Sustainable Goals

Feasible Paths to Desirable Long-Term Futures

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Stockholm, Sweden 2014

Licentiate Thesis in Philosophy, 2014

Abstract

Baard, P., 2014. Sustainable Goals: Feasible Paths to Desirable Long-Term Futures. Licentiate Thesis in Philosophy from the Royal Institute of Technology, Stockholm. ISBN: 978-91-7595-079-2

The general aim of this licentiate thesis is to analyze the framework in which long-term goals are set and subsequently achieved. It is often claimed that goals should be realistic, meaning that they should be adjusted to known abilities. This thesis will argue that this might be very difficult in areas related to sustainable development and climate change adaptation and that goals that are, to an acceptable degree, unrealistic can have important functions.

Paper I discusses long-term goal setting. When there is a great temporal discrepancy between the point in time of setting and achieving a goal, many uncertainties have to be considered. The surrounding world and the agent's abilities and values might change. This is an ontological uncertainty. We often form beliefs regarding how abilities and values might change, but such beliefs are always uncertain. A form of goal called *cautiously utopian goals* is proposed; it incorporates such uncertainties but enables goal setting with long time frames.

Paper II investigate the issue of goals intended to reduce great risks. We cannot expect an agent to do something that lies beyond his or her abilities, as exemplified in the principle 'ought implies can.' Adjusting goals to what we currently, with a high degree of certainty, know could be done is difficult. If this does not include an estimation of how abilities can change, important performance-enhancing functions of goals might be lost. It is argued that very ambitious goals should be set. This is partly due to the great magnitude and likelihood of unwanted consequences and partly due to the difficulty of delineating what lies in the agent's capacity to manage complex risks.

Paper III describes a decision-facilitating tool, *Sustainability Analysis,* which is to be used by Swedish municipal planners. One subpart of the tool, *Goal Conflict Analysis*, can be used to identify how the consequences of a planned adaptation measure will affect other long-term municipal goals. Identified goal conflicts can then be used to determine whether the conflicts are acceptable or a different adaptation measure should be worked out. The paper discusses a workshop in a Swedish municipality in which the tool has been tested.

Keywords: goal setting; adaptation; sustainability; utopian goals; realistic goals

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This licentiate thesis consists of an introduction and the following essays:

I. Baard, P., and Edvardsson Björnberg, K. 2014. "Cautious Utopia: Environmental Goal-Setting with Long Time-Frames." *Ethics, Policy & Environment* (forthcoming).

II. Baard, P. 2013. "Risk-Reducing Goals: Ideals and Abilities When Managing Complex Environmental Risks." *Journal of Risk Research* (submitted manuscript).

III. Baard, P., Vredin Johansson, M., Carlsen, H., and Edvardsson Björnberg, K. 2012. "Scenarios and Sustainability: Tools for Alleviating the Gap between Municipal Means and Responsibilities in Adaptation Planning." *Local Environment: The International Journal of Justice and Sustainability* 17: 641-662. Doi: 10.1080/13549839.2011.646969.

ISSN 1650-8831
ISBN 978-91-7595-079-2

Printed by US-AB, Stockholm, Sweden 2014

CONTENT:

Acknowledgements

First, I would like to thank my main supervisor, Sven Ove Hansson. I am also in great gratitude towards my assistant supervisors, Karin Edvardsson Björnberg and Jessica Nihlén Fahlquist. *All* colleagues at the philosophy division have been of more assistance than I can reckon, and has taught me too much to even begin to mention. The brilliance of several of them, Payam Moula, Karim Jebari, Linda Johansson, and Björn Lundgren to name a few, has left me in awe and inspiration. Two in particular, Dan Munter and William Bülow, has been crucial in handling the experience. I would also like to thank Eric Brandstedt and Tom Olle Torpman, whose generous attitudes and excellence in environmental philosophy have provided great support. Without the insistent help of these people this licentiate would not have seen the light of day but would have remained shrouded in confusing statements supported by unclear arguments and non-relevant literature.

The importance of my longtime friends cannot be overstated, contributing to getting my mind on and off the right things. Daniel, Emma, Jon, Maria, Hatem, and Wictoria. Some friends have had the (un)fortunate role of reading works in progress – Johanna Skinnari, Claes-Magnus Bernson, and Marie-Noëlle Godin, *sorry!* My family has also been a terrific support.

Mira Kjellsdotter, whose support has at times been outer-worldly, your kindness, intelligence, wit, and attitude have set me straight on too many occasions to count by now.

Parts of this thesis were funded by the Swedish Environmental Protection Agency, to which I am very grateful.

Stockholm, April 2014

1. Introduction

This thesis discusses strategies for constructing feasible and desirable futures in response to the harmful impacts of anthropogenic climate change from a philosophical perspective. Specific attention is devoted to climate change adaptation, sustainable development, and analysis of the general framework of goal setting and the subsequent achievement of goals. Philosophy can contribute to the discussions on climate change adaptation and sustainable development in several ways. First, it can contribute by providing analytical frameworks for decision making under uncertainty. Second, it can analyze how to distribute burdens and the role that future generations' interests, needs, or rights should play in decisions taken by current generations. An additional normative issue concerns reducing future risks and how to define acceptable risk with regard to likelihood and magnitude. These issues converge when setting and achieving goals, which is understood as future states of affairs that are justifiably believed to be achievable and desirable. The general claim of this thesis is that we ought to set long-term goals in which feasibility and desirability are clarified but which also exceed the set of currently available alternatives and are thus, to an acceptable extent, unrealistic but not utopian. This idea challenges some very basic intuitions, as it is commonly assumed that an agent cannot be expected to do something that lies beyond his or her capacities, which is often understood as the capacity to do something 'here and now.' The thesis explicates the difficulty of delineating feasibility and provides an argument for letting ideals that are, to an extent, unrealistic guide action. However, it could be problematic to set goals that are clearly and knowingly impossible to achieve. This thesis explores this middle ground between the knowingly realistic and the definitely impossible as well as the functions of goals set within this framework.

The impending impacts of climate change will lead to highly undesirable states of affairs. As the extent of climatic changes, and consequently of impacts, will depend on our present choices, there is a certain urgency of required action and to construct trajectories to reduce future climate-related harm. The concerns are both of intra- and intergenerational character and are inherently complex. This is because they require combining estimations of consequences from many different perspectives and concern time frames that are not common in policy making and social planning, all of which are factors that constrain decision making. Closely related to managing the harmful impacts of climate change are the problems of long-term planning and goal setting.

These issues are described in Section 2. Section 3 discusses strategies to manage the issues—specifically, anticipatory climate change adaptation and sustainable development. To set goals that could have a long-term action-guiding purpose, despite their complexity and uncertainty, Section 3b will discuss a form of goal to enable long-term planning. Section 4 will discuss possible topics for future research, and finally, Section 5 will briefly present the papers of this thesis.

2. Climatic changes and long time frames

The lack of certainty regarding the local impacts of climate change and the uncertainty regarding agents' capabilities make it difficult to manage undesired future states of affairs. This section surveys these issues.

a) Impacts of climate change

Estimating future states of affairs is difficult, especially when it comes to changes in complex climatic systems and the ensuing environmental, social, and economic consequences. Establishing a clear link from the emission and concentration of greenhouse gases to temperature increases and the precise

local impacts is difficult due to its immense complexity. The following qualitative relationships are well supported by scientific evidence. Current and past emissions will lead to changes in climate, such as increased global mean temperatures, which will, in turn, lead to increased sea levels, increased precipitation, drought, and the occurrence of surprise events with greater frequency (Dessai and van der Sluijs 2007). These changes will have impacts on our societies, environment, and economies. Indeed, the warming of the climate system is 'unequivocal' (Intergovernmental Panel on Climate Change [IPCC] 2013: 2). It is also "*extremely likely*[1] that human influence has been the dominant cause of the observed warming since the mid-20th century" (IPCC 2013: 13).

Furthermore, some quantitative thresholds have also been proposed. A concentration of 350 particles per million (ppm) of atmospheric CO_2 is required to stay within the natural climate fluctuations (Schneider and Azar 2001: 21; Hansen et al. 2008). Higher levels of ppm will heighten the probability that temperature increases will surpass +2°C compared to preindustrial times, which is a common target for avoiding a great magnitude of harm. It is sometimes argued that 400 or even 450 ppm is acceptable, based on assumptions regarding climate sensitivity (cf. Azar and Schneider 2001). Transgressing such limits raises both the likelihood and the magnitude of unwanted consequences. Defining safe boundaries evokes both descriptive and normative challenges.

Due to the difficulties of determining the exact time point of impacts and the exact severity of local impacts in particular, the IPCC constructs scenarios to

[1] 'Extremely likely,' as used by the IPCC, expresses a 95–100 percent likelihood that a claim is accurate. Such estimations are based on "statistical analysis of observations or model results, or both, and expert judgments" (IPCC 2013: 2).

estimate the states of affairs to which current actions will lead, judging from different preconditions, with a specific focus on emissions and socioeconomic conditions (IPCC 2000). In the fifth assessment report, emission scenarios were replaced by representative concentration pathways (RCP) (IPCC 2013: 17). The family of "B" scenarios portrayed communities (both global and local) geared toward sustainability and green technology.[2] In the fifth assessment report, the most 'green' scenario is RCP2.6, in which it is likely that global surface temperature change by the end of the twenty-first century will exceed 1.5°C, but is unlikely to exceed 2°C (IPCC 2013: 18). This scenario, which is the only one that is not likely to exceed a 2°C increase in surface temperature relative to the time period 1850–1900 (IPCC 2013: 18), would require a substantial reduction in the emission of greenhouse gases and a conversion to sustainable living (cf. PwC 2012). The so-called 2°Celsius target, related to Article 2 of the United Nations' Framework Convention on Climate Change, is required to avoid dangerous interference with the climate system, and subsequent negative impacts. Exceeding 2°C, if compared to preindustrial times, greatly increases the risk for severe harm.

