“…but it has to be done fairly”

Results from an experimental study of Norwegian citizens’ conceptions of climate justice

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Abstract

This thesis explores how Norwegian citizens conceive climate justice. It has been argued that the success of international climate change agreements depends on them being perceived as fair. Even though states are the actors participating in international negotiations, it is the citizens who ultimately will feel the costs of the commitments that states make. If these commitments are perceived as unfair, states will most likely experience resistance from citizens.

At the same time, we know that the economic interests of each state have an important influence on the policy commitments they make. We cannot assume that states will seek to achieve fair international climate policy, and neither can we assume that citizens will want to prioritize climate justice over the national economy. This thesis asks how Norwegian citizens make this trade-off between economy and justice, and which (if any) of the common principles of climate justice are perceived as fair.

The thesis utilizes a distributive justice approach to climate justice. This approach sees the atmosphere as a global common which should be distributed fairly between countries. There are four main principles of climate justice within this approach: polluter pays, ability to pay, grandfathering and equal per capita emissions. Support for these four principles is tested through a randomized between-subjects survey experiment with a non-directive design. The experiment is accompanied by an open question where respondents are given the opportunity to elaborate on their answer in the experiment.

The thesis finds that overall, Norwegian citizens are willing to prioritize justice over the economy when Norway makes commitments in international climate change agreements. Both the polluter pays principle, the ability to pay principle and the grandfathering principle are perceived as fair. At the same time, answers to the open question reveal that collective responsibility is an important part of Norwegians' conceptions of climate justice. Support for international climate change agreements may not depend so much on the exact distributive principle, as it does on whether or not all countries contribute.

Forord

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Disclosure statement

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For the sake of clarity, I would like to inform the reader that I have been a part-time employee at Ideas2Evidence, the company that handles the data collection for the Norwegian Citizen Panel, since august 2017. However, I have not had any tasks related to the Norwegian Citizen Panel as a part of my job.

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1.0 Introduction

"Public opinion acts as an important constraint on and facilitator of climate policy"
(Anderson, Bernauer and Balietti 2017, 451)

In both academic and policy circles, it has been emphasized that climate change is inherently a normative issue. The Intergovernmental Panel on Climate Change (IPCC) have stated that "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 judgements*" (IPCC 2001, 2, my emphasis). Scientific findings leave no doubt that the climate is changing due to human influence. Science also tells us what we *can* do in order to prevent further changes to the environment. These are empirical issues. Whether we *should* do anything, and in that case *what*, and *how much,* are normative questions (Broome 2008, 97).

It has been argued that understanding what would be perceived as fair policy in the face of climate change is crucial for the success of any international climate change agreement. Even though states are the negotiating parties, it is the citizens who ultimately will carry many of the potential costs that come with tackling climate change such as changing their lifestyles or paying higher taxes (Lavik and Pedersen 2017, 342). For citizens to be willing to change their behaviour and not punish the politicians who commit the country to international climate change agreements, policies must be perceived as fair (Jamieson 2011, 29). This dynamic also works the other way around: for politicians to be willing to commit to mitigation, they need to know that voters will not punish them for it (Carlsson et al. 2013, 14).

If we accept that the responsibility for mitigation should be allocated fairly in international climate change agreements, then what could such a fair agreement look like? One approach argues that it is morally intuitive that those who have emitted the most, should have the biggest responsibility (Caney 2005; Page 2008). This is known as the polluter pays principle. This would undoubtfully entail large costs for the Western world, who have emitted greenhouse gases (GHGs) since the industrial revolution. On the other hand, the ability to pay principle argues that economic capacity also should be a key factor determining responsibility for

mitigation (Caney 2010; Baer et al. 2010). If you have the economic means for it you have a moral responsibility to contribute, no matter what your contribution to the problem has been. Contrasting this, the grandfathering principle holds that by emitting GHGs, each country establishes a property right to their share of the atmosphere. Therefore, it is only fair that all countries reduce their emissions with the same percentage, with the effect that everyone keeps their share of the global total (Knight 2013; Bovens 2011). Lastly, in the equal per capita emissions principle it is argued that because the atmosphere is a global common shared by all the earth's inhabitants, it is fair that everyone has an equal right to use it (Agarwal and Narain 1991; Shue 1999; Singer 2010). Therefore, the atmosphere's remaining capacity to absorb GHGs should be divided equally between everyone on earth. In short, there are many suggestions on how the responsibility for mitigation can be allocated as fairly as possible between countries, yet we know little about how citizens perceive these principles.

At the same time as justice is deemed an important ingredient of any successful climate change agreement, we know that the economic interests of each country play a crucial role in international negotiations on climate change. By most accounts a climate change agreement that tries to distribute the responsibility or mitigation as fairly as possible between countries, will have big costs for Western countries. Several studies have found that states support the justice principles that are in line with their own economic interests (Lange, Vogt and Ziegler 2007; Lange et al. 2010; see also Kallbekken et al. 2014, 11-14). We also know that in many cases, the preferences of citizens are shaped by what is in the best interests of their own country, rather than by what is fair (Carlsson et al. 2013, 3). Therefore, we cannot assume that citizens prefer a fair agreement over one that prioritizes economic interests. If commitments in international climate change agreements entail considerable costs for a country, citizens may not support these commitments. This is perhaps especially important in countries such as Norway, where oil wealth has been and still is a very important part of the economy.

Thus, states are here faced with a choice: Should they prioritize achieving fair international climate policy, even though it may entail large costs? Or should they prioritize the domestic economy over committing to big emissions cuts? For this choice to be democratically anchored, we need to know more about how ordinary citizens think about these questions.

In a discussion of what Norway *should* do, it is necessary to include a brief remark on what Norway is already doing. Norway's current international commitments are found under the

Paris agreement, which Norway ratified in June 2016 (Ministry of Climate and Environment 2016). While international climate politics has been built on a distinction between Annex 1 industrialized countries and Non-Annex 1 developing countries ever since the introduction of the introduction of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, the Paris agreement establishes obligations for *all* countries, and thus ends this division (Lahn 2018, 30). According to the Ministry of Climate and Environment (2016) under the Paris agreement Norway has committed to reducing emissions with at least 40% compared to 1990 levels within 2030. Several attempts have been made at operationalizing and quantifying the different principles of climate justice and estimating how much Norway should cut in order for our share of emissions cuts to be fair, if following these understandings of justice (Kallbekken et al. 2014; Kartha et al. 2014; Kartha, Holz and Athanasiou 2018). All estimations reach the overall conclusion that Norway's efforts should be a lot bigger than today in order to be fair. I will not dwell further on these calculations but take as a premise for the discussions that follow that as of today, Norway is not taking its fair share if following the common understandings of climate justice.

1.1 Research question and structure of the thesis

In order to find out whether Norwegian citizens are willing to prioritize fair allocation of responsibility over Norwegian economic interests and how they perceive the common principles of climate justice, I ask the following research question:

> *How do ordinary citizens in Norway make the trade-off between the Norwegian economy and justice, and which (if any) of the common principles of climate justice do they perceive as fair?*

In chapter 2, the thesis provides an overview of the literature on climate justice, both from normative political theory and empirical studies that investigate citizens' support for these normative ideas. Chapter 3 presents the method and study design employed in the thesis; a survey experiment combined with an open question, as well as the competing hypotheses that will be investigated through the experiment. Chapter 4 presents the results of the analysis of the data from the survey experiment, and discusses their implications for the hypotheses. Chapter 5 presents the results of the analysis of the text data from the open question. The analysis employs both inductively and deductively developed categories. Chapter 6 provides a summary

of the findings of the thesis, before discussing the implications of these findings and providing a conclusion.

1.2 Contributions

The contributions of the thesis are both theoretical, empirical and methodological. Theoretically, the thesis sees the literature on the tragedy of the commons and the literature on climate justice in combination, using them as two competing theoretical perspectives to explain citizens' preferences in international climate policy. Empirically, the thesis expands the research on citizens' conceptions of climate justice to a new empirical domain: The case of Norway. Whereas most of the existing research has been conducted in big states such as the US, China and Germany, this thesis explores citizens' conceptions of climate justice in a small state. There may be other mechanisms at work in smaller states, given that the big states stand for much larger shares of the global total of emissions. Additionally, Norway provides a case where the production of oil, a highly polluting activity, is a crucial part of the national economy. This may lead to other justice preferences among Norwegians than what has been found in previous research. Methodologically, the thesis takes a new approach to the study of climate justice as it provides the respondent with a way of expressing that they do not want to prioritize justice. Most previous studies go straight to asking which justice principle citizens prefer, assuming that they want to prioritize justice over the economy, but this may not be the case. Designing the experiment as a choice between two options rather than an agree/disagree question may also serve to counteract acquiescence bias, which is a potential limitation of some of the previous research within this field. Lastly, the analysis of the data from the open question takes a largely inductive approach to citizens' conceptions of climate justice, allowing respondents themselves to identify what is the most important for them in the question of fair allocation. This has never been done before, and contributes to identifying new key factors determining support for international climate policy.

1.3 Key findings

The main finding of the thesis is that Norwegians are willing to prioritize justice over the Norwegian economy. This is strongly supported in the findings of the survey experiment, and also in the data from the open question. It is found that both the polluter pays principle, the ability to pay principle and the grandfathering principle have a high level of support among Norwegians, while the equal per capita emissions principle is less supported. Data from the

open question triangulates the support for polluter pays and ability to pay, indicating that these two principles are intuitively associated with fair allocation of responsibility for many Norwegians. Additionally, in the analysis of the data from the open question it is found that the idea of a collective responsibility for mitigation seems to be strongly connected to Norwegians' conceptions of climate justice. The exact distributive principle may not be the most important determinant of policy support, but rather that all countries make a contribution.

2.0 Climate justice in theoretical and empirical literature

This chapter provides an overview of the normative political theoretical literature on climate justice, and a review of the existing literature that empirically investigates citizens' preferences for climate justice. The chapter starts by drawing some limitations for the scope of the thesis: I will follow a distributive justice framework focusing on the atmosphere as the resource to be distributed fairly, and I will focus on spatial climate justice, in other words how this resource should be distributed between countries. Next, the thesis discusses the terms common and global common and the potential problems that lie in the distribution of a common, using Hardin's (1968) theory of the tragedy of the commons, and Gardiner's (2008) idea of climate change as a perfect moral storm. Next, the chapter provides a review of the existing literature on citizens' preferences for climate justice. The findings of previous studies are mixed, but indicate that it is relevant to include both economic costs and distributional consequences when investigating citizens' climate policy preferences. Lastly, the chapter provides a short review of previous research on climate change attitudes in Norway.

2.1 Theoretical framework and delimitations

Within the political theoretical literature on climate change, climate justice is by far the topic that has been the most discussed (for a review, see Lane and Rosenblum 2017, 4). This field is dominated by liberal political theory, and the default analytical framework within this line of thinking is distributive justice. This approach is centred on distribution of resources and seeks to answer three key questions: *What* is allocated, to *whom* will it be allocated, and *why* will it be allocated in such a way? (Barry, Mol and Zito 2013, 363; Roser and Seidel 2017, 106-107).

Commonly, theorists view the atmosphere's capacity to absorb enough GHGs to avoid dangerous climate change as *what* is to be distributed (Raymond 2008, 3). The key normative question then becomes how this resource can be distributed as fairly as possible. As for *to whom* this resource shall be distributed, this question has both a temporal and a spatial aspect (Vanderheiden 2008b, 44). The absorptive capacity of the atmosphere needs to be distributed both between individuals or countries, and between generations. As Vanderheiden (2008b, 44) puts it: "while the latter distributive problem involves the determination of some maximum allowable aggregate level of emissions – where higher current emissions necessarily entail lower future ones given any future atmospheric GHG concentration target – the former allocates this annual total among nations". Assuming that our goal is to avoid dangerous climate change,

then the more GHGs we emit today, the less of the absorptive capacity of the atmosphere will be left for future generations. Similarly, the more one country emits, the less there will be left for the rest of the world.

For the first two key questions of distributive justice, political theorists of climate change are quite consensual in their answers. The atmosphere is the resource to be distributed, and it is to be distributed between countries. It is the last question, *why* the resource should be distributed in such a way, that causes the most disagreement both among academics and policy makers. Numerous normative principles have been proposed as a basis for allocating the responsibility for mitigation. Therefore, the main contribution of this thesis is to illuminate Norwegian citizens' conceptions of fair allocation.

This thesis will follow the liberal framework of distributive justice, and view the atmosphere's capacity to absorb GHGs as the resource to be distributed. As for to whom it shall be distributed, the thesis will focus on spatial climate justice, meaning how the use of this resourse should be distributed between countries (or individuals), rather than across generations.

There are several reasons why distributive justice is seen as an appropriate theoretical framework. First of all, this analytical framework is the one that has been used the most in the academic literature, which puts the findings of the thesis within a larger context of previous research. This allows me to compare my study to others, and build on their strengths and weaknesses. While it is not an argument in iself that this framing has been used by many studies before mine, it is also pragmatic concern, as the critics of the liberal framework rarely provide an alternative analytical framework.

The most prominent alternative to distributive justice, is that of harm avoidance (Caney 2014, 125-127). Several scholars have argued that focusing on those who are threatened by climate change and what can be done to uphold their basic rights and avoid harm is an important alternative to distributive justice. Grasso (2013), for instance, argues that the core moral feature of climate change is that by emitting GHGs some people are harming other people. Therefore, the the main motivation for reducing emissions should be harm avoidance rather than sharing a resource in a fair way. Avoiding harm should be the goal of mitigation and the way the issue is framed, and a fair distribution of burdens should come second (Barry, Mol and Zito 2013, 364). I argue that this is little more than a frame for the issue of climate justice. This approach

does not provide a cohesive analytical framework through which one can address how to achieve harm avoidance. Shue (2011, 305-306) provides a more nuanced portrayal. While focusing on the way climate change threatens basic human rights, he also argues that justice and harm avoidance are equally important ethical issues. Fair distribution of the responsibility for mitigation is a means while harm avoidance is the end. Therefore I choose to see these two approaches as compatible rather than contradictory. I will follow the framework of distributive justice, yet aknowledge that harm avoidance is an important goal of mitigation.

Another important strength of the liberal framework is that it explicitly acknowledges that there are both benefits and disadvantages associated with GHG emissions. While several commentators attach negative connotations to the liberal "right to pollute" (see for instance Barry, Mol and Zito 2013, 364), it is my opinion that we cannot ignore the benefits of emitting GHGs if we are ever to overcome the problems of climate change. Emissions has caused harm to both the environment and human beings, but fossil fuels have been an important driver of development and increased human well-being in many parts of the world. As Shue (2011, 307) argues: "we are of course trying to reach a point at which none of us are dependent on fossil fuel, but we cannot make the transition by simply pretending we are already there and ignoring the fact that most people are now dependent on fossil fuels". Whether we like it or not GHG emissions have been central for increasing economic and human development up until today, and therefore it only seems fair that until we find other pathways to development, emissions should be treated as a good to allocate fairly between us rather than something to avoid completely.

At the empirical level, this way of framing the issue is in line with how climate change is discussed in the international policy debate, especially in UN negotiations. Negotiations have largely been dominated by a scientific approach that focuses on the total amound of gases emitted globally, and how much of these current emissions we need to cut in order to reach a set target for concentration of gases in the atmosphere (Lahn 2015, 542). This way of framing the problem logically leads to the main question being how much each country should cut. As this thesis aims at providing results that are relevant for policy, it should follow the framing of the climate change problem that is common in policy debates.

As for the choice to focus on spatial rather than temporal climate justice, this choice is also in line with the goal of providing policy relevant results. While temporal climate justice raises

numerous important normative questions such as wheter our descendants should be allowed to emit as much as we have done (see for instance Page 2006), in the policy realm these questions are largely resolved. The important question for temporal climate justice is what the ceiling for temperature rise should be, and within what year. This gives us a carbon budget that determines how much we can emit within a given time frame. While this question clearly has important normative aspects, the choice of the technical specifications for temperature rise have largely been made based on reports by IPCC and other similar actors. Based on projections for different scenarios of temperature rise, politicians make commitments to goals such as to keep the temperature rise to well below 2 degrees above pre-industrial levels, as stated in the Paris agreement (Dooley, Gupta and Patwardhan 2018; Lahn 2015, 542-543). Thus, the carbon budget until the end of the century is set, and the important remaining normative question is how we should divide the responsibility for mitigation fairly, in order to keep the global total of emissions within this budget.

2.2 The atmosphere as a global common

The distributive justice approach to climate justice sees the atmosphere's capacity to absorb GHGs as a global common, in line with the theory of the tragedy of the commons put forth by Hardin (1968). The term common is usually used to refer to "resources held in common by a group of people, all of whom have access and who derive benefit with increasing access" (Burger and Gochfeld 1998, 7). Following this, a global common is a resource held in common by all people on earth. Hardin's original example was a field that was open to every herder in the area. If each herder put all of their cattle on the field to graze, the field will be overgrazed and die. This shows that what is individually rational, leads to a collectively suboptimal result. At the same time, it is irrational for each individual herder to reduce the amount of cattle they send to graze, because they will bear the full loss of feeding one less cattle, while the benefit of less animals grazing will be shared by everyone. "Freedom in a commons brings ruin to all", concludes Hardin (1968, 1244). This theory challenged the influential line of thought represented by Adam Smith: that individually rational decisions will lead to results that are collectively rational (Ostrom 1990, 5).

Hardin's theory holds that individuals are strictly rational and utility maximizing, and have their own best interest as their ultimate goal (Burger and Gochfeld 1998, 9). This assumption has been weakened in newer research. Ostrom's (1990) analysis of different cases of management

of commons all over the world shows that this assumption does not always hold up. Individuals are influenced by norms of behaviour as well as their interest for a specific outcome and are therefore in many cases able to organize in order to avoid overexploitation of a common (Ostrom 1990, 7). Increasingly, it is assumed that actors have mixed motivations and that their actions cannot be explained by rational self-interest alone. Norms and morals also have a strong influence on action (Udéhn 1993, 251). The logical conclusion that follows from this, is that the tragedy of the commons is not unavoidable as norms and values can lead individuals to work together to achieve common goals, rather than only working towards fulfilling their own interests.

Still, it can be questioned whether these conclusions are relevant for the atmosphere as a global common. Ostrom et al. (1999) argue that while some of the findings from commons on a smaller scale can be directly related to global commons, there are some important features of global commons that raise challenges not found in the management of smaller commons. Even though norms *can* cause people to try to avoid overexploitation in a common, it is not always the case that they do so (Ostrom et al. 1999, 279).

Gardiner (2008) describes climate change as a *perfect moral storm,* because "it involves the convergence of a number of factors that threaten our ability to behave ethically*"* (26). First of all, the size of the problems creates challenges related to agreeing on, and enforcing, rules. One of the important findings in Ostrom's seminal study, is that an important feature of sustainable use of a common is in many cases a set of rules that specify how much of the resource participants can use, how use should be monitored and how rule-breaking should be sanctioned (Ostrom 1990, 185-186). Based on this finding, then, to solve the problem of climate change it seems necessary to create rules regulating GHG emissions that are enforceable and sanctionable on a global scale. In the current climate of international relations so dominated by national interests, this seems nearly impossible (Gardiner 2008, 29).

Further, a dynamic known from Olson's (1971) Logic of collective action is at play: as the group size increases, the relative importance of each person's contribution to the desired outcome decreases (Udéhn 1993, 240). As each individual's contribution to climate change is so small, the effectiveness of one actor decreasing its GHG emissions depends on everyone else doing the same, and this notion can become a source of apathy and an incentive to free-ride on the efforts of others. There is no system uniting all of the individual agents involved in causing

climate change, and this is what Gardiner calls a *fragmentation of agency* (2008, 27). Further, with climate change we observe a dispersion of causes and effects related to the global character of the problem. The emissions that cause climate change have to a large degree come from the global North, yet the effects of the problem are and will be felt the most in the global South. This dispersion also has a temporal effect – many of the effects of GHGs emitted today will be felt by later generations, as some mechanisms following from increased concentrations of GHGs in the atmosphere are time lagged (Gardiner 2008, 31) The consequences of overuse of the common are not necessarily felt by the persons causing the overuse, and this reduces incentives to act. Lastly, as Hardin (1968, 1245) points out, pollution is in a way the reverse of the tragedy of the commons, as the problem is related to putting something in rather than taking something out. This means that the common resource will not run out in the same sense that a field will run out of grass or a pond will run out of fish.

In short, for the case of climate change the relationship between cause and effect is far more complex than for a traditional commons problem, and that inhibits our ability to act morally. This makes it especially hard to overcome the problem of the tragedy of the commons, and we cannot assume that citizens are willing to prioritize fair allocation over the national economy.

2.3 Normative principles for spatial climate justice

In discussions of burden sharing, a distinction can be made between three levels of analysis: general principles of fairness, burden sharing rules and operationalizations of the rules through criteria or indicators (Ringius, Torvanger and Underdal 2002, 2). The general principles are norms of fairness that are seen as valid across a wide range of issues, while the burden sharing rules apply these general principles to a specific policy area. Within the literature on climate justice, four such general principles have been influential: Responsibility for causing a problem, capacity to fix a problem, sovereignty and egalitarianism. These four general principles are reflected in the burden-sharing rules of polluter pays, ability to pay, equal per capita emissions and grandfathering (Schleich et al. 2016, 51; Carlsson et al. 2013, 3). These are the four burden-sharing rules that have been the most discussed in the academic literature, and they have also (to differing degrees) been influential in international negotiations on climate change. The following subchapters present these four burden-sharing rules, and discuss their strengths and weaknesses. In the upcoming discussion, the terms burden-sharing rule and principle will be used interchangeably.

