Title of the Thesis: The Ethics of Climate Change Mitigating Intensification

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Table of Contents

Abbreviations

CC: Climate Change
CCMI: Climate Change Mitigating Intensification
GHG: Greenhouse Gas
MC: Mitigation Cost

Introduction

In a 2006 newspaper article, after considering how poorly farm animals are treated in factory farms, and how factory farming of animals has serious environmental consequences, philosopher Peter Singer declared that "there is a growing consensus that factory farming of animals is morally wrong." (Singer 2006, first paragraph) Looking at how hundreds of environmental organisations united in the Living Land campaign have all agreed to lobby against intensification (a different term for factory farming) [1] might point to the fact that Singer is right: the consensus about the moral wrongness of intensification has been reached.

My aim in this thesis is to offer a less straightforward view on the ethics of intensification of animal farming. I will do so by dealing with the ethical assessment of a specific type of intensification, that is, forms of intensification of animal farming that yield climate change mitigation benefits. This is what I dub climate change mitigating intensification (CCMI), of which I will give examples in chapter 1. The ethics of CCMI is the focus of this thesis.

Starting from the premise that intensification is morally wrong, and that mitigating climate change is morally good, I look at CCMI as a problematic ethical issue insofar as there are good reasons to both carry it out and not carry it out. In this sense, CCMI makes the discussion about intensification of animal farming less straightforward than what Singer and others claim. This ethical difficulty of CCMI warrants this thesis, which is an attempt to thoroughly investigate all the different moral reasons that justify or reject CCMI from an ethical perspective.

What I should mention from the very beginning is that, even though the moral reasons for CCMI are thoroughly investigated in this thesis, I nonetheless here do not offer a clear-cut answer to the question of whether CCMI is morally right or wrong. In this sense, there is no overall claim of the thesis in respect to the ethical justification of CCMI. As the reader will find out in what follows, no reason for CCMI conclusively justifies or rejects CCMI, hence the final answer on the ethics of CCMI must remain open. What really motivates me in writing this thesis is the belief that more clarity can be provided in the ethical assessment of CCMI, and this is what I hope I will have achieved here.

The thesis is divided in four chapters. The first lays the groundwork for the arguments that follow by clarifying the key concepts I will use in those arguments. This chapter also introduces the list of moral reasons for CCMI I will look into in the following

chapters, as well as making clear my empirical and theoretical assumptions in respect to CCMI and related issues.

The second chapter deals with the first reason in the map of moral reasons for CCMI, which I call a reason of fairness. There, CCMI will be looked at from the perspective of climate ethics, i.e., the issue of how to fairly distribute the costs of acting on climate change. In this regard, the overall claim of the chapter will be that CCMI is unfair.

The third chapter looks at CCMI from a consequentialist perspective, clarifying that the typical consequentialist cost/benefit analysis in respect to CCMI does play a role in the ethical assessment of CCMI. In this regard, the overall claim of the chapter is that the consequentialist reason does justify CCMI, yet only to a small degree.

The fourth and final chapter deals with the question of whether farm animals are morally relevant things, which I will phrase as whether farm animals have moral status. This question will turn out to be a relevant moral reason in the assessment of CCMI, since many of the arguments in chapters 2 and 3 will rest on the assumption that farm animals are indeed morally relevant, and they are as much as human beings. In this regard, chapter 4 will defend the moral relevance of farm animals, even though the overall claim of the chapter will be that farm animals are not as morally relevant as human beings. In this sense, this lack of moral status of theirs does play a role of ethically justifying CCMI.

Finally, the conclusion will summarise the main points of this thesis, as well as briefly sketch why the ethical issue of CCMI could be seen as a further argument to reduce the consumption of animal products in our lives.

Chapter 1: Groundwork

In this chapter I lay the necessary groundwork for the central arguments of this thesis. More precisely, I provide definitions of the crucial concepts I use throughout the thesis, as well as highlighting the empirical and conceptual assumptions I make in the following chapters.

The first section of this chapter deals with the definition of climate change, greenhouse gas emissions (GHG emissions), and mitigation costs (MCs). Moreover, the section touches upon the general ethical issue linked to climate change. This section also explains some empirical assumptions about climate change that are the starting point of the thesis.

The second section deals with intensification of animal farming, providing a definition of it that elucidates which farming practices fall within intensification. In addition, this section clarifies that some practices of animal farming intensification are beneficial in

mitigating climate change—these being the core of the discussion of the thesis as mentioned in the introduction. Climate change mitigating intensification (CCMI) is explained through a series of abstract examples of mitigating intensification practices, as well as through reference to empirical findings from the agricultural studies literature.

