



Licentiate Thesis in Philosophy

Ethical Adaptation to Sea Level Rise: The Planner's Perspective

ANNA WEDIN

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Abstract

This thesis addresses local adaptation to climate change-induced sea level rise, taking an ethical perspective and focusing at the role of planning and the planner. The research, which has been conducted within a transdisciplinary research project, takes a bottom-up approach to applied ethics, and relies to a great extent on empirical data. In doing this, it contributes to the growing field of ethics of climate change adaptation, with results that can be of interest to both ethicists and planners. The thesis consists of an introductory chapter and three articles.

Article 1: Departing from an interview study with planners working with adaptation to sea level rise in Sweden, a typology of ethical issues is presented. It is shown that planners have to deal with input-oriented, process-oriented, and outcome-oriented ethical issues, and that knowledge of these can contribute to ethical adaptation policy.

Article 2: A method building on Value Sensitive Design (VSD) and scenario planning is developed and applied to address the challenge of integrating ethics when planning for uncertainty over long time-horizons, in the context of adaptation to sea level rise. The method consists of three steps for scenario development and three steps for value investigations. The application resulted in insights on aspects important for an ethical long-term adaptation to sea-level rise.

Article 3: Responsibility of adaptation to sea level rise is often assigned to local planners. But what does it mean to be responsible? Departing from the idea of professional virtues, three codes of ethics for planners are analysed to extract aspirational characteristics for planners. The identified virtues are put in relation to central challenges of adaptation, where five virtues stand out as central to the understanding of what it means to be responsible in adaptation to sea level rise.

Keywords: adaptation, climate change, sea level rise, local planning, ethics, empirical ethics, planning for uncertainty

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ETHICAL ADAPTATION TO SEA LEVEL RISE

Part I

Introduction

1. Introduction

Climate change and its effects pose real threats to human and natural systems and need to be addressed urgently. In the climate change discourse, focus has historically been on preventing climate change (called climate change *mitigation*), rather than addressing its consequences (called climate change *adaptation*). This focus is reflected in the philosophical literature on climate change, with an overwhelming emphasis on climate change mitigation, for example on distributing responsibility for emission of greenhouse gases that causes climate change (see e.g. Gardiner et al. 2010, Adger et al. 2017). However, as the world is beginning to truly notice the effects of climate change, more attention is directed towards climate change adaptation. Adaptation is generally contextualised to a specific aspect of climate change and addressed locally, and yet ethical investigation of local climate change adaptation is underexplored (Edvardsson Björnberg and Hansson 2011). The aim of this thesis is to contribute to the growing field of ethics of climate change adaptation, by shedding light on ethical aspects of adaptation to climate change-induced sea level rise.

This thesis has been written within the research project Sea-rims, which stands for *Sustainable and Ethical Adaptation to Rising Mean Sea Levels*. The research project is funded by the Swedish Research Council Formas and is running from 2017 through 2021 as a transdisciplinary collaboration between the Division of Philosophy at KTH and the Swedish Geotechnical Institute (SGI). Our research has been focused around an area in southern Sweden where coastal erosion is a pressing issue that is expected to get worse as sea levels continue to rise. A growing need for adaptation to sea level rise is apparent. Research within Sea-rims has been carried out in close collaboration with project partners and a reference group, consisting of representatives from municipalities in southern Sweden, and state agencies, including county administrative boards. The results presented in this thesis can therefore be seen an

unusually applied form of philosophy and ethics, which puts forward results that can be of interest to ethicists and those working with adaptation alike.

Adaptation to sea level rise is largely about physical planning and for this reason, the planner plays a key role in this thesis, and the three articles all relate to the planner in adaptation in one way or another. Article 1 departs from interviews with planners and formulates a typology on their experience to better understand the ethical challenges of adaptation. Article 2 presents a method for integrating ethical values into the process of adapting to sea level rise over unusually long time-horizons. This method has been tried out with the project partners and can ideally help planners make adaptation policy sensitive to ethical values. Article 3 discusses responsibility and tries to specify this in terms of desirable professional virtues in the context of adaptation to sea level rise. Beside these three articles, this thesis consists of the introductory chapter, or “kappa”, that you currently are reading. In the next two sections I present some background to the research topic. In section 2, I present a brief overview of climate change and the main responses to it. In section 3, the problem of sea level rise is introduced and I explain what distinguishes adaptation to sea level rise from adaptation to climate change more generally. After reading that section, it should be clear that adaptation to sea level rise is mainly a physical planning concern. In section 4, I discuss a few methodological approaches; specifically applied ethics, ideal and non-ideal theory and empirical and field philosophy. In section 5, I introduce some ideas on justice in adaptation and the ethics of planning for uncertainty. This leads on to section 6 consisting of summaries of the three articles. Finally, in section 7, I share a few concluding remarks and point to future research.

2. Climate change and its responses

Climate change

To begin with: climate change is real, and we are causing it. Based on a review of 11,602 peer reviewed articles on “climate change” and “global warming” published in the first seven months of 2019, there is 100% agreement that climate change is caused by humans emitting greenhouse gasses and limiting the extension of carbon sinks (Powell 2019). For this reason, the current geological period has been labelled Anthropocene. Compared to pre-industrial levels, human activities have caused approximately 1.0°C of global warming so far (IPCC 2018). In the US National Oceanic and Atmospheric Administration record, dating back 141 years, the ten hottest years have all taken place since 2005 (Thompson 2021).

Global greenhouse gas emissions up until today are unlikely to cause more than an additional 0.5°C until the end of the century (IPCC 2018). Thus, the question of how much more global warming will take place, largely depends on future global emissions of greenhouse gases. Assessments of future climate change are therefore commonly based on assumptions of future changes in the amount of greenhouse gases in the atmosphere, and other drivers of climate change. For example, recent reports from the United Nations body The Intergovernmental Panel on Climate Change (IPCC), uses scenarios called “Representative Concentration Pathways” (RCPs). The RCPs “include time series of emissions and concentrations of the full suite of greenhouse gasses and aerosols and chemically active gasses, as well as land use/land cover” (IPCC 2019a, p.8). Table 1 shows what the four RCPs mean in terms of global mean temperature change according to an assessment by the IPCC (2019a).

The Paris agreement, which was negotiated within the United Nations Framework Convention for Climate Change (UNFCCC), and signed by 196 nations in 2015, obliges the signatory parties to strive to

TABLE 1 – Adapted from IPCC 2019a, p.8

Scenario	Near-term: 2031-2050		End of century: 2081-2100	
	Mean (°C)	Likely range (°C)	Mean (°C)	Likely range (°C)
RCP2.6	1.6	1.1 to 2.0	1.6	0.9 to 2.4
RCP4.5	1.7	1.3 to 2.2	2.5	1.7 to 3.3
RCP6.0	1.6	1.2 to 2.0	2.9	2.0 to 3.8
RCP8.5	2.0	1.5 to 2.4	4.3	3.2 to 5.4

keep global warming “well below 2°C above pre-industrial levels” (UN-FCCC 2015, Article 2, 1(a)). Out of the four RCPs, it is only in RCP2.6 that the global mean warming stays below 2°C in Table 1. The RCP2.6 scenario can therefore be seen as representing a low emission, high mitigation future. The IPCC states that if global mean temperatures should stay below 2°C, global emissions need to decline by about 25% by 2030 and reach net zero by 2070 (IPCC 2018, p.12). This could only be achieved through “rapid and far-reaching transitions in energy, land, urban infrastructure (including transport and buildings) and industrial systems” (IPCC 2018, p.15).

Global warming, even at 1.5°C above pre-industrial levels, will have severe consequences for human and natural systems. Climate change will pose risks to health, livelihoods, food security, water supply, human security, and economic growth. The potential impacts increase as temperature rises. For example, at 1.5°C warming there is a projected decline of coral reefs by 70-90%, at 2°C warming, this figure is over 99% (IPCC 2018). This collapse can be explained in terms of the system having reached its tipping point. Other potential future large-scale tipping points concern the Amazon rainforest, the Greenland Ice Sheet, the West Antarctic Ice Sheet and the Atlantic Ocean circulation, to mention a few. It has been proposed that if a tipping point in one of these systems is reached, it will affect other systems too, potentially leading to a “global cascade of tipping points” that could throw us into a permanent “hothouse climate state” (Lenton et al. 2019). The likelihood and timing of reaching such tipping points is very uncertain, but if global emissions of greenhouse gases go towards the RCP8.5 scenario and we end up with five degrees of global warming by the end of the century, the risks of reaching one or several of large-scale tipping points seem clear.