As discussed in Paper II, predicting the impacts of anthropogenic climate change involves a "cascade or explosion of uncertainties" (IPCC 2001b; Dessai and van der Sluijs 2007: 44). This complexity stems, in part, from the scope of

[2] However, even the most ambitious of the "B" scenarios, B1, which is premised on a future increased "high level of environmental and social consciousness" (IPCC 2000: 181ff), will *likely* lead to an increase in temperatures between 1.1 and 2.9 degrees in 2090–2100 if compared to 1980–1990 (IPCC 2007a: 13). Scenario A1FI, which is the most severe, is based on rapid economic growth, global population growth peaking mid-century, and the rapid introduction of new and more efficient technologies; but it is fossil intense (IPCC 2000: 4) and is expected to reach a temperature increase in the range of 2.4–6.4 degrees Celsius in 2090–2100 if compared to 1980–1999 levels (IPCC 2007a: 13). The greater range is due to uncertainties with regard to feedback mechanisms, for instance.

the issue, being global, and incorporating land, atmosphere, and oceanic changes. Several uncertainties pertain to the models by which the scenarios are constructed, "all of which contribute to a degree of uncertainty about the predictions of these models" (Winsberg 2010: 100). These uncertainties make it difficult to estimate in detail the local changes and the social, economic, and environmental impacts and, furthermore, to design anticipatory adaptation measures (cf. Dessai et al. 2009).[3]

Managing the impacts of anthropogenic climate change is not only an issue of estimating future changes and possible actions to manage them, but, in addition to this descriptive dimension, managing climate change also has normative dimensions: "Natural, technical, and social sciences can provide essential information and evidence needed for decisions on what constitutes 'dangerous anthropogenic interference with the climate system.' At the same time, such decisions are value judgments" (IPCC 2001a: 2). Such judgments concern, in part, what to regard as valuable, which, in turn, affects the allocation of resources. Normative issues are more often discussed alongside descriptive issues than has previously been the case. Most prominently, the field of climate justice has grown in recent years, focusing on questions of future generations (such as their needs or interests), the distribution of burdens as a matter of justice (for instance, identifying responsible agents who have a duty to those most vulnerable by, for example, limiting emissions or enhancing vulnerable nations' adaptive capacities), and principles to identify fair usage of commons (such as entitlements to emissions) (cf. Page 2006; Gardiner 2011; Caney 2010; Broome 2012).

[3] The assessment and scenarios are sometimes interpreted on national scales, such as the Swedish governmental report *Sweden Facing Climate Change: Threats and Opportunities* (SOU 2007:60), which provide the general background for policy making and decision making at the regional and municipal levels.

The impacts of climate change will transgress local, regional, and national authorities' boundaries, and there exist many potential conflicts between goals and different perceptions of acceptable risks (cf. Voß et al. 2007). Several nations might share responsibility for a sea or a large forest, for instance. The resource might differ with regard to the value that the different nations ascribe to it, consequently affecting what resources they find legitimate to devote to maintenance or increasing resilience. Furthermore, even if there is consensus regarding the desirability of a goal, such as sustainable energy provision, the means (for instance, nuclear energy versus renewables) to that goal might be valued differently by different actors (Voß et al. 2007: 196). Achieving societal changes to reduce the emission of greenhouse gases or to achieve sustainability entails a complex interplay between different factors, such as political power, lifestyles, law, and technology. No single actor controls all these factors (Voß et al. 2007: 194) or has perfect knowledge regarding their interaction.

Despite these challenges, there are several normative reasons to act to reduce climatic changes and their impacts and, according to this thesis, to set very ambitious goals. First of all, we act in ways that cause greenhouse gases to be emitted; second, the harm will not be negligible but of a rather great magnitude; third, the emissions are not accidental; fourth, we are currently not, on any greater scale, compensating those who will be negatively affected by current and past emissions; and finally, emissions are normally done for our (short-term) benefit (Broome 2012: 55–57). Indeed, a substantial proportion of policies are aimed toward economic growth, which burdens the environment and the atmosphere, as growth is currently based on resource-intense activities (cf. Jackson 2009). There are ecological boundaries to economic activities, and as discussed by Tim Jackson, for instance, there might be reasons to reevaluate the goal of continuous growth, which often supersedes other policy goals even at local levels (Jackson 2009). One reason is that

growth, in its current form, is unsustainable; however, degrowth—that is, planned reductions in economic production—is not an alternative as it would most likely have severe societal consequences (Jackson 2009).[4] This is a very risky trajectory, lest economic growth be made compatible with sustainable development and less dependent on the emission of greenhouse gases. We are knowingly and non-accidently, exposing others, without compensation, to great harms for the benefits of short-term economic growth. We are also increasing that risk in both likelihood and magnitude due to a lack of efficient action.

b) Future-oriented action and goals

Besides being an empirically and normatively complex issue, climate change, and the management of its impacts, is challenging due to the required time frames that exceed commonly myopic planning horizons (cf. Jackson 2009: 192). Indeed, our institutions are set up with limited temporal horizons, as exemplified by Stephen Gardiner, who states:

[G]overnments are often focused on their impacts over limited terms of office, particularly as they affect their ability to win the next election; corporations are often focused on the dividends likely to be produced in the immediate years ahead, not the further implications of their actions. (2011: 173–174)

[4] One historical example of a philosopher who has discussed the relationship between economic growth and future resource scarcity is John Stuart Mill (1806–1873), who proposed, and indeed saw as necessary, a 'stationary state' in which wealth and population are held constant. For Mill, a general argument was that resource depletion was undesirable. When "minds cease to be engrossed by the art of getting on" (CW 3: 756), the prospects of improving life from moral, social, and mental perspectives increases. (For a short paper situating Mill's view in a contemporary sustainability discourse, see Baard 2011.)

Thus, the time frames are extremely limited, even if those of government often exceed those of corporations. However, even if we should decide to accept this obligation and devote extensive resources to planning with long time frames, there remain great challenges.[5]

Sustainable development and climate change adaptation goals are often intended to guide policy and decision making. Goal setting entails portraying a desired future state of affairs and determining a realistic trajectory—that is, a plan to get there.[6] Such plans should induce action devoted toward achievement of the goals. Certain rationality criteria pertain to action-inducing goals, namely that relevant agents know what the goals are and what to do to approach them, and that the goal is motivating. A rational goal is one that is justifiably believed to be achievable, and which fulfills the criteria of abilities, epistemic conditions, and volition (Edvardsson and Hansson 2005; cf. Papers I and II).

Meeting one or several of the criteria should induce actions toward goal achievement. That is, a rational goal is more likely to be realistic due to being

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[5] The concept 'long time frame' is, of course, rather vague and will differ depending on context. The time frames required for planning related to climate changes will have to consider the inertia and complexity of climate systems and the ensuing consequences.

[6] A goal, in this case, is supplemented with a plan, or at least a sufficiently clear conception of how to achieve a state of affairs. The difference between a goal and a plan is that a "goal specifies an end-state to be achieved, [while] a plan specifies a sequence of actions to be taken" (Edvardsson and Hansson 2005: 348). A plan describes a certain sequence of actions, whereas a goal "leaves it to the agent to determine the appropriate actions to be taken in order to realize that end-state," and consequently "new and efficient ways to achieve the goal can be discovered, tested and adopted" (Edvardsson and Hansson 2005: 348–349). When setting realistic goals, one often needs to form a belief regarding achievability—that is, to form a conception of the available trajectories or plans that will suffice to achieve the intended state of affairs—and goals and plans are thus often intertwined.

adjusted to what is known regarding achievability and motivation, and should "perform its achievement-inducing function well" (Edvardsson and Hansson 2005: 347).[7] Realistic goals are contrasted with utopian goals, which are either known to be unachievable, or achievability is so uncertain or unlikely that it would be highly questionable if it were legitimate to devote resources toward achieving them.

Setting realistic goals is often, but not always, preferable in social planning, which makes use of public resources with the aim of ascertaining welfare levels or reducing the risk of harm. However, setting realistic goals could be difficult. In complex issues, such as anticipatory climate change adaptation or sustainable development, which require many different forms of expertise and the consideration of different normative viewpoints (i.e., what to regard as a valuable state of affairs, acceptable risks, or fair distribution of burdens), combined with our myopic vision and surrounding uncertainties, it is difficult to ascertain what means are available and what states of affairs we can plan to achieve. We might not, for instance, know the efficiency of a specific policy or adaptation measure in achieving a desired state of affairs, such as reducing risks to acceptable levels.

As discussed in Paper I, with great distance or discrepancy between the time points of goal setting and goal achievement, it becomes more likely that the world changes in unforeseen ways that are significant to goal achievement. This is an ontological uncertainty. However, we often have beliefs regarding changing preconditions for goal achievement. The likelihood of such beliefs

[7] One sometimes speaks of SMART criteria for goals—that is, that goals are specific, measurable, accepted, realistic, and time-bound (cf. Edvardsson Björnberg 2008: 140). These criteria require a high degree of justified belief regarding achievability.

being correct often diminishes as the time frame between goal setting and achievement expands. This is an epistemological uncertainty.

Another element that makes it difficult to clearly determine feasibility is complexity. A goal is more distant when there are many obstacles between us and its achievement, and a goal needs to be supplemented with a plan. By doing so, the goal "reappears as a series of 'what next's" (Dewey [1922]2002: 36), but such plans are arguably more uncertain with increasing complexity or with a greater number of 'what next's. As discussed in Paper II, knowledge regarding 'what next's is arguably better when it comes to areas or issues in which we have invested previous research or of which we have experiences. Neither is the case with climatic changes and their impacts. Setting such plans will require consideration of several agents' capacities, spread out both geographically and temporally.

Climatic changes are, to a great extent, dependent upon our actions, and current choices will influence the level of impact, placing a tremendous responsibility on us. What is less certain is whether we are willing to take the required actions now, as this imposes costs now for future benefits. It is sometimes argued that postponing action and goal setting is an appropriate response since future generations will have more resources and will be able to provide more cost-efficient measures, or because future generations will know more and thus act from a better decisional basis—that is, they will be in a better position to set realistic goals.