2.3.1 Sovereignty: Grandfathering

The normative principle of grandfathering argues that each country should reduce its GHG emissions by the same percentage, with the effect that each country keeps the same percentage share of the global total after everyone have reduced their emissions (Barry, Mol and Zito 2013, 366). Thus, it takes current emission shares as the basis for what share of the global total of emissions each country should have in the future. Looking at the issue straightforwardly, this can make intuitive sense. Climate change is a problem that will cause harm to all of mankind, and therefore all of mankind has to make equal contributions to combat the problem (Roser and Seidel 2017, 109). However, this simple account ignores some objections against the grandfathering approach that will be discussed later in this subchapter.

Even though grandfathering is often portrayed as morally indefensible in the academic literature (see for instance Caney 2011, 88-89), it is in my opinion important to understand it. The main reason for this, is the fact that grandfathering has been influential in policy making. When emissions quotas have been allocated in actual policy such as the Kyoto protocol and the EU Emissions Trading Scheme, grandfathering has been an influential component (Knight 2013, 410-411; Raymond 2008, 6). Therefore, even though the moral account for grandfathering emission rights seems thin at best, it should be included when exploring citizens' conceptions of climate justice. Importantly, Norway has been a proponent of using grandfathering as the basis for allocation of emissions quota in international negotiations (Lavik and Pedersen 2017, 348; Lahn 2013, 50). This makes it especially interesting to address Norwegian citizens' support for this principle.

Knight (2013) argues that the way grandfathering is portrayed in the academic literature, is not in line with how the principle is used in practice. He distinguishes between a weak, a moderate and a strong conception of grandfathering. Weak grandfathering would take the *ceteris paribus* condition and say that prior emission shares should determine future emission shares only when all else is equal. Contrasting this, moderate grandfathering argues that grandfathering is always relevant for distribution, but does not have to be the only principle that influences how the responsibility for emissions reduction is distributed. The strong version of grandfathering is where grandfathering is the only relevant normative principle determining each country's share of emissions reductions. This is how the principle usually is portrayed in the academic literature, but is not in line with how the principle is used in actual policy. The Kyoto protocol, for example, only specified mandatory emissions reductions for Annex 1 developed countries and

is therefore not a case of strong grandfathering (Knight 2011, 411-412). Regardless, the main argument of grandfathering is that current emission shares should be the basis for future emission shares, whether it is considered alone or in combination with other principles. Therefore, it is this core idea that will be discussed further.

There are two main lines of argument put forward to defend grandfathering as a principle for climate justice; the libertarian and the pragmatic. The most common way of defending grandfathering in the academic literature is by appealing to a Lockean defence of private property. This argument holds that past use of a common establishes a sovereign right to use of the same amount of the common also in the future, as long as it leaves enough of the resource for others to use, and in as good condition as it was (Bovens 2011, 128-129). This is what is known as the Lockean proviso. It seems clear that the Lockean proviso is not fulfilled when it comes to the use of the atmosphere, but seeing as countries have established a right to use their share of the atmosphere they should be entitled to the same share also after global emissions have been reduced. As for the pragmatic or realist argument, it has been claimed that grandfathering is a way of getting countries with high emissions to commit to an agreement. When countries first are committed, the agreement could be adjusted over time to give a fairer distribution (Caney 2011, 88-89). In essence, the argument is that an unfair agreement built on grandfathering would be better than having no agreement at all. This is, of course, not a normative argument in itself (Bovens 2011, 124-125).

There are several important weaknesses to the grandfathering approach. First of all, it seems doubtful whether this can be accepted as a normative principle at all. This argument builds on something descriptive – how emissions *are* distributed – and uses this to make a normative argument about how emissions *should* be distributed (Roser and Seidel 2017, 113). As for the pragmatic defence of grandfathering it seems clear that this cannot be accepted as a normative argument. As for the libertarian line of argument, support for the principle rests on the premise that the atmosphere can be treated as we would treat a piece of land or a pond with fish – in other words, that we can treat a global common as we would treat any common. If we accept that the global commons are "natural resources that remain beyond the control or ownership of any individual, corporation or nation" (Raymond 2008, 3), I would argue that a global common cannot be treated as a common at a lower level. A global common is beyond the ownership of any nation state, and then we cannot talk about ownership rights. Another point refuting the argument that the atmosphere can be treated as any other commons, is the simple fact that it is

so important. In a resolution from 1988, the UN general assembly asserted that "climate change is a common concern of mankind since climate is an essential condition which sustains life on earth" (General Assembly Resolution 43/53 1988). To determine the right to use such an important resource based on a "first come, first serve" principle seems morally indefensible.

Another important criticism is the fact that grandfathering is at odds with the important moral principle that those who caused a problem should fix it (Lavik and Pedersen 2017, 348). In this respect, grandfathering makes the opposite argument of the polluter pays principle which will be discussed in subchapter 2.3.3. While polluter pays argues that those who pollute the most should have the biggest responsibility for mitigation, grandfathering in effect rewards those who have caused the problem. What makes this criticism even deeper, is the previously discussed spatial dispersion of the causes and effects of climate change. The scope of the damages felt is not proportional to the contribution to the problem. While rich countries in the North have stood for most of the GHG emissions, the damages are felt mainly in the global South (Jamieson 2011, 32). Grandfathering thus argues that those who bear little of the fault for global warming but feel most of the costs should contribute with an equal percentage reduction as those who bear most of the fault, reap most of the benefits and feel fewer of the costs. From an ethical standpoint, this is problematic.

2.3.2 Egalitarianism: Equal per capita emissions

The equal per capita emissions principle is based on the notion that all citizens of the world have an equal right to use the atmosphere's absorptive capacity (Mattoo and Subramanian 2012, 1084). Because the atmosphere is a global common shared by all of mankind, no one has a right to more than an equal share of its absorptive capacity (Gardiner 2010, 58). In the literature there are two related versions of this principle based on two different rights: The right to equal per capita emissions, and the right to a guaranteed minimum (Gardiner 2004, 583-585).

The former approach is based on a radical idea of complete egalitarianism – that good things should be completely equally distributed (Shue 1999, 532). For the case of climate change, this approach would entail determining how much is left of the atmosphere's absorptive capacity, and dividing this resource equally between everyone on earth. This will give everyone equal emission rights (Singer 2010, 190). This approach has many proponents among developing nations. Perhaps the most provocative version of this argument was put forth by Agarwal and Narain (1991), who in the report *Global warming in an unequal world: A case of environmental*

colonialism argue that Western science on climate change is politically motivated and serve to blame developing countries for global warming. If policies are to live up to ideals such as global justice and sustainability, they argue, the only way of achieving this is to share the atmosphere on an equal per capita basis (Agarwal and Narain 1991, 13). Researchers usually propose that as a basis for actual policy, this principle should be combined with emissions trading. Singer (2010) argues that trading of emissions quota will make the transition from a high to a low emissions society easier for the developed nations, and at the same time be beneficial for developing nations as "they would have, at last, something that they can trade in exchange for the resources that will help them to meet their needs" (196).

The second approach, the right to a guaranteed minimum, takes as its starting point that not all GHG emissions are equal. Distinguishing between survival and luxury emissions, it argues that everyone has an equal right to emit survival emissions. These are unavoidable emissions that a person needs in order to meet their basic needs (Vanderheiden 2008b, 50). Therefore, survival emissions do not cause moral responsibility for climate change, and they should never be restricted to allow other people to keep emitting luxury emissions (Shue 2010, 211-212). Shue (2010, 213) argues that the important difference between the equal per capita and the survival emissions approach, is that while the former treats every emission as equal on the quota market, survival emissions are guaranteed to each person and can never be sold as part of a quota scheme. This guarantees that the wealthy will never be able to buy all of the quotas of the poor and leave them unable to satisfy their basic needs. Only luxury emissions should be subject to sale.

Many of the common objections against the per capita approach are based on practical, rather than normative, concerns. Lavik and Pedersen (2017, 347) argue that the principle can be interpreted as both a historical principle with retroactive force, as well as a time-slice principle that would start from the day an agreement is signed and ignore all previous emissions. Even though one might agree with their argument that this is a potential source of controversy, it is not an argument that refutes the principle on moral grounds. Similarly, the argument made by Gardiner (2004, 586) that reaching a common definition of a subsistence emission will be challenging, does not weaken the appeal of the principle from a normative standpoint. Lastly, the argument that equal per capita emissions can give countries incentives for increased population growth in order to obtain more emissions permits is also practical by nature, and can

be solved by tying emissions permits to projections of population growth within a given year (Singer 2010, 191, 194).

A more fundamental criticism of the equal per capita emissions approach, is the fact that allowing for some inequality in the distribution of emission rights might lead to a fairer outcome. There are some factors outside human control might affect needs for emitting GHGs, such as the availability of renewable energy and climate of each country (Lavik and Pedersen 2017, 348). This can be framed as a question of whether we are concerned with equality of outcomes or equality of opportunity (Vanderheiden 2008a, 50). If we are concerned with equal outcomes, then equal per capita emissions might lead to an unjust result for those living in societies with higher energy needs due to natural circumstances. Another important objection is the fact that buying emissions permits can be seen as a way for high-emitting countries to buy off the poor rather than acknowledging and taking the consequences of their responsibility for causing climate change (Gardiner 2010, 59). The egalitarian approach, if used as a time-slice principle, completely ignores the notion that the ones who caused a problem should be the ones to fix them (Lavik and Pedersen 2017, 348).

2.3.3 Responsibility: Polluter pays

The polluter pays principle (hereafter PPP) builds on the relatively intuitive principle of justice that those who have caused a problem should bear the costs of fixing it. Thus, for the case of climate change, it is argued that the responsibility for mitigation should be distributed proportionally in relation to how much GHGs each nation has emitted (Page 2008, 557). The foundation for applying a principle based on responsibility for causing the problem may be especially strong for the case of climate change due to the unequal distribution of costs and benefits related to GHG emissions. As some nations controlled industrialization and received most of its benefits, while other nations feel most of the costs of global warming, it only seems fair that the actors who have polluted the most have a moral responsibility for dealing with the related costs (Caney 2010, 205).

There is some ambiguity in the literature as to whether this principle should be interpreted as a historical principle or a time-slice principle. Some (see for instance Mattoo and Subramanian 2012, 1086; Shue 1999, 534) distinguish between PPP and the historical responsibility principle, portraying PPP as a time slice-principle principle focusing on current emissions, while the historical responsibility principle focuses on cumulative emissions over time as the

basis for how much each country should cut. Others make no such distinction and see PPP as a historical principle (see for instance Caney 2010, 205; Roser and Seidel 2017, 118). This seems to be more of a case of conceptual ambiguity rather than an actual disagreement, as what these authors present as respectively the historical responsibility principle and PPP in practice entail the same. Therefore, for the sake of simplicity, I see the PPP as a historical principle. This interpretation of the principle has been promoted by many developing nations, and an important contribution putting this principle on the agenda of international negotiations for the first time came from Brazil in their proposal to the UNFCCC in 1997 (Mattoo and Subramanian 2012, 1085).

In the literature there are two main objections raised against PPP. Firstly, in its historical interpretation the principle is built on citizens today inheriting responsibility for the emissions of their forefathers. Levels of GHGs in the atmosphere started rising during the industrial revolution, and this means that the persons responsible for most of the GHGs in the atmosphere today are already dead (Page 2008, 559). The share of the concentration of GHGs that can be accounted to persons who are still alive is quite small – one estimate says about 10% (Mattoo and Subramanian 2012, 1085). Is it really morally acceptable that today's citizens have a moral responsibility for dealing with emissions they did not cause? Shue (1999, 536-537) argues that while common conceptions of justice would hold that persons cannot be held accountable for actions by other persons which they had nothing to do with, this does not hold for the case of climate justice. The emissions of our forefathers are far from unrelated to us. As a part of an enduring economic structure we inherit the benefits of their emissions, and therefore it is also fair that we should inherit the costs.[1] Additionally, as the spatial and temporal dispersion of climate change causes many of the costs of GHG emissions to be borne by someone who have not benefited from the carbon-driven industrialization, it only seems fair that we inherit the responsibility.

Secondly, it is argued that there can be no moral responsibility attached to the emissions of our forefathers, as they did not know that what they were doing was harming the planet (Roser and Seidel 2017, 125). Thus, as Shue (2015, 14) puts it, by allocating responsibility using PPP "we wold have the wrong people even if there were an offense, and the relevant action was not an

[1] This is sometimes treated as a separate principle; the beneficiary pays principle (BPP). As the arguments in favour of this principle are similar and closely related to those in favour of PPP, I will not include this principle in my discussion.

offense when it was done". Here, it is useful to draw a distinction between excusable and culpable ignorance. There are some things we *should* know, while other things it is not reasonable to demand that people know. It might not even be possible to know it because the knowledge is not available yet. For the case of climate change, then, it seems that many of our forefathers were excusably ignorant, as the consequences of emitting GHGs were not yet known when the industrial revolution started (Roser and Seidel 2017, 125). It can be argued, however, that at one point in time this ignorance went from being excusable to being culpable. Knowledge about global warming has been growing, and at least from 1990 when the first IPCC report was released, it is commonly held that actors should have known that GHG emissions harm the planet. It could even be argued that as it has been widely known since long before 1990 that GHGs *might* damage the planet, actors should have taken precaution and reduced their emissions although the science was not yet certain (Caney 2010, 208). And, crucially, GHG emissions have continued at uninterrupted speed long after it became impossible to plead excusable ignorance, indicating that our forefathers would not have changed their behaviour, even if they did have the information we have today (Shue 1999, 536).

2.3.4 Capacity: Ability to pay

The ability to pay principle (hereafter APP) is based on the argument that the countries with the greatest capacity for it, should have the greatest responsibility for mitigating (Page 2008, 561). Following this principle, costs should be distributed proportionally in relation to the capacity of each country (Ringius, Torvanger and Underdal 2002, 7). When discussing this principle capacity is usually understood as economic capacity and operationalized as GDP per capita adjusted for purchasing parity. Economic capacity is not necessarily the only resource needed to combat climate change, but in practice this is usually highly correlated with other important assets such as technological capacity and knowledge (Kartha et al. 2014, 12). APP is an entirely forward-looking, time-slice principle. It does not consider different contributions to the problem, but rather the means each party has for fixing the problem (Caney 2010, 213).

It has been argued by several authors that this principle should not be interpreted to mean that *everyone* should contribute in proportion to their economic capacity (Roser and Seidel 2017, 141; Page 2006, 171). Some countries might have *just* enough resources to meet the needs of their own citizens, or they might not be able to meet them at all (Page 2008, 561). Bearing costs of mitigation, then, could be detrimental for the overall standard of living in the country. It is

argued that only those countries that have more than what they need to meet the basic needs of their citizens should be obligated to mitigate (Roser and Seidel 2017, 141).

The main objection towards this principle, is the fact that it does not consider each party's contribution to causing the problem, which by most accounts is morally relevant (Caney 2010, 214). Theoretically, a rich country that had contributed very little to climate change could be left with a big responsibility for mitigation. Conversely, a poor country that has polluted a lot would have little or no responsibility. This begs the question of whether you can gain a big responsibility for mitigating just because you are rich, no matter what your actual contribution to the problem is, and whether you can be freed from responsibility if you are poor. APP is at odds with the important moral convention captured in PPP; that those who cause a problem should clean it up themselves. In practice, historical contribution to climate change and economic capacity are highly correlated, meaning that for the most part countries that should take big responsibility for mitigation following PPP will also have a big responsibility following APP (Mattoo and Subramanian 2012, 1090). This does not make the moral grounds for this principle any stronger, however, and most accounts of APP do not see it as a principle that should be used alone, but rather in combination with other principles such as PPP.[2]

2.4 Previous research

The following two subchapters provide a review of the existing research on citizens' conceptions of climate justice, as well as studies that investigate climate change attitudes in Norway.

2.4.1 Empirical studies of citizens' perceptions of climate justice

While climate justice mostly has been discussed within theoretical literature, there are a few studies that investigate this topic empirically. This subchapter discusses the existing research in order to identify the state of knowledge about citizens perceptions of climate justice, as well as strengths and weaknesses of the studies that have been conducted so far. This allows me to take this into account in the design of my own study. The scope of the literature search was restricted to focus on studies that empirically investigate attitudes towards climate justice, and the relationship between justice perceptions and willingness to pay for mitigation. While there

[2] The Greenhouse Development Rights principle (Baer et al. 2010) and the Hybrid principle (Caney 2010) formulate a combination of PPP and APP as one coherent principle. As the main arguments are similar to those in favour of APP and PPP alone, I will not discuss these principles here.

are many studies that focus on willingness to pay for mitigation (see Johnson and Nemet 2010 for a review), these have been considered outside the scope of this review as the focus of the thesis is the relationship between distributive principles and the willingness to pay for mitigation, rather than willingness to pay alone.

The most important differences between the existing studies lie in their choice of respondents, and the method that they use. The earliest studies of this phenomenon investigated the attitudes of negotiators and other stakeholders in international climate negotiations (see for instance Lange, Vogt and Ziegler 2007; Dannenberg, Storum and Vogt 2010; Hjerpe et al. 2011), while more recently the focus shifted towards the attitudes of citizens. I will focus my review on the studies that investigate citizens' attitudes, as these are the most relevant for my study. The existing studies mainly employ different kinds of survey experiments, but some also use lab experiments or data from regular surveys. While findings are mixed, a majority of studies seem to reach the overarching conclusion that citizens' opinions are influenced by both the costs a policy will entail, as well as how these costs are distributed.

Cai, Cameron and Gerdes (2010) investigate the relationship between willingness to pay for mitigation and individual distributional preferences. They use data from a survey conducted in 2001 with a sample of college students from the US and Canada. It should be noted that the data are quite old, and that the sample does not mirror the general population. The survey does not explicitly include normative principles, but instead gathers information about opinions about "the extent to which responsibility for the costs of climate change mitigation should be borne by various payers" (Cai, Cameron and Gerdes 2010, 435), both domestically and internationally. Their main finding is that for some, willingness to pay for a policy is higher when it is in line with their normative preferences. For others, distribution does not affect support. This finding provides a nuanced image of distributional preferences, and indicates that it can be relevant to ask the basic question of whether or not respondents want distributive justice in the first place, as I do in my study. While it may not be a shocking conclusion in itself that willingness to pay can increase if the distributional consequences of a policy is in line with your normative preferences, the authors argue that surveys that aim at addressing the willingness to pay for a given policy should mention the distributional consequences of the policy explicitly. Respondents do not only take into account the costs of policy, but also how they will be distributed. If these consequences are not explicitly mentioned in the survey, respondents "are at liberty to impute whatever unspecified distributional consequences seem

most probable to them, and such perceptions may differ across people in unobserved ways" (Cai, Cameron and Gerdes 2010, 454). This conclusion underlines that finding out more about individuals' normative preferences, which is the goal of my study, is important in order to ensure that commitments made in international climate change agreements are supported by the population. Population support for a policy does not necessarily depend on the cost alone, but can also be affected by how burdens are distributed between different actors.

Carlsson et al. (2011) build on the study by Cai, Cameron and Gerdes (2010) and also explore the effect of distributional consequences on willingness to pay for mitigation. They use a mail-based survey experiment that was sent out to a random sample of Swedish citizens. Respondents are given a short text explaining that the goal of emissions reduction is a reduction of 60% of global emissions within 2050, and that the total cost is the same no matter which distributional rule is followed. Thus, they isolate preferences for the different burden-sharing rules, rather than identifying willingness to pay for different levels of emissions reduction (Carlsson et al. 2011, 1530). The experiment is a choice experiment that asks respondents to choose between two alternative ways of distributing the costs of mitigation. Contrasting Cai, Cameron and Gerdes (2010) they include explicit mention of burden sharing rules rather than assigning responsibility to different actors. The authors include three principles: the current and historical interpretation of PPP, and equal per capita emissions. They argue that this choice is made in order to reduce the cognitive load for respondents, but it should be noted that the exclusion of APP weakens their results, as several other studies establish citizen support for this principle (see Gampfer 2014 and Schleich et al. 2016 discussed below). Their main conclusion is similar to that of Cai, Cameron and Gerdes: "distributional consequences are important and can affect citizens' willingness to accept costly measures" (Carlsson et al. 2011, 1533). The authors find that equal per capita emissions is the principle that Swedish citizens prefer the most, while historical emission is the least preferred. In addition to the choice to leave out APP, this study is also limited by the fact that respondents are forced to choose between two justice principles and are not provided with a way of expressing that they do not have a preference.

