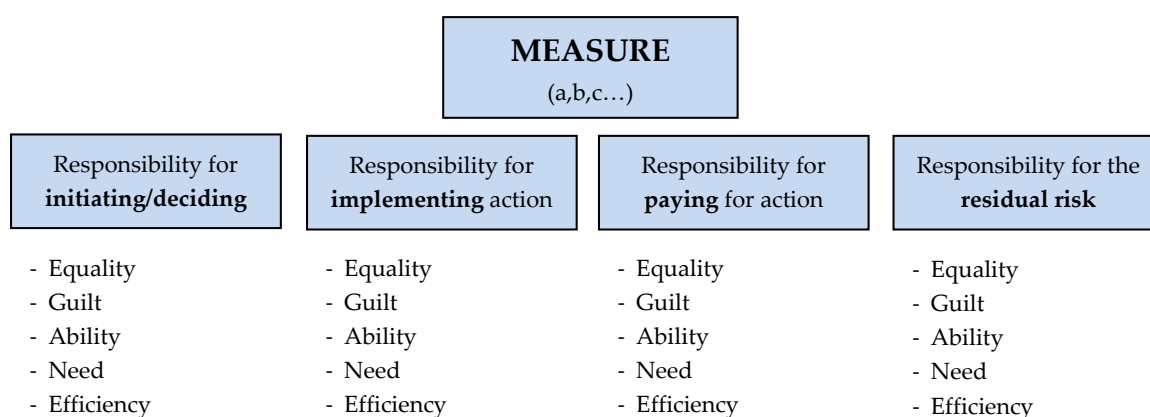


Figure 1. Framework for analyzing responsibility for adaptation measures (step 1, identify adaptation measures; step 2, for measures a,b,c . . . analyze possible responsibility distributions for different tasks based on the normative principles).

The four categories of responsibility capture main aspects of a prospective responsibility. The four are wide categories, incorporating several aspects. For example, the implementing category covers implementation of decisions, monitoring, and evaluation [31]. If necessary the categories will be refined for the empirical analysis.

3.2. Module 2

Module 2 is focused on fulfilling aim 2. In order to study empirically what residents and civil servants perceive as a just distribution of responsibilities for climate adaptation, we will focus on municipalities and county administrative boards (CABs).

According to Swedish legislation [44], authorities are responsible for providing reliable information about local climate change effects, developing plans for threatened areas, and spatial planning. While residents are responsible for protecting their property, authorities have a role in guiding them. There are, however, extensive opportunities for municipalities to interpret how the distribution of responsibility should be structured and which normative principles to follow.



Figure 2. Example of the analysis of the possible responsibility distribution based on the five normative principles.

The perception among authorities of what constitutes a just distribution will likely be affected by adaptation decisions already made. Therefore, we will study these decisions in six municipalities and two CABs (see Section 3.4. *Case Selection*) through document studies. Although not explicitly dealing with normative considerations, these decisions still provide information about normative positions.

To study perceptions of a just distribution in the municipalities and CABs, we will interview civil servants from different parts of the administrations working with climate adaptation and spatial planning. The interviews, which will be recorded and transcribed, will be exploratory [45] and semi-structured [46]. The analysis will seek to detect which normative principles the civil servants emphasize in relation to the different responsibility categories.

The residents' perceptions of what constitutes a just distribution will be studied using a mixed-methods approach [47] combining a quantitative survey study and a qualitative focus group study. The research data will be collected sequentially, with the results of the survey study forming the basis for the focus group study. Focus groups will be utilized to achieve a more nuanced and in-depth understanding of the results from the survey about why individuals prefer different combinations of distribution principles and about conflicts between different priorities. The data will be analyzed to establish which normative principles residents see as important for a sustainable distribution of responsibility.