Focusing on future ability to pay would seem to counter the intuition that "polluters should generally pay for their pollution" (Caney 2009: 172). Moreover, the ability to pay is an aggregate quantity, and we know little about the distribution of future wealth, which could lay expectations on the future poor that they cannot meet, and which it would be wrong to expect them to

meet, as a matter of justice. Moreover, it might be cheaper to tackle a problem sooner rather than later (Caney 2009: 173; Stern 2007). Furthermore, the prospect of growing ability to pay is often based on continuous economic growth, a development that might be undone should natural resources become scarce, since such growth is still often based on resource depletion.

Not devoting resources toward limiting impending impacts might entail a 'business as usual' approach with regard to increasing emission levels and a lack of decisions to enhance adaptive capacities. After all, if we do not know what the impacts will be, why should we devote resources to limiting the future risks? This is sometimes put forward as an issue related to anticipatory climate change adaptation (cf. Dessai et al. 2009). Future generations will know more and can, from that basis, provide more adequate adaptation measures. However, such an approach would likely result in 'tipping points' being reached, which could result in feedback mechanisms that would increase uncertainties regarding the impacts of climate change (cf. Munthe 2011: 144). For example, the greater the concentration levels of emissions, the wider the 'temperature intervals' (see footnote 2 above). The higher the concentration levels, the less we would know about what the consequences will be and thus what we would have to adapt to.

Another argument for postponement relies on technological development. The idea is often based on the belief that since historical accounts show that technological innovation has, in the past, become more resource efficient, this will always be the case (cf. Oreskes and Conway 2010: 256; Jackson 2009: 188). Such assumptions are risky, as there is no guarantee that technology will develop in a way that will be able to uphold productivity despite depleting resources. This viewpoint is overly optimistic. Despite historical developments of means of production, global emissions of CO_2 are still increasing due to, for instance, *rebound effects* when "increased energy efficiency is accompanied by

increased demands for energy services" (IPCC 2007b: 420). The benefits of increased energy efficiency are used for other energy-demanding activities, in turn increasing the total sum of emissions rather than lowering it as originally intended. Regardless, technology does develop, but some idea of what can be done and how technology can develop is required. Moreover, it is questionable whether technological development alone will suffice if not accompanied by behavioral changes and transitions to less resource-intensive consumption. It is, for instance, estimated that until 2050, carbon emissions will have to decrease by 5.1 percent each year to reach the 2° Celsius goal (PwC 2012: 9). Since World War II, no year has seen the decarbonization that is annually required until 2050, and reaching it would require tremendous technological innovation if relying on only that factor.

The uncertainties regarding impacts and the management of those impacts, as well as the required temporal dimensions, challenge the setting and achievement of realistic goals. In short, it becomes difficult to set goals that we can rely on to be achievable. Managing the impacts of climate change requires difficult estimations of future states of affairs and of means that will efficiently achieve such states of affairs.

3. The strategies

Managing the impending harms related to climate change is arguably one of the most central problems facing global and local communities, but managing such harms is also unique in its complexity and scope. Sustainable development and anticipatory adaptation are strategies that are required for avoiding these risks. The two concepts are discussed in Section 3a. Section 3b will discuss strategies to manage the overarching problem of long-term planning.

a) Sustainable development and anticipatory adaptation

Two different strategies are predominantly discussed in the policy debates related to climate change—mitigation and adaptation. Mitigation intends to limit the impact by reducing the emission of greenhouse gases and consequently the concentration of CO_2. Adaptation is defined by the IPCC as "refer[ring] to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts" (IPCC 2001b: 879). In this thesis, anticipatory adaptation is discussed. Mitigation and adaptation are intertwined strategies as "in theory, more mitigation would imply less adaptation" (Biesbroek et al. 2009: 232). Settling for an 'adaptation only' strategy would be very risky on a global scale, as continuing current or increasing levels of emissions could result in threshold effects being reached, for which adaptation would be very costly if even possible. Conversely, settling for a 'mitigation only' strategy would also be problematic as current and past emissions will most likely lead to impacts that will require adaptation (Jamieson 2010; cf. IPCC 2007b: 753). As illustrated by Dale Jamieson, "the adaptations may be clumsy, inefficient, inequitable, or inadequate, but it has been clear for some time that human beings and the rest of the biosphere will have to adapt to climate change or they will perish" (Jamieson 2010: 266).

Reducing vulnerability to climate change through anticipatory adaptation "is increasingly seen as a prerequisite for sustainable development" (Eriksen and O'Brien 2011: 338), the general idea being "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987: 43). If the chances of reaching the important goal of temperature increases below 2°C compared to preindustrial times are

slim (and we can thus expect quite severe impacts), adaptation will become necessary. If not, the abilities of future generations to meet their needs will be severely limited.

Not all adaptation measures are sustainable. There is a need to "widen the adaptation focus beyond climate change to encompass sustainability" (Adger, Lorenzoni, and O'Brien 2009: 12). Adaptation measures can have negative secondary impacts, which the following example illustrates:

[W]ater development projects (adaptations to water supply risks) can have significant effects on local transmission of parasitic diseases, including malaria, lymphatic filariasis and schistosomiasis. […] Improved water supply in some rural areas of Asia has resulted in a dramatic increase in Aedes mosquito breeding sites and, consequently, outbreaks of dengue. (IPCC 2001b: 893)

Implementing adaptation measures that have negative long-term consequences could work at cross-purposes to sustainable development. Mitigation and adaptation could benefit from greater integration with sustainability policies and vice versa. For instance, sustainability policies could promote developmental paths incorporating technological developments and reductions in greenhouse gas emissions, and climate change policies could have significant ancillary benefits and increase the likelihood of achieving sustainable developmental goals by limiting environmental, economic, and social risks following climate change (cf. Swart et al. 2008: S21).

From a sustainability perspective, one method of incorporating such consequences and estimating the state of affairs that will result from adaptation measures is by applying decision-facilitating tools, such as *Sustainability Analysis*, which is discussed in Paper III (cf. Baard 2013; Baard, Vredin Johansson, and Edvardsson Björnberg 2011). One part of the tool, *Goal*

Conflict Analysis, makes use of preexisting and previously set goals to estimate the ways in which the consequences of one or several adaptation measures will affect goals and is designed for municipal planners (cf. Paper III; see Baard 2013 for an extended discussion on *Goal Conflict Analysis*). Should the consequences of an adaptation measure have a negative impact on achieving other goals, it results in a goal conflict. On the other hand, should the measure facilitate achieving other goals, it results in a goal synergy.

Incorporating goals and estimating whether an adaptation measure will have a negative or positive effect on these goals is one way of incorporating the long-term effects of climate change adaptation. There exist many possible goal conflicts in climate change adaptation planning, as adaptation is not the only goal or responsibility of a local authority (Edvardsson Björnberg and Hansson 2011: 681ff). The tool combines goals from different sections of municipal organizations in order to generate a comprehensive view of how adaptation measures might affect the different dimensions of sustainable development. Prioritizing between different goals when a conflict has been identified requires a judgment from decision makers. The aim of the tool is to structure the various steps of such a choice in order to improve deliberation and to make the final choice transparent—that is, how the decision makers have, in the end, prioritized between different goals and which conflicts have been considered.

b) Uncertainty and goal setting

Goal setting orients action toward specific future states of affairs. When setting a goal, an agent makes assumptions regarding the achievability and desirability of the intended state of affairs. As investigated in Papers I and II, there are many different uncertainties that have to be considered when setting goals, as it would be naïve to set goals that do not relate to means (cf. Dewey [1922]2002: 27–28). In the worst case, neglecting means could result in goals

that are extremely unlikely to be achievable, which would be very problematic when discussing issues such as sustainability.[8] The problem investigated in Paper I, under the heading *temporal discrepancy*, suggests that the difference in time between goal setting and intended goal achievement could be problematic for long-term planning as both means (such as technology) or values could, and most likely will, change. As suggested, setting a goal requires forming beliefs regarding two propositions: (1) that a goal is achievable and (2) that the degree of desirability will remain the same. Such aspects are usually not an issue when planning in shorter time frames, but the likelihood for significant changes increases in longer time frames. However, the time frames required for planning anticipatory adaptation necessitate the consideration of states of affairs that lay perhaps 30 years or more in the future as, for instance, IPCC scenarios go all the way to 2100. Such time frames increase the uncertainty of both (1) and (2).

Paper I proposes a goal-setting and -achieving strategy that is neither realistic nor utopian. This is, more specifically, the setting of *cautiously utopian goals,* which are defined as follows (Paper I):

i) Given that it has been set as a long-term goal, it is believed, but not certain, to be achievable, and its desirability will remain
ii) It is open to future adjustments due to changes in desires and/or in factual circumstances.

[8] Often, goals are means to other higher-order goals (cf. Dewey [1922]2002; cf. Paper I). The distinction between goals and means as discussed here primarily serves an analytical purpose.

Such goals incorporate the epistemic condition regarding propositions related to achievability and desirability in a way that exceeds the distinction between realistic and utopian goals. This form of goal requires explicating the degree to which the belief in a future-oriented proposition is considered true and determining the evidential basis that supports such a degree of belief. For instance, a proposition such as "10 years from now, we will have access to emission-reduction technologies that effectively takes care of all CO_2 emissions from this specific branch of industry" (Paper I) is a future-oriented ability-related statement.

The question then becomes one of forming a degree of belief regarding how true this proposition is and the evidence that supports it. Setting a realistic goal requires that we have a high degree of justified belief that a means-related proposition, such as the above, is true–such low degrees of uncertainty are difficult to reach. However, this evokes the different issue of what degree of justified belief suffices. For instance, what degree suffices for a planning agent to include this proposition in a goal with a, say, 20-year time frame related to climate change? As discussed in Paper I, it could be permissible to accept low degrees of belief in cases in which the state of affairs is highly desirable—for example, if it relates to avoidance of very great harm.

Cautiously utopian goals might have a *performance-enhancing function*. As stated above, it might be permissible to include not only the abilities that we have now, synchronic abilities, but also indirect diachronic abilities, which it is assumed we can develop (cf. Jensen 2009). Such indirect diachronic abilities are always very uncertain, but setting ambitious goals might result in resources allocated toward developing the means required for reaching a desired state of affairs. We need to form beliefs regarding what capacities are available, and how sure we are about such availability, to manage the harmful impacts of

climate changes, as the currently most realistic alternatives arguably will not suffice.