The third section deals with the definitions of moral status and moral agency, as well as with the question of whether the two concepts are dependent on one another. Moral status and moral agency are necessary concepts in most of the arguments that follow in the next chapters, hence a clarification of them beforehand is necessary. Moreover, the section makes clear where in the thesis I assume these concepts to apply to farm animals and to what extent they apply.

The fourth section provides with clarification of the conception of ethical justification I use in the thesis, which I take to mean all-things-considered moral rightness of a certain action. The section also provides with the map of reasons that should be taken into consideration in deliberating whether climate change mitigating intensification of animal farms is all-things-considered morally right. These are a reason of fairness, a consequentialist reason and a lack of moral status reason. Each of these reasons will correspond to one of the core chapters of the thesis (chapter 2, 3, and 4).

Section 1.1: Climate Change, Related Concepts, and the Ethical Issues Around Them

When I refer to climate change in this thesis I refer to human-induced changes to the global climate through the emissions of greenhouse gases (GHGs), which are by-products of a number of human activities. For example, combustion of fossil fuels such as coal in power plants or petrol in car engines release CO_2—a GHG—in the atmosphere.

A gas such as CO_2 is a GHG, as it and other GHGs act as a "heat trap" in the atmosphere, preventing heat from the earth to be released in space, just like a greenhouse prevents heat from the ground to be released outside. A certain natural amount of GHGs is present in the atmosphere regardless of human activities that release GHGs. However, an increase in these activities in the last two centuries has overstepped the capacity of the atmosphere to absorb GHGs, hence their amount is increasing as so is the "heat trap", which now retains more heat that it would without human activities. [2]

What this means for the global climate is a steady increase of temperatures, with a series of collateral effects such as higher occurrence of extreme weather events, sea-level rise, and loss of biodiversity among others. This climate change, and especially the pace at

which it is happening has serious implications for human beings too. For example, the leading experts on climate change assembled in the Intergovernmental Panel for Climate Change (IPCC) put the issue in their synthesis report as follows:

> Climate change is projected to undermine food security and reduce renewable surface water and groundwater. [...] It will impact human health mainly by exacerbating health problems that already exist. Throughout the 21st century, climate change is expected to lead to increases in ill-health in many regions and especially in developing countries with low income. [...] In urban areas climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges. […] Climate change is projected to increase displacement of people. Populations that lack the resources for planned migration experience higher exposure to extreme weather events, particularly in developing countries with low income. Climate change can indirectly increase risks of violent conflicts by amplifying well-documented drivers of these conflicts such as poverty and economic shocks. (IPCC 2014. p. 13-16)

Given this disastrous picture threatening the existence of both present and future people, [3] philosophers have argued that climate change is best seen as an ethical issue, and not merely as technical problem related to the environment. For example, Stephen Gardiner maintains that "climate change is fundamentally an ethical issue, [and] supposing that acting on it is morally required, the core ethical issue here concerns how to allocate the costs of [doing so]." (Gardiner et al. 2010, p. 3 and p. 14)

Given the empirical evidence from IPCC on the catastrophic scenario brought about by climate change I mention above, there seems to be a *prima facie* reason to claim that acting on climate change is an ethical obligation. From a consequentialist point of view, minimising the empirically-confirmed bad consequences of climate change cannot be but what we should do, and from a Kantian perspective, we owe respect to our fellow human beings whose very existence is threatened by climate change.

However, there are arguments showing that we don't have such obligation to act on climate change. These arguments usually rest on empirical scenarios in which human mitigating action is ineffective insofar as it doesn't prevent harm from climate change. [4] Rebutting these arguments is beyond the scope of this thesis, and I am willing to take a

precautionary approach and assume that we do have an ethical obligation to act on climate change, even if it might be empirically true that such action is pointless. Hence, as Gardiner mentions in the quote above, once we have an obligation to act on climate change, the core of the ethical issue is how to allocate costs of such action, i.e., how to allocate mitigation costs (MCs). [5]

To clarify the concept of mitigation cost (henceforth MC), I here refer to MCs as burdens to certain recipients (for example, people, countries, firms) that help slowing down climate change by directly or indirectly reducing GHGs emissions. For example, the burden of a person having the discomfort of commuting by public transport instead of private car is a MC, as public transport emits less GHGs than using a private car given the same output (the commute of the person); or the cost of a carbon-tax, where people are burdened with this tax in order to reduce overall GHGs emissions is a MC; or a strict quota of CO_2 emissions a certain country or firm has to cope with is a MC, as given our current dependency on CO_2-producing activities, complying with a quota of CO_2 will burden that country or firm; or the burdening physical effort of re-wilding a piece of land with forests by some volunteers is a MC, as forests function as CO_2-sinks. These are but some examples of MCs, yet they should be sufficient to see what I take MCs to be.