Responses to climate change

There are two main responses to climate change: mitigation and adaptation. Climate change mitigation are those actions that reduce the rate of climate change, by means of reducing emissions of carbon dioxide (CO₂) and other greenhouse gases. Climate change adaptation can be defined as “the process of adjustment to actual or expected climate change and its effects” (IPCC 2014, p.6). In addition to mitigation and adaptation to climate change other approaches to respond to climate change have been proposed, including measures to reduce the amount of greenhouse gases in the atmosphere (called carbon dioxide removal) or changing the amount of sunlight that reaches the Earth (called solar radiation management). Such approaches are commonly called ‘geoengineering’, although other terms such as ‘climate intervention’ have been proposed (Academies of Sciences, Engineering, and Medicine 2021). Similar to mitigation, these are ways to limit climate change itself. In fact, carbon dioxide removal is thought as necessary to limit global warming to 1.5°C by the end of this century (IPCC 2018). While geoengineering might allow us to buy time, and possibly allow us to respond to a climate emergency, there are several reasons for being cautious in seeing it as a solution to climate change (Hamilton 2013). For example, the technology and institutional frameworks to implement geoengineering at the necessary scale are simply not available in the foreseeable future. Moreover, these large-scale measures can have unknown consequences that could pose greater risks than those that they address (Academies of Sciences, Engineering, and Medicine 2021). While questions of geoengineering and the ethics surrounding it indeed are important, further exploration of them is beyond the scope of this thesis.

Mitigation of climate change can be achieved through transforming our energy, transportation, and construction systems and move away from carbon-intense processes, and thus limiting emissions (IPCC 2018). In addition to this, each one of us can contribute, for example through limiting our consumption or choosing more climate-friendly goods and services. However, while some attitudinal changes can be observed, transformation to a zero-emission society is, at best, happening slowly.

As long as economic growth is the ruling paradigm and binding international agreements are lacking, there is a significant risk that climate change mitigation will not be as far-reaching as is needed. Considering the increasing evidence that mitigation will prove insufficient to prevent significant climate change, more attention needs to be paid to adaptation (Dow et al. 2013). While mitigation and geoengineering are about limiting climate change and global warming, adaptation is an approach for limiting the risks that climate change poses. Adaptation is thus more context-dependent and adaptive measures are generally diversified to address particular risks arising from climate change. Adaptation to climate change includes measures such as: installing cooling systems for the elderly in the face of more frequent heatwaves, breeding new crop varieties that are better equipped to meet changing temperature and precipitation patterns, or building dikes and levees to protect against rising sea levels.

The need for adaptation will be greater the more global mean temperatures are rising, as will the likelihood that adaptation fails to eliminate the risks that climate change poses.¹ The conditions that can hinder adaptation are known as constraints and barriers. Adaptation constraints are “factors that make it harder to plan and implement adaptation actions” (Klein et al. 2014, p.907). Constraints include: knowledge, awareness, and technology; the physical environment; biological tolerances; economic factors; financial factors; human resources; social and cultural factors; and governance and institutional processes (Klein et al. 2014). It has been pointed out that these can in principle be overcome with concerted effort, creative management, change of thinking, prioritisation, and related shifts in resources, land uses, institutions, etc. (Moser and Ekstrom 2010). Limits to adaptation have been defined as “the point at which an actor’s objectives or system’s needs cannot be secured from intolerable risks through adaptive actions” (Klein et al. 2014, p.907). However, as has been pointed out by Dow et al. (2013), planned and well-

¹When adaptation fails to protect people against targeted risks, they are left with what is known as loss and damage (Page and Hayward 2016). At this stage, a fourth potential response to climate change can be actualised, namely compensation.

thought-out decision-making can shift adaptation limits. This makes it evident that policy and planning are central elements of a successful adaptation to climate change.

3. Adaptation to sea level rise

One effect of climate change is global mean sea level rise, which can be attributed to the thermal expansion of warming oceans and the melting of land-based ice. At this point, the main contributor is the melting of land-based ice, primarily in Antarctica and on Greenland (IPCC 2019b, p.55). The current rate of sea level rise has been measured to be twice as high as the last century, in which sea levels rose by 0.17 m, which in turn was higher than the century before that, providing evidence of acceleration (USGCRP 2018). It can take centuries for the full depth of the ocean to adjust to the warming of the surface water so sea levels are likely to continue rising long after emission rates have gone down. This is called the “commitment to sea level rise” and means that there will be a need to plan for continuously rising sea levels (Nicholls 2011).

The projections of a future rise in the global mean sea level on a century timescale is strongly dependent on which representative concentration partway (RCP) emission scenario is assumed (Oppenheimer et al. 2019). Under the low emission scenario RCP2.6, the IPCC projects global mean sea levels rise between 0.29-0.59 m by the end of this century, and under the high emission scenario RCP8.5 between 0.61-1.10 m (IPCC 2019b, p.56). Note that these numbers in the terminology used by the IPCC to characterise uncertainty are considered “likely,” meaning that the IPCC estimates that there is a 66% probability that the true outcome will fall within this range. Thus, the IPCC projections does not exclude sea level rise going beyond this level, even though these ranges are often misinterpreted as an upper limit. This is significant as the IPCC projections are scientifically conservative and other assessments provide much higher numbers (Steffen et al. 2018; Sweet et al 2017). Bamber et al. (2019) suggest that sea level rise exceeding 2 meters by

2100 is within the 90% uncertainty bounds for a high emission scenario, and that it would be wise to start planning for this.

These higher projections often assign a greater importance to the melting of land-based ice. It is alarming that there has been a three-fold increase in mass loss from the Antarctic ice sheet over the period 2007-2016 relative to 1997-2006 (IPCC 2019a, p.10). Scientists fear that irreversible processes that will speed up this mass loss and lead to significantly higher sea level rise have been initiated; Lenton et al. (2019) point to research indicating that both the Amundsen Sea Embayment in West Antarctica and Wilkes Land in East Antarctica might have reached their tipping points, and that these sectors may collapse, causing a total of up to 7 meters of sea level rise. Such a collapse may take several millennia, but it might also go much faster. In summary, the uncertainty regarding the extent and pace of sea level rise is substantial, which makes planning for long-term sea level rise difficult. Moreover, there are local variations to sea level changes. In some places the relative sea level rise will be lower due to land rise, and in others it will be higher due to subsiding land. There is a need to explore local and regional variations in order to be prepared for future challenges.

The effects of rising sea levels include flooding, erosion and land loss, saltwater intrusion and higher water tables (IPCC 2018). This will negatively affect the large share of the world's population that live in coastal areas. When global mean sea levels are rising, coastal areas become more vulnerable to extreme events. Extreme floods that historically have occurred once a century in the recent past, may now become a yearly occurrence in many places (IPCC 2019a). Globally, an estimated 20 million people live below normal high tide levels and over 200 million are vulnerable to flooding during extreme sea level events produced by storms (Nicholls 2011). IPCC points to historic patterns in demographics and settlement, as well as anthropogenic subsidence, as important factors behind the exposure and vulnerability of those living in coastal zones (IPCC 2019b). Across the globe, people have been implementing a range of adaptation responses to coastal impacts and risks, however, this has mostly been reactive to current coastal risk or experienced disasters.

As sea levels continue to rise, there will be an increasing need for actions to manage changing sea levels.

Common measures taken to manage sea level rise include hard protection, sediment-based protection, ecosystem-based adaptation, coastal accommodation, coastal advance, and retreat, either as planned relocation or forced displacement (IPCC 2019a). An example of hard protection is to build seawalls to prevent the sea from reaching areas at risk from flooding. Sediment-based protection includes beach nourishment in which sand is pumped from the bottom of the sea onto beaches to prevent coastal erosion. Ecosystem-based adaptation includes the restoration and maintenance of mangrove forests and coastal reefs. An example of coastal accommodation is to build houses on stilts. Coastal advance means the creation of new land by building into the sea. Coastal retreat on the other hand involves moving people and infrastructure from at-risk zones. Coastal retreat has up until now been quite unusual, but it has been used for the purpose of creating new wetland habitats (IPCC 2019a). These measures have in common that they largely concern making changes in the natural or physical environment. Adaptation to sea level rise is therefore often an issue in urban and regional planning (Hurlimann et al. 2014).