Our initial estimates or beliefs regarding achievability or desirability might turn out to be wrong. Such beliefs should continuously be reassessed, and goals might have to be reconsidered or revised. Goals and plans should not be revised too often. A plan that is continuously revised could have a negative effect on action. Reconsidering goals and plans is costly and entails renewed deliberation on issues that, in the agents' minds, were settled (Bratman 2010). There is a balancing act between reconsidering goals and plans too often and not reconsidering them when appropriate. If, as noted by Bratman et al.:

the agent is [...] willing to reconsider her plans in response to every unanticipated event, then her plans will not serve sufficiently to limit the number of options about which she must deliberate. On the other hand, if the agent is not sensitive enough, she will fail to react to significant deviations from her expectations. (1988: 16)

A sustainable goal is one that lasts for a long time without requiring reconsideration. Goals might, however, become increasingly unachievable. This is the case with, for instance, the so-called '2°C-target' (cf. PwC 2012). This target is the only agreement that is attracting somewhat international support for mitigation efforts. Such targets should not be easily reconsidered due to the importance of reducing a great magnitude of harm and due to the difficulty of pinpointing, with a high degree of justified belief, what states of affairs we are capable of achieving. Indeed, the very basic notion of something becoming increasingly unachievable, which would usually suggest that a goal should be revised, might not give sufficient reasons to reconsider a risk-reducing goal of such normative weight.

Paper II discusses the 'ought implies can' principle in relation to risk and what could be expected and viewed as obligatory of an agent. While it is usually taken for granted that it is wrong to expect an agent to achieve something that is impossible, we might indeed expect *more* resource allocation and effort when it comes to goals intended to reduce great risks. One aspect of the 'ought implies can' principle is the very notion of feasibility and how it is defined. The statement "X can φ" can be interpreted in different ways, such as it being an empirical possibility for X to φ, that the costs of φ-ing are not unacceptably high, and that X can right now φ (cf. Besch 2011). However, this differentiation does not solve the issue of defining abilities and capacities such as what indirect diachronic abilities lie within an agent's disposal or setting a threshold of sufficient probability regarding abilities. Not all goals provide a blueprint that is intended to be achieved in full, but can also be approached to various extents, or have the function of ideals toward which to strive. However, to guide action and policies, clearly utopian goals should be avoided and sufficiently feasible alternatives chosen, even if those alternatives will require great effort and are, to an extent, unrealistic.[9]

4. Future research

The topics investigated in these papers, specifically Papers I and II, create space for future research. Two examples of ongoing research are presented below, but many more issues could be addressed.

[9] Several visions of more or less utopian character have been formulated in relation to climate changes, which challenge current states of affairs, such as 'post-growth economy,' various forms of downshifting (cf. Jackson 2009), or managing transitions to, for instance, energy, infrastructure, or waste management over 25–40 years (Voß et al. 2009: 285). Such approaches are, however, most likely very difficult to achieve on any greater scale but could perhaps be set as cautiously utopian goals intended to be approached.

a) Adaptive ideals

One topic is, for instance, the role that ideals have when setting goals and the distinction between ideals that are, with a high degree of belief, achievable and those that are very uncertain but highly desirable. The distinction is often discussed within political theory, and in recent years, there has been a discussion of 'ideal' and 'non-ideal' theory. The discussion has, in part, been spawned by a frustration that normative political theories "offer[s] no immediate or workable solutions to any of the problems our societies face" (Stemplowska 2008: 319; cf. Valentini 2012).[10] There are different ways to understand this distinction, but at center of the debate is the issue of feasibility and what role it should play when articulating normative political principles (cf. Gilabert and Lawford-Smith 2012). As discussed in Paper II, feasibility can be conceptualized in different ways. This issue has relevance to the area of environmental philosophy and goal setting, as it intends to supplement discussions regarding which principles should guide the distribution of burdens and will, moreover, be an addition to the growing philosophical literature on climate change adaptation. Anticipatory adaptation raises both epistemic and normative concerns. First, there are the uncertainties that have been discussed throughout this introduction. However, there is also a great dissymmetry between vulnerability and contribution to the problem. In short, those who are the most vulnerable to the impacts of climate change and often most lack adaptive capacities have seldom contributed in any significant degree to the problem by way of historical emissions. The normative issue of how to redistribute resources in order to enhance such actors' adaptive

[10] The distinction has been discussed at least since Rawls presented the concept of 'realistic utopia' (Rawls 1999). In Rawls' view, a normative political theory must portray social arrangements that are desirable but must also consider whether such arrangements are feasible (Rawls 1999; cf. Gilabert and Lawford-Smith 2012).

capacities is difficult to answer but could be treated as a further epistemic uncertainty regarding normative claims. An additional normative issue concerns acceptable risk, and the likelihood and magnitude of unwanted harm from which we should protect future generations. This uncertainty is, to an extent, evident in the many different principles that are often discussed in the climate justice debate.

It is desirable that the distribution of burdens is just, that the decision exposes future generations to acceptable levels of risk, and moreover, that the realization of any such distribution or level of acceptable risk is also feasible in practice. Requiring too high a degree of feasibility would disqualify many progressive decisions. However, there seems to be a great 'utopophobia' in political theory—that is, a "fear of normative standards for politics that are unlikely ever to be met" (Estlund 2007: 14). On the far end of the scale, political theorist David Estlund places what he calls 'complacent realism,' which is based on what is definitely possible and realistic—most often to do nothing different from before at all; this is because "any theory that implies criticism of actual institutions or behavior is not as realistic as it could be" (2007: 263). In the context of climate change and the asymmetry between contribution to the problem and vulnerability, this would be a quite repulsive alternative. According to David Estlund, it is no defect of a normative political theory if its prescriptions are unlikely to be met, and between utopian theories and 'complacent realism,' he posits what he terms 'aspirational theories.' Such theories "posit[s] standards that are not generally met [...] though they are possible to meet" (Estlund 2007: 259). Principles of justice or ideals that are adaptive to surrounding conditions and acknowledge feasibility constraints to a sufficient degree, but are not completely constrained by such propositions, are arguably required and could offer an alternative to the distinction between realistic and utopian ideals. The importance of finding the middle ground

between realism and utopianism is required, as the currently most realistic alternatives will most likely lead to great risk exposure, whereas utopian alternatives are arguably both very irresponsible and risky.

b) Reconsidering goals

Another area for future research is determining what events should trigger reconsideration and the possible revision of goals, as suggested in Paper I. Such accounts will have to consider the strength of doubts, how such doubts are raised, and which goals in a goal–means structure doubt is turned as it is most likely a difference between doubts turned against a fundamental objective, and doubts turned towards more specific concretizations of such objectives. Goals could be viewed as including beliefs regarding two claims: (1) that a state of affairs is sufficiently achievable and (2) that the state of affairs will be desired when achieved. Justifiably accepting such beliefs could be regarded as accepting working hypotheses that suffice for promoting action and continuous inquiry, but in which an agent is also aware of the fallibility of his or her own viewpoint. In other words, they acknowledge that they might be wrong regarding (1) or (2). As suggested in Paper I, goals might thence require future revision or reconsideration. Increasing doubts in achievability or desirability could justify reconsidering such goals—that is, that the working hypotheses are most likely wrong and that the goal might be less achievable or desirable than initially assumed. Should achievability or desirability reach unacceptable levels of doubt, the goal should probably be reconsidered. Setting the boundaries for what constitutes unacceptable levels of doubt will most likely differ between contexts, agents, and assumptions regarding indirect diachronic abilities. Perhaps one could, tentatively, say that an unacceptable level is when the goal reaches such a low degree of belief that it is demotivating to continue striving toward it, it becomes too costly, or when resources have to be devoted elsewhere.

There could be different sources of doubt. For instance, previously unforeseen challenges to a policy or project can be one source that might require a goal to be reconsidered. Conversely, both normative and factual viewpoints that had not been considered when setting a goal or were not seen as offering realistic alternatives when a goal was set could be another source. Such situations should be scrutinized more closely in order to assess what constitutes challenges to the assumptions held regarding long-term goals. Considering the strength of doubt—that it is, for instance, more likely than not that the current belief in achievability is false—could perhaps be supplemented with a discussion regarding the levels toward which, in a goal–means structure, a doubt is directed. There is most likely a great difference between doubting an assumption about what to do next and doubt regarding overarching objectives. The degrees of doubt, and the level, in a goals–means structure, to which the doubt is directed, are factors that are important when determining the rationality of reconsidering goals.

5. The papers

The papers in this licentiate thesis all revolve around the central above-listed issues concerning climate change and strategies for coping with them, as well as the challenge involved in managing such uncertainties.

I. Cautious Utopias

The concept of sustainable development has arguably had an unmatched influence on planning and policy setting, ranging from global to local levels. That is, planning sustainably entails acknowledging long-term environmental, economic, and social consequences of a decision or an implemented policy. Setting a goal entails forming a belief regarding two claims—that the goal is achievable and that the future state of affairs will be desired when achieved.

However, sustainable development is also challenging due to uncertainties and required long time frames. Increasing distance between goal setting and goal achievement, or *temporal discrepancy*, consequently results in uncertainties due to the increasing likelihood of significant changes in the means and ends preconditions required to achieve a goal. Goals set with a long time frame might not be achievable—means might change, and technology might develop in a previously unforeseen manner. Similarly, values might change, and the goal might not be desirable.

With increasing discrepancy, such changes become all the more likely but also difficult to foresee. Planning in short time frames, in which knowledge is less uncertain, will often suffice for many issues. Regardless, when it comes to issues such as anthropogenic climate change and sustainable development, it is often required that long time frames are considered. The reason is that the magnitude of changes and their subsequent impacts will, to a great extent, be determined by current decisions regarding, for instance, mitigation and adaptation. Sustainable development requires consideration of the long-term impacts of decisions.

In Paper I, three alternative approaches to planning are discussed, and criticized, and an alternative form of goal is suggested—cautiously utopian goals. This form of goal does not only acknowledge that there are, ontologically, potential changes in both means and ends; it also acknowledges the epistemic basis and what can, on good grounds, be assumed regarding such changes. This epistemic condition and different degrees of uncertainty will then, in turn, influence what form of goals can be set.