Carlsson et al. (2013) have a design similar to the study by Carlsson et al. (2011), but the study is conducted digitally in the United States and China. This study includes the APP principle as well as historical and current PPP and equal per capita emissions, and the aim is to find out which of these four burden-sharing rules respondents prefer. Respondents were presented with pairs of burden sharing rules and information about the monthly cost for the household given a

goal of a 60% reduction of global emissions distributed by each rule, and asked which of the two options they prefer. The main finding of the study is that in both countries, respondents prefer the burden-sharing rule that is the least costly. Chinese respondents have the strongest preference for historical responsibility, while American respondents prefer current responsibility. Similar to Carlsson et al. (2011), the study assumes that respondents have a preference for a justice principle, and concludes that "[…] the two countries are similar in that their respondents' express preferences that are strongly correlated with how advantageous a particular rule is for their country" (11). This conclusion should be treated with some caution. The finding could also be interpreted to mean that citizens do not have preferences for rules per se, but rather that they prefer whatever is the most economically beneficial for their country. In line with the finding by Cai, Cameron and Gerdes (2011) that justice matters *for some*, respondents should be provided with a way of expressing that justice is not important for them.

Bechtel and Scheve (2013) conduct a conjoint experiment with data from France, Germany, the UK and the US. In the experiment several aspects of a climate change agreement are varied: number of participating countries, costs in percentage of GDP operationalized as average monthly cost to household, share of emissions represented by participating countries, sanctions, monitoring and burden sharing rule for distributing the costs of implementing the agreement. The options included were historical and current PPP, APP interpreted as "only rich countries pay" and "rich countries pay more than poor countries" (Bechtel and Scheve 2013, 13764). Respondents were presented with two hypothetical agreements where these six elements vary, and asked to choose which agreement they preferred. They were also asked whether or not they would vote in favour of the agreement in a referendum. This provides respondents with a way of expressing explicitly that they do not want their state to commit to an international climate change agreement, and is a strength of this study. The authors find that cost to the household is by far the most important determinant of support for a climate change agreement. They find some influence of distributive justice principles on support for an agreement, but this effect is much smaller than that of cost. Interestingly, support for an agreement increases slightly if it is *not* based on "only rich countries pay", but there is no significant difference between historical PPP, time-slice PPP or APP where the rich countries pay the most (Bechtel and Scheve 2013, 13764-13765). Thus, it seems that the aspect of justice that respondents in these developed countries care the most about is whether or not developing countries contribute with something. The exact details of the principle do not seem to make much of a difference, as long as all countries pay.

Schleich et al. (2016) investigate citizens' support for different burden-sharing rules through analysis of survey data from Germany, China and the United States. Respondents were asked "how strongly should the following rules be considered when allocating costs in order to reduce global warming" and presented with a short description of PPP, APP, grandfathering and equal per capita emissions. The information does not include the costs of following each rule, which is a limitation of this study. Answers were given on a five-point scale from "very weakly" to "very strongly". This could cause a risk of acquiescence bias, which is reflected in the fact that in all three countries a large share of the respondents express strong support for several principles (Schleich et al. 2016, 57). The study finds that in all three countries, the ranking of the principles is identical. Respondents in all countries prefer PPP, followed by APP, equal per capita emissions and lastly grandfathering.

Lange and Schwirplies (2017) use data from two different surveys to investigate the equity preferences of citizens from Germany, the US and China, and those of negotiators from the same countries. Citizens were presented with a description of PPP, APP, equal per capita emissions and grandfathering, and asked "how strongly should the following rules be considered when allocating costs in order to reduce global greenhouse emissions?" (Lange and Schwirplies 2017, 514).[3] The survey was conducted in 2013. The position of the different countries was identified through surveying experts that have participated in international climate policy making on what they think is the position of different countries. These data were collected in 2004. The study concludes that overall, there are some inconsistencies between the position of negotiators and what citizens actually prefer. It is found that the equity preferences of citizens are equal to or higher than the expected position of their delegates. This conclusion demonstrates the necessity of increasing knowledge about citizens' preferences for burden sharing in international climate policy, as this can be a step toward ensuring democratic anchoring of policy commitments made in international climate change agreements. Some weaknesses of this study should be noted, however. Firstly, the survey of negotiators is almost ten years older than the survey of citizens. Expected bargaining positions may have changed as knowledge about climate change has increased. Secondly, data on the position of country negotiators is based on experts' expectations of the positions negotiators would take. This could have been identified by analysing the positions parties actually did take in negotiations, which also could have given data for citizens and negotiators that were closer in time.

[3] This study is based on the same data as Schleich et al. (2016)

A few studies use lab experiments in order to address the influence of norms of justice on respondents' willingness to pay for mitigation. This is an interesting approach as it allows researchers to identify individuals' preferences through how they act in the experiment rather than through their stated preferences, which could be affected by social desirability bias. Participants receive money based on the choices made during the experiment, meaning that that choices they make will have actual consequences for them. If we assume that humans are utility maximizing, then we should expect that normative considerations would not increase willingness to pay for mitigation. It should be noted, however, that the generalizability of the findings of these experiments could be questioned. How individuals act in a bargaining game with a small sum of money at stake, may not be a god representation of their opinions about how states should act in international negotiations.

Gampfer (2014) conducted a lab experiment with a convenience sample mainly consisting of Swiss college students. The experiment is an interactive bargaining game where respondents are divided into pairs and have to agree on how to share the costs of mitigation. One person proposes a way of sharing the burden, and the other accepts or declines the offer. The agreement they reach affect the payment the receive after the experiment. Historical responsibility, vulnerability to climate change and capacity to mitigate is preassigned as a treatment. Based on the observed behaviour of participants in the experiment, the study concludes that fairness norms are influential when players allocate costs. Both capacity and historical responsibility have great influence on how the players share the costs of mitigation between them. Players that have contributed more to climate change accept to pay more, as do players with higher economic capacity (Gampfer 2014, 73). Anderson, Bernauer and Balietti (2017) build on the design of Gampfer's (2014) study, but conduct the experiment online with a sample from the US population that has a higher degree of representativeness than Gampfer's student sample. They reach a more nuanced conclusion: "unless a Proposer is highly altruistic, her capacity and historical responsibility do not affect her willingness to pay for climate change mitigation. The Responder's capacity and historical responsibility, in contrast, significantly affect the Proposer's willingness to pay regardless of her level of altruism" (Anderson, Bernauer and Balietti 2017, 458). Regardless of some differences between them, the main finding of both studies is that fairness norms can have an impact on respondents' willingness to pay for mitigation.

In sum, the findings of the existing research demonstrate that both distributional consequences and costs influence citizens' opinions about climate policy. Presenting respondents with only the costs of a policy or only normative principles can lead to biased results, as both of these factors are important for opinion formation.

2.4.2 Research on the Norwegian case

While there are no previous studies that investigate Norwegians' attitude towards climate justice, a few studies investigate Norwegians' attitudes towards climate change in general, or towards specific mitigation measures. This section gives a brief overview of the existing research on Norwegians' attitudes towards climate change and climate policy. The findings that are relevant for my study will be emphasized.

Austgulen and Stø (2013) aim to find out how common climate denial and scepticism is among the Norwegian population, and what can explain these attitudes. They test three common theoretical explanations: First, that denial can be explained by lack of knowledge, second by world view and values, and third, that denial is a result of a social practice of ignoring information about climate change. Based on a regression analysis using survey data from a representative sample of the Norwegian population, they conclude that all of the three theoretical explanations are supported, but that individual values and political party is the most influential. Respondents who have individualistic values and vote for the Progress party are found to be climate change denialists to a larger degree than others. The study concludes that while a majority of respondents believe that climate change is real and caused by human influence, there is at the same time a large share of the respondents who are unsure of the severity of climate change (Austgulen and Stø 2013, 145).

Krange, Kaltenborn and Hultman (2018) go more in depth on the phenomenon of climate change denial. They test the hypothesis that conservative, white males are more likely than the rest of the public to express climate change denial. Their study is a replication of a study by McCright and Dunlap (2011) who, based on data from the United States, conclude that white conservative males are more likely to deny climate change than the general population. They also explore another hypothesis that has been supported in recent research in other Nordic countries and China: that scepticism towards immigration strengthens the white male effect (Krange, Kaltenborn and Hultman 2018, 1). The study is based on data from an online survey conducted on a representative selection of the Norwegian population. Through a series of

logistic regressions, the authors conclude that conservative white males express climate change denial to a larger degree than the general population. This effect is strengthened if the person reports xenophobic attitudes as well. Importantly, similar to the findings by Austgulen and Stø (2013) the authors conclude that outright climate change denial is not a widespread phenomenon in Norway. Only about 1% of the general population, and about 3% of white conservative men, deny that climate change is happening altogether. The share that express scepticism towards the causes of climate change and how severe its effects will be, is bigger. It is found that about two thirds of conservative white males, and a third of the rest of the sample, express some form of climate change scepticism.

Tvinnereim et al. (2017) present results from an analysis of answers to open-ended survey questions about climate change (see Tvinnereim and Fløttum 2015 for a similar study). The authors argue that "this type of survey question […] may access more fundamental attitudes and associations than pre-defined response options. Notably for our purposes, textual answers imply a prioritization of relevant themes, as respondents are likely to suggest what is important to them, while leaving out what is less important" (Tvinnereim et al. 2017, 35). The data in the study are from Wave 4 and 5 of the Norwegian Citizen Panel conducted in the spring and autumn of 2015. Respondents were asked "when it comes to climate change, what do you think should be done?". Responses are analysed using Structural Topic Modelling in order to identify prominent topics in the data material. One of the seven topics in the model the authors choose is "international collaboration and responsibilities". The authors find that within this category, many answers emphasize that what Norway does has little impact on global mitigation efforts due to the small size of the country. This perception can be a source of apathy. This should be taken into account when analysing the results of the survey experiment – people may express support for prioritizing the Norwegian economy not because they do not want justice, but because they believe that Norway's contribution will not have an impact anyway. The open question following directly after the experiment provides respondents with a way of expressing such attitudes. At the same time as respondents feel apathy due to the country's small size, many express scepticism towards flexible international mitigation measures such as quotas. Many respondents are negative towards "paying off" others rather than reducing emissions domestically. Further, the authors address key variables that explain why some respondents mention certain topics to a larger degree than others. The gender differences found by Austgulen and Stø (2013) and Krange, Kaltenborn and Hultman (2018) are also present here: Men are more likely to question the causes of climate change in their freely formulated answers

(Tvinnereim et al. 2017, 39). They also find a negative correlation between education level and mention of this topic.

Several studies address citizens' attitudes towards the use of specific policy instruments. Tvinnereim and Steinshamn (2016) use survey data to investigate support for six different state polities to address climate change, including lower emissions allowances for industry, Co2 capture and storage, higher taxes on the petroleum industry, increased support for renewable energy adaption and geoengineering. Of relevance for my study, they find that while setting emissions limits is a popular measure, many people attach negative connotations to the word quotas. While this will not be included explicitly in my experiment, people still might associate international climate policy with a quota system. Whether they are negative or positive towards quota might affect which of the options they support.

Kallbekken and Sælen (2011) conduct a study of determinants of individual support for environmental taxes. They test a theoretical model consisting of four factors that are hypothesized to influence an individual's support for environmental taxes: Belief about consequences to self, belief about consequences for others, belief about environmental consequences of the tax and socio-political factors such as gender, education and trust in government use of revenues (Kallbekken and Sælen 2011, 2968). The analysis is based on survey data from a representative sample of the Norwegian population, who were asked to give their opinion in a fictive referendum on the fuel tax, asking whether it should be lowered, kept as it is or increased. The authors argue that while the standard theoretical assumption in the literature is that such votes are cast based on rational self-interest, their results challenge this notion. The factor that best predicts support for a fuel tax is beliefs about environmental consequences – whether or not the respondent believes that driving is harmful for the environment, and whether or not the respondent believes that the tax leads to less emissions from cars. Contrary to theoretical expectations, beliefs about consequences to one self is the factor that has the least effect on support for the fuel tax. This study investigates willingness to pay at the level of a specific policy whereas my study looks at willingness to pay at a more abstract level, but the mechanisms identified may still be relevant for my study. If respondents believe that international commitments are not effective for reducing GHG emissions, this might decrease their support for prioritizing justice. This mechanism is similar to the finding by Tvinnereim et al. (2017) that some respondents express scepticism towards Norway

participating in international climate policy, because they question the effectiveness of such participation for mitigation as Norway's contribution is so small.

Using two different survey experiments conducted in Norway, the US, Canada and Sweden in 2013 and 2015, Tvinnereim, Lachapelle and Borick (2016) investigate whether support for participation in international climate change agreements depends on reciprocity. In the first experiment, respondents were given a short text explaining that world leaders would meet in November to negotiate a new climate change agreement. The control group was asked to what extent they thought that Norway should commit to such an agreement, while the treatment group was asked to what extent they thought that Norway should commit to the agreement before other countries such as China. It is found that while the majority of respondents support signing the agreement in both groups, support is significantly lower for signing before China. In the second experiment, respondents in the control group were asked to what extent they would support or oppose signing a treaty where the country commits to considerable reductions of GHG emissions. The two treatment groups were asked the same question, but including information that China will or will not commit to the same agreement. Support for signing the agreement is significantly lower when China is not mentioned. It is found that of the four countries, Norway seems to be the country where reciprocity is the most important for respondents. Thus, reciprocity seems to be an important determinant of Norwegians' support for international climate change agreements.

Lastly, Tvinnereim and Ivarsflaten (2016) investigate the relationship between economic interest in the oil industry through employment in the sector, and support for different mitigation policies. They find that policies that entail high costs for the oil industry such as reduced oil production and stricter taxes on oil exploration gain significantly less support from oil workers than from the rest of the population, while policies that have more ambiguous costs or even can present new work opportunities for oil workers, are equally supported by those with economic interests in the oil industry and the rest of the population (Tvinnereim and Ivarsflaten 2016, 368). This provides a nuanced image of the relationship between economic interests and climate change; those with economic interests connected to high emissions might not be categorically against all policies that lower emissions, but policy support rather depends on the specifics of the policy.

In sum, even though no previous research in Norway explicitly addresses climate justice, there are some main findings about climate change perceptions that may be relevant for my study. Firstly, outright denial of climate change in the form of trend scepticism is a very limited phenomenon, while attribution and impact scepticism is somewhat more common. These attitudes seem to be more frequent among older, conservative males. Several studies find that policy support or opposition cannot be reduced to economic self-interest, but has multifaceted determinants. Perceived effectiveness of a policy can be an important determinant of support, and it seems that many Norwegians emphasize that Norway is a small country and that what we do will not necessarily have a big impact on global emissions reduction. Perhaps related to this notion, support for signing international climate change agreements is found to be significantly lower if China does not sign the same agreement, indicating that reciprocity may be an important determinant of support.

2.5 Summary

This chapter has presented the theoretical framework of the thesis, and previous empirical research on citizens' conceptions of climate justice. The analytical framework of the thesis has been restricted to distributive, spatial climate justice, meaning that the thesis will focus on principles describing how the atmosphere's absorptive capacity can be distributed as fairly as possible between countries.

The review of previous research showed that both the allocation of responsibility and the costs for each country can influence citizens' opinions about climate policy. This underlines my argument that it is necessary to ask citizens whether they are willing to pay more for an agreement that is fair, and then find out which justice principle is in line with their preferences.

3.0 Method and study design

This chapter first presents the methods employed in the thesis: a randomized survey experiment followed by an open question. Following Morton and Williams (2008), three defining features of survey experiments will be emphasized: intervention in the data-generation process, random assignment of treatments and a high degree of control. Following this the chapter presents the data used in the analyses, and discusses potential biases in the data and how to deal with them. Next, the chapter presents the design of the survey experiment. Lastly, the chapter presents hypotheses that will be addressed through the experiment, as well as expectations towards patterns in the experiment and how these can be interpreted.

3.1 Randomized survey experiments

The use of survey experiments in political science started as a way of testing for unintended effects of question order or question wording. What scholars first saw as a weakness of survey research – if results were affected by wording and question order, how could surveys ever bring reliable results? – was turned into a strength. Through conscious manipulation of questions and comparison of different versions of the question given to separate groups of respondents, researchers can identify causal relationships (Gaines, Kuklinski and Quirk 2007, 3). This, argues Morton and Williams (2008, 341), is the key defining feature of experimental research: the researcher does a targeted intervention in the data-generating process which leads to variations in the data that are a result of this intervention. This gives what is known as *experimental data*, contrasting *observational data* where variation is a result of factors outside the control of the researcher.

In the classical and most simple version of experiments often associated with medical research, the design entails a group that receives a treatment, and a control group that does not (Lijphart 1971, 683). Modern-day survey experiments are often far more complex than this simple two-group design. In survey research, the different ways of asking the question is the treatment. Respondents are "treated" for example through changing the order of response alternatives, giving a certain piece of information to only some of the respondents or using equivalent but different words to describe the same phenomenon. In randomized experiments, the treatment is randomly assigned to different units. This is a second defining feature of the experiment. If randomization is done correctly, it gives groups that are "probabilistically similar to each other on the average" (Shadish, Cook and Campbell 2002, 13), and this means that if the value on the

variable that measures the outcome of interest is significantly different between the groups, the difference is due to the treatment, and not any pre-existing difference between the groups.

Random assignment gives a high degree of control, which is the third characteristic, and one of the main strengths of the experiment. Everything else but the treatment variable X is equal between the groups, and thus we know that any difference in outcome variable Y between the two groups is due to the introduction of X (Moses and Knutsen 2012, 52-53). This gives a high degree of internal validity. In order to make a meaningful comparison when using observational data, the researcher needs to control for potential confounding variables and assume that there are no variables left uncontrolled for. Contrasting this, experimental data ensures that all potential confounding variables that can cause differences between the groups being compared are held constant (Morton and Williams 2008, 342).

It is commonly distinguished between within- and between-subjects designs, where the former entails observing the same unit before and after a treatment, while the latter compares different groups that have received different (or no) treatments. Of the two, within-subjects designs have a lesser degree of control and the results are more susceptible to confounding variables. Between-subjects designs are the most common in the social sciences (Druckman et al. 2011, 18). When randomized between-subjects experiments are conducted in representative surveys, as I do in my study, the results have a strong combination of both internal and external validity (Sniderman and Grob 1996, 378).

3.2 Data

The Norwegian Citizen Panel is a web-based panel survey based on a representative sample of the Norwegian population. As of spring 2018, the panel consisted of about 7000 active participants who receive a survey three times a year (NCP 2018). My data were collected in round 13 of the panel, which was in the field from the 17th of October to the 5th of November 2018 (Ivarsflaten et al. 2018). In each round the sample is divided into subsets, which receive different questions. This allows for more effective use of respondents' time, meaning that the survey can include more questions in each round without making the survey very time-consuming to complete. It also serves to avoid spill over effects between questions. The survey experiment and the open question went out to two subsets with a total of 2777 respondents.

Even though the Norwegian Citizen Panel is based on a probability sample of the Norwegian population above the age of 18, there are some known systematic biases. The most important bias is with regards to education: There is an overrepresentation of individuals who have completed education at university or university college level, and underrepresentation of individuals who hold no education, elementary school or upper secondary as their highest completed level of education. It should be noted that correctly assessing education levels and finding comparable numbers between different data sources is challenging. According to the methodology report for round 13 of the Norwegian Citizen Panel, around 60% of the respondents in the panel have completed education at university or university college level, compared to around 30% for the population (Skjervheim, Høgestøl and Bjørnebekk 2018, 12). Due to the difficulties of working with educational data these exact numbers should be treated with some caution, but the main conclusion is that individuals with high education are overrepresented. This bias may be due to the fact that respondents with higher education are easier to recruit into the panel, and stay longer once they are recruited (Skjervheim, Høgestøl and Bjørnebekk 2018, 7). There is also an underrepresentation of respondents in the age group 18-29, and an overrepresentation of respondents above 60. Lastly, younger men are underrepresented.

The overrepresentation of highly educated individuals is especially of relevance for my study. As presented in subchapter 2.4.2, several studies have found education to be an important predictor of climate change attitudes in Norway. Austgulen and Stø (2013) find that if you are highly educated, you are less likely to be a climate change denialist. This is mirrored in the findings by Tvinnereim and Austgulen (2014) and Krange, Kaltenborn and Hultman (2018). Tvinnereim, Lachapelle and Borick (2016) find that support for signing an international treaty is significantly higher for those who have completed higher education. Therefore, the overrepresentation of highly educated individuals could lead to an overestimation of the support for justice in the survey experiment, as highly educated individuals are more likely to believe in climate change in the first place, as well as more inclined to support signing international climate change agreements. This will be taken into account in the analysis, as the results from the sample are not necessarily generalizable to the population. The exact percentages reported should be treated with some caution.

One way of compensating for observed biases in a sample, is using weights. The Norwegian Citizen Panel does come with weights that use data from the Norwegian National Registry to

adjust for biases in age, gender, geography and education in the sample. The weight gives each respondent a value around 1, where overrepresented respondents get a value below 1 and underrepresented respondents get a value above 1 (Skjervheim, Høgestøl and Bjørnebekk 2018, 11). There are, however, some uncertainties related to the use of weights in population-based survey experiments. Generally, little work has been done on the use of weights in these types of experiments (Mutz 2011, 113), and there are no standard procedures in the literature as to how one should deal with such biases in experimental data (Franco et al. 2017, 163). It is known, however, that introducing weights to the data can introduce covariate imbalance across treatment groups, especially when samples are relatively small. Thus, if weights are not carefully crafted, they can lead to even more biased results (Franco et al. 2017, 168). Weighting also increases the need for statistical power (Miratrix et al. 2018, 276). Due to these uncertainties, I will base the main analyses on unweighted data, but will also report some weighed estimates as well as separate analyses for high and low education levels, in order to explore the possible effects of an education bias on the results.