The mentioned adaptation strategies differ in terms of potential effectiveness, advantages, co-benefits, drawbacks, economic efficiency and governance challenges (for an overview, see IPCC 2019a, p.33). The challenges of adaptation will thus not just be technical (Hinkel et al. 2018). At the same time, they all “have important and synergistic roles to play in an integrated and sequenced response to sea level rise” (IPCC 2019b, p.57). Societies will most likely need to implement a number of adaptation measures in the face of sea level rise, but deciding how to combine and implement context-specific and integrated adaptation options that manage to balance costs, benefits and trade-offs of available options and that can be adjusted over time, presents societies with significant challenges (IPCC 2019a). There is a need to formulate and implement adaptation to sea level rise sooner rather than later, especially as many decisions made today, for example developing land or

building infrastructure, can have consequences ranging many decades or centuries into the future.

4. Methodological approaches

As the above sections have shown, climate change and sea level rise pose real threats to people and the environment. Natural and social sciences can help us discover and understand the effects and causes of climate change. However, what should be done about climate change is an ethical question as it is about balancing conflicting interests and values (Broome 2008). Ethics is about systematising right and wrong, and determining what is the right action. An ethical perspective can also contribute through structuring the analysis of complicated questions. In this section, I will discuss the methodological approaches used in this thesis in the ethical analysis of adaptation to sea level rise.

The articles in this thesis have been written within a transdisciplinary research project, where philosophers have collaborated with geologists, urban planners and other civil servants. We are studying adaptation to sea level rise in southern Sweden, and an ethical outlook contributes new perspectives and methods for dealing with the challenges that adaptation to sea level rise poses in this setting. The three articles in this thesis take different approaches as they try to further the understanding of what ethical adaptation to sea level rise can mean. The common factor of the three articles is that they can be categorised as applied ethics that relies on inputs from the “real world.” In relation to these features and the underlying goals of the project, this section contains overviews of the concepts applied ethics, ideal and non-ideal theory, as well as empirical and field philosophy.

Applied ethics

Applied ethics can be understood as ethics engaging with various fields of human activity, such as business, politics and medicine, as well as with particular problems, such as abortions (Childress 1986). Alternatives to the term applied ethics include “specialised ethics” (Hansson 2009) and

“engaged philosophy” (Wolff 2011). Although these terms perhaps better capture the gist of an area-specific ethics that can provide innovative solutions for societal problems, I will use the more established term “applied ethics” in this thesis. In the 1960s and 1970s, applied ethics grew as an academic discipline, beginning with an interest in medicine (which has grown into the field of bioethics) and currently addressing different arenas of human activity, and a range of particular problems. In order for applied ethics to be truly useful, it is important that its practitioners not only possess knowledge of ethical theory and methods, but also a thorough understanding of the particular subject area (Hansson 2009).

In applied ethics, there are different approaches of dealing with a problem at hand, where two contrasting alternatives are known as top-down and bottom-up approaches. Top-down approaches (or in the words of Ronald Dworkin, philosophy made from the inside out) apply moral theories to the case in question and draw conclusions from there. The most famous example is perhaps Peter Singer, who in his book *Practical Ethics* (1979) approaches a number of topics, including euthanasia, the moral status of animals, and overseas aid, and gave his view on these from a broadly utilitarian position. While stringent and consistent, the problem with top-down approaches is that they are dependent on the acceptability of the original theory. If the used theory is refuted, so are the conclusions drawn from it.

Bottom-up applied ethics, on the other hand, departs from a specific problem and attempts to solve it using philosophical methods and deliberation. In his book *Ethics and Public Policy* (2011), Jonathan Wolff approaches a number of issues, including drugs, the free market, and immigration, starting with the problem, being sensitive to the constraints at hand, and proposing solutions that more commonly than not can be understood as some form of ethical compromise. A drawback with bottom-up approaches is that it is difficult to address moral problems without prior knowledge. In fact, there is a need of prior knowledge of what is seen as a moral problem in order to observe moral problems in the very first place. However, a bottom-up approach can be valuable in that it enables more useful and realistic policy recommendations

compared to theory-based approaches (Wolff 2011). For this reason, I have taken a bottom-up approach to study adaptation to sea level rise.

Ideal and non-ideal theory

Another related distinction is that between ideal and non-ideal theory. Ideal theory became a paradigm in political philosophy after discussed by John Rawls in *A Theory of Justice* (1971). In this book, ideal theory is described as a theory of justice designed under two conditions: (i) all relevant agents comply with the demands of justice applying to them, and (ii) natural and historical conditions are favourable. Non-ideal theory, in contrast, takes into consideration the fact that these conditions often do not apply, and raises questions of what should be done given the constraints of the real world (Valentini 2012). As a consequence, acts that might be considered wrong in an ideal world, can be permissible in non-ideal circumstances. For example, exposing people to the many risks that are associated with large-scale geoengineering is arguably permissible, as it is the best that can be done to fight climate change given the present circumstances (Morrow and Svoboda 2016).

Central questions in the discourse on ideal theory concern the purpose of theorising about ideals, and how effective this theorising is in achieving its goals (Farrelly 2007, Erman and Möller 2013). Ideal theory, being focused on what is optimal, generates principles before considering how they may apply to the current context. Some strengths of using ideal theory are that principles derived from it can be applied universally and that it provides higher-level standards for justice, which can be seen as something to strive for. However, ideal theory is sometimes criticised for not being action-guiding on the basis that it requires the unfeasible, and in the light of this criticism, non-ideal policy, which derives principles sensitive to the constraints of the real world, has been proposed. The main strength of non-ideal theory is that it better acknowledges the variability between different circumstances. However, when departing from what is feasible, ambitions might end up being set too low.

In the context of adaptation to sea level rise, ideal and non-ideal theory can both be useful, and one option could be to use them in tan-

dem. In this understanding, ideal theory dictates the objective, whereas non-ideal theory dictates the route to that objective (Simmons 2010). However, there are some possible risks in this. First, it is not certain that it is possible to derive policies from an ideal, as the path to the ideal might not be straight but need to take surprising turns. Moreover, planning for adaptation to rising sea levels is urgent. In the context of adaptation to climate change, it has been argued that we need to aim at achieving “ethical enough” adaptation practices (Fibieger Byskov et al. 2021). The best way to do this, is to use non-ideal theory in the given context. By departing from the world as it is, it is possible to find principles that allow us to bring about if not the optimal, at least a more ethical adaptation than otherwise would have been implemented.

Empirical and field philosophy

Another methodological consideration concerns if, and if so how, philosophy should make use of empirical data. In the last decades, philosophy has received internal criticism for being too theoretical. Out of this critique, the field of empirical philosophy has grown, meaning philosophy in which philosophers cite relevant empirical research and use it to argue for philosophical conclusions (Prinz 2008). This is a “philosophy of citation” and should not be confused with experimental philosophy that tries to test philosophical claims using the methods of science (Levy 2008). Rather, it proposes a way to complement knowledge gained from traditional philosophical methods.

Proponents of empirical philosophy raise concerns over the fact that philosophers have almost exclusively conducted their analysis through reflecting on things and conducting thought experiments. While these introspective methods ought to play a central role in philosophy, some sources of potential problems with such armchair intuition elicitation have been raised (Prinz 2008). For example, this kind of introspection can be understood as a constructive process in which our intuitions are influenced by theories, social pressures and background knowledge, in addition to the philosopher’s own beliefs. Moreover, the rules derived from introspection are formed drawing inferences from specific cases

and are as such not necessarily suited to generalisation. Therefore, it is worth reflecting on whether our intuitions can be supported by knowledge which has been collected using other methods. In the last decades, empirical approaches to philosophy have become more common and it has been suggested that there has been an empirical turn in bioethics, in which empirical data have been used to further the understanding the context-specific challenges (Schicktanz et al. 2011). Of course, this raises other methodological concerns, such as what counts as appropriate identification of affected persons, collection of public voices, and interpretation of public attitudes and arguments.