In order to estimate whether a cautiously utopian goal is approached, degrees of justified beliefs in propositions related to achievability and desirability should be continuously assessed. The planning agent might have held too high

hopes for technology to develop or misjudged the desirability of the goal. Moreover, one aspect of setting cautiously utopian goals is their performance-enhancing function. That is, by setting a goal, a trajectory is established that will increase the probability that adequate means will be developed. The reason for this is that resources are allocated to develop the technology required to achieve a highly desirable goal (such as avoiding the significant harms associated with climate change, or achieving sustainable development).

The final section of Paper I discusses quality criteria—that is, what makes a *good* cautiously utopian goal. This involves both substantive epistemic criteria and procedural criteria for forming such beliefs and enabling adjustments in response to changes in preconditions. It requires scrutinizing evidence to determine adequate degrees of beliefs—that is, to assess the quality of evidence and adjust the degree of belief accordingly. Processes for such continuous estimations require ascribing responsibility to specific, knowledgeable actors and stakeholders, and the goal should be reconsidered when new evidence propels a change in the degree of justified belief.

II. Risk-Reducing Goals

Paper II situates the issue of climate change within the area of risk. More specifically, it discusses risk as future events involving possible, but not certain, harm. In this paper, some of the themes discussed in Paper I overlap. More specifically, it discusses ability-related claims and when these can be deployed to justify the reconsideration of goals. This is done by way of discussing the 'ought implies can' principle and situating it in the area of managing future, but not certain, harm.

Many would argue that unrealistic goals to reduce risks should be avoided and that goals should be aligned with actual abilities. Indeed, as the principle

'ought implies can' states, it would be wrong to expect from an agent something that lies beyond his or her abilities. Thus, it would not be legitimate to ascribe responsibility to an agent for something that this agent cannot achieve; it cannot be expected that this agent *ought* to achieve or realize a specific state of affairs. Consequently, risk acceptance has to be adjusted to risk-reducing abilities—that is, if there are no ways to limit risks, those risks will have to be accepted. This could, however, lead to possibly neglecting the enhancement of risk-reducing abilities. This paper argues that we have good reasons to set and retain very ambitious risk-reducing goals that do not fully align with abilities and are, in a sense, unrealistic. Indeed, in the context of reducing risks related to climate change, there are reasons to demand levels of risk that are, to an acceptable degree, unrealistic.

When discussing climate change, which will very likely expose many people to the likelihood of great harm, applying the principle of 'ought implies can' is troublesome. A closer scrutiny of the feasibility-related aspect of the principle—that is, 'can'—is undertaken. It is argued that when combined with the required complex decision making and long time frames of planning related to climate change and sustainable development, the principle loses force. The reason is that such management requires assessments of impacts and of defining alternatives to manage such risks; however, both aspects are characterized by uncertainty. Such management will often require a great series of actions of which we lack previous experience and in which we seemingly have not devoted resources to reduce uncertainty—that is, instances in which it is not known what means (such as decisions or implemented policies) will bring about a specific desired state of affairs, and it is very costly, if at all possible, to find out. Regardless, considering how valuable the states of affairs of sustainable development and adequate climate change adaptations are, more scientific endeavors should arguably be devoted to closing this gap.

The question is what that consequently means with regard to expected duties to reduce exposure of risk to (future) others. As discussed in the paper, there are several aspects that have to be explicated before adjusting demands to abilities. First, feasibility is not only a descriptive concept related to causality in the broad sense of 'if X φ, then A will be the subsequent state of affairs,' but is also often value-laden, such as state of affairs A is desired, and X highly values achieving A at acceptable costs. Moreover, it is known through, for instance, previous research or experience that X's φ-ing will produce A. Such knowledge is often closely connected to the achievement of states of affairs that we highly value and have devoted resources to ensure that we know how to get there, such as research into efficiency of policies. Second, caution is required before a risk-reducing goal is reconsidered, even if it seems overly ambitious. It might be better to have a very ambitious goal than to align goals with abilities that are uncertain, especially when it comes to events for which there is risk of great harm. Adjusting goals to abilities and consequently accepting higher degrees of risk could result in missed opportunities for enhancing abilities that could be efficient in managing risks. Third, the function of a goal has to be explicated before reconsideration is an option, as a goal might have several different functions. A goal might be a blueprint for a future state of affairs, any deviation from which is considered an unachieved goal. It might also serve as a state of affairs that is approachable—that it is better that our situation is *more* like that than the current state of affairs.

We do not yet know what states of affairs we are able to bring about. Comporting demands to abilities in instances of great uncertainty could result in demands constantly being reconsidered as we come to learn more regarding abilities. Considering the likely very harmful impacts of climate change, we could also be expected to be able to do more than in the current case—that is,

setting ambitious goals to manage such risks and retaining such goals despite claims regarding unfeasibility.

III. Scenarios and Sustainability

Swedish municipalities have a responsibility when adapting to a changing climate with support from county councils. This responsibility is often judicially based, as municipalities are responsible for social and contingency planning, rescue services, physical planning, and the provision of drinking water, sanitation, and waste management services. In order to facilitate municipal decision making and planning, the research program called *Climatools* developed a set of tools, two of which are tested and reported in this paper: *Socioeconomic Scenarios* and *Sustainability Analysis*. *Sustainability Analysis* has been developed to assess the long-term consequences of implementing adaptation measures. This is done to facilitate a decision in which a decision maker has several alternative adaptation measures and has to make a decision on either implementing or further developing adaptation measures that are sufficiently adequate with regard to the ensuing impacts in environmental, social, and economic areas. Another tool, *Socioeconomic Scenarios*, portrays different future scenarios in order to estimate the impact that different policy options might generate.

Implementing adaptation measures might have negative long-term effects. The tool *Sustainability Analysis* offers two different forms of analyses of consequences that different alternative adaptation measures might bring about: Cost-Benefit Analysis (CBA) and *Goal Conflict Analysis*. CBA is a tool in which the consequences of a decision are translated into costs and benefits with the intent of choosing the alternative that is expected to generate the greatest net benefit. *Goal Conflict Analysis* intends to facilitate the choice of adaptation measures by estimating how they will impact the achievement of

previously set goals related to the dimensions of sustainable development. *Socioeconomic Scenarios* was primarily developed by the Swedish Defense Research Agency. *Sustainability Analysis* was a joint project between the philosophy division of the Royal Institute of Technology and the National Institute of Economic Research; the latter is primarily responsible for CBA, and the former is primarily focused on developing *Goal Conflict Analysis*.[11]

The paper reports on one occasion in which both tools, as well as the two parts of *Sustainability Analysis*, have been tested. The test was carried out in Botkyrka, a municipality in the Stockholm metropolitan region. (For an exclusive discussion on *Goal Conflict Analysis,* including a further test in Helsingborg in the south of Sweden, see Baard [2013].) Testing the tool was important, as it was designed to be used by future municipal planners, and their perception of the usefulness of the tool was pivotal in developing the finished product (cf. Baard, Vredin Johansson, and Edvardsson Björnberg 2011).

The tool is to be used when a set of possible adaptation measures has been designed and a decision maker wants to choose one measure to implement or develop further. In the first stage of using the tool, which is a step common to both CBA and *Goal Conflict Analysis*, planners estimate which consequences an adaptation measure will bring about in different planning areas (such as health, tourism, employment, environment, etc. [see Appendix 1 to Paper III below]). Those consequences are then deployed when using *Goal Conflict*

[11] The main author of Paper III had the primary responsibility for the paper but was primarily involved in the development and testing of *Goal Conflict Analysis*. For this reason, and due to the division of labor in developing the tools, *Goal Conflict Analysis* will be the focus of this discussion. (For a paper exclusively focused on *Goal Conflict Analysis*, see Baard [2013].)

Analysis by estimating whether the consequences will have a negative or beneficent effect on goals.

When using *Goal Conflict Analysis*, the intention is to provide a transparent and structured choice of adaptation measure. Using the tool explicates which conflicts have been judged as acceptable and which synergies have been promoted. In this way, the tool offers an alternative to the quantitative CBA; it offers the possibility of structured deliberation regarding the value, expressed nonmonetarily, of achieving different states of affairs. The test showed that the municipal planners found using the tool rewarding.[12]

6. Svensk sammanfattning

Det överhängande målet med denna licentiatavhandling är att beskriva strategier för att konstruera uppnåbara och önskvärda mål som svar på de skadliga effekterna av antropogeniska klimatförändringar. Syftet är också att tydliggöra ett teoretiskt ramverk för att understödja långsiktig planering och målsättning. Uppsatsen består av en inledning, samt tre artiklar. Denna svenska sammanfattning kommer kortfattat ge en översikt över de frågor som behandlas, samt de strategier som presenteras i artiklarna. Generellt argumenteras att man bör sätta mål som inte till fullo är bundna av vad man, med hög grad av övertygelse, vet är möjligt. När man tillåter större osäkerheter gällande möjliga tillstånd blir det möjligt att sätta och försöka uppnå långsiktiga mål. Detta står i kontrast till intuitioner om att mål bör vara realistiska och anpassas till vad man vet är möjligt. Istället bör mål som till viss

[12] For reasons of space, both the presentation of the background of the tools and the tests are rather cursory. (See Baard [2013] for an in-depth discussion of *Goal Conflict Analysis* from a conceptual viewpoint as well as empirical discussions of two tests, or Edvardsson Björnberg and Svenfelt [2009] for a conceptual overview of goal conflicts.)

del är orealistiska, eller vars uppnåbarhet är osäkert, sättas. Emellertid bör man undvika mål som man vet är utopiska eller omöjliga att uppnå, eller mål vars uppnåbarhet är väldigt osäkra. I detta mellanrum mellan mål som man vet är uppnåbara och utopiska mål är det möjligt att orealistiska, men inte utopiska, mål kan ha gynnsamma funktioner. I planering med långa tidsperspektiv är det väldigt svårt att, med säkerhet, säga vad en agent förmår uppnå. Dock kan man göra uppskattningar med olika grad av osäkerhet – vilket ofta fordras i långsiktigt målsättande, som t ex mål som rör hållbarhet eller klimatanpassning.

a) Klimatförändringar och långa tidsperspektiv

Klimatet förändras som en följd av tidigare och nuvarande generationers handlingar (IPCC 2013). Främst sker denna förändring som en följd av utsläpp av växthusgaser. Att klimatförändringar sker som en följd av människors aktiviteter är välkänt, och Förenta Nationernas klimatorgan, IPCC, bekräftade, i ännu högre grad än tidigare, detta i sin senaste rapport som släpptes hösten 2013. Dessa förändringar kommer få allvarliga miljömässiga, sociala och ekonomiska konsekvenser.