3.3 A non-directive experimental design

The experiment has a between-subjects design where respondents are randomly assigned to one of five treatment conditions. Four of these treatment conditions are based on the different principles of climate justice presented in the theoretical chapter, and one constitutes a baseline group. Randomly assigning respondents to different justice principles in this way is what Sniderman and Grob (1996) call a non-directive design. Experiments are often associated with active manipulation that aims at causing an effect on the outcome measure, called directive designs. This is, they argue, a narrow conception of survey experiments. Experiments can also entail "randomized assignment of respondents to question form without an intent to sway, influence, or control the direction of responses" (Sniderman and Grob 1996, 385). Many modern experiments do not aim at manipulating responses, but rather utilize the high degree of control that is achieved through an experimental design to test hypotheses about pre-existing opinion. This is the purpose of the survey experiment in my study.

In the experiment, respondents are first presented with a short text about division of burdens in international climate agreements, which is identical for all groups.[4] The text was designed to explain the key issue for distributive climate justice: the idea that we need to cut a given amount

[4] The complete experiment in Norwegian, as well as an English translation, is attached in appendix A

of GHGs in order to limit global warming, but this amount can be distributed between countries in different ways as long as the total global amount reduced is enough. Explaining this issue is a balancing act, as respondents need enough information to understand the context and the mechanism behind the question they are being asked, yet the text should not be too long or complicated in order for them to not lose interest (Mutz 2011, 87). I chose to keep the text relatively short and simple, in order to not make it very demanding for respondents to read it. I did, for instance, not mention the distinction between time-slice and historical interpretations of principles, or the role of emissions quota trading. This means that respondents can interpret such factors as they like, and this may be a source of error. I attempted to counteract this by including an open question after the experiment, where respondents have the opportunity to elaborate on their opinion about the distribution of responsibility in international climate change agreements. I see this as a better solution than increasing the level of detail in the introductory text.

Following the introductory text, respondents get the following question:

> *The options below describe two opposing positions in the question of how the responsibility for emission cuts should be distributed between countries in international climate change agreements. Which of these positions do you agree the most with?*

The text then presents two possible policy positions in international climate negotiations – option A and option B. Option A is held constant among all groups and describes a position that prioritizes the Norwegian economy, while option B is the treatment condition that varies, and each treatment describes a different principle of climate justice.

The reasons for designing the study as a choice between two policy positions are both theoretical and methodological. As outlined in the theoretical chapter, motivation for policy support can be both economic self-interest and normative considerations. Reduction of GHG emissions is an area where policies potentially can have big costs for countries. This begs the question of whether citizens are willing to pay these costs in order to achieve a normative goal such as climate justice. Presenting respondents with only the costs of a policy or only normative principles can lead to biased results, as both of these factors are important for opinion formation. As Cai, Cameron and Gerdes (2010, 454) argue, leaving out this information will make it up to each respondent to imagine the distribution or the cost that they find likely, decreasing the

reliability of the results. Therefore, contrasting several of the previous studies of citizens' perceptions of climate justice that only measure support for different principles, my dependent variable measures *if* and *to what degree* respondents are willing to prioritize justice over the Norwegian economy, even if it may entail significant costs for Norway. Unlike the previous studies that employ choice designs, I will provide respondents with a way of expressing explicitly that they do not want to prioritize justice. An underlying assumption of many previous studies is that justice does matter for respondents, and the central question for research then becomes identifying *which* justice principle is the most supported. In my opinion this puts the cart before the horse; first we have to identify whether or not justice matters more than other concerns such as costs, then we can identify which (if any) justice principle resonates the best with the opinions of citizens. The methodological choice to design the study as a choice experiment is a strength of the studies by Carlsson et al. (2011 and 2013) and Bechtel and Scheve (2013). A survey asking how much respondents agree with a principle, or something similar, may lead to an artificially high level of support for a principle due to acquiescence bias, which seems to be a limitation of the study by Schleich et al. (2016). Choice experiments, on the other hand, force respondents to more actively take a stance. A choice experiment design, albeit in a simpler version than the aforementioned studies, will be used in my study in order to counteract acquiescence bias.

Option A is identical for all respondents and reads "*Norway should prioritize our economic interests rather than committing to great emissions reductions*". This option is meant to capture an economically rational opinion about international climate policy. Contrasting other studies that simply have asked to what degree respondents agree with different positions on what would constitute fair policy, this design provides respondents with a way of expressing explicitly that in this context, the Norwegian economy is more important to them than fair allocation of responsibility.

3.3.1 Treatment groups

Respondents were randomly assigned to one of five groups, each of which receive different versions of option B (see table 3.1).

Option B^1 reads: "*The responsibility for emissions reduction should be distributed as fairly as possible between the countries, even though it may entail large costs for Norway*". The group that receives this option constitutes the baseline condition for the experiment. It does not build

on a specific principle of justice, but measures the support for the general idea of prioritizing justice over the economy. It does not go into what a fair distribution of responsibility would look like, and therefore allows respondents to base their answer on their own subjective conception of justice. This allows me to compare support for the general idea that respondents are willing to pay more for an agreement that is fair, and support for the specific justice principles measured in the other four treatment groups. Thus, it is not a control group in the traditional sense where data where the researcher has intervened are compared to data where the researcher has not intervened. Rather, the strength of this design is its ability to provide data that allows for comparisons between the groups where all potential confounding variables are controlled for (Morton and Williams 2008, 342).

Table 3.1: Description of wording of treatment conditions

Treatment group	Principle	Wording	N
B^1	Baseline	The responsibility for emissions reductions should be distributed as fairly as possible, even though it may entail large costs for Norway	698[5]
B^2	PPP	The countries that have emitted the most greenhouse gases until now should cut the most, even though it may entail large costs for Norway	538
B^3	APP	The rich countries should cut the most, even though it may entail large costs for Norway	492
B^4	Grandfathering	All countries should reduce their emissions with the same percentage, even though it may entail large costs for Norway	555
B^5	Equal per capita	All humans should have a right to emit an equal amount of CO2, so that the size of a country's population determines how much greenhouse gases the country can emit, even though it may entail large costs for Norway	494

Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral

Options B^{2-5} are based on the four specific principles of climate justice that are outlined in the theoretical chapter: PPP, APP, grandfathering and equal per capita emissions. The formulation of these four options was done carefully, in order to ensure that they capture the essence of the distributive principle, yet are relatively easy to understand. In these treatment groups

[5] The baseline group has a higher N than the other groups because a fourth of respondents were randomly assigned to this treatment in order to increase N to allow for more thorough background analyses on the data from this group. The remaining respondents were randomly distributed between the four other treatment groups.

respondents have to choose between option A and a specific conception of what climate justice entails. This allows me to identify which (if any) principles of climate justice are supported by the Norwegian population, and to compare the levels of support for each principle in order to see if any of the principles are more or less preferred than the others. I can also compare each principle to the baseline group, in order to see which (if any) of the principles are perceived as fair. Note that all treatment conditions specify that "it may entail large costs for Norway". This was explicitly stated in order to emphasize the contrast between option A and option B. If you choose to support option B, it means that you are willing to sacrifice the economy order to achieve a fair distribution of responsibility.

3.3.2 Dependent variable

The dependent variable is measured on a seven-point scale that reads: *Agree a lot more with A – agree more with A – agree somewhat more with A – agree somewhat more with B – agree more with B – agree a lot more with B - agree with neither A nor B.* The variable will be coded on a scale from 1 to 7, with "agree a lot more with A" coded as 1; "agree a lot more with B" coded as 6; and "agree with neither A nor B" coded as 7. This scale acknowledges that the question of economy versus justice is not black and white: rather, humans can have mixed motivations. Still, it attempts to identify which of the two options that capture the respondent's opinion best, assuming that the respondent has at least a somewhat stronger preference for one of the two. This allows me to identify whether or not there exists what V. O. Key (1961, 32-33) termed a "permissive consensus": a broad pattern of general support for a proposition which is permissive of action. The existence of such a consensus in the population does not necessarily mean that politicians will implement the policy. Even though a small share of the population opposes a proposition, this small share may be stakeholders with strong influence on the policy area. Conversely, those who consent to the suggestion may not be strongly attached to their position, or may not rally actively for the policy to be put into action. The identification of a permissive consensus does mean, however, that if the proposition were to be enacted, most citizen would not oppose it. This dependent variable allows me to identify whether or not there exists such a permissive consensus in the population regarding any of the positions in international climate policy presented in the experiment. Importantly, the dependent variable can also identify whether there is strong polarization regarding this issue. High support for both A and B simultaneously means that it will be hard to enact policy that does not invoke opposition from a considerable part of the population.

3.4 Open question

In order to facilitate interpretation and provide more nuance to the results of the survey experiment, I chose to include an open question where respondents were asked to elaborate on their opinion about how the responsibility for emissions reductions should be distributed between countries. This method of data generation is suited for exploratory research, and thus seems beneficial for the field of climate justice as very little is known about citizens' conceptions of this topic. The options given in the experiment might not capture the factors that respondents think are important when allocating responsibility for emissions reductions, and if this is the case they have the opportunity to express their opinion in the open text box. This also provides respondents with a way of expressing that they did not understand or disagreed with the question. Analysis of the open text answers can also be a way of triangulating findings in the experiment. If any of the justice principles achieve especially high support in the survey experiment, it can be expected that this principle will be mentioned in the open text box by respondents in the groups that did not get this principle as a treatment. Lastly, while the results from the survey experiment can contribute to causal description - that variation on one variable leads to variation in another - the experiment is less suited for providing causal explanation. This means identifying which mechanisms lie behind the causal relationship, and under which conditions the causality is at work (Shadish, Cook and Campbell 2002, 9-10). The answers in the open text box might provide more clarity to the mechanisms that affect support for climate policy. The challenges and advantages of using data from open question, as well as the procedures used for categorization and coding, are discussed in detail in chapter 5.

3.5 Hypotheses

The first part of the research question asks how ordinary citizens make the trade-off between the Norwegian economy and justice. This can be formulated through the following competing hypotheses:

> H1: *Norwegians support prioritizing justice when making commitments in international climate change agreements*
>
> H2: *Norwegians support prioritizing the Norwegian economy when making commitments in international climate change agreements*

These two competing hypotheses reflect the division between economic rationality and norm-driven action laid out in the theoretical section. While it is now generally acknowledged that humans have mixed motivations and are influenced both by what is individually rational *and* norms, in this experiment I assume that respondents will have at least a somewhat stronger preference for one of the two positions. If H1 is supported, I should find that a majority of respondents express support for B[1], the baseline group that states that *the responsibility for emissions reductions should be distributed as fairly as possible.* To address this hypothesis, I will consider any of the response alternatives expressing support for B (agree somewhat more with B, agree more with B and agree a lot more with B) as support for B. Conversely, for H2 to be supported I should see that a majority express support for A: *Norway should prioritize our economic interests rather than committing to great emissions reductions*. I consider any of the three response options (agree somewhat more with A, agree more with A, agree a lot more with A) as an expression of support for A.

The second part of the research question asks which (if any) of the common principle of climate justice Norwegians perceive as fair. There is no theoretical reason to expect that any of the justice principles should have more or less support than the other, and empirical findings have been mixed. Some previous studies have even indicated that citizens may not have a strong preference for a justice principle (see Bechtel and Scheve 2013). Therefore, it is first necessary to ask the question of whether or not the specific formulation of the justice principle matters for support level. As shown in the review of previous literature, many previous studies have assumed that respondents will have preference for a specific justice principle, yet this may not be the case – I might observe a similar level of support for all four justice principles. I therefore outline the following hypothesis, and the corresponding null hypothesis:

> H3: *The formulation of the justice principle matters for whether it is perceived as fair*
> H0: *The formulation of the justice principle does not matter for whether it is perceived as fair*

I consider H3 to be supported if there is a significant difference in support level for at least one of the justice principles.

By comparing the support level of the specific principles to the support level for the baseline

condition, I can identify which principle or principles are the closest to respondents' conception of fair allocation. This gives the following four sub hypotheses:

H3.1: *Polluter pays is perceived as fair*
H3.2: *Ability to pay is perceived as fair*
H3.3: *Grandfathering is perceived as fair*
H3.4: *Equal per capita emissions is perceived as fair*

If any of the principles have a level of support that is equal or nearly equal to the level of support for the baseline condition, I consider them to be perceived as fair.

3.6 Interpretation of patterns

It is hard to devise expectations towards the experiment, as only a few international studies have addressed citizens conceptions of climate justice, and no studies have investigated this phenomenon in Norway. I will still devise some general expectations towards the patterns of how opinions are distributed in the different experimental groups, and how such patterns can be interpreted.

I expect to see some differences in how respondents are distributed between the response categories in each experimental group. My expectation is that the level of support for alternative A, prioritizing the economy, will be relatively stable across all five groups. If your motivation is primarily economic, then you will want to prioritize the Norwegian economy no matter what kind of distributive justice principle is the alternative. Further, I expect that the level of support for alternative B, justice, will be at its highest for group B^1, the baseline group that gets the option to distribute "as fairly as possible". This principle does not specify what a fair distribution of responsibility looks like, and is thus more abstract than the specific distributive formulae respondents are presented with in groups $B^{2\text{-}5}$. Thus, alternative B in the baseline group can be seen as a less demanding response option that it is easier to agree with as respondents themselves can interpret what a fair distribution means. I therefore expect that it will gain higher support than the specific principles. Still, it should be noted that option B^1 specifies that "it may entail large costs for Norway", meaning that the respondent knows that following this strategy is not cost free. Lastly, the response option "neither A nor B" allows me to identify how large share of respondents have another preference than both A and B. From the assumption that the support for A will remain relatively stable, and that support for B will

be at its highest in group B^1, it follows that the share that answers "neither A nor B" will be higher for groups B^{2-5} than for group B^1. A high share of "neither A nor B" for one or more of the groups may also indicate that respondents do not understand the question, find it hard to answer, or do not have a strong opinion.

I might see some unexpected patterns in the distribution of answers. The level of support for A may differ between the groups, rather than remain stable. This can mean that prioritizing the economy is not a fixed opinion, but rather something that depends on what the alternative is. It may be that respondents are willing to "sacrifice" the economy if they perceive the distributive principle as fair, whereas a principle they think is unfair will lead them to want to prioritize the economy. Thus, a higher level of support for A in one of the groups B^{2-5} than in group B^1 means that respondents are more willing to prioritize justice over the economy when presented with the abstract idea that responsibility should be distributed fairly, than when they are presented with this specific distributive formula.

I may also observe that the level of support for some of the options B^{2-5} are equal to or higher than the support for option B^1. If support for any of B^{2-5} are equal to support for B^1, I interpret this to mean that this specified principle matches what respondents perceive to be a fair distribution. If any of the principles B^{2-5} have a higher level of support than option B^1, it may mean that explicitly mentioning the word "fair" makes the position more demanding for respondents to agree with. Whereas the other positions also mention the word "should", giving them a normative dimension as well, respondents might not agree with prioritizing justice as justice is hard to achieve. The other positions provide a specific formula for how burdens should be divided, and it may be easier for the respondent to agree with such a position when they know what it will entail in practice.

3.7 Summary

This chapter has presented the method and study design of the thesis. In order to answer the research question, the thesis employs a randomized between-subjects survey experiment, combined with an open question. The experiment has a non-directive design, where respondents are randomly assigned to different versions of the question without trying to affect their answers. Thus, this design utilizes the high degree of control in randomized survey experiments to make meaningful comparisons between groups.

The survey experiment has five treatment groups. One baseline group which describes the general notion that responsibility should be allocated fairly, and four treatment groups which describe a specific distributive formula based on the PPP, APP, grandfathering and equal per capita principles. In the experiment, respondents are asked which of two positions they agree the most with; prioritizing the Norwegian economy, or one of these justice positions. This design allows me to determine whether Norwegians are willing to prioritize justice in the first place, rather than simply asking them their opinion about different justice principles. The survey experiment is followed by an open question that allows me to triangulate the findings of the survey experiment, and to discover possible causal mechanisms that are not revealed through the experiment. It also serves as a safety valve where respondents can express that they did not understand the question, or do not agree with the premise.

4.0 Analysis of the survey experiment

This chapter analyses and discusses the findings from the survey experiment. The chapter first gives an overview of the data based on a rough coding of the dependent variable. This allows me to identify the overall patterns, and to discuss the level of support for justice and the economy in each of the treatment groups. Next, the analysis presents distributions on the dependent variable within each treatment group. Whereas the first section of the chapter discusses the *level* of support for justice and the economy, this section discusses the *strength* of this support. Then the chapter presents treatment effects with the baseline group as a reference category, in order to address which distributive principle is the closest to respondents' conception of fair allocation of the responsibility for climate change mitigation. Following this the chapter briefly presents and discusses the possible effects of sample biases on the results. Lastly, the chapter discusses the findings of the experiment in light of the theory and previous research presented in chapter 2.

4.1 Level of support

As presented in the previous chapter, the survey experiment presents respondents with two policy positions in international climate policy: prioritizing Norwegian economic interests, or a fair allocation of responsibility, even though it may entail large costs for Norway. The second position is the treatment condition that varies, and is based on the four different justice principles presented in the theoretical chapter, as well as a baseline condition that states that the responsibility should be distributed as fairly as possible, without describing a specific distributive principle. Respondents are asked which position they agree the most with. This experimental design allows me to identify whether Norwegians support prioritizing justice, whether some principles are more preferred than others, and if any of the principles are perceived as fair.

In order to analyse the results of the survey experiment, I first recoded the dependent variable into three values, with 1 = any of the response options supporting A (economy), 2 = any of the response options supporting B (justice), and 3 = neither A nor B. I then estimated margins for each treatment group, with support as the dependent variable and treatment group as the independent variable. This was done using multinomial logistic regression, as the dependent variable has unordered categories. All analyses presented were conducted in Stata version 15.

Table 4.1 shows the share in each treatment group that expressed support for the economy, justice and neither. Ninety-five percent confidence intervals are given in parenthesis. The next subchapter will address the distributions within each treatment group in order to provide more nuance to the data, but for the purpose of determining whether or not H1 or H2, and H3 are supported by the findings, it suffices to address the results from this coding.

Table 4.1: Levels of support within each treatment group

Treatment group	Economy (% agree)	Justice (% agree)	Neither (%)	N
Baseline	19 (16-21)	76 (73-80)	5 (3-7)	690
Polluter pays	16 (13-19)	77 (74-81)	6 (4-8)	533
Ability to pay	24 (20-28)	68 (64-72)	8 (5-10)	488
Grandfathering	21 (18-25)	73 (69-77)	6 (4-8)	552
Equal per capita	26 (22-30)	53 (49-58)	21 (17-25)	483

Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral
Note: Estimated using multinomial logistic regression. Response options "Agree a lot more with A", "Agree more with A" and "agree somewhat more with A" coded as 1. Response options "Agree a lot more with B", "Agree more with B" and "Agree somewhat more with B" coded as 2. "Neither A nor B" coded as 3. Ninety-five percent confidence intervals in parenthesis.

I will start by discussing the findings regarding H1*: Norwegians support prioritizing justice when making commitments in international climate change agreements*. As discussed in the methods chapter, in order for H1 to be supported I should see that a majority of respondents support the baseline condition, "the responsibility for emissions reductions should be distributed as fairly as possible, even though it may entail large costs for Norway". I will here consider any of the three response options expressing support for B, either agree somewhat more, agree more or agree a lot more, as support for B. When addressing this first hypothesis I want to identify support for the general idea that Norwegians are willing to pay in order to get a fairer distribution of responsibility. The strength of support will be addressed in the next subchapter, but for H1 I consider any of the three response options supporting B as an expression of willingness to prioritize justice over the economy.

The results in the justice column show strong support for the baseline condition, the general idea that the responsibility for emissions reduction should be distributed fairly even though it may entail significant costs for Norway. Seventy-six percent of respondents support this policy position. This means that about three fourths of respondents agree that the responsibility for emissions reduction should be distributed as fairly as possible, and are willing to pay to achieve

this goal. In this treatment group 19% agree with A, the position that we should prioritize the Norwegian economy, and 5% do not agree with either of the options. These results lend strong support for H1. As the levels of support or the economy are far below 50%, H2 is not supported.

H3 states that *the formulation of the justice principle matters for whether it is perceived as fair,* contrasting the null hypothesis *H0: The formulation of the justice principle does not matter for whether it is perceived as fair.* The results of the survey experiment indicate that the justice principle does matter for support level, at least to some degree. Support for three of the four normative principles is relatively similar. PPP has a support share of 77%, and is not significantly different from the baseline group. The grandfathering principle has a support share of 73%, not significantly different from either the baseline group or PPP. The APP treatment has a support share of 68%, significantly lower than the baseline and PPP groups but not significantly different from grandfathering. For these three principles, a considerable majority express support for B. The principle that gains the least support is equal per capita emissions, which has a significantly lower support share than all the other groups with 53% support. This is barely a majority, and confidence intervals indicate that support may be at less than a majority. In sum, there is strong and relatively similar support for three of the four distributive principles, while barely a majority supports equal per capita emissions. In other words, the formulation of the justice principle does matter for whether it is perceived as fair, at least to some degree.