The survey allows us to study the attitudes towards a just distribution of responsibility among the wider population. This enables us to identify differences between young and old, low- and high-income, more and less educated, and more and less vulnerable residents. There could also be differences between those already affected by climate-related events and those who are not [48]. The survey will reach a random sample of all adults registered as residents in the municipalities, in total 6000 residents. In addition to background questions about age, gender, income, education, etc., and a few questions about their acceptance of climate science and experiences of climate change, we also ask about their attitudes towards different ways of distributing responsibility. The latter is primarily done through a series of statements that the respondents are asked to grade to the extent they agree with the statements from 1 (do not agree) to 7 (strongly agree). The answers will be in the nominal and ordinal scale. Non-parametric statistical methods will be used for the analysis.

The purpose of these questions is not to test the respondents' knowledge about legal responsibility or to find out what measures they have actually taken or believe have been taken by different actors, but to understand what they perceive as just distribution.

We are aware that questionnaires are never completely free from bias and that respondents may have different reasons for answering the way they do. We believe, however, that this is the best way of getting as close as we can to understanding the distribution of different perceptions of what a just distribution of responsibility means in relation to climate adaptation in the population of the studied areas.

Focus groups allow for a broad set of opinions to be voiced and discussed [49]. In our case, this implies that participants need to qualify and justify their normative positions regarding responsibility to the other participants.

We will conduct twelve focus group sessions, two in each municipality, with 8–10 participants in each group. The reason for holding two focus groups in each municipality is to reduce the risks connected with focus groups, including that the participants are biased in some direction, and that the discussion is dominated by one person. The focus groups will consist of individuals who live or are active (through, for example, owning a company) in the municipality. Invitations to the focus groups will be advertised in local Facebook groups and sent out through local branches of civil society organizations. The selection of participants will be made to cover as wide a group as possible, yet the participants are not seen as representing a specific group. Instead, the purpose of the selection is to increase the possibility of many different normative principles being voiced. We are interested in the justifications that participants give for their positions. This will provide an in-depth understanding of how they think about a just distribution of responsibility, and where there are consensus and conflicts.

Participants will discuss how responsibility can be distributed based on a scenario developed from regional climate change scenarios [50], a general flooding scenario and risk assessments [51] in their municipality. The scenario will be illustrated using maps, photos and other graphics to illustrate the flood and its effects. We will also provide a description of the course and the consequences of the scenario. The conversations will be recorded and transcribed. Observations made during the discussions will be written down.

The combination of these methods will give us a good understanding of what different groups of residents and civil servants perceive as a just distribution, and of areas of consensus and conflict.

3.3. Module 3

Module 3 is focused on fulfilling aim 3. Any distribution of responsibility will benefit some and disfavor others. For a distribution to be truly sustainable, it has to be perceived as morally acceptable by both those disfavored and those benefitted, as well as by public authorities.

Based on the results of modules 1 and 2, module 3 is focused on creating a better understanding of conflicts among the perceptions held by different groups of residents and civil servants. We will systematically investigate possibilities for municipalities and CABs to manage these conflicts. In most cases, a mix of normative principles, both for the different categories of responsibility and for different adaptation measures, is needed for finding a sustainable distribution. The task in this module is to find distributions of responsibility that can generate public decisions perceived as just. The analysis will take account of how responsibility distributions affect different groups, as well as their potential for effective climate adaptation. The methodology developed in module 3 will be broadly applicable.

3.4. Case Selection

The studied municipalities are selected to cover different locations and sizes: three from the County of Skåne (Malmö, Ängelholm, and Vellinge) and three from the County of Västra Götaland (Göteborg, Uddevalla, and Skövde), see Figure 3.