Another new movement in philosophy, which takes us even further from the armchair is known as field philosophy. This is a relatively new concept and there is no established definition, but one understanding of field philosophy is that it is a form of philosophic practice where one works at the project level with non-philosophers over an extended period of time (Frodeman 2020). This movement towards experimenting with fieldwork has grown out of a commitment to the promotion of contextually situated knowledge, concerning concepts, theories, narratives, and practices that bridge across disciplines (Buchanan et al. 2018). It challenges philosophers to think with others, and being challenged by unfamiliar standpoints and perspectives. In some way this seems opposed to the very practice of philosophy and it “uncomfortably breaks assumptions of the proper identity and place of the philosopher” (Bastian 2018, p.450). However, field philosophy needs not be seen as a contradiction to traditional methods but as a complement to them.

In this thesis, all three articles have elements of both empirical and field philosophy in them. Article 1 and Article 3 in particular should be understood as drawing on empirical sources (interviews and codes of ethics respectively). Article 2 does not fully, but at least to some extent, build on collaborative work with non-philosophers over an extended period of time. It is important to understand that even though value might not be derivable from facts, empirical facts and input from non-philosophers can stimulate reflection on values and ethics (Balsamo

and Mitcham 2010). This is particularly valuable for formulating ethical adaptation policy in collaboration with affected stakeholders.

5. Ethics of adaptation to climate change and sea level rise

Adaptation to sea level rise will to the greater part consist of formulating and implementing urban and regional planning policies. Planning is guided by values, which are displayed in various policies or planning approaches. Moreover, planning involves making choices in contexts characterised by complexity and uncertainty, which indicates that most aspects of planning relate to ethical concerns (Campbell 2012). For this reason, Upton (2002) suggests that planning should be understood as a complex form of applied ethics, a spatial ethics. Adaptation to sea level rise, being concerned with the physical environment, can also be seen as a *spatial ethics*, realised through the implementation of public policy.

Adaptation policy can, and ought to, address ethical concerns. Here, it is important to be aware that not only climate change poses ethical problems that adaptation can help solve, but that different adaptation approaches can raise unique ethical concerns: for example, hard protection can bring high costs and cause negative ecological impacts and equity concerns, while managed retreat can involve the loss of sense and cultural identity and impact on receiving communities (Klein et al. 2014). I will not be able to discuss the full range of ethical concerns relevant in adaptation to climate change and sea level rise here, but will limit myself to adaptation policy as a means to further justice, and the ethics of planning for an uncertain future in the context of local adaptation to sea level rise. I will begin by discussing how furthering justice can be seen as a goal of adaptation to climate change, then explain what this means in relation to distributive, intergenerational, and procedural justice. After that, I will discuss how adaptation to sea level rise can be seen as a form of decision-making under uncertainty, and briefly mention ways in which this can be addressed to promote an effective and ethical adaptation over time.

Boston et al. (2019) suggest that public policy should be analysed both in terms of the ends it intends to achieve, and the means which it proposes to meet its goals. There are, however, different ways of understanding the goals of adaptation. Pelling (2011) presents a typology of understandings of adaptation, differing in how far-reaching the goals are. Adjustment adaptation is about “putting out fires” and coping, while transformational adaptation promotes deeper systematic change in public and private organisations. Adjustment adaptation has the goal of protecting status quo, whereas transformative adaptation has an additional goal of addressing governance, socio-economic inequalities and other aspects of vulnerability to further justice. Reformist adaptation occupies a middle ground between the other two. Local adaptation to sea level rise seems, at its current state, mostly to be adjustment adaptation, in which much emphasis is on “putting out fires” and protection against a physical threat. However, there is a movement towards including more ethical values including justice in adaptation to sea level rise, suggesting that reformist adaptation is becoming a more common approach.

As was discussed above, climate change and sea level rise are already posing threats to people around the world. The fact that people are already losing their homes, their livelihoods, and even their lives as a result of the climate change we are causing, can be considered as an injustice done to those people (Broome 2008). In the light of this, questions of how the costs and burdens of adaptation to climate change and sea level rise are to be distributed can be thought of as a matter of *distributive justice*. In the discourse on distributive justice and climate change, it is often pointed out that climate change impacts hit disproportionately hard against vulnerable segments of the population (Edvardsson Björnberg and Hansson 2011). Just adaptation, as a way of limiting risks that climate change and sea level rise pose on people, can therefore either limit threats to vulnerable groups, or decrease vulnerability through addressing underlying injustices relating to e.g. gender, race, or class. The latter option is in line with the ideals of transformative adaptation.

In order to make adaptation just, local authorities thus need information about the distributive effects of different adaptation alternatives,

and they have to balance these in their adaptation policy. Thaler et al. (2017, p.307) proposes “the introduction of a greater degree of positive discrimination in favour of risk reduction.” This emphasises risk rather than vulnerability. Transformational adaptation would rather seek to improve the socio-economic position of the most vulnerable to make them better fitted to meet the risks that climate change and sea level rise pose. An alternative approach to fair adaptation departs from the understanding of “lived values.” Taking a bottom-up approach, lived values can be discovered by surveying what people value in a place, and what importance they attach to these values (Graham et al. 2013). This corresponds with the idea that adaptation is ethical precisely because it is about preserving that which is valued (Hartzell-Nicholls 2011). In a case study in southern Australia, lived values relating to health, safety, belongingness, esteem, and self-actualisation were found (Graham et al. 2014). This provides a complementary approach to putting vulnerable first when formulating distributively just adaptation to sea level rise.

The challenge of distributing justice is not just an *intragenerational* matter. The problems of climate change and sea level rise are likely to intensify and as such present even greater challenges for future generations. This makes *intergenerational justice* a central concern in addition to distributive justice. We need to ask what responsibilities current generations have to future generations and how costs and burdens are to be distributed across time. In the case of adaptation to climate change, the beneficial consequences of an adaptation measure that is taken today often occur in the distant future, whereas the costs of implementing the measure have to be paid immediately (Edvardsson Björnberg and Hansson 2011). At the same time, if it is decided to develop coastal zones today, burdens are placed on future generations as they will have to bear a greater cost of adaptation. A framework that is often mentioned in the context of intergenerational justice is sustainable development, which has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED 1987). However, we do not know what needs future generations will have. It has been suggested that we ought to assume

that future generations will value the freedom to promote well-being, and that one should adopt a capabilities approach to intergenerational justice in adaptation to climate change (Schlosberg 2012). Local policy on adaptation to sea level rise could adopt such an approach in order to guide how costs and benefits should be distributed over time.

In addition to distributive and intergenerational justice, procedural justice is discussed in the context of adaptation to climate change and sea level rise. Theories of procedural justice address whether the institutional processes and decision-making procedures are just (Young 1990, pp.19-20). While adaptation ideally should be addressed locally, research has shown that people feel that decisions regarding adaptation to sea level rise are in fact taken at a central level, and as a consequence, disfavours them (Graham et al. 2015). In the light of this, it has been suggested that capacities of lower levels of government need to be strengthened in order to achieve procedural justice (Head 2014). Furthermore, it has been shown that while climate change will hit the vulnerable the hardest, their voices are heard the least in adaptation processes (Martinich et al. 2013). It is important that the local level of government seeks to engage residents in the adaptation process, and especially include those most vulnerable to climate change and sea level rise. Adaptation policy should not only be evaluated in terms of outcomes but also in terms of whether vulnerable groups have power or capability to influence adaptation decisions (Holland 2017).

Finally, it should be said that achieving just adaptation over time is complicated by the fact that there is much uncertainty surrounding climate change and its effects that has to be addressed in the decision-making process. In decision theory, a common distinction is drawn between decision-making under risk and decision-making under uncertainty. When options can have more than one outcome, and there is knowledge on the potential impacts and the probabilities of these outcomes, this is known as decision-making under risk. When the probabilities of the different outcomes are unknown, this is known as decision-making under uncertainty (Hansson and Hirsch Hadorn 2016). Sometimes, the terms decision-making under “deep uncertainty”

or “great uncertainty” are also used for decisions on problems in which information is lacking not only on probability, but there are also, for instance, “unidentified consequences, undecided values, unidentified options, undetermined demarcation of the decision, unclear connections with later decision on the same subject-matter, or unforeseeable dependence on decisions by others” (Hansson and Hirsch Hadorn 2016, p.18). Adaptation to sea level rise should be understood as planning under deep or great uncertainty as the predictions for extent and pace of future sea level rise are very uncertain, as well as its impact on human and natural systems over time.