Looking at the share that supports position A (economy) also indicates that the justice principle matters for support level. While my expectation was that the position wanting to prioritize the Norwegian economy would have relatively stable support across all five treatment groups, the results show some variation. The variation in the share that supports prioritizing the economy is not overwhelmingly large, but there are some significant differences. The two groups with the highest support for justice, the baseline group and PPP, also have the lowest shares of support for A, with 19% and 16% respectively. The support for prioritizing the economy is at its highest in the equal per capita treatment group, with 26%. This is significantly different from the support share in the baseline and PPP groups. This indicates that economic rationality on behalf of one's country is not a fixed opinion, but rather depends on the alternative, at least to some degree. If the alternative is considered good enough, then some respondents seem to be willing to prioritize justice over the economy. Once again, the justice principle matters.

As a logical consequence of the expectation that the support for A would be stable across groups, I expected that if support for the different normative principles varied, there would also be variation in the share answering "neither A nor B". This expectation is not met, as the share that answers this option is relatively stable across four of the five groups, between 5% and 8% with no significant differences. An important exception from this pattern is found in the equal per capita treatment group, where 21% answered "neither A nor B". I argued that a high share of "neither A nor B" could indicate that respondents find this question hard to answer, or do not have a strong opinion. This high share of "neither A nor B" in the equal per capita group may indicate that respondents in this group find it harder to take a stand on this principle than in the other three. The text explaining the principle is longer than the others, increasing the cognitive burden for respondents. The principle is also perhaps less intuitive than the other three. With this exception, however, the pattern shows that most respondents do have a preference when presented with the two positions.

It should be noted that the "neither A nor B" category is somewhat imprecise. On the one hand, it could mean that respondents do not know which of the options they would prefer. On the other, it could express that respondents do not prefer any of the principles presented, but rather have a third option in mind that they would support. This can be seen as a flaw in the design, but I do not consider it to be of big importance for two reasons. Firstly, the share that choose this response option is relatively small in three of the four groups. Secondly, respondents do have the opportunity to express their opinion in the open text box. Through examining the text answers of those who chose "neither A nor B", I can get insight into whether there is some third principle that these respondents prefer over the two alternatives they were presented with in the experiment.

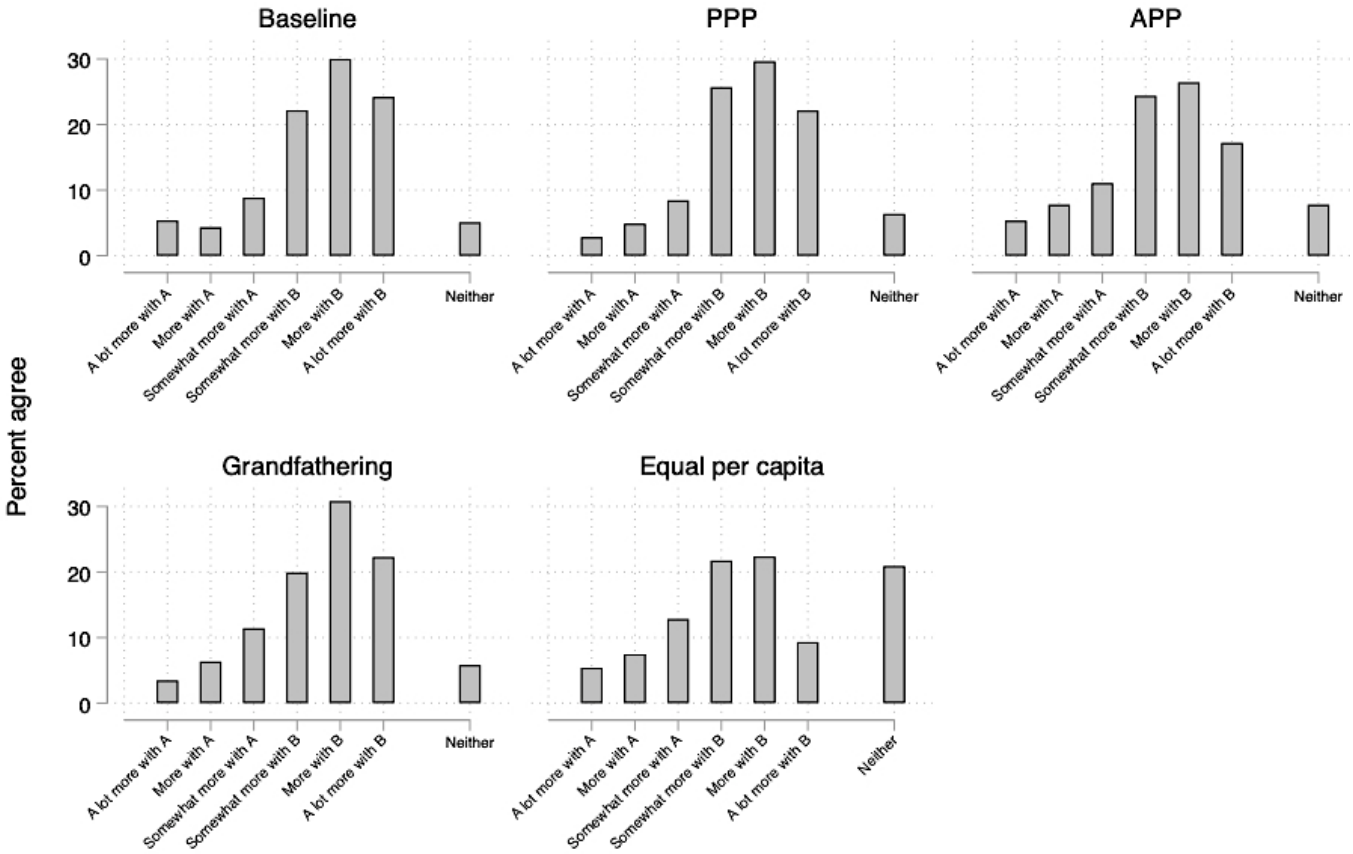
So far, the analysis has showed that H1: *Norwegians support prioritizing justice when making commitments in international climate change agreements* is supported, while H2: *Norwegians support prioritizing the Norwegian economy when making commitments in international climate change agreements* accordingly is not supported. H3: *The formulation of the justice principle matters for whether it is perceived as fair* is supported to some degree. In the next section I examine the distributions of answers in each treatment group, utilizing the original seven-point response scale in order to find out how strong or weak these opinions are.

4.2 Strength of support

In this subchapter I examine the distribution on the dependent variable in each treatment group using the original coding on a seven-point scale. This can give more nuance to the conclusions drawn based on the rough coding presented in the previous subchapter. Although a majority of respondents have answered that they support prioritizing justice, this support may be strong or weak and this nuance is hidden by the rough coding. Thus, I distinguish between the *level* and the *strength* of support. As argued in the discussion about the possibility for a permissive consensus in the previous chapter, even though a majority support a policy it might not be enacted if this support is weak. Conversely, even though a minority opposes the policy, it might be hard to enact the policy if opposition is strong among this minority. Looking at distributions between the answer categories expressing support for the economy and support for justice will say something about the viability of making commitments in international climate policy where the normative goal of justice is prioritized over the Norwegian economy. If feelings are strong about both, it indicates a high degree of polarization which can lead to conflict over this issue.

Overall, the distributions presented in figure 4.1 (see next page) support the findings of the previous subchapter. Importantly, apart from a few exceptions the distribution between answer categories is relatively similar for all treatment groups. For the three answer categories that express support for A (economy), the lukewarm response option "agree somewhat more" is the most frequent option in all treatment groups. The "agree a lot more with A" is the least chosen option for all groups, apart from the baseline group where it is slightly higher than "agree more with A". This indicates that among those who choose to support option A, which is relatively few to begin with, few have very strong feelings about this prioritization. In each group, around 5% or less have chosen this outer pole of the scale. At least in theory, this bodes well for a permissive consensus regarding Norwegian contributions to fair allocation in international climate policy.

Figure 4.1: Distribution of answers within treatment groups



Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral

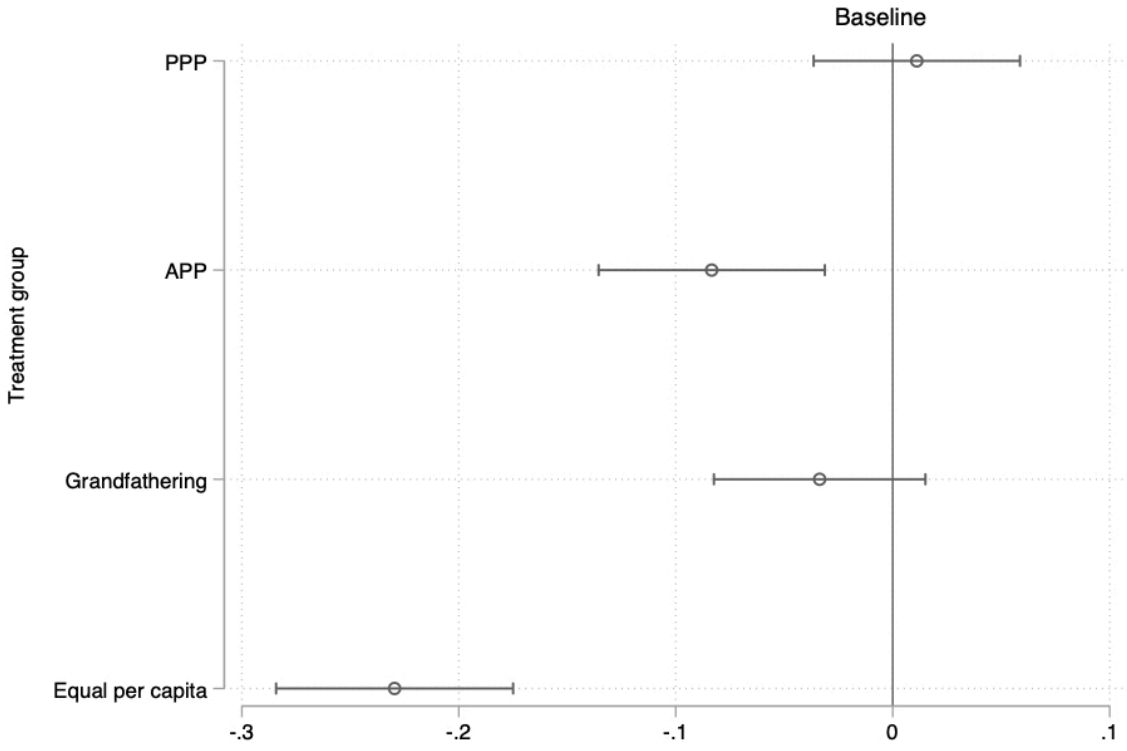
Among those who have chosen response options that support B (justice), "agree more" is the most frequent response option in all treatment groups. This indicates that opinions are stronger among those who support prioritizing justice than among those who support prioritizing the economy. An important exception here is the equal per capita group, where the "agree somewhat more" and "agree more" are almost equally frequent, and the "agree a lot more" considerably lower than in the other treatment groups. This shows that not only does the principle have a lower level of support, but for those who chose to support this principle, the degree of agreement is weaker than for the other principles. Another important nuance revealed by the distributions, is the differences between the APP and grandfathering groups. In the grandfathering group, a larger share answered that they "agree more" with B than in the APP group where support is somewhat weaker. This indicates that even though confidence intervals in the previous subchapter showed that level of support for these two principles is not

significantly different, the support for grandfathering is somewhat stronger than the support for APP.

4.3 Which justice principle is perceived as fair?

The findings so far indicate that PPP and grandfathering are the principles that are the closest to what respondents perceive as a fair way of allocating the responsibility for mitigation, with APP following close behind. I will end my presentation of the results from the analyses of the survey experiment by showing the comparison between the baseline group and the four justice principles graphically.

Figure 4.2: Marginal effects



Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral
Note: Estimated using logistic regression. Agree a lot more with B, agree more with B, agree somewhat more with B = 1. Agree a lot more with A, agree more with A, agree somewhat more with A, agree with neither A nor B = 0.
Baseline category treatment: "The responsibility for emissions reductions should be distributed as fairly as possible, even though it may entail large costs for Norway"

The plot is based on a logistic regression where all answers supporting B are coded as 1, and support for A and neither are coded 0. The results of the logistic regression are presented as odds ratios. This measure tells us the relative change in the odds of a positive outcome on the

dependent variable when the independent variable increases by one unit (Skog 2004, 365). The graph sets the baseline group as the contrast category, and shows the estimated marginal effects for each of the other treatment groups as compared to the baseline group which is set at zero. Thus, this figure shows the percentage probability of having a positive outcome on the dependent variable for the treatment groups that got the four justice principles, as compared to the probability of a positive outcome in the baseline group.

The graphical representation of the data confirms what was shown by the frequencies discussed in the first subchapter. The probability of a positive outcome on the dependent variable in the PPP and grandfathering groups is not significantly different from the baseline category. The probability of a positive outcome on the dependent variable in the APP group is slightly lower and significantly different from the baseline group, but not from the PPP and grandfathering groups. Lastly, the equal per capita emissions group has about 20% lower probability of a positive outcome on the dependent variable as compared to the baseline and is significantly different from all the other groups. Based on these findings we can conclude that hypotheses *H3.1: Polluter pays is perceived as fair* and *H3.3: Grandfathering is perceived as fair* are supported. *H3.2: Ability to pay is perceived as fair* is also supported, but somewhat less. The level of support is slightly lower than the baseline group and the difference is significant, but the share that supports this principle is still high. Thus, we can say that this principle is perceived as fair, but slightly less fair than the PPP and grandfathering principles. This is also supported by the distributions discussed in the previous subchapter, which showed that support is weaker for APP than for the grandfathering principle. Lastly, *H3.4: Equal per capita emissions is perceived as fair* is not supported.

4.4 Exploring the effects of sample biases

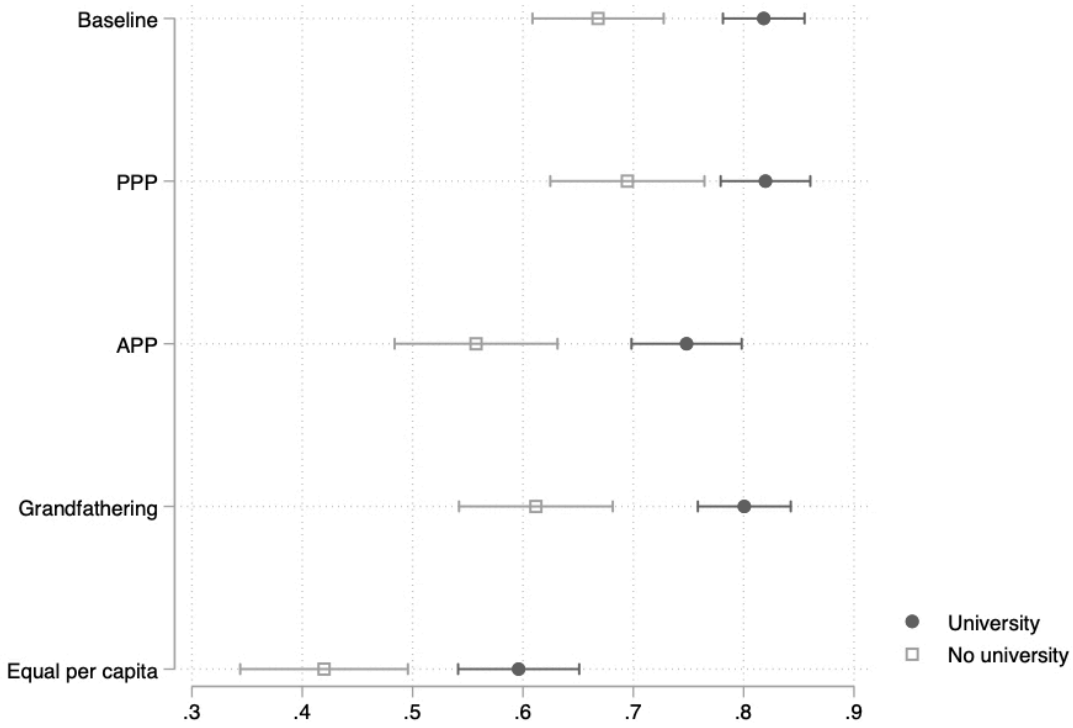
In this section I will briefly discuss the potential effects of sample biases on the results of the analyses. As discussed in the previous chapter there are some known biases in the Norwegian Citizen Panel, most notably with regards to education. Based on results from previous research on climate change attitudes in Norway, it seems plausible that this overrepresentation of individuals with high education can lead to an overestimation of the support for justice in the experiment. To test the robustness of the findings from the unweighted data I have used so far in the chapter, I have run analyses comparing the results of weighed and unweighted data. I have also run separate analyses for respondents with high and low education levels. All plots

comparing margins were generated using the user-written module Combomarginsplot for Stata (Winter 2014).

For the comparison of weighed and unweighted data, I conducted two logistic regressions, one with and one without weights. Support for B is the dependent variable, using the same coding as in chapter 4.3, and treatment group is the independent variable. This allows me to estimate the percentage share that supported justice in each of the five treatment groups, and compare this estimate for weighed and unweighted data. The results from the two analyses show that there is a tendency that the estimated level of support for B (justice) is slightly lower for the weighted data. This is found in all groups, but none of the differences are significant. Using weights gives bigger confidence intervals due to robust standard errors (Acock 2016, 295-296) which makes it harder to get significant results, but the differences are quite small regardless. The results from this analysis are attached in appendix B.

As discussed in chapter 3, there are some uncertainties related to the use of weights in population-based survey experiments. I therefore, in addition, conducted separate analyses for the support for B for respondents who have completed education at the university or university college level, and those who have no education, elementary school or upper secondary as their highest completed level of education. These results are showed in figure 4.3 below, which shows that the level of support for justice is significantly lower for those who have not completed higher education, compared to those who have. This result is the same for all treatment groups. This indicates that the estimates from the unweighted data could be too high compared to the true value for the population. These results do not, however, weaken the support for H1: *Norwegians support prioritizing justice when making commitments in international climate change agreements*. As argued in chapter 3, for this hypothesis to be supported I should see that a majority of respondents support justice in the baseline condition. Confidence intervals show a support share of at least 60% for the baseline condition, lending support to H1. The main patterns of the experiment also remain when breaking the data down on education level: PPP, grandfathering and APP are all supported, and equal per capita emissions has the least support.

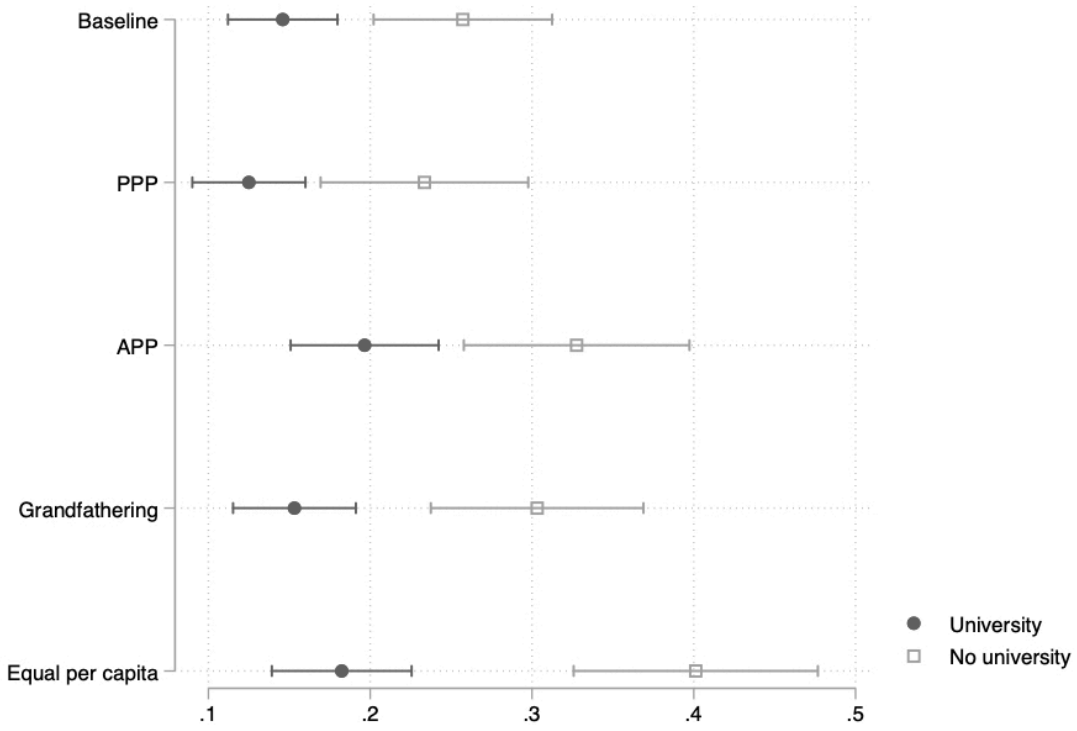
Figure 4.3: Comparison of support for justice, university and no university education



Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral
Agree a lot more with B, agree more with B, agree somewhat more with B = 1. Agree a lot more with A, agree more with A, agree somewhat more with A, agree with neither A nor B = 0.