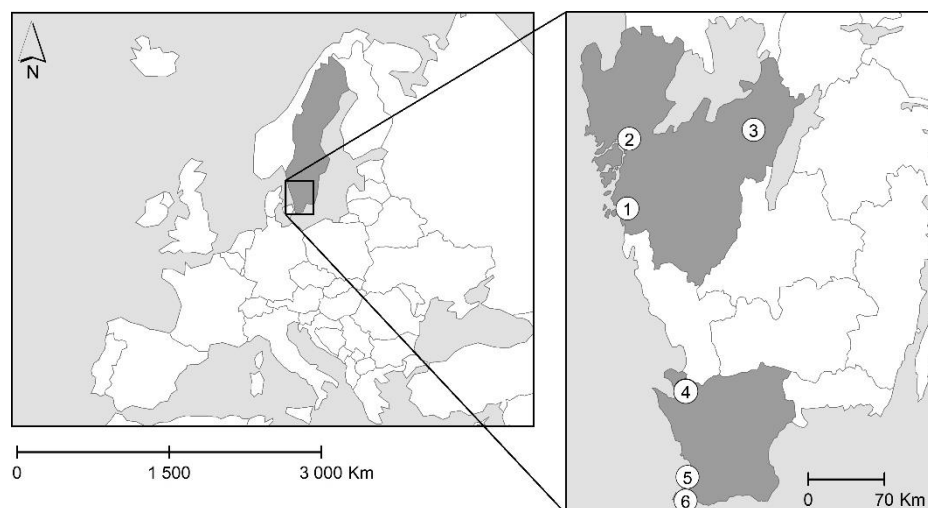


Figure 3. Map of studied municipalities (numbers) and counties (grey areas) in Sweden. ① Göteborg, ② Uddevalla, ③ Skövde, in the County of Västra Götaland, and ④ Ängelholm, ⑤ Malmö, ⑥ Vellinge, in the County of Skåne. Source: Made with Natural Earth; Statistics Sweden.

The municipalities are all at risk for future negative climate change impacts. Two municipalities in each region have experienced climate change-related events with a major disruptive effect, whereas one municipality per region has not, see Table 2. The selection of municipalities will ensure variation in location, size, and previous experience of impacts. The CABs of Skåne and Västra Götaland will also be studied. All eight authorities have agreed to participate in the study. We have chosen to focus on

flooding (with different causes, such as sea level rise and cloudbursts), as it has been highly associated with climate change in the public debate. It is therefore likely that residents to some degree have considered flooding as a future climate risk and have possibly also considered the normative aspects of flooding. As flooding has similar characteristics to other climate change impacts, such as heat waves, in terms of the relation between public and private stakeholders, the normative perceptions regarding responsibility distribution will probably be similar.

Table 2. Choice of municipalities. Information about size and climate-related aspects.

	Malmö	Vellinge	Ängelholm	Göteborg	Uddevalla	Skövde
Region	Skåne	Skåne	Skåne	Västra Götaland	Västra Götaland	Västra Götaland
Size (geographical)	157 km ²	143 km ²	420 km ²	448 km ²	638 km ²	674 km ²
Size (inhabitants)	329,000	35,000	41,000	557,000	55,000	54,000
Climate change risks (most pronounced)	Flooding (sea-level rise and cloudbursts)	Flooding (sea-level rise and cloudbursts)	Flooding (sea-level rise and cloudburst), cost erosion	Flooding (sea-level rise and cloudbursts), landslides	Flooding (sea-level rise and cloudbursts), landslides	Flooding (cloudbursts)
Recent climate-related events	Flooding due to cloudburst (2014)	Flooding due to cloudburst (2014)	No major climate-related event	Flooding (2006, 2008)	Flooding due to cloudburst and rising sea level (2008)	No major climate-related event

4. Plan of Implementation

The first year, 2019, will be devoted to modules 1 and 2. The work in module 1, focused on aim 1, will lay the groundwork for module 2, in which we will conduct document studies at regional and local levels of existing adaptation decisions during the first and second year of the project. Interviews and focus groups, including development of local scenarios, will be prepared, and work with the survey will be initiated.