This in turn is causing problems for traditional decision-making approaches such as cost-benefit analysis (Hallegatte 2009). Instead, strategies for planning for uncertainty are commonly recommended, such as Dynamic Adaptive Policy Pathways, Robust Decision Making, Real Options Analysis, decision trees, or roadmaps (Haasnoot et al. 2013). These kinds of methods “contain a strategic vision of the future, commit to short-term actions, and establish a framework to guide future actions” (Haasnoot et al. 2013, p.485). I will not go into detail of what each of these options would involve, but will merely recommend that they are used in planning for uncertainty, in the context of local adaptation to climate change and sea level rise. They are indispensable in order to achieve a just, effective, and efficient adaptation over time.

6. Summary of articles

In this section, the three articles of this thesis will be summarised. They rely on empirical inputs and take a bottom-up approach to applied ethics, as they explore local adaptation to sea level rise.

Article 1. Getting adaptation right – challenges and ethical issues facing planners adapting to sea level rise in southern Sweden

In the first article, ethical issues emerging in adaptation to sea level rise, departing from interviews with municipal and regional planners in Southern Sweden are explored. The interviews that took place in

southern Sweden in September 2017, were semi-structured, and centred around the interview subjects' views on sea level rise and adaptation to sea level rise, as well as questions on ethics, values, and value conflicts in adaptation to sea level rise. The goal of the interview study was to get a hands-on understanding of the challenges planners are facing in order to use these results to explore the ethical issues underlying these challenges. Basing the ethical analysis on the experiences of the interview subjects, this study can be understood as building on the ideals of empirical and field philosophy in that it begins with empirical data from the stakeholders and draws out philosophical insights from that. From the interviews, six challenges were identified:

1. Lacking knowledge and human resources.
2. Lacking coordination and integration.
3. Unusually long-time-horizons
4. Suboptimal distribution of legal responsibilities for implementing adaptation
5. Lacking frameworks for financing adaptation
6. Goal conflicts

These challenges are practical in their nature, and many need to be addressed through new regulation and legislation. However, related to these challenges, there are ethical issues that need to be considered in adaptation to sea level rise. Building on the six identified challenges, a typology of ethical factors that are of particular importance for adaptation to sea level rise was formulated. The ethical issues have been categorised as input-oriented, process-oriented and outcome-oriented. This typology is illustrated in table 1.

Input-oriented ethical issues refer to how decision-makers approach uncertainty, and the unusually long time-horizons that are defining for the problem of adaptation to sea level rise. Within this category, questions that are raised include: do people in general (and perhaps policy-makers in particular) have a moral duty to educate themselves in the light of climate change, in order to be able to take important decisions? Or can refraining from acting be justified on the basis of

TABLE 2 – Typology of ethical factors in adaptation to sea level rise

Category of ethical factors:	Need to address:
Input-oriented ethical issues	Uncertainty Long time-horizons
Process-oriented ethical issues	Responsibilities Procedural Justice
Outcome-oriented ethical issues	Distributive justice Values at stake

ignorance or lacking knowledge on a potential threat? Sometimes adaptation is indefinitely postponed or left aside for the time being, due to the long-term nature of the challenge of sea level rise. Concerns were raised as to whether that is a legitimate approach, especially as this might place burdens on future generations. Input-oriented ethical issues are prerequisites to deal with in order to be able to progress to issues such as who should be doing or getting what in adaptation to sea level rise.

The process-oriented ethical issues raise questions on responsibility for adaptation to sea level rise and procedural justice. Across the board, interviewees expressed that that the current legal responsibility is not in line with their moral intuitions or convictions of how responsibility ought to be distributed between individuals, the municipality, regional authorities, and the state. The current legal framework places a lot of responsibility for adaptation to sea level rise on the individual property owner, and it was suggested that it ought to be shifted towards a more centralised level. There was an agreement among the interviewees that adaptation to sea level rise is too complicated for individuals to address; individuals generally lack knowledge and capacity to take on sea level rise and do not deserve blame for the situation they are in. Other process-oriented issues refer to the question of who should be involved in the adaptation process. Involving those affected by sea level rise is not only likely to lead to more thought-through adaptation policy, but also promotes important values such as democracy.

The third category is labelled outcome-oriented ethical issues. Key outcome-oriented ethical factors are distributive justice and values at

stake. As adaptation policy is implemented, it can affect people differently. Therefore, it is important for planners to be aware of how the harms and benefits are distributed amongst different groups in society, and pay attention to vulnerable groups. Moreover, it is important that planners are aware of the many conflicting values that need to be considered when formulating adaptation policy. For example, short-term economic gain can be put against long-term security as coastal zones are being developed. Furthermore, natural and cultural values need to be considered in adaptation to sea level rise.

The results give an overview of the intricate ethical landscape surrounding the challenge of adaptation to sea level rise. This overview could serve as a point of departure for researchers interested in the dynamics of local adaptation to sea level rise and the ethical dimension of the problem. For planners, the results may be helpful in furthering the understanding of adaptation as an ethical venture, including knowledge on where in the adaptation process different challenges are likely to arise. This article does however not address how these challenges should be approached, ideas for how to move forward with this are presented in the concluding section of this kappa.

Article 2. Value Sensitive Scenario Planning for Adaptation to Sea Level Rise (co-authored with Per Wikman-Svahn)

One challenging circumstance of adaptation to sea level rise is that there is a need to plan for a future that we have very limited knowledge about. The adaptation measures implemented today might be considered greater or lesser successes depending on how fitting they are with regards to future developments, not only in terms of sea level rise, but also in terms of socioeconomic factors. The second article presents a method for addressing this problem and meet the challenge of including ethics in the long-term (200 years) planning of adaptation to sea level rise. The article consists of two parts; in the first part a new method for approaching this challenge by combining elements from Value Sensitive Design (VSD) and scenario planning is presented, and in the second part an application of this method is described and discussed. The method

development has been carried out over a number of workshops in close collaboration with our project partners. It can as such also be seen as building on ideals from field philosophy.

The purpose of the method is to investigate how social and moral values initially promoted by adaptation can be affected over time. This is done by looking at various scenarios that build on developments both with regards to climate change and socio-economic factors until year 2200. The method builds on elements from VSD and scenario planning. VSD is a method for integrating social and moral values in the development into the design process, however, it has not been applied for products meant to last longer than a few decades. Scenario planning has commonly been used in the context of adaptation to climate change in order to investigate uncertainty over time, however, it usually does not address ethical values explicitly. Using VSD in combination with future scenarios is a promising new approach for taking social and ethical values into consideration when planning for uncertain futures.

The method consists of six steps, three that focuses on scenario building, and three that focuses on value investigation. The scenario-building half of the method consists of the development of scenarios that are tailor-made for the case study. This includes formulating a focal question, which the scenarios are meant to help answer. For us, the focal question was: "What factors might be most impactful for a Swedish coastal municipality in managing rising sea levels in a 200-year time frame?" Having decided on this question, 13 factors were identified. These factors were divided into alternatives (e.g. low, medium, high) in order to create a so-called morphological field. From this morphological field, five scenarios that would be interesting to discuss in relation to the focal question were agreed upon. These scenarios were used as a basis for the value investigations that make up the second half of the method.

In the second part of the method, the workshop participants were asked to identify values important in adaptation to sea level rise, in the given area and time-frame. We underestimated the time required for a thorough discussion of the role of ethical values in adaptation, and the results from this part therefore ended up somewhat superfi-

cial. Possible ways to improve this are discussed in the concluding and forward-looking section of this kappa. That said, the values identified at the workshop were sufficient in order to move on to the second step of the value investigations in which the participants were given two scenarios and were asked to discuss how the ability to promote these values in their scenarios. Finally, they were asked to depart from what they had found so far and give suggestions for how it is possible to promote the given values through adaptation.

It was found that the method has some of its main strengths in providing a framework for discussion on ethical issues in adaptation and in doing that challenging established planning practices. Moreover, it enabled identification and articulation of important values and identification of a number of general considerations that need to be accounted for in adaptation policy. The method could have benefitted from allowing more thorough investigation of values in order to focus the results more towards ethical values. It also assumes that values are constant over time, which is a strong assumption to make. However, using scenario planning in combination with VSD highlights the ethical challenges of planning for an unknown future, and are thus making us better prepared to meet the unknown.