At this point, one might ask what a burden is. By burden I here refer to what causes worry, or hardship, or distress. [6] The discomfort of public transport, an extra tax to pay, the complications from complying with a CO_2 emission quota, the physical effort of planting trees, etc., all these things are burdens insofar as a burden is what causes worry, or hardship, or distress. It follows that if a thing can be caused to have a worry, or hardship, or distress, that thing can have a burden, or in other words, it can be a recipient of burdens. And if that recipient of burdens is also a recipient of burdens that help slowing down climate change by directly or indirectly reducing GHGs emissions, that thing is a recipient of MCs. The concept of a recipient of MCs is important as I will later claim that farm animals can be recipients of MCs.

In this section I have provided with the definitions of climate change, greenhouse gas emissions (GHGs), and mitigation cost (MC), which are concepts I will use throughout the rest of this thesis. Moreover, I have highlighted some empirical assumptions I make in order to clarify the claim that we have an ethical obligation to act on climate change, as well as explaining which kind of ethical obligation it is, i.e., an ethical issue of fair distribution of MCs.

Section 1.2: Climate Change Mitigating Intensification (CCMI)

As mentioned in the introduction, this thesis deals with the ethical reasons that should be taken into consideration in the discussion of intensive animal farms, and in particular to those forms of intensification of animal farms that are beneficial in mitigating climate change. In this section, I provide with a definition of intensive animal farming, as well as giving examples of it. Moreover, I will narrow down this definition to focus on examples (both abstract and taken from agricultural studies literature) of intensification that are beneficial in mitigating climate change.

To begin with intensive animal farming in general, Rossi and Garner (2014) provide with the following definition:

> [Intensive animal farming] is characterized by corporate ownership and/or control; economic consolidation and vertical integration; the extreme confinement of large numbers of animals; the use of ''technological sanders'' such as growth-promoting antibiotics; the use and long-distance transport of remotely-grown concentrated feedstuffs, instead of forage-or pasture-based feeding; and tight control over the breeding, feeding and living conditions of animals so as to achieve the greatest production at the lowest cost and in the shortest amount of time. (p. 480)

Now, it is clear that not all these characteristics of intensification are beneficial in mitigating climate change, yet some of them are. Before mentioning some empirical findings that show so, I will propose two abstract examples of animal farming practices that fall within the umbrella definition of intensification and are also beneficial in mitigating climate change.

The first example is the use of feedlots in intensive cattle farming as opposed to pasture farming. Feedlots are special confinement areas, either indoor or outdoor, with high animal stocking density (the number of animals in a given area)." (ibid., p. 482) When cows are fed in feedlots, they reach their ideal slaughter weight more rapidly than when they are let free to graze in pastures, since their feeding rate can be controlled and enhanced. Feedlots are relevant for climate change mitigation for two reasons: through their better efficiency, they reduce the energy necessary to produce a certain amount of meat, hence they reduce GHG emissions from energy production. Moreover, they avoid the destruction of carbon sinks (i.e., forests that trap CO_2 from the atmosphere) for the sake of creating pasture lands that would have to be used instead. [7]

The second example is the use of transport trailers for the movement of alive sows. Similar to feeding technique in cattle farming, the use of trailers can be made more efficient by intensifying the number of animals per floor space in the road trailer. Assuming a 12-meter-long trailer physically allows transportation of maximum 50 sows, one can decide whether to "stuff" the trailer with its maximum capacity in order to need only 4 trailers to transport 200 sows. At the same time, one can decide to "stuff" the trailer with only 10 sows, which would then require 16 extra trailers to transport the same 200 sows. Fewer trailers on the road implies less GHG emissions from their engine, which is a climate change mitigation benefit.