During 2020–2021, we will collect data for module 2 working towards aim 2. The survey, the scenarios for the focus groups and the interview guide will be completed and the interviews and survey conducted. Thereafter, the focus group studies will be conducted. The data will be analyzed.

During 2021 and first part of 2022 we will work on module 3 and publish and disseminate the results. Work towards aim 3 will be based on results from modules 1 and 2. We will publish a policy report and conduct stakeholder workshops (see the Section 6. *Stakeholder Communication*).

4.1. Plan for Scientific Publication

The results will be published with open access in four articles in high-impact peer-reviewed journals (see Table 3). We will present the results at academic conferences focusing on climate change, climate adaptation, risk, and decision-making. During the last year, we will organize a workshop on just distribution of responsibilities for climate adaptation. The workshop papers will be published as a special issue.

Table 3. Deliverables.

Stage	Deliverables	Publications (No.)	Conferences/Workshops
Module 1	- Article on normative principles for responsibility distribution applied to climate change adaptation measures.	Journal article (1)	- Participation at one academic conference.
Module 2	- Article on the findings of which normative principles municipalities use for making decisions related to climate change adaptation; - Article on the findings of which normative principles that residents find just regarding climate change adaptation.	Journal articles (2)	- Participation at one academic conference.
Module 3	- Article on conflicts between perceptions held by different groups of residents and civil servants, and how these conflicts can be managed; - Policy report presenting the results of the project.	Journal article (1), special issue (1), policy report (1)	- Participation at one academic conference. - Organisation of and participation in several stakeholder workshops/conferences.

4.2. Ethical Considerations

The project will deal with sensitive personal data. Thus, in accordance with Swedish law, the project needs ethical approval. Further, the project will only use information collected from individuals who give explicit consent to participate in the study and to the scientific use of anonymized information (interview and focus group studies) and information in aggregated form (survey study) respectively, after having been informed about the purpose of the study.

4.3. Gender and Social Aspects

Gender and other social aspects are central to the project. Key are income and education, as they determine one's ability to make adaptation decisions, although gender can also be important. In the literature on climate adaptation and risk, "vulnerable" groups are often discussed, including elderly and low-income groups.

We will explore these issues through the principle of ability-based distribution (one of the five principles), which implies that those with higher capacity in terms of, for example, knowledge and financial resources, should take on a larger responsibility for adaptation.

5. Societal Relevance

The project is concerned with the need to adapt to climate change and questions of how this should be done and who should do it. There are currently conflicts concerning how, for example, effects of extreme weather should be handled [9]. For example, residents feel let down by their municipalities when they fail to prevent repeated flooding. Even in the day-to-day work in municipalities, the issue of who should be responsible for climate adaptation is disputed. One example of this is when CABs reject municipal local plans (*detaljplaner*) based on a lack of climate adaptation measures. When the effects of climate change worsen, so will the conflicts. Increased pressure at the local level will raise demands from residents for more public support and action. At the same time, increased costs due to climate change impacts will reduce the support capacity. Further, within 50–100 years it is quite possible that municipalities will have to abandon parts of their cities due to raised sea levels (foremost in the region of Skåne) or repeated flooding. These changes will lead to increased tension and to conflicts between different citizen groups, between citizens and public authorities, and within municipal organisations.

All adaptation measures will have both benefits and disadvantages. Some parts of the population will suffer under the disadvantages, whereas others will mostly reap the benefits. This inequality concerns climate change impacts, as well as the responsibility for adaptation.

For climate adaptation to be sustainable, it is crucial that it is not only seen as a scientifically-based spatial planning issue, but also as a normative one. If municipalities do not take the distributive effects of climate adaptation seriously, the risk of conflicts could increase unnecessarily. If public authorities, in their spatial planning, are aware of the potential conflicts relating to the distribution of responsibilities for climate adaptation, these conflicts can be managed more efficiently. By being transparent and systematic in the treatment of these issues, municipalities can make better-informed decisions while increasing the legitimacy and sustainability of these decisions [9].