Men även om vi vet att klimatet förändras som en följd av våra handlingar så saknar vi kunskap om vilka nationella, regionala, och lokala konsekvenser som kommer att framträda vilket är ett problem såtillvida att det finns goda skäl att planera så att dessa konsekvenser håller sig inom acceptabla gränser. Denna osäkerhet är både deskriptiv och normativ. Vi vet till exempel inte vilka de lokala konsekvenserna kommer att bli, och således saknar vi även kunskap om vilka anpassningsåtgärder som är adekvata, eller hur vi bör planera hållbart. Även om vi kan vara säkra på att klimatet förändras som en följd av främst utsläpp av växthusgaser, är det inte självklart i vilken utsträckning den påverkas, och exempelvis hur mycket utsläpp och koncentrering av koldioxid

som kommer att innebära en 2°C-ökning av global medeltemperatur i förhållande till förindustriella tider. Klimatet kan variera med avseende på sårbarhet, och möjligen kommer vi nå väldigt riskabla situationer redan vid mindre ökningar av medeltemperaturen. Oavsett så kan vi vara säkra på att vår påverkan på klimatet är stor, och att det förmodligen är bättre att vara försiktig, än att ta onödiga risker, när det rör sig om potentiella globala skador.

Men vi vet inte heller vad som kännetecknar 'acceptabel risk'. Begreppet risk implicerar att det finns en möjlig, men inte säker, skada som kan uppstå. Begreppet markerar både något oönskat, och en avsaknad av säkerhet (cf. Hansson 2011). Dessa faktorer utmanar möjligheten till hållbart planerande, och planerande för klimatanpassning. Vi är inte heller överens om hur vi bäst bör fördela bördor och ansvar för att begränsa dessa risker. Detta reflekteras bland annat i vilka mål vi är förpliktade att sätta och vars uppnående är eftersträvansvärda nog för att legitimera allokering av resurser. Diskussioner om fördelning av bördor brukar ofta exkluderas till aktörer som existerar samtidigt, men det finns även en temporal aspekt som är synnerligen relevant vid frågan om klimatplanering då de största skadorna eller oönskade konsekvenserna ännu ligger en bit in i framtiden. Detta ger en möjlighet, menar somliga, till att uppskjuta handlingar och policys. Ofta baserar sig sådana resonemang på att framtida generationer kommer att ha bättre möjligheter att vidta åtgärder som antingen är mer kostnadseffektiva, eller för att de har en bättre kunskap om vilka åtgärder som erfordras.

Dessa är dock inga bra argument. Att framtida generationer kommer kunna agera mer kostnadseffektivt baserar sig på premisser om fortgående ekonomisk tillväxt, vilket kan skadas av klimatförändringar. Om nuvarande utsläppsnivåer fortgår eller ökar så finns det en stor risk att det får stora konsekvenser på ekonomin. Kostnader för t ex anpassning kommer även öka i takt med att miljömässiga och samhälleliga konsekvenser blir värre. Men inte

bara kostnaderna kommer öka, även osäkerheterna kommer att bli mer svårhanterliga. Med högre nivåer av utsläpp och atmosfärisk koncentration av växthusgaser blir det mer osäkert inom vilka nivåer exempelvis temperaturökningar kommer att hålla sig. I IPCC's mest hållbara scenarier, B1, är en möjlig temperaturökning mellan 1,1-2,9 grader Celsius 2100 i förhållande till nivåerna 1980-1999. I de mer utsläppsintensiva scenarierna, t ex A1FI, är motsvarande intervall 2,4-6,4 grader Celsius (IPCC 2007a: 13).[13] Den större intervallen är en konsekvens av att högre utsläpp och koncentrationsnivåer av växthusgaser kan leda till återkopplingsmekanismer, vilket i sin tur höjer temperaturerna ytterligare. Ett exempel är när ökade temperaturer, som en följd av ökad koldioxidhalt, leder till att mer vattenånga finns i luften, vilket höjer temperaturen ytterligare (SMHI 2014). Vi har låg kännedom om sådana mekanismer och att undvika denna osäkerhet ger oss också ytterligare skäl att agera och sätta ambitiösa mål.

Även om vi alltså har skäl att, trots dessa osäkerheter, sätta mål, så kvarstår flera utmaningar. Hållbar utveckling och klimatanpassning kräver planering som överskrider de tidsramar som vi är vana att planera i. Utöver det fordrar sådan planering politiska beslut, men överskrider politiska mandatperioder. Oavsett om vi tar beslut att lägga väldigt mycket resurser på att sätta mål och uppnå dem, samt gör nödvändiga omställningar till mer hållbara livsstilar eller

[13] I IPCCs femte och senaste rapport används inte längre samma scenarier, utan man pratar istället om "Representative Conceptration Pathways" (RCP). Det mest hållbara, RCP2.6, vilket kommer fordra en topp i utsläppsnivåer runt 2050, varpå koncentrationsnivåer måste minska som en följd av minskade utsläpp och mer effektiva sänkor, kommer leda till en ökning av yttemperatur på 0,3-1,7°C 2081-2100 relativt 1986-2005. RCP8.5, som är betydligt mer intensivt gällande utsläpp, har ett motsvarande intervall mellan 2,6-4,8°C. RCP2.6 är det enda scenario som inte kommer överskrida en ökning på 2°C i förhållande till för-industriella temperaturer (IPCC 2013: 18).

teknikutveckling, finns det stora osäkerheter avhängiga tidsramarnas längd, och vi har en i förhållande till problemet väldigt kortsiktig syn.

När man planerar med längre tidsramar uppstår en hel del osäkerheter. Två centrala sådana, som utforskas i den första artikeln, är ontologiska och epistemologiska osäkerheter. Det vill säga: med längre tidsramar ökar sannolikheten för att den omgivning i vilket målet försöker att uppnås kommer att ändras på centrala sätt. Medel för att uppnå ett mål kan komma att utvecklas och underlätta att målet uppnås. Men samtidigt kan omgivningen ändras på sätt som försvårar måluppfyllelse, vilket är tydligt i till exempel planering för hållbarhet eller klimatanpassning som ofta fordrar att klimatförändringar är inom hanterbara gränser. På samma sätt kan värderingar förändras, vilket kan påverka hur önskvärd det tillstånd som tidigare utgjort målet upplevs. Så kan exempelvis det sätt på vilket vi föreställer oss hållbar utveckling ändras, och önskvärdheten i det mål vi planerar mot följaktligen ändras. Skillnader i uppnåbarhet och i önskvärdhet kan uppstå, och vi brukar också göra vissa antaganden om sådana förändringar. I kortare tidsperspektiv brukar vi t ex ofta anta att kapaciteter och preferenser är, och förblir, stabila fram till måluppfyllelse. Sådana förgivettaganden blir däremot betydligt mer problematiska i längre tidsramar. Denna uppsats ämnar dock erbjuda en strategi för att underlätta även dessa osäkerheter. Centralt är att förtydliggöra vilken grad av övertygelse man har gällande uppnåbarhet och önskvärdhet, samt att kontinuerligt utvärdera huruvida målet blir mer, eller mindre, uppnåbart eller önskvärt.

Bortsett från att vara utsträckt i tid, är problemet även geografiskt komplext. Klimatförändringarna är inte bundna till enskilda aktörer, och hanteringen av dess konsekvenser kommer fordra att flera aktörer samarbetar. Detta kan leda till att olika värden, förmågor, samt uppfattningar av vad som utgör acceptabel risk behöver samordnas (cf. Voß et al 2007). Flera olika aktörer, t ex

kommuner, regioner, eller nationer, kan till exempel alla ha ett ansvar över att ett större skogsområde, eller ett hav, förblir hållbart, men värderar denna entitet, och dess nyttor, olika. Förmodligen kommer de även ha olika resurser att bidra med, och de kan också ha olika uppfattningar om hur stort de övriga aktörernas ansvar sträcker sig. Följaktligen finns en risk att de kommer att göra olika värderingar av hur värdefullt det är att bibehålla en viss entitet, och hur ansvaret bör fördelas. Sådant kan leda till målkonflikter, det vill säga när olika aktörer har olika mål, och en aktörs måluppfyllelse står i konflikt till en annan aktörs mål. Omvänt kan man tala om målsynergier, vilket är när uppnåendet av ett mål understödjer eller förenklar möjligheten att nå ett annat mål. Men även om man är överens om mål, som t ex hållbar energi, så kan vägarna dit värderas olika, där vissa aktörer kanske värderar kärnkraft högre än förnybara källor, och vice versa (cf. Voß et al 2007: 196). Det kan också finnas målkonflikter hos en och samma aktör. Exempelvis är planering i en kommun eller region ofta indelad i många olika expertområden, och det kan finnas möjliga konflikter mellan t ex miljömässiga mål och ekonomiska mål.

Att förstå ett sådant komplext system som klimatet, och dess konsekvenser i miljömässiga, sociala och ekonomiska system, är givetvis en stor utmaning. En ytterligare utmaning är de långa tidsramar som fordras, och klimatet överskrider de flesta tidsramar vi vanligen brukar planera i. Dessa faktorer gör klimatfrågan till en unik fråga, både i sin globala utsträckning, den stora nivån av risk som kommer uppstå, i sin komplexitet, och i sina långa tidsramar.

b) Klimatanpassning, hållbarhet, och försiktiga utopier

Det finns olika strategier för att minska skadliga konsekvenser av klimatförändringar. En strategi som ofta diskuteras är att begränsa utsläpp av växthusgaser med ambitionen att detta kommer minska klimatförändringarna,

som följaktligen kommer leda till färre, eller mer hanterbara, konsekvenser på nationella och lokala nivåer. Detta är en svårframkomlig väg, då stora delar av vårt samhälle och ekonomi är beroende av sådana utsläpp för exempelvis transporter, produktion, till mer vardagsnära aktiviteter som uppvärmande av hus, mat, och konsumtion.