As to empirical findings from agricultural studies, after comparative analysis of different animal production systems, Swain et al. (2018) conclude that "intensive livestock systems can reduce the land use and GHG emissions of meat production." (p. 1209) Similarly, Nijdam et al. (2012) report that intensive beef production has a carbon footprint of average 30 kg CO_2-equivalent per kg of meat against average 70 kg CO_2-equivalent per kg of meat from extensive beef production. In the case study of pig production in East and South-East Asia, Gerber et al. (2013) point to the benefit of more industrialised (read, intensive) farms:

> Intermediate systems have a higher emission intensity compared with industrial systems. This is due to lower animal and herd performance. In particular, late age at first farrowing (1.25 year in the region) and weaning age (40 days) result in a greater breeding overhead, which contributes to emissions but not to production. High mortality rates result in further "unproductive emissions". A lower feed quality results in lower daily weight gain (0.66 kg/day) leading to longer production cycles, thus increasing the relative part of energy (therefore emissions) dedicated to animal maintenance compared with production. (p. 63)

The examples above and the empirical literature just mentioned are not meant to be exhaustive, yet they should be sufficient to show that some forms of intensification are indeed beneficial in mitigating climate change. As I mention in the introduction, this thesis deals with the ethics of these forms of intensification of animal farming, which for short I dub climate change mitigating intensification (henceforth CCMI).

Section 1.3: Moral Status and Moral Agency

This section provides with the definitions of moral status and moral agency I will use throughout the thesis, as well as clarifying the connection between the two concepts. Moreover, in this section I will specify what I assume and defend in regards to moral status and farm animals in different parts of the thesis, offering a guide to understand the background premises of my arguments in those parts. Finally, I also show why farm animals are not moral agents.

Starting with the definition of moral status, throughout this thesis I take a simple definition of it from Mary Ann Warren, who maintains that to have moral status is for an entity "to be an entity towards which moral agents have, or can have, moral obligations". (Warren 1997, p. 3) For example, a child has moral status because people have moral obligations to a child.

In addition, there are two types of moral status: intrinsic and derivative. Intrinsic moral status is the moral status that a being has in its (his/her) own right. For example, a child has intrinsic moral status as people have a moral obligation to her in her own right. On the contrary, derivative moral status is the moral status that a being has in virtue of being cared about. For example, a child's favourite toy has derivative moral status as we have a moral obligation to that toy only in virtue of the child caring about that toy. In this thesis I only look at intrinsic moral status, and henceforth moral status refers to intrinsic moral status.

In chapter 2 and 3 of the thesis, which respectively deal with the question of fairness of CCMI and the consequentialist reason for CCMI, I assume that farm animals have moral status. Hence, according to Warren's definition of moral status above, they are subject to moral obligations. Moreover, in those two chapters I also assume that farm animals have the same moral status as human beings, hence we have the same degree of obligations to farm animals than we have to human beings. For example, if we have an obligation to a person not to reduce her welfare by a certain amount X, all else being equal, we have the same obligation to a farm animal.

This assumption is highly controversial, and requires extensive clarification and perhaps a partial rejection of it, for example by advancing a more defensible and weaker claim such as that farm animals have moral status and are subject of moral obligation to a smaller degree than human beings. I will deal with these issues in chapter 4, where I discuss the lack of moral status reason for CCMI.

As to the concept of moral agency, a deep analysis of what constitutes it would be impossible in the space of this thesis. Nonetheless, certain characteristics of moral agency are taken to be paradigmatic. For example, Lori Gruen puts them as follows:

Moral agents not only have interests in living lives that are good for them by their own lights, full of enriching experiences, pleasurable activities, and satisfying projects, but they also have ethical obligations that arise, in part, because they have the capacity to reason about their actions and alter their behaviours accordingly. Moral agents can form intentions about their actions; are causally responsible for actions and can be blamed or praised for them; they are able to make judgments about rightness and wrongness, both of their own conduct and of the conduct of other agents; and can construct and follow norms or moral principles. (Gruen 2011, p. 61)

In other words, a thing is a moral agent if it has the capacity to reason about its actions, and the capacity to make judgments about them. As a consequence, a moral agent has obligations, and can be the subject of praise and blame.

Throughout the thesis, I maintain that farm animals are not moral agents, as they lack the necessary capacities as the ones indicated by Gruen in the passage above. Farm animals don't have the capacity to reason about their actions, nor do they have the capacity to make judgments. In this regard, they are not subject of praise and blame, and they don't have moral obligations and duties. In short, they are not moral agents as per the definition of moral agency above.

At this point, it should be noted that things that are not moral agents can still have moral status. In other words, a thing can be the subject of an obligation (i.e., it can have moral status) without itself being a moral agent (i.e., without having itself obligations towards something else). In other words, lack of moral agency is compatible with having moral status.