The project will provide a knowledge base regarding the application of principles for a just distribution of climate adaptation responsibility, as well as regarding how civil servants and residents understand that responsibility. Further, the project will contribute with a systematic investigation of the possibilities to manage conflicts over these issues. The combined knowledge can guide policy-makers and spatial planners to make sustainable decisions based on knowledge of both climate change impacts and what residents and civil servants see as just adaptation actions.

An important point of departure for this project is that even if public authorities do not make decisions to deliberately distribute responsibility for climate adaptation, all decisions implicitly distribute this responsibility. This means that seemingly even non-normative decisions have normative

implications [9]. By making this explicit, public authorities can manage conflicts so that residents perceive decisions to be just.

A public investigation from 2017 on climate adaptation [1] is focused on the distribution of legal responsibility between different actors in Sweden. Its conclusion is that the current distribution is unreasonable, as private actors in the future will bear disproportionately high risks. However, the investigation does not consider the normative aspects of the distribution any further and thus cannot suggest strategies for how conflicts can be managed; we argue that this is necessary. The investigation only considers legal responsibility, whereas we consider a wider responsibility.

6. Stakeholder Communication

The plan for stakeholder communication is based on insights from research on knowledge utilization—foremost, the importance of including stakeholders throughout the research process and the need for meetings and oral communication [52,53]. In our own experience, these aspects are crucial for improving the usability and use of scientific knowledge.

The most central stakeholders for the project are Swedish municipalities, which through spatial planning will have a major influence on the practical distribution of responsibility for climate adaptation. The CABs are stakeholders responsible for regional strategies and can reject local municipal plans according to national legislation. A third group of stakeholders is national public authorities including agencies such as the Swedish Civil Contingencies Agency and the National Board of Housing, Building and Planning, in their capacity to decide on national strategies and advise municipalities. A fourth stakeholder group is the public, as they are affected by the decisions on climate adaptation. Our results can influence how public authorities at all levels work with climate adaptation in a more sustainable direction. The project can also make municipal residents more aware of spatial planning issues and climate adaptation and feel more included in planning processes.

The project will enable interaction with stakeholders throughout the project duration with the aim of (1) allowing input from stakeholders, (2) enabling communication between different stakeholder groups, (3) communicating the results of the project, and (4) increasing awareness about responsibilities for climate risks in society.

The first aim will be reached through the collection of data and through a stakeholder workshop. The interviews with civil servants will, in addition to enabling data collection, also let civil servants share ideas with us, which will be important input during the project. The stakeholder conference is held during year three to discuss what the studied municipalities and CABs, as well as national agencies, see as important aspects of our research and ideas about how they could use the results, which will be utilized for the final deliverables.

For our second aim, the focus groups will be crucial. The focus groups will include residents with different perspectives on climate adaptation and on the distribution of responsibility. The stakeholder conference will also be important in this regard, as it allows actors from different political levels to meet.

We will reach the third aim through communication of our results towards the end of the project. This communication will be directed at a wider group of municipalities, CABs, and national agencies. An important communication channel is the Swedish Association of Local Authorities and Regions (SKR), which has agreed to spread our results through its newsletter and networks. We will also present our results in workshops, co-organized with CABs, to reach a large number of municipalities. As part of the communication, we will also write a policy report directed at civil servants and politicians at all levels. The policy report will be printed in a report series and will be available online. Further, the main results will be presented at a conference attended by policymakers, organizations, and academics.

The aim of the communication during year three is also to increase awareness of the importance of responsibility distribution for climate adaptation decisions, therefore also fulfilling the fourth aim. Throughout the project, we will write debate articles in newspapers and engage in public lectures. The aim is to increase the general awareness of the responsibility for climate adaptation.