En annan strategi som allt oftare diskuteras är klimatanpassning, som kortfattat kan sägas innebära att man anpassar sig till de klimatförändringar som sker. Om exempelvis oftare skyfall blir vanligare, så anpassar man lokalsamhällets system för att kunna hantera sådana. Om högre havsnivåer är en konsekvens för ett kustnära samhälle, är skyddsvallar ett exempel på en anpassning till klimatet. Klimatanpassning uppmärksammar att klimatet kommer förändras på något sätt, vilket kommer få konsekvenser, och att anpassning således är nödvändigt.

Båda strategierna kommer behövas. Att enbart förlita sig på att begränsa utsläpp torde vara omöjligt – både historiska utsläpp finns kvar, och nuvarande utsläppsnivåer tycks väldigt svåra att begränsa tillräckligt för att ingen förändring alls ska ske. Att enbart förlita sig på anpassning är också problematiskt. Om man inte samtidigt begränsar utsläpp kommer det öka konsekvensernas omfattning. Om utsläpp ökar, eller koncentrationen av växthusgaser i atmosfären inte radikalt minskar (genom t ex koldioxidsänkor), så kan det leda till konsekvenser som är väldigt svåra, möjligen omöjliga, att anpassa sig till. Ett specifikt problem är att ju högre koncentrationen är av växthusgaser, desto osäkrare är det vilka konsekvenserna kommer att bli. Båda strategierna behövs.

Någon form av förändring kommer att ske, och denna kommer att kräva anpassning. Förändringen bör dock begränsas så gott det går, vilket argumenteras för i Artikel II, där det framhålls att viss grad av orealistiska mål

kan vara legitima att sätta när det rör sig om att hantera stora risker och där det är svårt att urskönja vad som kan göras – det vill säga att bilda sig en tydlig bild av vad man förmår göra. Detta kan vara att föredra framför att sätta mål som leder till betydligt större, och skadligare, konsekvenser, men som bedöms som mycket mer realistiska.

Att våra val kommer att påverka framtida generationer är en central aspekt av begreppet hållbar utveckling, som formulerades på följande sätt i rapporten *Vår Gemensamma Framtid*: *"En utveckling som tillgodoser dagens behov utan att äventyra kommande generationers möjligheter att tillgodose sina behov"* (WCED 1987: 43). Givet att klimatet kommer att förändras, kommer det krävas klimatanpassningsåtgärder för att uppnå hållbar utveckling. Emellertid är inte anpassningsåtgärder allt, och även dessa bör analyseras utifrån ett hållbarhetsperspektiv. Ett verktyg för att möjliggöra sådan analys diskuteras i Artikel III (samt även Baard 2013). För att undvika att sådana åtgärder leder till negativa långsiktiga konsekvenser undersöks hur konsekvenserna kommer påverka uppnåendet av miljömässiga, ekonomiska och sociala mål. Verktyget är främst framarbetat för kommunala beslutsfattare, och beaktar således främst kommunala mål.

Sådana verktyg ämnar förbättra den position från vilken (främst lokala, i detta fall) planerare tar beslut relaterade till klimatanpassningsåtgärder från ett kunskapsmässigt perspektiv, och *Målkonfliktsanalys* är ett sätt att tydliggöra och förhoppningsvis undvika målkonflikter genom att sammanföra deltagare med olika expertis. Men det kvarstår dock fortfarande osäkerheter, och frågan om vilka mål som kan, och måste, sättas för att möjliggöra hållbar utveckling och klimatanpassning blir en alltmer relevant och pressande fråga. Det är osäkert vad vi kan göra för att undvika de mest oönskade tillstånden. Till exempel verkar det högst osannolikt att vi, på en global nivå, kommer lyckas

begränsa utsläpp till sådana nivåer att konsekvenserna kommer hålla sig inom acceptabla gränser.

Ur ett analytiskt perspektiv ställer detta vissa synnerligen intressanta frågor om vilka mål vi kan, och bör, sätta ur ett långsiktigt perspektiv. Att sätta realistiska mål är att föredra, men är väldigt svårt då sådana mål i väldigt hög grad måste relatera till relevanta aktörers förmågor, vilket är kunskap vi ofta saknar. Vi kan t ex ha en uppfattning om vilka nivåer växthusgaser som är nödvändiga för att hålla klimatförändringarna inom acceptabla nivåer, men det är betydligt mer osäkert om vi har förmågan att utveckla och implementera nödvändig teknologi och beteendeförändringar. Vi bör dock undvika utopiska mål, definierat som mål där vi antingen vet att de är omöjliga att nå, eller där uppnåbarhet är så pass osannolikt att det är högst problematiskt att sätta sådana mål för att hantera risker av den skala som klimatförändringarna.

I Artikel I föreslås ett mellanting mellan realistiska och utopiska mål – 'försiktiga utopier'. Sådana mål är satta med långa tidsperspektiv och tillåter höga osäkerheter i vad som är möjligt att uppnå. Försiktiga utopier definieras som:

i) Givet att målet har satts som ett långsiktigt mål är det troligt, men inte säkert, att målet är uppnåbart och att önskvärdheten kommer att bestå; och
ii) Målet är öppet för framtida justeringar som en följd av förändringar i värderingar och/eller omständigheter

Sådana mål tillåter följaktligen osäkerheter gällande möjliga förändringar i uppnåbarhet och hur önskvärda framtida tillstånd är. Men de fordrar också ett tydliggörande av vilken grad av övertygelse man exempelvis tillskriver påståenden om uppnåbarhet. Till exempel kan det röra sig om att bilda sig en uppfattning om i vilken utsträckning en proposition som följande är sann:

”Inom tio år kommer vi att ha tillgång till teknologi som effektivt tar hand om alla utsläpp från en viss industri” (Artikel I). Detta är ett framtids-orienterat påstående som relaterar till förmåga. Vi har goda skäl att tro att vi inte kan samma saker idag, som vi kommer kunna om tio år. Förhoppningsvis kommer förmågor att utökas, och vi kommer kunna göra saker mer effektivt och bättre. Men det är inte säkert. Frågan vid målformulering är dock vilken nivå av övertygelse man bör tillskriva ett sådant påstående för att inkludera det i en målsättning. Det vill säga hur säker man bör vara på att det kan vara sant för att rättfärdiga att det inkluderas i planering.

Ofta kräver vi en låg grad av osäkerhet gällande sådana påståenden, för att inkludera dessa i ett mål. Exempelvis realistiska mål kräver väldigt hög grad av sannolikhet, vilket är en väldigt stor utmaning. Dessutom kräver hållbar utveckling tillgång till en hel del förmågor som vi för tillfället inte har tillgång till, och det finns skäl att acceptera lägre grad av sannolikhet gällande sådana påståenden. För det första kan mål ha en teknik- och medel-utvecklande funktion. Att trots allt inkludera mål som ter sig rätt osannolika när de sätts kan leda till att resurser allokeras som förbättrar medel och möjliggör vägen till det eftersträvade tillståndet.

För det andra kan det i vissa tillfällen vara viktigt att sätta mål för att undvika ett väldigt oönskat tillstånd, men samtidigt väldigt svårt att säga, med någon större grad av säkerhet, vad som är möjligt. Detta är till viss del situationen vid hantering av sådana storskaliga och komplexa risker som de som rör antropogena klimatförändringar. Påståendet ’X kan ϕ’ kan förstås på väldigt många olika sätt. Det är inte bara ett påstående som rör ett kausalt förhållande, det vill säga att X har en möjlighet att förmå ett specifikt tillstånd att uppstå. Ofta rör det även en normativ eller värderingsmässig aspekt, att X kan ϕ givet acceptabla kostnader, eller att X *bör* ϕ på grund av dennes

förmåga eller ansvar för att ett oönskat tillstånd annars kommer att uppstå. Oavsett finns det väldigt många olika aspekter som måste beaktas innan vi kan fastslå vad som ligger i X:s förmåga, vilket gör det ännu mer problematiskt att, med hög grad av övertygelse, fastslå vad en viss agent kan göra. Detta gör det givetvis väldigt svårt att anpassa mål så de kan uppnås. Sådana mål kan vägleda handling så till vida att de poängterar ett önskvärt tillstånd som man bör närma sig. Om det visar sig vara helt omöjligt, kan dock mål komma behöva att omformuleras, men när det rör oönskade tillstånd eller risker av sådan skala som antropogena klimatförändringars konsekvenser bör man enbart när det finns väldigt goda skäl omformulera ett mål. Detta står i kontrast till våra intuitioner, och i Artikel II utforskas hur principen 'bör implicerar kan', det vill säga att vi inte kan förvänta oss att en agent ska göra något som ligger bortom dennes kapacitet, blir väldigt svår att implementera när det är svårt att med hög grad av säkerhet säga vad som är möjligt och vad en agent förmår. Enligt somliga, som vill bibehålla principen, kan istället höga nivåer av risk behöva accepteras om det inte finns agenter som kan hantera dessa risker. Detta argumenterar dock Artikel II emot, och menar, i likhet med Artikel I, att vi har skäl att sätta mål som inte är realistiska, men inte heller utopiska, just för att de har en möjlighet att utveckla medel.

Oavsett så kan det vara så att mål måste omformuleras då de visat sig vara omöjliga att uppnå. Artikel I, och till viss del Artikel II, diskuterar processer där förändringar i grad av övertygelse förtydligas även efter att målet satts, men innan det ska ha uppnåtts. Vid vilka tidpunkter mål faktiskt bör omformuleras är emellertid en fråga för framtida forskning.

c) Artiklar

De tre artiklar som denna licentiat utgörs av försöker alla, på olika sätt, underlätta långsiktigt planerande trots de osäkerheter som har beskrivits ovan.