The finding that support for justice is significantly lower for those who have not completed university education, begs the question of whether this difference is due to higher support for prioritizing the economy, or because more respondents choose the neither option. Additional analyses with support for prioritizing the economy as the dependent variable presented in figure 4.4 below show that support for prioritizing the economy is significantly higher among respondents who have not completed education at the university or university college level. This finding is consistent for all five treatment groups. This indicates that the support for prioritizing the economy presented in table 4.1 could be somewhat underestimated. A similar analysis for the neither response option, showed no significant differences between high and low education levels in the share that chose this option.

Figure 4.4: Comparison of support for the economy, university and no university education



Source: Norwegian Citizen Panel (2018), Wave 13, variable r13km_moral
Agree a lot more with A, agree more with A, agree somewhat more with A = 1. Agree a lot more with B, agree more with B, agree somewhat more with B, agree with neither A nor B = 1.

In sum, respondents who have completed education at the university or university college level are significantly more supportive of prioritizing justice, and significantly less supportive of prioritizing the economy. Therefore, the exact percentages presented in the previous subchapters should be treated with caution as the support for justice could be somewhat overestimated. The true value for the population probably lies somewhere in between the estimates for those with high and low education. The differences between the two levels of education are not overwhelmingly big, however. The main patterns and conclusions drawn from the results of the analyses of the survey experiment remain the same.

4.5 Discussion of findings

The following subchapter discusses the findings of the survey experiment, and see them in relation to the theory and previous research presented in chapter 2.

The results presented in the previous subchapters lend little support for Hardin's (1968) idea of

the tragedy of the commons which was captured in H2. His core argument holds that humans are not willing to make choices that are individually irrational in order to achieve a common goal. Supporting emissions reductions that have significant costs for one's country is arguably such an irrational act. These results indicate that there is considerable support for this prioritization, taking an economic loss in order to achieve a normative goal. Even though support for prioritizing justice is lower among respondents who have not completed higher education, it is still well above 50% for the baseline group, as well as for three of the four normative principles. Thus, there seems to exist a foundation for overcoming the tragedy of the commons. This echoes Ostrom's (1990) finding. At the same time, as Ostrom et al. (1999) point out, it remains to be seen whether the mechanisms used to manage smaller commons are relevant for the management of global commons.

Even though there seems to be considerable willingness to prioritize climate justice, this does of course not mean that public opinion will be translated into actual politics. The high level of support can be taken as an indicator of the existence of a permissive consensus regarding Norway committing to large emissions cuts in international climate change agreements, which will entail significant costs for Norway. At the same time, as discussed previously, the existence of a permissive consensus does not mean that the policy will be put into action, or that citizens will rally for the policy to be put into place. The high and quite strong level of support for justice, as well as the low and relatively weak support for prioritizing the economy does however seem to indicate that Norway making big commitments in international climate change agreements would not be met with big opposition – at least if commitments are *not* based on the equal per capita principle.

Still, it should be noted that one can question the validity of the measure of the dependent variable. Option A in the experiment captures individual opinions on behalf of the state, rather than costs directly imposed on the individual, which arguably is more closely related to economic rationality. The economically rational position can also be seen as too abstract. If it explicitly mentioned policy measures such as reducing oil and gas production or consequences such as less money for welfare services, the level of support for prioritizing the economy might have been higher, as this may be seen as a tougher sacrifice to make in order to achieve a normative goal. Still, as the Norwegian economy is closely connected to the economic welfare of citizens, this measure still can be seen as a measure of economic rationality influencing policy support. If Norway makes commitments that are costly, it will most likely affect citizens.

It should be kept in mind, however, that support for justice may have been lower if the experiment specified costs for the individual rather than for the state.

The results show some support for H3. The exact formulation of the justice principle does seem to matter, at least to some degree. PPP and grandfathering are the most supported principles, and are not significantly different from the baseline group. APP follow closely behind, while equal per capita emissions clearly is the least supported principle. This main pattern also holds when breaking the results down on education level. These results are somewhat surprising, given both the theoretical arguments and empirical findings of previous research that were discussed in chapter 2.

The high level of support for grandfathering is unexpected both from a normative standpoint, and based on the findings of previous studies. Within normative political theory, several commentators have deemed this principle as morally indefensible (see Caney 2011, 88-89; Roser and Seidel 2017, 113). That developing countries should contribute with the same percentage of emissions cuts as developed countries, when climate change to a large degree has been caused by the Western world, seems unfair. At the same time, as argued in the theoretical section, this principle may seem intuitively fair when not explicitly addressing that developing countries have to take a disproportionately big share of responsibility. The formulation of the principle in the experiment does not specify any such consequences, and this could have contributed to the high share of support.

Those who have tried to defend the grandfathering principle in the theoretical literature, have appealed to a defence of private property (Bovens 2011), or argue that grandfathering can be interpreted in both a strong, moderate or weak way (Knight 2013). It does not have to be the only principle considered when allocating responsibility, but can be combined with other considerations as well. In the policy realm, arguments in favour of this principle are often pragmatic rather than normative. As Norway has appealed to this principle in the past, it is interesting to see that citizens express a high level of support for grandfathering. We do not know, however, whether citizens interpret this principle in a weak or strong way, or whether they support grandfathering simply because it seems to be a practical solution. Few of the previous studies of citizens support for normative principles include the grandfathering principle, but interestingly, Schleich et al. (2016) include the same four principles as I do in my study, and find that grandfathering is the least preferred principle in both Germany, the US and

China. The experiment leaves unanswered whether there is a causal mechanism at work making this principle especially appealing to Norwegians.

The equal per capita principle appears to have little appeal compared to the other three principles. Even though the thought that everyone has an equal right to use a global common can be appealing from a normative standpoint, there would be many practical problems with allocating emissions allowances based on this principle. Norway is a cold country with higher needs for energy use for warming than many other countries, and respondents may perceive this as a principle that will lead to an unfair outcome. It should also be noted, as discussed previously in this chapter, that the formulation of this principle was longer and more complicated than the other three. This may increase the cognitive burden for respondents, making it harder to take a stand. Still, the fact that the highest share of support for prioritizing the economy was found in this experimental group, indicates that there is something unappealing about this principle, leading at least some respondents to be unwilling to prioritize justice over the economy because of the specific formulation of the principle. In previous research the findings regarding support for the equal per capita principle are mixed. Both Schleich et al. (2016) and Carlsson et al. (2013) find that equal per capita emissions is the second least or least preferred principle among their respondents. Carlsson et al. (2011), on the other hand, find that Swedes prefer the equal per capita emissions principle. Thus, Norwegian citizens seem to have preferences that are in line with findings from Germany, the US and China on this principle. This is somewhat surprising, given the social and cultural similarities between Norway and Sweden.

It is argued in the theoretical literature that PPP has a normatively intuitive appeal – if you cause a problem, you also have to fix it. This is supported by the findings in the experiment, given both the high level of support, and the strength of this support. The counterarguments that it is unfair that we can inherit responsibility from our forefathers, and that our forefathers should not be blamed because they were not aware of the damage that could be caused by GHG emissions, do not seem to have a considerable influence on the support for this principle. The high level of support is also in line with the findings of several previous studies (see Carlsson et al. 2013; Schleich et al. 2016).

APP has a slightly lower level of support than PPP. The strength of support for the principle is somewhat weaker than the support for grandfathering, even though the shares that support the

two are not significantly different from each other. This principle does not consider each country's contribution to the problem and is entirely forward-looking, which might cause some respondents to agree less with this principle than the two others. The somewhat weaker support can also be seen in light of Bechtel and Scheve's (2013) finding that if "only rich countries pay", respondents are significantly less willing to support an agreement. If some respondents interpret this principle in such a way, it can lead to somewhat more lukewarm support towards APP, even though the differences between these three principles are not big.

Lastly, it should be noted that the validity of the experiment can be questioned due to its simplicity. The normative principles that are discussed over tens of pages in the academic literature have been reduced to one-sentence descriptions. This of course leads to some loss of detail. It is for instance not specified whether there should be a subsistence-emissions limit below which no one should be forced to reduce their emissions, or what role trading of emissions quotas should play in such a regime. These omissions are potential sources of error, as it leaves it up to the respondent to interpret what is meant. I still chose to design the experiment in this way in order to reduce the cognitive load for respondents. Too complex questions that are hard for the respondent to understand are at risk of *satisficing,* the phenomenon where respondents lack the motivation to think thoroughly and actively take a stand, and rather answer the first thing that comes to mind or click the first response option (Krosnick 1991). My strategy for counteracting the reduced validity that might come from this lack of detail, is to include the open text question.

4.6 Summary

This chapter has presented results from the analyses of the data from the survey experiment. The frequencies of respondents supporting A (economy), B (justice) and neither show strong support for H1: *Norwegians support prioritizing justice when making commitments in international climate change agreements*. Accordingly, H2: *Norwegians support prioritizing the Norwegian economy when making commitments in international climate change agreements* is not supported. When using unweighted data, about three fourths of respondents in the baseline group supported prioritizing justice in international climate change agreements, even though it may entail large costs for Norway. Even though analyses show that the support for justice is somewhat weaker for respondents who have not completed education at the university level, the support for H1 remains.

The examination of distributions on the seven-point response scale shows that the support for justice is quite strong, whereas for the respondents wanting to prioritize the Norwegian economy opinions are more lukewarm, with "agree somewhat more with A" being the most frequent response option. Overall also these results support H1, and seem to indicate that there is a potential for a permissive consensus over the issue of prioritizing justice in international climate policy.

H3: *The formulation of the justice principle matters for whether it is perceived as fair* is supported, but only to some degree. For three of the four justice principles, PPP, APP and grandfathering, support is almost equal. Some nuances in the strength of support for APP compared to the other two indicate that this principle is somewhat less preferred, but these differences are marginal. The finding that lends support to H3, is the fact that support for justice in the equal per capita group is significantly lower than in all the other treatment groups, also when breaking the data down on education level. Support for justice is about 20% lower than in the baseline group, and distributions show that support is also considerably weaker than for the other principles.

The comparison of the support for justice in the four treatment groups to the baseline group, shows that H3.1: *Polluter pays is perceived as fair*; H3.2: *Ability to pay is perceived as fair*; and H3.3: *Grandfathering is perceived as fair* are all supported. The support for grandfathering and PPP is not significantly different from the baseline, whereas the support for APP is significantly different from the baseline but only slightly lower and still at a relatively large majority. H3.4: *Equal per capita emissions is perceived as fair* is not supported.

5.0 Analysis of text data from the open question

This chapter presents results from the analysis of the data from the open survey question. The chapter first discusses the advantages and challenges of using data from open questions. Next, the open question, the categories developed in the analysis and the coding process are presented. The analysis employed both deductively and inductively developed categories. The deductive categories were developed based on the theoretical framework of the thesis and serve to triangulate the findings from the survey experiment, whereas the inductive categories are exploratory and provide insight into what ordinary citizens consider to be important when allocating responsibility for mitigation, in addition to what was explicitly mentioned in the experiment. The main part of the chapter presents and discusses findings from the contents of the five most frequent categories in the data material. The findings from the deductive categories triangulate the high support for PPP and APP found in the survey experiment. The inductive findings indicate that collective responsibility is an important part of Norwegians' conceptions of climate justice.

5.1 The use of data from open survey questions

Data from open-ended survey questions can provide information that closed questions cannot. Closed questions present respondents with options that are predefined by the researcher, and therefore reflect the researchers' assumptions about which response options are relevant, and what constitutes an exhaustive list of alternatives. Open questions, on the other hand, allow respondents themselves to determine what should be the response to the question (Stoneman, Sturgis and Allum 2012, 853). I argue that this mode of data collection is especially well suited for exploratory fields of research where little is known about public opinion, such as opinions on climate justice. Another feature that makes climate change well suited as a topic for open-ended questions is the highly complicated nature of the issue. Climate change raises both technically and politically complex questions (Tvinnereim et al. 2017, 34), and it is demanding to design closed questions that take into account all the different aspects where climate policy can vary. As already discussed, this was a challenge in the design of the survey experiment, and was one of the reasons why I chose to include an open question after the experiment.

The use of data from open questions also raises some challenges. First of all, it can be asked what these data actually tell us. We do not know why respondents write what they write, while other things are left out. Arguably, what respondents write can be seen as an expression of a

prioritization where they write what is the most important to them while other issues are left out (Tvinnereim et al. 2017, 35). At the same time, open questions are more cognitively demanding to answer than closed questions. Rather than simply taking a stand on pre-determined response options, respondents themselves determine what should be included in the answer and what is left out. It has been debated whether such questions actually measure salient issues, or whether they simply tap into more superficial concerns (see Geer 1991). The cognitive demand of answering open questions also raises the issue of *who* answer such questions. Some have argued that open questions favour those with high education and high political interest, as they have better abilities to formulate an answer to an open question (Geer 1988; Zuell and Scholz 2015). These groups may thus, potentially, exert a disproportionately big influence on public policy, and it has therefore been argued that open questions are unsuited for measuring actual public opinion. In light of this, it is important to address the characteristics of those who chose to answer the open question, as there might exist biases that should be taken into account when analysing the data.

An important reason that the number of studies using open-ended survey questions has been relatively low until recently, is the fact that these data are challenging to analyse (Tvinnereim and Fløttum 2015, 744-745). Contrasting data from closed questions, the responses from each respondent are not directly comparable. Therefore, it is necessary to develop categories, either manually or by the use of quantitative methods, that allow us to make meaningful comparisons of answers. The introduction of quantitative tools such as Structural Topic Modelling has made the analysis of open text data much less costly and time-consuming than it used to be. At the same time, it should be noted that some nuance and level of detail can be lost when using computer-assisted analysis of open text data. Manual coding, while more time-consuming, arguably allows for a higher level of detail when answers are analysed. Following Shapiro (2009, 234), this can be seen as a trade-off between validity and reliability: Computer coding leads to results of high reliability but lower validity, whereas human coding results in categories of high validity but lower reliability.

5.1.1 Anonymity

Another important issue raised by the use of open questions, and especially open questions as a part of a panel data set, is how to maintain the anonymity of respondents. Written answers to open questions can contain personal information such as where the respondent lives; membership to a specific organization; family relations; or life events. While this information

alone may not be enough to identify the respondent, it could threaten anonymity if seen in combination with other information about the respondent gathered in the panel.

In order to ensure that the privacy of respondents is maintained, all text data gathered through the Norwegian Citizen Panel has to be de-identified. Researchers who wish to use open text data first sign a confidentiality agreement, and then gain access to a safe server with a file that only contains the answers to the open question, not the respondent ID or any of the other variables in the data set. The text answers are read manually, and any personal information that can contribute to identification of the respondent is removed. The de-identified data are then connected to the rest of the data set by the data management company Ideas2Evidence and sent back to the researcher. After manual reading, I removed potentially identifying information from 11 of the responses. This constitutes less than 0,5%, and thus has not affected the overall quality of the data material in a considerable way. In cases where potentially identifying information has been removed from an answer, this is indicated in the following way: […].

5.2 The open question

The open question that was included after the survey experiment reads:

> *"We would like to ask you to elaborate your opinion on how the responsibility for emissions cuts should be allocated between countries. We want all types of answers; a couple of sentences would be good, or just a few words if that is better for you".*[6]

The purpose of including the open question is threefold. On the one hand, the question serves as a way of triangulating the findings of the survey experiment. If I find that PPP, APP or grandfathering is mentioned often in the open text answers from the groups that did not get these distributive principles as a treatment, this strengthens the finding that these are the most supported justice principles. At the same time, the question also has an exploratory function. It allows me to find out more about *why* the respondent gave the answer she or he gave in the survey experiment, thus tapping into the causal mechanisms behind support for the different justice principles. This complements the causal description provided by the survey experiment. Also, respondents may consider other factors than the ones described in the survey experiment to be important, and the open question provides a way of expressing this. Lastly, because so little is known about ordinary citizens' views on climate justice, I found it important to include an open question as a "safely valve": a way for respondents to express that they did not

[6] The original version of the question in Norwegian is attached in appendix A

understand the question; that they think this is a question for experts; or that they do not have an opinion.

5.3 Categories and coding

Shapiro (2009) draws a distinction between representational and instrumental approaches to coding. Whereas the instrumental approach focuses on the theoretical perspective of the researcher, the representational approach has as its goal to understand the views and attitudes expressed through the data material, thus involving a higher degree of interpretation than the instrumental approach. For the main purposes of the open question in my study, to triangulate and provide more depth to the findings of the survey experiment, a representational approach is needed. This calls for the use of human, rather than computer-driven coding (Popping 2015), and I therefore chose to code the data manually.

I made a coding protocol based on a combination of inductively and deductively developed categories. I attempted to make the coding protocol as unambiguous as possible in order to avoid a too large degree of subjective interpretation.[7] Most categories have to contain mention of certain words or terms in order to be regarded as a mention of that category, yet at the same time I evaluate the entire answer to determine whether it should be regarded as belonging to the category. The deductive categories were developed based on the theoretical framework of the thesis. I looked for arguments based on the four justice principles: PPP, APP, grandfathering and equal per capita emissions. I also looked for mention of two important debates discussed in the theoretical chapter: the division between historical and time-slice interpretations of PPP, and between basic and luxury emissions.

For the inductive categories, I read the data material several times before beginning the coding, in order to identify patterns of which words, expressions or opinions were mentioned often. More specifically, I was looking for arguments regarding which factors should be taken into account when allocating responsibility for emissions cuts. Respondents may consider other factors than the ones presented in the experiment to be important, and I attempted to identify such factors when developing categories. For instance, a respondent may write "Norway should cut a lot", but I already have this information based on their answer in the experiment. What I was looking for in the text data was *why* a country should be assigned big or small

[7] The coding protocol is attached in appendix C

responsibility. The most frequent inductively developed categories are the collective responsibility category, which contains answers arguing that everyone, or all countries, have to contribute to mitigation; the charity category which argues that rich counties should contribute to mitigation in poor countries; and the limited impact category, arguing that Norway's contribution does not make much of a difference because we are a small country. Table 5.1 provides an overview of the key words and terms in each of these three categories, as well as an example of a typical quote from the category.

Table 5.1: Most frequent inductive categories

Category	Key words/terms	Typical quote
Collective responsibility	Everyone, all countries, every country	"Everyone has to contribute, but the richest countries as well as those with the biggest emissions should contribute the most"
Charity	Help, aid, support, contribute	"We who have emitted a lot, should contribute with a lot. Contributions from us in other countries are as relevant as contributions internally in Norway. Both transferrals of money and technology relevant"
Limited impact	Little Norway, small, a drop in the ocean	"Little Norway cannot make a difference as long as the big countries who pollute the most do not contribute and take responsibility"

Source: Norwegian Citizen Panel (2018), Wave 13, manual coding of variable r13kmmoral_open. My translation.

Six inductively developed categories had a frequency of less than 5% (N between 30 and 90) for the entire sample, and I chose to not include them in the analysis.[8] These are: the mention of USA as a party who emits a lot or that has to take a big responsibility; the mention of China, Asia or other Asian countries as parties who emit a lot or that has to take a big responsibility; consumption as a factor increasing responsibility; oil as a factor increasing responsibility; emissions quota as a way of assigning responsibility; and denial of the premise of the question. It should be noted that the frequency for the denial category is very low. This category contains answers that disagree with the premise of the question, either because they do not believe in

[8] Frequencies for all categories are attached in appendix C

climate change, do not think we should reduce emissions, or do not believe that there is a trade-off between reducing emissions and the well-being of the Norwegian economy. This category is mentioned in 2% of answers (N = 53), which gives an overall impression that most respondents agreed with the premise of the question.

Once the categories were developed, I manually coded each answer with a dichotomous variable for each category. Each answer can contain mention of several categories. Unfortunately, I did not have the resources to employ other coders to test for inter-coder reliability, but to test for intra-coder reliability I coded the data twice in order to discover any typing errors and to check that all positive coding was a clear instance of the category. If there were discrepancies between the two rounds of coding, I consistently used the coding from the last round. Coding was done conservatively, meaning that when an answer is unclear or can be interpreted in several ways, I coded it as miscellaneous. This category mainly contains answers that are too short or vague to clearly express an opinion; answers that do not respond to what the question asked; or answers that simply do not fit into any of the other categories. About 10% of the answers are coded in this category, and will not be taken into account in the following analysis.

5.4 Descriptive statistics

The open question was given to the same number of respondents that was assigned the survey experiment, 2777. Of these, 25% (685 respondents) left the text box empty, wrote "???", or similar answers. These have been coded as missing. This leaves 2092 respondents who answered the open question. The shortest answer contains one word, while the longest contains 282 words. The mean word count is 24 words, which in most cases makes up two or three sentences. 244 respondents wrote answers of 50 words or more. All in all, I consider this to be a good data material. A vast majority of the respondents who got the open question actually answered, and many respondents wrote two to three sentences, as asked in the pretext of the open text box. As this is a complicated topic that one perhaps could think that ordinary citizens do not have much knowledge of, I was pleasantly surprised to see that most respondents expressed a clear opinion.

5.4.1 Bias

As discussed earlier in this chapter, there is some debate regarding what such open questions actually tell us. One important aspect to take into account is whether there are any biases in who actually wrote an answer. I have therefore examined descriptive statistics on some key variables for those who answered the open question, and compared them to corresponding numbers for the respondents who were assigned the survey experiment.