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References

1. SOU 2017:42. *Vem har ansvaret?* Statens Offentliga Utredningar: Stockholm, Sweden, 2017.
2. Barnett, J. Adapting to climate change: Three key challenges for research and policy—an editorial essay. *Wiley Interdiscip. Rev. Clim. Chang.* **2010**, *1*, 314–317. [[CrossRef](#)]
3. Schlosberg, D.; Collins, L.B.; Niemeyer, S. Adaptation policy and community discourse: Risk, vulnerability, and just transformation. *Environ. Politics* **2017**, *26*, 413–437. [[CrossRef](#)]
4. Massey, E.; Huitema, D.; Garrelts, H.; Grecksch, K.; Mees, H.; Rayner, T.; Storbjörk, S.; Termeer, C.; Wings, M. Handling adaptation policy choices in Sweden, Germany, the UK and the Netherlands. *J. Water Clim. Chang.* **2015**, *6*, 9–24. [[CrossRef](#)]
5. Bauer, A.; Feichtinger, J.; Steurer, R. The Governance of Climate Change Adaptation in 10 OECD Countries: Challenges and Approaches. *J. Environ. Policy Plan.* **2012**, *14*, 279–304. [[CrossRef](#)]
6. Biesbroek, G.R.; Swart, R.J.; Carter, T.R.; Cowan, C.; Henrichs, T.; Mela, H.; Morecroft, M.D.; Rey, D. Europe adapts to climate change: Comparing national adaptation strategies. *Glob. Environ. Chang.* **2010**, *20*, 440–450. [[CrossRef](#)]
7. Milman, A.; Warner, B.P. The interfaces of public and private adaptation: Lessons from flooding in the Deerfield River Watershed. *Glob. Environ. Chang.* **2016**, *36*, 46–55. [[CrossRef](#)]
8. Driessen, P.P.J.; van Rijswijk, H.F.M.W. Normative aspects of climate adaptation policies. *Clim. Law* **2011**, *2*, 559–581. [[CrossRef](#)]
9. Adger, W.N.; Butler, C.; Walker-Springett, K. Moral reasoning in adaptation to climate change. *Environ. Politics* **2017**, *26*, 371–390. [[CrossRef](#)]
10. Aguiar, F.C.; Bentz, J.; Silva, J.M.; Fonseca, A.L.; Swart, R.; Santos, F.D.; Penha-Lopes, G. Adaptation to climate change at local level in Europe: An overview. *Environ. Sci. Policy* **2018**, *86*, 38–63. [[CrossRef](#)]
11. Araos, M.; Berrang-Ford, L.; Ford, J.D.; Austin, S.E.; Biesbroek, R.; Lesnikowski, A. Climate change adaptation planning in large cities: A systematic global assessment. *Environ. Sci. Policy* **2016**, *66*, 375–382. [[CrossRef](#)]
12. Hughes, S. Justice in urban climate change adaptation: Criteria and application to Delhi. *Ecol. Soc.* **2013**, *18*, 48. [[CrossRef](#)]
13. Blennow, K.; Persson, J.; Wallin, A.; Vareman, N.; Persson, E. Understanding risk in forest ecosystem services: Implications for effective risk management, communication and planning. *For. Int. J. For. Res.* **2014**, *87*, 219–228. [[CrossRef](#)]
14. Blennow, K.; Persson, E.; Lindner, M.; Faias, S.P.; Hanewinkel, M. Forest owner motivations and attitudes towards supplying biomass for energy in Europe. *Biomass Bioenergy* **2014**, *67*, 223–230. [[CrossRef](#)]
15. Blennow, K.; Persson, J.; Persson, E.; Hanewinkel, M. Forest Owners' Response to Climate Change: University Education Trumps Value Profile. *PLoS ONE* **2016**, *11*, e0155137. [[CrossRef](#)] [[PubMed](#)]
16. Storbjörk, S.; Ugglå, Y. The practice of settling and enacting strategic guidelines for climate adaptation in spatial planning: Lessons from ten Swedish municipalities. *Reg. Environ. Chang.* **2015**, *15*, 1133–1143. [[CrossRef](#)]
17. Von Oelreich, J.; Carlsson-Kanyama, A.; Svenfelt, Å.; Wikman-Svahn, P. Planning for future sea-level rise in Swedish municipalities. *Local Environ.* **2015**, *20*, 459–473. [[CrossRef](#)]
18. Glaas, E. Reconstructing Noah's Ark: Integration of Climate Change Adaptation into Swedish Public Policy. Ph.D. Thesis, Linköping University, Linköping, Sweden, 2013.