Artikel I tar upp en form av mål som bör underlätta långsiktig målsättning, trots att det är oklart vilka förmågor man har till förfogande och således vilka mål man kan betrakta som realistiska. 'Försiktiga utopier', som beskrivits ovan, förtydligar vilken grad av rättfärdigad tro man har på påståenden gällande uppnåbarhet och önskvärdhet, och gör fortlöpande uppskattningar av möjliga förändringar i sådan övertygelse. Artikel II tar också upp frågan om förmågor, och menar att man kan förvänta sig mer av agenter än vad de för tillfället förmår. Detta strider emellertid mot principen att 'bör implicerar kan'. Principen är intuitivt giltig när det är obestridbart och känt, bortom rimligt tvivel, vad en agent förmår. Vi är sällan i en sådan position, och den osäkerhet som präglar klimatbeslut innebär att det är svårt att svara på frågan om vad vi förmår. Det vore, i en sådan situation, väldigt märkligt att anpassa mål eller de medel som man har, när kunskap om dessa medel är bristfällig och osäker. Till exempel skulle det kunna innebära att vägar stängs till att utveckla värdefulla möjligheter. Artikel III tar upp ett annat problem, nämligen anpassningsåtgärders möjliga negativa konsekvenser. Detta undersöks genom test av ett beslutsstödsverktyg, utformat för kommunala planerare. Verktyget, *Hållbarhetsanalys*, tydliggör möjliga konsekvenser av implementerandet av en anpassningsåtgärd. Dessa konsekvenser utgör sedan underlag för antingen en kostnads-nytto-analys (CBA), eller *Målkonfliktanalys*. Det sistnämnda är främst av intresse, då det är en ny verktygsdel, medan CBA använts länge i många olika sammanhang. Analysen tydliggör hur en beslutsfattare har prioriterat mellan olika mål, och vilka konsekvenser och mål som har beaktats när beslut om anpassningsåtgärder arbetats fram.

References

Adger, W. N., Lorenzoni I., and O'Brien K. L. 2009. Adaptation Now. In Adger W. N., Lorenzoni I., and O'Brien K. L. (eds.). Adapting to Climate Change: Thresholds, Values, Governance. Cambridge: Cambridge University Press. 1–22.

Baard, P. 2011. "Mill, miljö och hållbarhet" [Mill, Environment and Sustainability]. Tidskrift för Politisk Filosofi 0311: 29–36.

Baard, P. 2013. "Goal Conflict Analysis: Avoiding Regret When Planning Climate Change Adaptation Measures." Environmental Policy and Governance. (Submitted manuscript). [Available from author]

Baard, P., Vredin Johansson, M., and Edvardsson Björnberg, K. 2011. Hållbarhetsanalys – en vägledning [Sustainability Analysis – A Guide]. FOI report: FOI-R--3389--SE.

Besch, T. 2011. "Factualism, Normativism and the Bounds of Normativity." Dialogue 50: 347–365.

Biesbroek, G. R., Swart, R. J., and van der Knapp, W. G. M. 2009. "The Mitigation-Adaptation Dichotomy and the Role of Spatial Planning." Habitat International 33: 230–237.

Bratman, M. 2010. "Agency, Time and Sociality." APA Presidential Address.

Bratman, M., Israel, D. J., and Pollack, M. E. 1988. "Plans and Resource-Bounded Practical Reasoning." Computational Science 4: 349–355.

Broome, J. 2012. Climate Matters: Ethics in a Warming World. New York and London: W. W. Norton & Company.

Caney, S. 2009. “Climate Change and the Future: Discounting for Time, Wealth, and Risk.” Journal of Social Philosophy 40: 163–186.

Caney, S. 2010. “Climate Change, Human Rights, and Moral Thresholds.” In Gardiner, S., Caney, S., Jamieson, D., and Shue, S. (eds.). Climate Ethics – Essential Readings. Oxford: Oxford University Press: 122–146.

Dessai, S. and J. van der Sluijs. 2007. *Uncertainty and Climate Change Adaptation – A Scoping Study*. Utrecht: Universiteit Utrecht.

Dessai, S., Hulme, M., Lempert, R., and Pielke, Jr., R. 2009. “Climate Prediction: A Limit to Adaptation?” In Adger, W. N., Lorenzoni, I., and O’Brien, K. L. (eds.). Adapting to Climate Change: Thresholds, Values, Governance. Cambridge University Press: Cambridge: 64–78.

Dewey, J. [1922]2002. *Human Nature and Conduct*. New York: Dover Publications, Inc.

Edvardsson, K. and Hansson, S. O. 2005. “When is a Goal Rational?” Social Choice and Welfare 24: 343–361.

Edvardsson Björnberg, K. 2008. “Utopian Goals: Four Objections and a Cautious Defence.” Philosophy in the Contemporary World 15: 139–154.

Edvardsson Björnberg, K. and Hansson, S. O. 2011. “Five Areas of Value Judgment in Local Adaptation to Climate Change.” Local Government Studies 37: 671–687.

Edvardsson Björnberg, K. and Å. Svenfelt. 2009. Goal Conflicts in Adaptation to Climate Change: An Inventory of Goal Conflicts in the Swedish Sectors of the Built Environment, Tourism and Outdoor Recreation, and Human Health. Report No FOI-R-2747-SE. Swedish Defence Research Agency: Stockholm.

Eriksen S. H. and O'Brien K. 2011. "Vulnerability, Poverty and the Need for Sustainable Adaptation Measures." Climate Policy 7: 337–352.

Estlund, D. 2007. Democratic Authority: A Philosophical Framework. Princeton: Princeton University Press.

Gardiner, S. 2011. A Perfect Moral Storm: The Ethical Tragedy of Climate Change. Oxford: Oxford University Press.

Gilabert P. and Lawford-Smith, H. 2012. "Political Feasibility: A Conceptual Exploration." Political Studies 60: 809–825.

Hansen, J., Sato, M., Kharecha, P., Beerling, D., Berner, R., Masson-Delmotte, V., Pagani, M., Raymo, M., Royer, D. L., and Zachos, J. C. 2008. "Target Atmospheric CO2: Where Should Humanity Aim?" The Open Atmospheric Science Journal 2(1): 217–233.

Hansson, S. O. 2011. *Riskfilosofi – En Introduktion*. Stockholm: Liber.

IPCC, 2013. Summary for Policymakers. http://www.climatechange2013.org/images/uploads/WGI_AR5_SPM_brochure.pdf (Accessed: 140312)

IPCC, 2007a. Fourth Assessment Report: Working Group I. Available online: http://www.ipcc.ch

IPCC, 2007b. Climate Change 2007: Working Group III: Mitigation of Climate Change. Available online: http://www.ipcc.ch

IPCC, 2001a. Climate Change 2001: Synthesis Report. Cambridge: Cambridge University Press.

IPCC, 2001b. Climate Change 2001: Impacts, Adaptation, and Vulnerability. Cambridge: Cambridge University Press.

IPCC, 2000. Special Report: Emission Scenarios. Cambridge: Cambridge University Press.

Jackson, T. 2009. Prosperity Without Growth: Economics for a Finite Planet. USA: Earthscan.

Jamieson, D. 2010. "Adaptation, Mitigation, and Justice." In Gardiner, S. M., Caney, S., Jamieson, D., Shue, H. (eds.). Climate Ethics – Essential Readings. Oxford University Press: Oxford: 263–283.

Jensen, M. 2009. "The Limits of Practical Possibility." The Journal of Political Philosophy 17: 168–184.

Mill, J. S. [1848]1965. The Collected Works of John Stuart Mill, Volume III: The Principles of Political Economy with Some of Their Applications to Social Philosophy (Books III–V and Appendices), John M. Robson (ed.), London: Routledge and Kegan Paul.

Munthe, C. 2011. The Price of Precaution and the Ethics of Risk. Dordrecht: Springer.

OECD. 2001. OECD Environmental Strategy for the First Decade of the 21st Century. Available online: http://www.oecd.org/env/indicators-modelling-outlooks/1863539.pdf (Accessed 20 February 2014)

Oreskes, N. and Conway, E. M. 2010. *Merchants of Doubt*. London: Bloomsbury.

Page, E. 2006. Climate Change, Justice, and Future Generations. Edward Elgar Publishing, Inc.: Great Britain.

PriceWaterHouseCooper Group (PwC), 2012. Too Late for Two Degrees? Low Carbon Economy Index 2012.

Rawls, J. 1999. The Law of Peoples. Cambridge: Harvard University Press.

Schneider, S. H. and Azar, C. 2001. "Are Uncertainties in Climate and Energy Systems a Justification for Stronger Near-Term Mitigation Policies?" PEW Center. Available online: http://www.c2es.org/docUploads/timing_azar_schneider.pdf (Accessed 24 February 2014)

SMHI, 2014. SMHI:s kunskapsbank, http://www.smhi.se/kunskapsbanken/vaxthuseffekten-1.3844 (Accessed 27 March 2014)

SOU 2007:60. Sverige Inför Klimatförändringarna – Hot och Möjligheter [Sweden Facing Climate Change – Threats and Possibilities]. Governmental report 2007:60.

Stemplowska, Z. 2008. "What's Ideal About Ideal Theory?" Social Theory and Practice 34: 319–340.

Stern, N. 2007. The Economics of Climate Change: The Stern Review. Cambridge: Cambridge University Press.

Swart R., Robinson J., and Cohen S. 2008. Climate Change and Sustainable Development: Expanding the Options. Climate Policy 3S1: S19–S40.

Voß, J.-P., Newig, J., Kastens, B., Monstadt, J., and Nölting, B. 2007. "Steering for Sustainable Development: A Typology of Problems and Strategies with Respect to Ambivalence, Uncertainty, and Distributed Power." Journal of Environmental Policy & Planning 9: 193–212.

Voß, J.-P., Smith, A., and Grin, J. 2009. “Designing Long-Term Policy: Rethinking Transition Management.” Policy Science 42: 275–302.

Valentini, L. 2012. “Ideal vs. Non-Ideal Theory: A Conceptual Map.” Philosophy Compass 7: 654–664.

Winsberg, E. 2010. Science in the Age of Computer Simulation. Chicago University Press: Chicago.

World Commission on Environment and Development, 1987. Our Common Future. Oxford: Oxford University Press.