Table 5.2: Biases in who answered the open question

		Question (%)	Experiment (%)		Question (%)	Experiment (%)
Female		48	49	**University**	67	65
High political interest		68	57	**Support A**	19	21
Age	18-29	7	7	**Support B**	73	70
	30-59	45	47	**Neither**	8	9
	60 +	48	45			

Source: Norwegian Citizen Panel (2018), Waves 11 & 13, variables r13P1 (gender), r13P4_1 (education), r13P5_1 (age), r11pk1 (interest in politics), r13km_moral, r13kmmoral_open

The descriptive statistics presented in table 5.2 show that those who answered the open question are similar to the respondents who got experiment in gender and age. I also compared the share that supported the different positions in the survey experiment in the overall sample, to the positions supported by those who answered the open question. The share that supported A, B and neither are similar for the overall sample and those who answered the open question, ensuring that the main positions in the experiment are represented in the open text answers. The share that holds education at the university or university college level matches that of the overall sample, but as discussed in chapter 3, the Norwegian Citizen Panel has a considerable education bias. This means that even though the answers to the open text are not biased compared to the sample, there is an education bias when compared to the corresponding number for the population. Lastly, there is some overrepresentation of people of high political interest among those who answered the open question compared to those who got the experiment. As political interest is thought to be highly correlated with high education, this number may be overestimated in the sample compared to the true value for the population due to the overrepresentation of highly educated individuals. In short, those who answered the open question are biased with respect to higher education and political interest. This decreases the representativeness of the text data.

5.5 Findings

The next subchapters discuss the five most frequent categories in the data material. I emphasize how these categories can triangulate the findings from the survey experiment, but also address how the contents of each category provide nuance to the conclusions drawn based on the findings in the experiment. Mainly, the deductive categories are used to triangulate the findings of the survey experiment, whereas the inductive categories are exploratory. Based on manual reading of each category, I have identified how respondents within each of these categories argue, and provide illustrations of these findings through example quotes. All quotes have been translated from Norwegian to English. Which treatment the respondent received in the survey experiment is specified in parenthesis after each quote. Firstly, I will briefly present the frequencies of the top five categories, for the entire sample and within each treatment group.

5.5.1 Frequencies of categories

Curiously, the most frequent categories are the same for all treatment groups, and I focus the following discussion on these five: PPP, APP, collective responsibility, charity and limited impact. These all have a mention of 5% or more for the entire sample and are the five most frequently mentioned categories for all treatment groups. No other categories have a frequency of 5% or more for the entire sample. With the exception of the country size category which is in a shared fifth place in the PPP treatment group with 4%, no other categories than these five make it in to the top five mentioned categories in any of the treatment groups. As the country size category does not have 5% or more for the entire sample, I have left this out of the further analysis. With a few exceptions, the ranking of the categories is identical for all treatment groups. This is presented in table 5.3. The percentages are calculated as the share of everyone who got the question, meaning that I have included those who chose not to answer it.

Table 5.3: Most frequent categories in each treatment group and for the sample

Justice (%)	**PPP (%)**	**APP (%)**	**GF (%)**	**Equal (%)**	**Sample (%)**
APP (22)	PPP (27)	APP (30)	APP (24)	APP (18)	APP (22)
PPP (20)	APP (15)	PPP (19)	Collective responsibility (22)	PPP (16)	PPP (20)
Collective responsibility (13)	Collective responsibility (18)	Collective responsibility (12)	PPP (17)	Collective responsibility (15)	Collective responsibility (16)
Charity (7)	Charity (8)	Charity (11)	Charity (7)	Charity (6)	Charity (8)
Limited impact (6)	Limited impact (4)	Limited impact (6)	Limited impact (5)	Limited impact (5)	Limited impact (5)

Source: Norwegian Citizen Panel (2018), Wave 13, manual coding of variable r13kmmoral_open. N of sample = 2777.

5.5.2 Deductive findings: PPP and APP

The PPP and APP categories were developed following the arguments of these justice principles that were discussed in chapter 2. These two principles gained a high degree of support in the survey experiment, and this finding is triangulated through the answers to the open question. As showed in table 5.3 these two categories are among the most mentioned in all treatment groups, also for those who did not get these principles as a treatment.

The answers in the PPP category express that high emissions should lead to a big responsibility for reducing emissions, the main argument of this principle. Strikingly, many of the answers in this category are short and to the point, irrespective of treatment group. Which treatment the respondent got is showed in parenthesis for each quote:

> *"Those who pollute the most should cut the most"* (baseline treatment group)
> *"The countries with the most emissions, should take more responsibility"* (PPP treatment group)
> *"Those who pollute the most, should try to cut the most of their pollution*" (APP treatment group)
> *"Responsibility for those who emit the most"* (equal per capita treatment group)

As illustrated by these quotes, many respondents seem to perceive PPP as a fair way of allocating responsibility, independently of which treatment they received in the experiment. The high frequency of short, to the point answers in this category, lends support to the theoretical argument that PPP is intuitive. It seems to roll off the tongue (or rather, keyboard) for respondents in all treatment groups.

Some respondents in this category also write longer answers that elaborate more on their position, and sometimes add more nuance to how responsibility should be assigned:

> *"The starting point should be that countries with the highest emissions contribute with the highest emissions cuts. Developing countries are polluters but can have economic problems by achieving big emissions cuts. Economically strong countries should help the poor countries"* (equal per capita treatment group)

Even though the theoretical debates about historical and time-slice interpretation of principles, and basic and luxury emissions are rarely mentioned (each of these two categories were mentioned by 1% of the respondents), this answer illustrates that respondents have insight into the complex question of assigning responsibility for emissions reduction. Some of the respondents argue that in addition to emissions levels, concerns such as the economy of the country should be taken into account as well.

As showed in table 5.3 there is some variation between groups in the share of answers in the PPP category: in the PPP treatment group it has a frequency of 27%, and is the most mentioned category. It has its lowest frequency with 17% in the grandfathering group, and is the third most mentioned category. Thus, there seems to be some priming effect of being presented with PPP in the survey experiment. For the entire sample, a fifth of respondents mention PPP in their answer. All in all, this lends support to the conclusion drawn based on the survey experiment: that PPP is one of the principles of climate justice that respondents prefer the most.

The answers in the APP category argue that the rich countries have to take responsibility for emissions cuts. Interestingly, many respondents do not argue that the rich countries have a big responsibility because they are the ones who pollute the most - rather, it is argued that rich countries should cut because they have the ability to do it, irrespective of their contribution to causing the problem:

> *"Rich countries should be able to cut more than poor*" (grandfathering treatment group)
> *"Rich countries should cut the most, have economy to use alternatives"* (APP treatment group)
> *"Rich countries should take the biggest expense"* (baseline treatment group)
> *"Developed countries should cut the most because they have a good economy and possibilities to develop alternative energy"* (equal per capita treatment group)

One of the main objections against APP expressed in the theoretical literature, is the fact that this principle does not take into consideration how each country has contributed to the problem. This does not seem to be of big concern for respondents in this category.

At the same time, it should be noted that a considerable share of the responses in this category

explicitly note that rich countries have made big contributions to climate change, and therefore should have a big responsibility:

> *"Rich countries have bigger emissions; bigger consumption, more money and also contribute to pollution in developing countries. Therefore, rich countries have a bigger responsibility for cleaning before their own door, but also other's doors where they have contributed in a negative way – such as increasing their own wealth by also increasing their own emissions"* (baseline treatment group)

> *"Countries who have a lot of their wealth today as a result of emission of gases have to take responsibility to lower their own emissions first. This is often countries who also have the means to be at the front in cutting their own emissions"* (PPP treatment group)

All in all, the answers in this category give the impression that many respondents think the rich countries have a big responsibility for mitigating, either simply because they are rich, or because they have made large contributions to climate change. The share that mentions APP is high in all treatment groups, and especially high with 30% in the APP treatment group, indicating a priming effect of the principle assigned in the survey experiment also here. Even though APP gained slightly less support than the baseline group, PPP and grandfathering in the survey experiment, the answers to the open question indicate that this is a principle that easily comes to mind when respondents are asked to elaborate on their opinion about the allocation of responsibility for mitigation.

In sum, the results from the APP and PPP categories lend strong support to the findings of the survey experiment regarding these two distributive principles. Arguments based on these two principles are used in about a fifth of the answers for each principle.

5.5.3 Inductive findings

The inductive categories were developed through manual reading of the data material to identify reoccurring themes, terms and words. The following subchapters present and discuss the contents of the three most frequently mentioned inductive categories: Collective responsibility, charity and limited impact.

5.5.3.1 Collective responsibility

The most striking inductive finding, is the high share that explicitly states that *everyone* has to do something. The instruction in the coding protocol is to code answers that mention the terms "everyone" "all countries" or "each country", and express the opinion that everyone should contribute to mitigation – in other words, that mitigation is a collective responsibility. This category is mentioned in between 12% and 22% of answers, with a share of 16% for the entire sample (see table 5.3). It is especially interesting that this category has a very high frequency in the grandfathering treatment group where it is the second most frequent category, mentioned in 22% of the answers. As noted in the previous chapter, the high support for the grandfathering principle in the survey experiment was somewhat surprising, as this approach is regarded as nearly morally indefensible in the theoretical literature. This finding may shed some light on why this principle gained such strong support. As the formulation of the principle starts by stating that "*all countries* should reduce their emissions" (my emphasis), it might be this explicit mention of a collective responsibility that appeals to respondents, rather than the fact that there will be specified a certain percentage each country has to cut. The answers in this category do not necessarily emphasize that everyone has to do *the same*, but rather that everyone should contribute with *something*. This is illustrated by some examples from the grandfathering treatment group:

> *"Everyone has to take responsibility"* (grandfathering treatment group)
> *"Everyone has to take their share of the responsibility to get emissions down"* (grandfathering treatment group)
> *"The rich countries who have the most emissions have to reduce the most. But all countries have to reduce some"* (grandfathering treatment group)
> *"Everyone should do everything they can, as simple as that. As of today, no one are doing enough."* (grandfathering treatment group)

Thus, the respondents who got the grandfathering principle as a treatment do not emphasize the fact that there will be an equal percentage cut for all countries, but rather that everyone will do something.

Even though the everyone category is mentioned somewhat less frequently in the other treatment groups, similar opinions are expressed there as well. This indicates that the thought

that everyone should make a contribution seems to be morally important for many respondents irrespective of treatment:

> *"All countries have to and should contribute with what they can now. If a country has relatively low emissions it does not mean that they should not cut where they can"* (equal per capita treatment group)

> *"The most important is that the countries make international commitments to each other. So that all countries make cuts, and not just one or two, who thereby would take a big economic risk. Everyone has to cut, also the big countries, to avoid the problem of "free riders""* (PPP treatment group)

> *"All countries have to commit to contributing if we hope to reach the climate goals. We have to be willing to spend money to save the planet"* (baseline treatment group)

Thus, it seems that collective responsibility is an important factor when respondents consider how the responsibility for emissions reductions should be allocated between countries. This may indicate that the exact distribution of responsibility is not the most important, but rather that all countries contribute to the common goal of mitigation in some way.

5.5.3.2 Charity

The charity category contains answers that argue that rich countries should help, aid, guide or in other ways contribute to emissions reductions in poorer countries, either through providing aid or transferral of technology. This category is the fourth most mentioned for all treatment groups, and the share varies between 6% and 11%. For the overall sample, 8% of the answers are coded as belonging to the charity category. The arguments used in this category can roughly be divided into two types. Some respondents argue that rich countries should help developing countries reduce their emissions because we have a moral obligation to do so. This seems to mirror the way respondents argue in the APP category: Because we are rich, we have the ability to do it, and therefore we should do it – regardless of contribution to the problem:

> *"No matter who have emitted/emit the most should Norway, who have money, spend them on helping other countries reduce their emissions (maybe just through education*

and spreading knowledge). We cannot expect that countries who have no social or economic prerequisites shall contribute as much as Norway" (PPP treatment group)

"Western rich countries have to be a part of reducing emissions in poor countries, with technology and economic help" (baseline treatment group)

"The rich countries have to contribute/help less rich countries with reduction of emissions/pollution. Think it is harder for poor countries to do enough on their own. But this of course has to come IN ADDITION to cuts in the rich countries" (APP treatment group)

On the other hand, a considerable share of the answers in this category argue that we should provide help because it would be more effective and make more of a difference if we invest our money in emissions reductions in poor countries, rather than making the cuts at home. Thus, these respondents support providing help on pragmatic, rather than moral grounds:

"Big countries who have sizeable emissions, can receive subsidies from smaller, but more wealthy countries. Typical developing countries have sizeable emissions, but do not have technology and economy to restructure business and production to more environmentally friendly alternatives. Rich countries, for example Norway, should contribute with this. Cuts in little Norway do not make as big of a difference for the climate as the contributions from the big countries." (PPP treatment group)

We should think environment and not country borders. Norway should for instance contribute more in big pollution countries with help there, rather than drops in our own country." (grandfathering treatment group)

"India, China and the other populous countries should get help reducing their emissions. That is where the really big emissions are. That is when it will show. It is nice that Norway can be in the driver's seat, but unfortunately it does not make a difference for the emissions scale" (equal per capita treatment group)

Regardless of which of these ways of arguing is used, the overall image that arises from the answers in the charity category, is that many expresses support for the policy of providing

climate aid to developing countries. Whether it is on moral or pragmatic grounds, it seems that many respondents think it is fair that we help others through charity. Climate aid is an important part of Norway's efforts in international development policy, and it seems to be supported by a considerable share of Norwegians.

5.5.3.3 Limited impact

The limited impact category contains answers that emphasize that mitigation efforts in Norway will not make much of a difference, because we are a small country. Because we are so few, the global impact of mitigation measures taken in Norway will be limited. The frequency of this category is similar for all experimental groups, with mentions between 4% and 6% in each group and 5% for the total sample. It could perhaps have been expected that this way of thinking was expressed more frequently. That both the collective responsibility and charity categories are mentioned to a larger degree, indicates that the limited impact argument is not the most salient issue when Norwegians think about allocation of responsibility in international climate change agreements.

There are two distinct ways of arguing also within this category. On the one hand, many of the answers in this category express feelings of frustration and powerlessness:

> *Norway is a very small country, with very small emissions. Don't burden the Norwegian population with nonsense. We should rather help countries such as China who are struggling with their emissions.* (equal per capita treatment group)
>
> *What little Norway emits does not matter* (PPP treatment group)
>
> *Little Norway cannot save the world alone and all the fees imposed on people in Norway cannot save the world. I think Norway has to stop being so concerned with climate fees, How many countries in the world use electric cars today compared to Norway, How many countries demand something extra from their citizens because of the environment and such, we pay and pay everything that is demanded, heating at home, extra prices for Diesel and Benzine and other countries are driving cars with big motors and cheap fuel such as USA, China, Russia, India etc. etc. LITTLE NORWAY CANNOT SAVE THE ENTIRE WORLD* (grandfathering treatment group)

> *"The countries with big emissions should take a much bigger responsibility. Norway's role here is like a drop in the ocean…"* (APP treatment group)

The argument that Norway's emissions are so small they do not matter for the global total is a reoccurring theme in this category. Many respondents contrast Norway with big countries such as the US and China, and the phrase "a drop in the ocean"[9] is used frequently in this category. Curiously, as illustrated by the above quote from the grandfathering group, some of the respondents in this category use arguments related what is happening in Norwegian domestic politics in their answer. The survey experiment and the open question do not mention domestic politics at all, and the respondents who were assigned to the survey experiment did not get any other questions related to climate policy in this round of the panel. Still, domestic politics such as road fees and electric cars is brought up by several respondents. This indicates that local climate policy is seen in relation to international commitments, at least by some.

At the same time as many answers express frustration and opposition against making big mitigation efforts in Norway because this will not have a global impact, there are also expressions of willingness to act in this category. Many respondents do not use Norway's size as an argument for *not* contributing; rather, they emphasize that we should contribute, but due to our small size it is important that others contribute as well:

> *"We have to work for the total of emissions to become smaller. Of course, Norway should contribute, but I don't think this is where the problem lies"* (equal per capita treatment group)

> *"It is important that all big countries in the world do as much for the environment as Norway already does. As long as all countries in the world do this differently, there is a long way to go. It is important that Norway is a pioneer but no matter what we do here it is a drop in the ocean considering size and the number of people*" (grandfathering treatment group)

[9] Norwegian: «En dråpe i havet»

> *"Norway is a small country and we won't save the world alone, nor should we carry big costs related to it. Of course we have to take our part, but it has to be done fairly"* (baseline treatment group)

As illustrated by these quotes, respondents express that it is important that everyone cut, not just us, because our country is so small that our efforts will not make much of an impact globally. This way of arguing can be seen in relation to the collective responsibility category: Because we are so small, it is not fair that we are the only ones who contribute – everyone has to make an effort. As the respondent in the above quote from the baseline group puts it: "*Of course we have to take our part, but it has to be done fairly".* Based on the inductive findings it seems that what makes allocation of responsibility fair for many respondents, is that everyone makes a contribution, not just little Norway. This collectivist aspect appears to be important for Norwegians' conception of climate justice.

5.6 Distribution of categories broken down by the response options in the experiment

Thus far, this chapter has presented and discussed the contents of the most frequent categories in the data material. Before discussing the findings and concluding, this subchapter briefly examines the distribution of categories within each of the three main answer categories of the survey experiment: prioritizing the economy, prioritizing justice, and neither. This allows me to identify differences and similarities between how respondents from each of these three groups reason and argue in their answers to the open question, and may provide more insight into *why* respondents chose to prioritize the economy, or did not support any of the options. Due to the relatively low N in the economy and neither groups the findings from these groups should be treated with some caution, and should be seen as illustrations of possible tendencies rather than absolute findings.

Table 5.4 below shows that support for PPP seems to be robust, as this is frequently mentioned also among the respondents who wanted to prioritize the economy, and those who chose the neither option. Contrasting this, even though it makes it into the top five in all groups the APP principle is less frequent among those who answered neither, and even less frequent among those who wanted to prioritize the economy, while for the justice response option it is the most frequently mentioned category. This of course seems intuitive; respondents who do not want to prioritize the economy over justice, would not want economy to be used as a way of allocating

responsibility for mitigation. Still, it is worth noting that if the goal is a permissive consensus regarding Norwegian commitments in international climate policy, allocating responsibility solely based on economic capacity would probably be met with more opposition than if commitments are based on actual emissions, or some combination of the two. This is also mirrored in the survey experiment where APP is somewhat less supported than PPP, but the differences are not considerable.

Table 5.4: Most frequent categories in each response category in the survey experiment

Economy (%)	**Justice (%)**	**Neither (%)**
PPP (19)	APP (28)	PPP (16)
Limited impact (15)	PPP (21)	Collective responsibility (13)
Collective responsibility (12)	Collective responsibility (18)	APP (12)
China (6)	Charity (9)	Charity (8)
APP (5)	*	Deny (5)

Source: Norwegian Citizen Panel (2018), Wave 13, manual coding of variable r13kmmoral_open. N economy = 573. N justice = 1933. N neither = 240.
Note: Only four categories have a mention of 5% or more in the justice group.

The frequencies of the inductive categories largely support the findings of the above discussions of the contents of each category. Firstly, the limited impact category does not even make it in to the top five categories among those who wanted to prioritize justice, nor for those who answered neither. Among those who want to prioritize the economy, on the other hand, it is the second most mentioned category with 15%, considerably higher than the mention for the overall sample as showed in table 5.3. This indicates that the idea that the efforts we do in Norway have a limited impact for the global total, is related to wanting to prioritize the economy rather than justice. This of course makes sense – why should we be willing to sacrifice our economy to mitigate, if we think that these efforts will not make much of a difference? This mirrors the finding by Kallbekken and Sælen (2011), who find that the perceived effectiveness of a policy, in their case environmental taxes, is the most important determinant of support for the policy. This notion of perceptions being important for policy support is also supported by the finding that the China category makes it in to the top five most frequent categories among those who wanted to prioritize the economy. As illustrated in the discussion of the limited responsibility category in the preceding subchapter, respondents sometimes contrast Norway with big countries such as China, or explicitly state that China has to take a bigger share. Still, this subgroup is the only one where the China category has a mention of more than 5%, indicating

that this way of thinking is more pronounced among those who want to prioritize the economy over justice.

Lastly, it is worth noting that the collective responsibility category is frequently mentioned in all of these three groups, once again illustrating that the idea of a collective responsibility is closely connected to Norwegians' conceptions of climate justice.

5.7 Discussion

The purpose of the open question was to triangulate the findings of the survey experiment, and to facilitate interpretation and give more depth and nuance to the findings. This subchapter discusses which of the findings of the survey experiment are triangulated through the open questions, and what the exploratory findings from the inductive categories have showed that was not found in the survey experiment.

The analysis of the data from the open question strengthens the impression that PPP and APP are perceived as fair by Norwegian citizens. Out of the total sample that got the open question, about a fifth of the answers mention each of these principles. It is especially interesting to see that these are the most mentioned categories also in the groups that did not get the PPP and APP treatments in the survey experiment. If one accepts that open questions are able to measure salient issues, then it seems that many respondents intuitively see these two principles as how responsibility should be allocated. Support seems extra robust for the PPP principle, which is mentioned frequently also by the respondents who supported prioritizing the economy or neither in the survey experiment. The grandfathering and equal per capita categories both have a mention of less than 5% for the entire sample and were therefore not included in the analysis. These principles are perhaps less known than PPP and APP, and harder to formulate in an easy way. Even though they gain support in the survey experiment, they do not seem to have salience or to be intuitively associated with fair allocation in the same way as PPP and APP.