19. Wamsler, C.; Brink, E. Planning for Climatic Extremes and Variability: A Review of Swedish Municipalities' Adaptation Responses. *Sustainability* **2014**, *6*, 1359–1385. [[CrossRef](#)]
20. Storbjörk, S. Governing climate adaptation in the local arena: Challenges of risk management and planning in Sweden. *Local Environ.* **2007**, *12*, 457–469. [[CrossRef](#)]
21. Caney, S. Just Emissions. *Philos. Public Aff.* **2012**, *40*, 255–300. [[CrossRef](#)]
22. Garvey, J. *The Ethics of Climate Change: Right and Wrong in a Warming World*; Continuum International Publishing Group Ltd.: London, UK, 2008.
23. Grasso, M. A normative ethical framework in climate change. *Clim. Chang.* **2007**, *81*, 223–246. [[CrossRef](#)]
24. Hayward, T. Climate change and ethics. *Nat. Clim. Chang.* **2012**, *2*, 843–848. [[CrossRef](#)]
25. Paavola, J.; Adger, N. Fair adaptation to climate change. *Ecol. Econ.* **2006**, *56*, 594–609. [[CrossRef](#)]
26. Lyster, R. Climate justice, adaptation and the Paris Agreement: A recipe for disasters? *Environ. Politics* **2017**, *26*, 438–458. [[CrossRef](#)]
27. Bulkeley, H.; Carmin, J.; Broto, V.C.; Edwards, G.A.; Fuller, S. Climate justice and global cities: Mapping the emerging discourses. *Glob. Environ. Chang.* **2013**, *23*, 914–925. [[CrossRef](#)]
28. Holland, B. Procedural justice in local climate adaptation: Political capabilities and transformational change. *Environ. Politics* **2017**, *26*, 391–412. [[CrossRef](#)]
29. Duus-Otterstrom, G.; Jagers, S.C. Identifying burdens of coping with climate change: A typology of the duties of climate justice. *Glob. Environ. Chang.* **2012**, *22*, 746–753. [[CrossRef](#)]
30. Jagers, S.C.; Duus-Otterström, G. Dual climate change responsibility: On moral divergences between mitigation and adaptation. *Environ. Politics* **2008**, *17*, 576–591. [[CrossRef](#)]
31. Mees, H.L.P.; Driessen, P.P.J.; Runhaar, H.A.C. Exploring the Scope of Public and Private Responsibilities for Climate Adaptation. *J. Environ. Policy Plan.* **2012**, *14*, 305–330. [[CrossRef](#)]
32. Johnson, C.L.; Priest, S.J. Flood risk management in England: A changing landscape of risk responsibility? *Int. J. Water Resour. Dev.* **2008**, *24*, 513–525. [[CrossRef](#)]
33. Mees, H. Local governments in the driving seat? A comparative analysis of public and private responsibilities for adaptation to climate change in European and North-American cities. *J. Environ. Policy Plan.* **2017**, *19*, 374–390. [[CrossRef](#)]
34. Wiering, M.; Kaufmann, M.; Mees, H.; Schellenberger, T.; Ganzevoort, W.; Hegger, D.L.T.; Larrue, C.; Matczak, P. Varieties of flood risk governance in Europe: How do countries respond to driving forces and what explains institutional change? *Glob. Environ. Chang.* **2017**, *44*, 15–26. [[CrossRef](#)]
35. Mostert, E. Who should do what in environmental management? Twelve principles for allocating responsibilities. *Environ. Sci. Policy* **2015**, *45*, 123–131. [[CrossRef](#)]
36. Boven, M. *The Quest for Responsibility*; Cambridge University Press: Cambridge, UK, 1998.
37. Cane, P. *Responsibility in Law and Morality*; Hart Publishing: Oxford, UK, 2002.
38. Hart, H. *Punishment and Responsibility*; Oxford University Press: Oxford, UK, 1968.
39. Garvey, J. *The Ethics of Climate Change*; Continuum: London, UK, 2008.
40. Barry, B. *Theories of Justice*; University of Berkeley Press: Berkeley, CA, USA, 1989.
41. Frank, J. Democracy and distribution: Aristotle on just desert. *Political Theory* **1998**, *26*, 784–802. [[CrossRef](#)]
42. Noble, I.R.; Huq, S.; Anokhin, Y.A.; Carmin, J.; Goudou, D.; Lansigan, F.P.; Osman-Elasha, B.; Villamizar, A. Adaptation needs and options. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*; Field, C.B., Ed.; Cambridge University Press: Cambridge, UK; New York, NY, USA, 2014; pp. 833–868.
43. Tennekes, J.; Driessen, P.P.; Van Rijswijk, H.F.; Van Bree, L. Out of the comfort zone: Institutional context and the scope for legitimate climate adaptation policy. *J. Environ. Policy Plan.* **2014**, *16*, 241–259. [[CrossRef](#)]
44. SFS 2009:956. Förordning om översvämningsrisker. Ministry of Justice: Stockholm, Sweden, 2009.
45. Kvale, S.; Brinkmann, S. *Den Kvalitativa Forskningsinterojun*; Studentlitteratur: Lund, Sweden, 2009.
46. Tanggaard, L.; Brinkmann, S. Interviewet: Samtalen som forskningsmetode. In *Kvalitative Metoder-En Grundbog*; Brinkmann, S., Tanggaard, L., Eds.; Hans Reitzels Forlag: Copenhagen, Denmark, 2010; pp. 29–53.
47. Creswell, J.W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*; SAGE Publications: Thousand Oaks, CA, USA, 2003.
48. Blennow, K.; Persson, J.; Tome, M.; Hanewinkel, M. Climate Change: Believing and Seeing Implies Adapting. *PLoS ONE* **2012**, *7*, e50182. [[CrossRef](#)]