Article 3. Professional virtues for a responsible adaptation to sea level rise

A central challenge in adaptation to sea level rise is the question of responsibility, and much has been written over the years on the issue of distributing responsibility for mitigation, adaptation, and compensation. The discourse on responsibility and climate change has gravitated towards responsibility for action, i.e. on responsibility to *do* certain things. In this paper, an alternative approach is taken, in which the focus is on character, or what it means to *be* responsible. Since adaptation to sea level rise largely will take the form of physical planning, it is the professional virtues that planners ought to possess in the context of adaptation to sea level rise that are at the centre of this investigation.

Professional virtues can be understood as virtues of relevance to a person's profession. A profession can be understood as a practice in the

sense proposed by Alastair MacIntyre. MacIntyre means that sufficiently coherent and complex human activities, or practices, have internal goals which are realised as standards of excellence that are definitive of that form of activity are achieved (MacIntyre 1982). To achieve standards of excellence, it follows that technical knowledge, skills, and virtues related to the practice are needed. Seeing planning as a practice, there are goods internal to and defining of planning, which are realised when attempting to achieve standards of excellence.

In this article, a bottom-up approach for defining these standards of excellence of planning is taken. Three codes of ethics for planners are analysed in order to identify virtues promoted within the practice of planning. In the three codes of ethics, eleven virtues were identified: *honesty, integrity, courage, perseverance, love of knowledge, justice, public spiritedness, practical wisdom, diligence, creativity, and humility*. Departing from these virtues, I turn to the challenge of adaptation to sea level rise, in order to see if any of the identified virtues are of particular importance.

Since adaptation to sea level rise is surrounded by epistemic challenges relating to uncertainty on the extent and pace on sea level rise, as well as on the effectiveness of various measures, there is a need for planners to cultivate *love of knowledge*. Given this uncertainty, planners should also strive towards cultivating *humility* as a way to become open to new knowledge. Furthermore, adaptation can in itself have consequences on human and natural systems, and planners in adaptation to sea level rise therefore need to cultivate the virtue of *justice* in order to achieve the goals of adaptation, including protecting those that are most vulnerable. To promote adaptation even when it is unpopular, e.g. against climate denialists, the virtue of *courage* is needed. Finally, the virtue *practical wisdom*, or the ability to balance the other virtues against each other, is as crucial in adaptation to sea level rise as in life in general.

That planners cultivate these virtues will not solve all the problems of adaptation to sea level rise, and it is important to understand that the planner exists within an institutional context. In addition to planners fostering these virtues (e.g. through “responsibility training”, which

could resemble “compassion training” that has been adopted in the healthcare sector), there is a need to foster appropriate institutional environments. However, given that the institutions often fail to live up to what it means to be responsible, why not also look to the individuals who make up intuitions?

7. Conclusion and where to go from here

It is evident that climate change is a defining challenge of our time, and there is a need to formulate responses to it in order to limit its negative impacts on human and natural systems. The aim of this thesis is to highlight ethical issues in local adaptation to sea level rise. Sea level rise poses particular challenges to coastal communities, many of which are already dealing with coastal erosion or other problems that will be enhanced as sea levels are rising. It is increasingly apparent that the global community will not be able to address climate change with mitigation alone, which means that more attention needs to be paid to adaptation to climate change. Adaptation in the context of sea level rise is largely about managing and planning the physical environment in such a way that our values can be protected over time. However, formulating and implementing adaptation policy is complicated by the large uncertainty on the speed and magnitude of sea level rise, especially as many spatial planning decisions made today can have consequences ranging decades or centuries into the future.

In this thesis, I have studied local challenges of adaptation to sea level rise from an ethical perspective. I have attempted to further the understanding of adaptation to sea level rise, engaging in transdisciplinary dialogues with planners and others working with adaptation to sea level rise in southern Sweden. This bottom-up approach has resulted in three papers, which each contribute with different perspectives on the ethics of local adaptation to sea level rise, primarily from the planner’s perspective. These articles can all be thought of doing the background work on which it is possible to build and further the understanding of an ethical adaptation to sea level rise. Moving forward, I would like

to build on this ground and seek to bring more normative guidance. Specifically, there are three topics in which further development seems fruitful. I will end this kappa by elaborating on these topics below.

Principles for a just adaptation

In the first article of this thesis, ethical challenges for planners are identified, but it is not suggested how these challenges should be addressed. Moving forward, it would be interesting to investigate what a principle for just adaptation could look like, in order to provide normative guidance for at least some of the challenges that planners express that they are facing. Looking to different accounts of justice in adaptation (see e.g. Adger et al. 2006), much emphasis has been placed on protecting vulnerable groups and promoting resilience in adaptation. Departing from existing ideas and seeking to formulate my own account for justice (in the context of local adaptation to sea level rise) would be a first step of this project.

The next step would be to investigate what kinds of constraints a principle of just adaptation might have. After all, there are constraints and limits to adaptation, including: knowledge, awareness, technology, the physical environment, biological tolerances, economic factors, financial factors, human resources, social and cultural factors, and governance and institutional processes (Klein et al. 2014). These constraints affect whether adaptation can be implemented in an effective way, or even at all. However, whether or not these factors should determine the acceptability of a principle of justice is not clear.

To help make sense of this, the investigation would involve engaging with ideal and non-ideal theory, and specifically draw on literature on feasibility constraints. The feasibility constraint on the concept of justice roughly states that a necessary (but not sufficient) condition for something to qualify as a conception of justice is that it is possible to achieve and maintain given the conditions of the human world. In very simplified terms, it concerns the difference between what is possible and what is believed can happen. For example, dangerous climate change could be prevented by taking various measures to limit greenhouse

gas emissions significantly. However, this has not been achieved so far. This is not because it is technically impossible, but the cooperation and measurements needed are highly unfeasible. Feasibility considerations can have two purposes: the first is to *rule out* political proposals on the grounds that they cannot be implemented in practice, and the second is to enable *comparative assessments* of various proposals (Gilabert and Lawford-Smith 2012). Drawing on this literature, it would be possible to assess the principle which I have proposed, and examine how it stands in relation to other accounts.

Further development of the VSD-scenario method

The second article in this thesis presents a method for involving values into planning for adaptation to sea level rise in a 200-year time-perspective, building on elements from VSD and scenario planning. It was developed and tried out in a number of workshops and ultimately led to quite general insights on issues that need to be addressed in adaptation to sea level rise. While this was valuable in itself, I am intrigued to take this further and seek to modify the method in order to give clearer normative guidance.

To begin with, the method would benefit from further development of the value investigations. Pragmatically, more time is needed to get to the core of what values that ought to be promoted through adaptation to sea level rise. However, this is merely a pragmatic concern. More importantly, I would like to investigate if, and how, it would be possible to connect the method to an ethical theory or framework. In its current form, the method may be helpful in identifying values in adaptation to sea level rise. However, in line with criticism put forward by Manders-Huit, VSD does not provide an account “for distinguishing genuine moral values from mere preferences, wishes, and whims of those involved in the design process” (2010, p.281). I second the view of Jacobs and Huldtgren (2018) that there is a risk that the method claims objectivity in situations where it is fact just the voice of practitioners that come through. Connecting the method to an ethical framework could “provide sources of justification and argumentation for moral claims

and considerations, which are needed to make principled judgments, to attend to a set of bounded and principled values, and to legitimize value trade-offs during the design process” (Jacobs and Huldgren 2018, p.1).

In the case of adaptation to sea level rise, I think an appropriate framework could be the capability approach. The capabilities approach is a framework building on the understanding that “the freedom to achieve well-being is of primary moral importance and, second, that well-being should be understood in terms of people’s capabilities and functionings” (Robeyns and Fibieger Byskov 2020). The capabilities approach has successfully been applied as a framework for ethical deliberation in VSD, when analysing a humanitarian cargo drone (Cenci and Cawthorne 2020). It has also been suggested as a relevant framework in the context of adaptation to climate change (Schlosberg 2012). Moreover, the capabilities approach has been suggested to be particularly suitable for ethical assessments over long time-horizons; even though it is not known exactly what future generations will value, it can be assumed that their most fundamental needs will be similar to ours. Therefore, it has been argued that “capabilities” for future generations should be protected so they can fulfil their own ideas of a good life and promote their own well-being (Doorn 2017).