Overall, the responses in the inductive categories do not go into the actual allocation of responsibility as was asked in the text of the open question, but rather go into bigger dilemmas related to the nature of the climate change problem. As climate change potentially is a tragedy of the commons we all depend on each other making a contribution towards solving the problem, and this idea seems to be strongly associated with how respondents perceive climate justice. The main finding of the inductively developed categories, is that collective

responsibility seems to be important in order for Norwegians to perceive international climate policy as fair. This category has a relatively high frequency for all respondents, irrespective of treatment group or the position supported in the survey experiment. It is interesting that this category has an especially high mention in the grandfathering treatment group, indicating that the fact that this principle assigns responsibility to *everyone* may be the reason why this principle gains such a high level of support in the survey experiment, rather than the fact that each country will cut by the same percentage. This could possibly also explain why the equal per capita emissions principle has significantly lower support than the other principles; this principle would entail that some countries do not contribute to mitigation (and are even allowed to increase their emissions), while other countries make big cuts. Even though this is not mentioned explicitly in the survey experiment, it may play into respondents' evaluation of the principle.

The collective responsibility category can also be seen in relation to the other two frequently mentioned inductive categories: limited impact and charity. Firstly, respondents in the limited impact category often argue that Norway should take our share, but because we are such a small country we depend on the other countries contributing as well. The frequent mention of the charity category also shows an emphasis on the problem being common: we have a responsibility to help reduce emissions in poor countries because this is a common problem, and we have the ability to contribute because we are rich. In a sense, these inductive findings give an impression of Norwegians' conceptions of climate justice being closely related to collective effort, almost resembling the Norwegian phenomenon of a "dugnad"[10]: The important thing is not how big or small your contribution is, but rather that everyone contribute to the best of their ability, helping each other to achieve a common goal. This strengthens the assumption that the specific justice principle perhaps is not the most important for ordinary citizens, but rather that all countries make a contribution, either big or small, to mitigation. This notion is in line with the findings by Bechtel and Scheve (2013) that the exact formulation of the justice principle is not as important as whether all countries or only rich countries contribute, and Tvinnereim, Lachapelle and Borick (2016) who find that reciprocity is important for Norwegians' support for international climate change agreements.

[10] Dugnad is usually understood as voluntary, unpaid communal work, often done in order to complete a task that is hard to get done alone (Nordbø 2018).

5.8 Summary

This chapter has presented and discussed results from the analysis of the answers to the open question posed after the survey experiment. There were three main goals of including this open question: Triangulating the findings of the survey experiment; inductively discovering what factors are important for Norwegians when allocating responsibility for mitigation; and providing an outlet for respondents who did not understand the question or did not have an opinion. For the last purpose, the data indicate that most respondents understood the question, and did have an opinion on the subject. Further, the deductive categories triangulated the findings from the survey experiment that the PPP and APP principles are strongly supported and perceived as fair. These principles were frequently mentioned also in the treatment groups that did not get these principles as a treatment, indicating that this way of allocating responsibility is intuitively associated with justice by many respondents.

The inductively developed categories show a strong emphasis on collective responsibility among all respondents, both when the data are broken down on the different treatment groups and on the response alternative the respondent chose in the survey experiment. Thus, it may be that rather than allocating responsibility according to a certain rule, respondents conceive a fair allocation of responsibility as one where all countries contribute, regardless of the exact amount they contribute with. This perception is perhaps reinforced by the fact that Norway is a small country, and that our domestic efforts will have a limited impact on the global total. Still, it should be noted that the frequency of the limited impact category is low for most subgroups, with the exception of the respondents who wanted to prioritize Norway's economic interests in the survey experiment. The emphasis on a collective responsibility is also showed in the charity category, where respondents show willingness to make contributions in other countries, in order to help them reduce their emissions.

6.0 Discussion and conclusion

This chapter discusses the findings from the analyses of the survey experiment and the open text data, and see them in relation to the research question of the thesis. The chapter first provides a summary of each of the chapters of the thesis. Then, the key findings of the thesis are discussed. Lastly, the chapter provides a conclusion answering the research question.

6.1 Summary

I have argued that in order to ensure democratic anchoring of the commitments Norway makes in international climate change agreements, it is essential to know more about what Norwegian citizens are willing to commit to. Both economic preferences and normative concerns can affect policy support, and we do not know which consideration is the most important for Norwegians when it comes to climate policy. To find out more about Norwegians' conceptions of climate justice, I asked the following research question:

> *How do ordinary citizens in Norway make the trade-off between the Norwegian economy and justice, and which (if any) of the common principles of climate justice do they perceive as fair?*

In chapter 2, the theoretical framework of the thesis and previous research on citizens' conceptions of climate justice were presented. There are several ways of approaching climate justice, and I argued that distributive, spatial climate justice was the best suited approach for my research question. This approach sees the atmosphere as a global common, and can therefore be seen in relation to Hardin's (1968) theory of the tragedy of the commons, which holds that in the management of a common, each actor will do what is rational for them, causing a collectively suboptimal result. Following Gardiner (2008) I also argued that climate change constitutes a *perfect moral storm* where several factors inhibiting us from acting morally converge. Thus, it is by no means given that citizens will want to prioritize justice in international climate change agreements. Next, the chapter presented the four most common principles of climate justice: PPP, which holds that those who have emitted the most should cut the most; APP, which holds that the richest should cut the most; grandfathering, which holds that each country should reduce their emissions with the same percentage; and equal per capita emissions, which holds that each citizen should be allowed to emit the same amount of GHGs. Lastly, the chapter presented results from previous research on citizens' conceptions of climate

justice, and research on climate change attitudes in Norway. Although results from previous research are mixed, they seem to indicate that it is relevant to include information about both costs and distribution when investigating citizens' support for climate policy.

Chapter 3 presented the method and study design of the thesis. In order to answer my research question, I employed a randomized, between-subjects survey experiment with a non-directive design. The experiment was included in round 13 of the Norwegian Citizen Panel. In the experiment respondents were asked which policy position they agreed the most with, prioritizing the Norwegian economy or prioritizing justice. The justice position was the treatment condition, and the different treatment groups were presented with one of the four different principles of climate justice, or a baseline category arguing that justice should be a priority without specifying what fair allocation would look like. The experiment provided a way for respondents to express that they want to prioritize the economy rather than justice, and this is an innovative feature of my study. The experiment was followed by an open question which served three functions: a safety-valve where respondents could express that they did not understand the question or disagreed with the premise; triangulating the findings of the survey experiment; and serving an exploratory function in order to identify other factors that are central for Norwegians' conceptions of climate justice. Lastly, this chapter presented three main hypotheses and four sub-hypotheses to be tested through the survey experiment:

H1: *Norwegians support prioritizing justice when making commitments in international climate change agreements*
H2: *Norwegians support prioritizing the Norwegian economy when making commitments in international climate change agreements*

H3: *The formulation of the justice principle matters for whether it is perceived as fair*
H3.1: *Polluter pays is perceived as fair*
H3.2 *Ability to pay is perceived as fair*
H3.3 *Grandfathering if perceived as fair*
H3.4 *Equal per capita emissions is perceived as fair*

Chapter 4 presented results from the analyses of the data from the survey experiment. Both the level and strength of support shows strong support for H1, and accordingly do not support H2.

Examination of the support for each of the justice principles indicates that PPP, APP and grandfathering are the principles with the most support, APP being slightly less supported than the other two. Equal per capita emissions is the least preferred justice principle, significantly lower than all other treatment groups. These results lend some support to H3. The formulation of the justice principle does seem to matter for whether it is perceived as fair, but only to some degree. The results show support for H3.1, H3.2 and H3.3, but not to H3.4. The chapter also presented analyses exploring the possible effects of sample biases. These analyses showed that support for justice is significantly lower among those respondents who have not completed education at the university level, indicating that the support for justice could be somewhat overestimated in analyses on unweighted data. The exact percentages should be treated with some caution, but the conclusions with regards to the hypotheses still stand.

Chapter 5 presented the findings from the analyses of text data from the open question. The deductively developed categories triangulate the strong support for the PPP and APP principles found in the survey experiment, indicating that these principles are intuitively associated with fair allocation for many respondents. The inductively developed categories show a strong emphasis put on collective responsibility. Collective responsibility is the most frequent inductive category, where respondents express that it is important that all countries contribute. Some also emphasize that the efforts made in Norway alone will not have a big impact on the global total because we are such a small country. Many show willingness to contribute with help in other countries, but it is frequently emphasized that we depend on other countries contributing as well.

6.2 Discussion

As discussed previously in the thesis, there seems to exist a permissive consensus regarding Norway making big commitments in international climate policy. Even when respondents are presented with a way of explicitly stating that they do not want to prioritize justice, there is considerable willingness to prioritize fair allocation over the Norwegian economy. The level of support for prioritizing justice is high, also when accounting for potential biases in the sample, and distributions show that support for justice is relatively strong. Still, these findings do not necessarily imply that that politicians will commit Norway to more ambitious mitigation goals. Nor do they mean that politicians will be punished for *not* enacting such policies, or that citizens will rally actively for them to be put into place. The existence of a public consensus simply

means, as V. O. Key (1961) put it: "that if the indicated action is taken dissent will not be widespread".

What "the indicated action" would mean in practice, is in this case still unknown. We know from the survey experiment that citizens are willing to prioritize fair allocation when making commitments in international climate change agreements, and we know that assigning responsibility based on responsibility for causing the problem and economic capacity to solve the problem, it perceived as fair by many. Still, it bears noting that measures to achieve mitigation goals are taken at the national level, but the experiment investigated support for commitments at the international level. The experiment does not tell us anything about *how* and *where* citizens think the actual cuts should be made. This illustrates the importance of continuing to investigate citizens' opinions on specific climate policy measures. Even though there seems to exist a permissive consensus on taking our fair share of mitigation at a relatively abstract level, work is needed on identifying the specific policy measures under which this support remains.

Furthermore, the findings of the thesis underline the importance of continuing to collect high quality survey data on ordinary citizens' opinions on climate policy. In order for policy to be democratic it needs to be in line with citizens' preferences, and therefore we need scientific knowledge about what these preferences are. Yet, if the data from which we draw our conclusions are biased, some groups of the population may exert a disproportionately big impact on public policy. Awareness of data biases is important for the field of climate policy, but also for survey data on public policy preferences in general. The findings of this thesis revealed variations in the justice preferences of individuals with different education levels, and if these analyses had not been made the level of support for justice would have been overestimated due to sample biases. Thus, ensuring high quality and unbiased data, and taking the known biases into account when drawing conclusions, is important.

Overall, the thesis has showed that the willingness to prioritize fair allocation is large in the Norwegian population, but it is not unconditional. Rather than depending on the specific justice principle by which the responsibility for mitigation will be allocated, perceptions of fairness seem to depend almost just as much on whether or not all other countries contribute. This limits the mandate of Norwegian negotiators in international climate policy making, as an agreement that does not specify commitments for all countries may not be perceived as fair. This implies

that the decision to repeal the distinction between Annex 1 and non-Annex 1 countries in the Paris agreement seems to be line with Norwegians' conceptions of climate justice. Based on the findings from the open question, it seems that a common opinion is that *all* countries have to contribute with something, regardless of development level.

The central role of collective responsibility for Norwegians' conceptions of climate justice also implies that Norwegians' support for commitments in international climate policy to a large degree depend on what other countries are doing. This begs the question of what events such as the US withdrawing from the Paris agreement has to say for Norwegian citizens' perceptions of the agreement. Is it still perceived as fair that Norway contributes based on our responsibility and capacity, even though the US does not contribute? How much are we willing to pay, if others do not make the same effort? Support for making commitments in international climate change agreements seems to be conditional on efforts from other countries, but we do not know to how large degree. Here, more research is needed in order to find out how fragile or stable the support for climate justice actually is.

6.3 Conclusion

This thesis has found that Norwegian citizens are willing to prioritize justice over the Norwegian economy when Norway makes commitments in international climate change agreements. This conclusion is supported also when taking the potential effects of sampling biases into account. Both PPP, APP and grandfathering are perceived as fair, but the results from the survey experiment indicate that support for the APP principle is somewhat weaker than for the other two. Results indicate that the equal per capita principle is not perceived as fair.

The results from the analysis of data from the open question triangulate the strong support for the PPP and APP principles, and indicate that these are more intuitively associated with fair allocation than the grandfathering and equal per capita principles. Inductive findings from the text data indicate that the idea of a collective responsibility for mitigation is important for many Norwegians. The answers to the open question also show that many are willing to prioritize justice over the economy, but additionally it is emphasized that because Norway is a small country it is important that others contribute as well. This indicates that the exact formulation of the justice principle perhaps is not the most important determinant of support, but rather that

all countries make a contribution to mitigation, because mitigation is seen as a collective responsibility.

7.0 Literature

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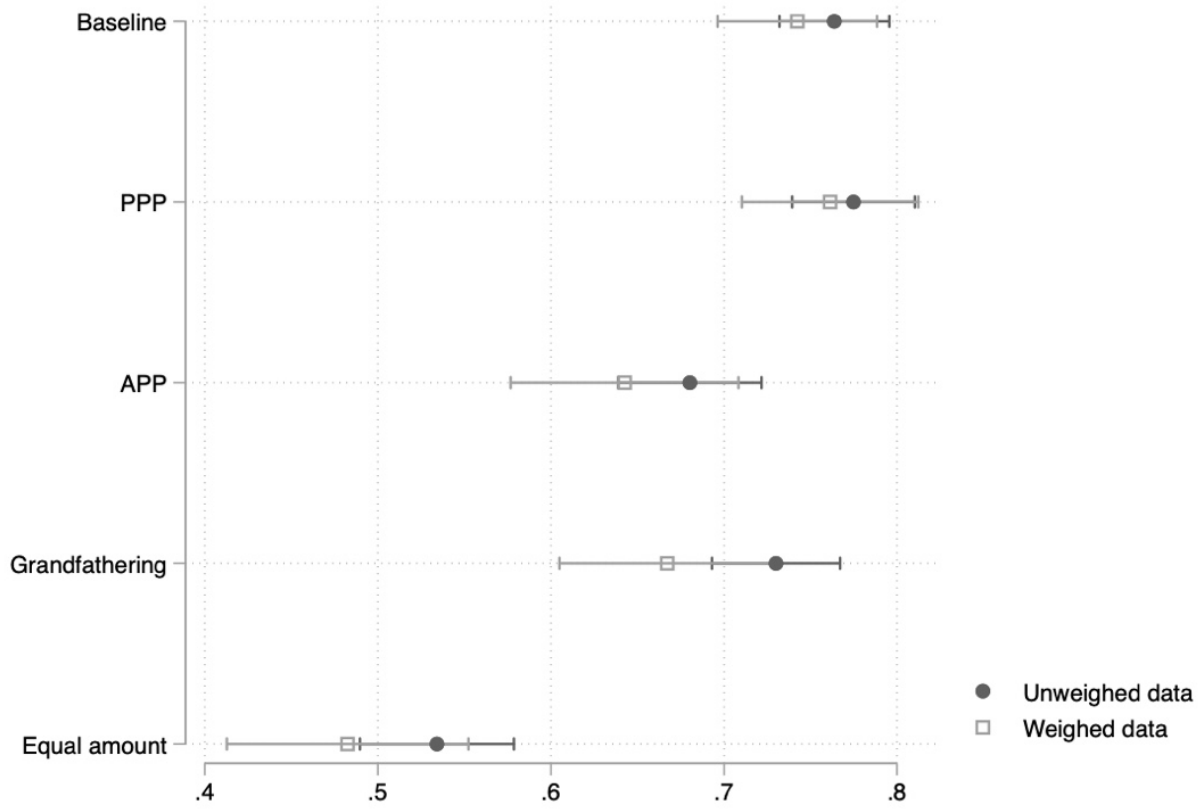
Appendix

A: Survey experiment and open question, Norwegian and English

	Norwegian	**English**
Pre-text	FN-landene har besluttet at vi skal prøve å begrense økningen i den globale gjennomsnittstemperaturen til under 2 grader. For å oppnå dette målet må vi kutte en gitt mengde av verdens samlede utslipp av klimagasser, men det er ikke avgjort hvor mye hvert enkelt land skal redusere sine utslipp. I internasjonale klimaforhandlinger prøver man å fordele ansvar, slik at landene samlet kutter så mye at vi oppnår målet om mindre enn to graders oppvarming.	The UN countries have decided that we will try to limit the increase in the global average temperature to below 2 degrees. In order to achieve this goal, we have to cut a certain amount of the global total of greenhouse gas emissions, but it has not yet been decided how much each country should reduce their emissions. International negotiations on climate change try to allocate responsibility, in order for the total of cuts made by all countries to be enough to achieve the goal of warming below 2 degrees.
Question	Nedenfor beskrives to motstridende posisjoner i spørsmålet om hvordan ansvaret for utslippskutt bør fordeles mellom land i internasjonale klimaavtaler. Hvilken av disse posisjonene er du mest enig i? A: Norge bør prioritere våre økonomiske interesser fremfor å forplikte oss til store utslippskutt B^1: Ansvaret for utslippskutt bør fordeles mest mulig rettferdig mellom landene, selv om det kan gi betydelige kostnader for Norge B^2: Landene som har sluppet ut mest klimagasser til nå bør kutte mest, selv om det kan gi betydelige kostnader for Norge B^3: De rike landene bør kutte mest, selv om det kan gi betydelige kostnader for Norge B^4: Alle land bør redusere sine utslipp med like stor prosentandel, selv om det kan gi betydelige kostnader for Norge B^5: Alle mennesker bør ha rett til å slippe ut like mye Co2 slik at størrelsen på et lands befolkning avgjør hvor mye klimagasser landet kan slippe ut, selv om det kan gi betydelige kostnader for Norge	The options below describe two opposing positions in the question of how the responsibility for emission cuts should be allocated between countries in international climate change agreements. Which of these positions do you agree the most with? A: Norway should prioritize our economic interests rather than committing to great emissions reductions B^1: The responsibility for emissions reductions should be distributed as fairly as possible, even though it may entail large costs for Norway B^2: The countries that have emitted the most greenhouse gases until now should cut the most, even though it may entail large costs for Norway B^3: The rich countries should cut the most, even though it may entail large costs for Norway B^4: All countries should reduce their emissions with the same percentage, even though it may entail large costs for Norway B^5: All humans should have a right to emit an equal amount of CO2, so that the size of a country's population determines how much greenhouse gases the country can emit, even though it may entail large costs for Norway
Response options	Svært mye mer enig i A – Mye mer enig i A – Moe mer enig i A – Moe mer enig i B – Mye mer enig i B – Svært mye mer enig i B – Verken A eller B	Agree a lot more with A – Agree more with A – Agree somewhat more with A – Agree somewhat more with B – Agree more with B – Agree a lot more with B
Open question	Vi vil gjerne be deg om å utdype din mening om hvordan ansvaret for utslippskutt bør fordeles mellom land. Vi ønsker alle typer svar, gjerne et par setninger, eller bare noen få ord om det passer bedre for deg.	We would like to ask you to elaborate on your opinion on how the responsibility for emission cuts should be allocated between countries. We want all types of answers; a couple of sentences would be good, or just a few words if that is better for you.

B: Comparison of weighted and unweighted data, support for justice



Source: Norwegian Citizen Panel (2018), Wave 13, r13km_moral
Agree a lot more with B, agree more with B, agree somewhat more with B = 1. Agree a lot more with A, agree more with A, agree somewhat more with A, neither A nor B = 0.

C: Coding protocol and frequencies

	Category	Instruction	Frequency (N=2777)
Deductive	PPP	Those who emit the most/pollute the most should cut/pay/take responsibility	20%
	APP	The richest/wealthiest/the industrialized countries/the countries with the most resources should cut/pay/take responsibility	22%
	Grandfathering	An equal percentage	2%
	Equal per capita	Everyone should be allowed to emit the same amount/an emissions quota per person	2%
	Time slice versus historical interpretations	Those who emit the most *today* versus those who have emitted the most during history	1%
	Basic versus luxury emissions	Everyone should have a guaranteed minimum/emissions cuts should not lower standard of living/those who struggle to keep their population fed should not have to cut	1%
Inductive	Collective responsibility	Uses the term all countries, each country or everyone. Meaning: Every country should contribute.	16%
	Limited impact	Emphasizes that Norway is a small country, and therefore our contribution will have limited impact	5%
	Charity	Emphasizes that wealthy countries should help/support/aid/guide/contribute to emissions reductions in poorer countries with money/technology	8%
	Example	Emphasizes that some countries have a moral duty to be a good example/take the driver's seat/be a driving force/be a leader in climate policy/emissions reduction	3%
	China	Mentions China/Asia/ the East	3%
	USA	Mentions the US, Trump	2%
	Size	Mentions big/large countries/the countries with the biggest size as a factor that should be taken into account in distribution	3%
	Consumption	Mentions the word consumption	3%
	Quota	Mentions the word quota or terms such as to «buy out», «pay others» for emissions reductions	3%
	Oil	Mentions wealth from oil/fossil fuels as a factor that should be taken into account in distribution	3%
	Denial	Disagree with the premise of the question: Either do not believe in climate change, do not believe that we need to reduce emissions, do not believe in international agreements, that this is a question that only experts should answer	2%