49. Stewart, D.W.; Shamdasani, P.N.; Rook, D.W. *Focus Groups: Theory and Practice*; SAGE Publications: Thousand Oaks, CA, USA, 2007.
50. SMHI. Framtidsklimat i Sveriges län—Enligt RCP-Scenarier. Available online: <https://www.smhi.se/klimat/framtids-klimat/framtidsklimat-i-sveriges-lan-enligt-rcp-scenarier-1.95384> (accessed on 10 December 2019).
51. Länsstyrelserna. Händelsescenario för Risk-och Sårbarhetsanalys: Skyfall i Nutid och Framtid. Available online: <https://www.msb.se/contentassets/53709e29881344459d4e78d396ba9dc8/handelsescenario-klimatforandringar-skyfall.pdf> (accessed on 10 December 2019).
52. Brown, C. The ‘policy-preferences model’: A new perspective on how researchers can facilitate the take-up of evidence by educational policy makers. *Evid. Policy A J. Res. Debate Pract.* **2012**, *8*, 455–472. [CrossRef]
53. Mitton, C.; Adair, C.E.; McKenzie, E.; Patten, S.B.; Perry, B.W. Knowledge Transfer and Exchange: Review and Synthesis of the Literature. *Milbank Q.* **2007**, *85*, 729–768. [CrossRef]



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