Besides using the framework for identifying values important in adaptation to sea level rise over a long time, it would also be possible to apply the method to a concrete case of adaptation, rather than keeping the dialogue at an abstract level, as was done in Article 2. Investigating a particular adaptation measure would also open up for more engagement in the empirical and technical aspects of VSD, allowing for evaluation of how those living and working in a studied municipality perceive their coastal environment and how they engage with the identified values. Discussing how, e.g. managed retreat or the maintenance of beach meadows can affect capabilities of affected citizens over time, is likely to open up for a deeper understanding of ethical dimensions of adaptation to sea level rise.

Motivations of mitigation and adaptation

A third possible way forward is about furthering the understanding of how our responses to climate change are perceived. Climate change is harming people around the world, yet we seem unable to stop this from happening. In the light of this, it would be interesting to investigate how responses to climate change are perceived as acts or omissions, and see if, and if so how, mitigation and adaptation differ. Philippa Foot (1978) distinguishes between different ways in which we can harm others: *initiating* (setting the harmful sequence going); *sustaining* (keeping the harmful sequence going when it would otherwise have stopped); *enabling* (removing some barrier which would have brought the harmful sequence to a halt) and *forbearing to prevent* (failing to take some action which would have brought the sequence to a halt). *Initiating* and *sustaining* both count as doing harm whereas *enabling* and *forbearing to prevent* are ways of merely allowing harm.

Adaptation to climate change requires action. An intriguing aspect of mitigation is that it does not require us to do anything, rather it requires us to stop doing something. At the same time, climate change is caused by our actions on a day-to-day basis. Perhaps one problem is the fact that climate problem has been framed as something which we fail to act upon rather than seeing it as something we are actively doing. Imagine that I am sitting in a car, driving at 50 km/h. I see a child walking onto the street and decide to sit still and do nothing. I continue driving as fast, and I hit the child. Few would find my explanation that I saw the child and decided to do nothing a convincing defence of my innocence. While many seem to take maintaining business as usual in the face of climate change as *forbearing to prevent* (failing to take some action which would have brought the sequence to a halt), which is to be understood as a form of omission by Foot's terminology, perhaps it would be more suitable to label it as *sustaining* the problem (keeping the harmful sequence going when it would otherwise have stopped), which counts as doing harm. Exploring this further, and investigating how mitigation and adaptation relate to this, could potentially help reframing climate change and explain why our lacking response is unethical.

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Part II

Svensk sammanfattning

Svensk sammanfattning

Den här avhandlingen behandlar etiska aspekter i anpassning till stigande havsnivåer. Som en följd av klimatförändringarna stiger havsnivåerna, vilket utsätter kustnära samhällen för stora risker. För att minimera dessa risker kan vi antingen minska våra utsläpp och begränsa klimatförändringarna (detta kallas på engelska för *mitigation*), eller så kan vi anpassa oss till förändringarna vi står inför. Anpassning till stigande havsnivåer kan bland annat ta form av hårda skydd som murar mot havet, ekosystembaserade skydd som mangroveskogar, eller genom att flytta samhällen och människor från riskzoner, en så kallad planerad reträtt. Det som är karakteristiskt för anpassning till stigande havsnivåer är att det i stor utsträckning handlar om ingrepp i den byggda miljön, vilket gör att anpassning till stigande havsnivåer på många sätt kan betraktas som en sorts fysisk planering.

I de flesta samhällen kommer anpassning innebära en kombination av insatser, och när anpassningsstrategier formuleras kommer det behövas tas hänsyn till mål- och värdekonflikter. I och med detta kan anpassning till klimatförändringarna och till stigande havsnivåer uppfattas som etisk till sin natur. En etisk analys kan bidra med att systematisera rätt och fel och bistå med verktyg för att fatta välmotiverade beslut. Trots detta har förhållandevis lite forskning inriktat sig på just etisk anpassning till stigande havsnivåer. Denna avhandling bidrar med etiska analyser av anpassning till stigande havsnivåer, med särskild inriktning på lokal anpassning och planerarens roll i anpassningsprocessen. Forskningen som presenteras har genomförts inom det tvärvetenskapliga forskningsprojektet *Sea-rims (Sustainable and ethical adaptation to rising mean sea levels)* som drivs av filosofiska avdelningen på KTH tillsammans med Statens Geotekniska Institut (SGI). Projektgruppen har tillsammans med ett antal projektpartners från sydsvenska kommuner och länsstyrelser, samt en referensgrupp med representanter från myndigheter som arbetar med anpassning till stigande havsnivåer, utforskat etiska dimensioner av de problem som projektmedlemmarna står inför. Avhandlingen kan därmed ses som ett exempel på tillämpad etik, med ett tydligt nedifrån-perspektiv på de etiska frågeställningarna.

Avhandlingen består av ett introduktionsavsnitt och två avsnitt (Avsnitt 2 och 3) där jag redogör för bakgrunden till forskningen. Dessa avsnitt behandlar klimatförändringarna och stigande havsnivåer, de risker som uppstår som en konsekvens av klimatförändringarna och stigande havsnivåer, samt olika sätt att bemöta dessa risker. Det framstår tydligt att anpassning till stigande havsnivåer kommer vara utmanande, inte minst då det råder stor osäkerhet kring hur mycket och hur snabbt havsnivåerna kommer stiga. I Avsnitt 4 diskuteras tre metodologiska förhållningssätt som ligger till grund för avhandlingsarbetet, tillämpad etik, distinktionen mellan ideal och icke-ideal teori, samt empirisk och fältfilosofi (eng. *field philosophy*). Detta följs av Avsnitt 5, där jag diskuterar hur anpassning kan ses som ett medel för att främja rättvisa, samt hur man kan förstå anpassning till stigande havsnivåer som beslutsfattande under stor osäkerhet. Efter det kommer Avsnitt 6 med sammanfattningar av de tre artiklarna som tillhör avhandlingen, och Avsnitt 7 som är sammanfattande och framåtblickande med förslag på framtida forskning. De tre artiklarna bygger på empiri i större utsträckning än vad som är vanligt inom den tillämpade filosofin, vilket gör att resultaten kan vara av intresse både för etiker och för planerare, eller andra som arbetar med eller forskar på klimatanpassning.

Artikel 1

Avhandlingens första artikel bygger på en intervjustudie där planerare och andra som arbetar med anpassning till stigande havsnivåer i sydsvenska kommuner och länsstyrelser har delgivit sin uppfattning kring de utmaningar som anpassning till stigande havsnivåer kan komma att innebära. Utifrån intervjumaterialet kunde sex utmaningar skönjas: (1) bristande kunskap och kompetens, (2) bristande koordinering och integrering av frågan, (3) ovanligt långa tidsperspektiv, (4) bristfällig fördelning av juridiskt ansvar för anpassningsåtgärder, (5) avsaknad av ramverk för finansiering av anpassning, och (6) målkonflikter. Dessa utmaningar analyserades sedan utifrån ett allmänetiskt perspektiv, och ett antal underliggande etiska faktorer med relevans för anpassning till stigande havsnivåer identifierades. Dessa etiska faktorer presenterades i

en typologi som visar på var i anpassningsprocessen det är mest troligt att de uppstår.

Den första kategorin i typologin, input-orienterade etiska faktorer, tar upp frågor som rör ett etiskt förhållningssätt till de osäkerheter och ovanligt långa tidsperspektiv som är utmärkande för anpassning till stigande havsnivåer. Hur ska man planera i ett långt tidsperspektiv? Kräver osäkerheten kring stigande havsnivåer att man som planerare anstränger sig för att sätta sig in frågan? Att hitta ett förhållningssätt till dessa frågor är avgörande för att kunna gå vidare till att diskutera exempelvis vem som ska göra eller få vad. Den andra kategorin, process-orienterade etiska faktorer, rör frågor kring ansvar för anpassning till stigande havsnivåer samt inkludering av berörda grupper och individer i anpassningsprocesser. Det framgick tydligt i intervjuerna att det finns ett glapp mellan vad de intervjuade anser vara en rimlig ansvarsfördelning och den rådande lagstiftningen, i vilken ett stort ansvar läggs på den individuella fastighetsägaren. Om ansvar på något sätt ska bero på förmåga krävs förändringar av lagstiftningen. Utöver detta togs frågor om rättvisa anpassningsprocesser upp, det vill säga frågor om vilka som kommer till tals och hur. Den tredje kategorin, till slut, är utfalls-orienterade etiska faktorer, berör utfallet av anpassning till stigande havsnivåer. Viktiga frågor inom denna kategori handlar om målet med anpassning, fördelningsfrågor, samt målkonflikter, till exempel mellan kortsiktig planering och långsiktigt skydd av exempelvis natur- och kulturvärden.

Resultaten i den första artikeln, inte minst typologin, bidrar med ett överblickbart ramverk över de etiska frågor som kan uppstå i anpassning till stigande havsnivåer, och visar därutöver på var i anpassningsprocessen de kan tänkas uppstå. Däremot ges ingen normativ vägledning som hur man ska agera i förhållande till de frågor som lyfts. Framtida forskning kan med fördel utforska detta. Ambitioner om att formulera etiska principer som kan vara handlingsvägledande i anpassning till stigande havsnivåer finns. Det vore även givande att utforska vilka begränsningar som finns och som bör tas hänsyn till i förhållande till etiska principer vad gäller anpassning.

Artikel 2

Avhandlingens andra artikel, samförfattad med Per Wikman-Svahn, presenterar en metod för att integrera etiska värden i långsiktig anpassning till stigande havsnivåer. Eftersom vi inte vet hur framtiden kommer se ut är det svårt för oss att anpassa sig till den. Detta skapar problem för anpassning till stigande havsnivåer eftersom de anpassningsåtgärder vi implementerar idag kan få långsiktiga konsekvenser. I artikeln presenterar vi en metod för analys av hur olika sociala och etiska värden som anpassning syftar till att främja kan påverkas över tid och i olika framtidsscenarioer.

Vår metod, som bygger på *Value Sensitive Design* (VSD) och scenarioplanering, utvecklades och testades under ett antal workshoppar med våra projektpartners. VSD är en metod som syftar till att integrera etiska värden i designprocesser och på så sätt främja produkter och systems positiva verkan på människor och samhällen. Scenarioplanering å andra sidan är en beprövad metod för att planera inför en osäker framtid, men tar vanligtvis inte specifik hänsyn till etiska värden. Kombinationen av VSD och scenarioplanering är lovande för att undersöka den värdemässiga dimensionen av långsiktig anpassning till stigande havsnivåer.

Metoden består av sex steg, där de första tre syftar till att utveckla scenarier och de tre övriga stegen är inriktade på att utforska olika värdeaspekter av anpassning till stigande havsnivåer. För att utveckla ett scenario måste först en fokusfråga formuleras. I vår tillämpning av metoden formulerades fokusfrågan: "Vilka faktorer kan ha störst inverkan på en svensk kustkommuns förmåga att anpassa sig till stigande havsnivåer i ett 200-årsperspektiv?" Steg två innebär sedan att svara på frågan, vilket i vårt fall ledde till att 13 faktorer identifierades, exempelvis befolkningsutveckling och ekonomisk tillväxt. Dessa faktorer delades upp i alternativ (ex. låg, medel, hög), för att skapa ett så kallat morfologiskt fält, vilket låg till grund för framtagandet av scenariona. Scenarierna utformas för att vara intressanta att undersöka i förhållande till fokusfrågan, och den etiska analysen som utgör den andra halvan av metoden utgår ifrån dessa. Metodens värdemässiga del inleds med

att analysera vilka värden som anpassning kan tänkas främja. Därefter diskuteras hur möjligheten att främja dessa värden påverkas i de olika scenarierna. Detta leder slutligen till en diskussion om hur anpassning till stigande havsnivåer bör formuleras och implementeras så det främjar de identifierade värdena.

Några av metodens främsta styrkor var att den tillhandahöll ett ramverk för att diskutera etisk anpassning över långa tidshorisonter, och att det genom att göra det utmanade beprövad planeringspraxis. Dessutom kunde ett antal värden, samt ett antal allmänna överväganden som bör tas hänsyn till i anpassning till stigande havsnivåer identifieras. Det framgick efter att ha testat metoden att mer tid krävs för att fördjupa sig i vilka värden som är viktiga. En annan svaghet är att metoden bygger på ett antagande att värden kommer förbli konstanta över tid. Trots detta kan kombinationen av VSD och scenarioplanering anses bidra till en djupare förståelse för utmaningarna som en långsiktig anpassning till stigande havsnivåer innebär, vilket är viktigt för att göra samhället bättre rustat för att bemöta dessa utmaningar. Vidare forskning på detta tema skulle kunna inkludera att knyta metoden till en etisk teori för att kunna bistå med ett ramverk att konsekvent kunna luta sig på i samband med värdekonflikter och för att kunna berättiga olika moraliska ställningstaganden.

Artikel 3

En stor utmaning när det gäller anpassning till stigande havsnivåer är att ansvarsfrågan, och mycket har skrivits om hur ansvaret för att ta sig an klimatförändringarna ska fördelas. Diskussionen i litteraturen har främst varit inriktad mot handlingar. Betydligt mindre uppmärksamhet har ägnats åt vad som karaktäriserar en ansvarsfull person. Eftersom anpassning till stigande havsnivåer i stor utsträckning handlar om den fysiska miljön, så har jag i den tredje artikeln valt att undersöka vilka karaktärsdrag eller dygder som utmärker en ansvarsfull planerare i anpassning till stigande havsnivåer. Yrkesrelaterade dygder (eng. *professional virtues*) kan förstås som dygder som är viktiga i utövandet av ett yrke. Ett yrke kan förstås som en praxis, såsom praxis har definierats av

Alastair MacIntyre. MacIntyre menar att en praxis är en sammanhängande och komplex mänsklig aktivitet med särskilda mål som kan uppnås genom att utveckla särskilda färdigheter kopplat till praxisen (MacIntyre 1982). Dessa särskilda färdigheter kan inkludera teknisk kunskap och tekniska förmågor, men även dygder. Om man ser planeringsyrket som en praxis så måste det finnas särskilda dygder som kan hjälpa uppnå dess mål.

För att identifiera dessa dygder har jag valt att utgå från tre etiska koder för planerare, för att se vilka dygder som förespråkas av planerare själva. I dessa identifierades elva dygder: *ärlighet, integritet, uthållighet, kärlek till kunskap, rättvisa, medborgaranda, gott omdöme (fronesis), flit, kreativitet* och *ödmjukhet*. Med utgångspunkt i dessa undersöker jag om några är av särskild relevans för anpassning av stigande havsnivåer. Eftersom det finns stor osäkerhet kring både hur mycket och hur fort havsnivåerna kommer stiga är det viktigt att planerare drivs av en *kärlek till kunskap* som får dem att ständigt vilja veta mer, och på så sätt få en större förståelse för olika aspekter om stigande havsnivåer och anpassning till det. Planeraren behöver även vara *ödmjuk* inför att ny kunskap kan tillkomma och för att förstå riskerna med att låsa in sig i ohållbara lösningar. Anpassning i sig kan påverka mänskliga och naturliga system på ett negativt sätt och därför är det viktigt att planeraren är *rättvis*. Planeraren kommer även behöva *modig*, inte minst eftersom klimatfrågan fortfarande ifrågasätts och det är sannolikt att hen kan behöva kämpa för att lyfta frågan i sin organisation. Slutligen så behöver planeraren *gott omdöme* eller *fronesis* för att balansera de andra dygderna mot varandra.

De svårigheter som uppkommer vid anpassning till stigande havsnivåer kommer inte lösas om bara planerare blir mer dygdiga, utan det är viktigt att vara medveten om att planeraren befinner sig i ett institutionellt sammanhang som påverkar hens möjlighet att utöva sina dygder. Det är viktigt att skapa institutionella miljöer där det är lättare att leva ut sina dygder, men eftersom institutioner kan brista i ansvarsstagande så finns en poäng i att främja vikten av att agera ansvarsfullt hos individerna inom institutionerna. På samma sätt som man idag har omsorgsträning med personer inom vård- och omsorgssektorn, kan

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även planerare tränas för att bli ansvarsfulla, för att bättre kunna hantera anpassning till stigande havsnivåer.