This claim is considered controversial by some philosophers. For example, Jeff Sebo puts the issue as follows: "you have full set of moral rights, including the right to life, if and only if you are a [moral] agent." (Sebo 2017, p.1) I believe this proposition is false, as there are examples of things that have moral rights (i.e., they are subject of moral obligations) in view of their moral status, without themselves being moral agents.

To see this, imagine a 2-year-old child who is playing with a loaded gun. By accident, the gun goes off and kills the child's friend who was standing next to her. The

child who killed her friend has of course moral status (and moral rights), while it has no moral agency, as we would not blame and punish the killing child, for example by imprisoning her.

This is best seen through a comparison with adults in the same situation. Imagine a healthy 40-year-old man who is playing with a loaded gun. By accident, the gun goes off and kills a child who was standing next to the man. I believe we would be ready to fully ascribe moral agency to the 40-year-old man, who would likely be blamed for the death of the child, and perhaps even imprisoned. At the same time, the 40-year-old-man would still have moral rights and moral status. This difference between the killing adult and the killing child, who both have moral rights and status, while one has moral agency and the other not, seems to falsify Sebo's proposition about the necessary link between the two concepts.

Besides giving this reason to believe that there is no necessary connection between moral status and moral agency, this example also shows that the conditions for moral agency listed above by Gruen all apply to the 40-year-old man (he is capable of giving reasons for his actions, and he's able to make judgments about it) and make him a moral agent who has obligations.

When it comes to farm animals, throughout the thesis I maintain that, like the killing child of the example above, they have moral status while lacking moral agency. This will turn out to be especially important for the arguments in chapter 2, which deal with the fairness of burdening farm animals with MCs.

In this section I have provided with the definitions of moral status and moral agency I use in the thesis, as well as argued for how the two concepts are independent from each other. I have indicated how farm animals are examples of entities that are not moral agents, while they might still have moral status. Moreover, I have made clear that the arguments that follow in chapter 2 and 3 assume that farm animals have indeed moral status, and the same moral status as human beings. Especially the latter claim is a highly controversial claim, hence in chapter 4 I extensively discuss it, clarify it, and defend it to some extent.

Section 1.4: Ethical Justification

In this section I clarify which conception of ethical justification I use throughout the thesis, as well as provide with a map of relevant moral reasons that should be taken into consideration in the ethical evaluation of CCMI.

First, I assume that ethical justification is synonym of all-things-considered moral rightness, hence if action X is ethically justified, X is all-things-considered morally right. Second, following Brad Hooker, an action X is ethically justified (or all-things-considered morally right) when its ethical evaluation "depends on all applicable moral reasons". (Hooker 2005, p. 350)

Hooker also proposes a general map of reasons to be considered in any ethical evaluation of a certain action. To paraphrase his claims, these are reasons of fairness, which depend on whether an action clashes with obligations we owe to people; reasons of net benefit or consequentialist reasons, which depend on whether the outcome of an action brings about most net good for people; and side-constraints, which are reasons that defeat all the other reasons in the ethical evaluation. (ibid. section 3) The first two reasons and how they play out in connection with CCMI will be discussed at length in chapter 2 and 3 of the thesis respectively.

As to the third reason, in this thesis I assume that side-constraints don't exist, and there is no such a thing as a reason that defeats any other reason in the ethical evaluation of an action. An example might clarify. Take the typical instance of a side-constraint, e.g. "torture is always forbidden" (also mentioned by Hooker (ibid, p. 334)). My assumption in this thesis is that propositions like this are false, as a certain action is never always forbidden. For example, torture might not be forbidden in the case in which torturing a person would save millions of lives.

Hence, I assume that the above map of reasons is limited to the first two reasons (fairness and consequentialist), and that side-constrains are subsumed under the category of reasons of fairness, which depend on obligations we have to people. For example, we might have an obligation not to torture a person that might nonetheless be defeated if the second reason (consequentialist) overrides it by weighing more in the ethical evaluation— for example if we weight more the fact that torturing a person would bring about most net good to people. As mentioned two paragraphs above, the rest of the thesis will deal with a clarification of these two reasons and how they are relevant in the ethical evaluation of CCMI.

Now, it is important to point out that Hooker's map only applies to actions involving human beings, which are the paradigmatic bearers of moral status. Yet, many actions also involve other entities that might also have moral status. Since I am for the moment assuming that farm animals have full moral status (see section 2 in this chapter), and CCMI does involve farm animals, CCMI is one of these actions that involve entities with moral

status that are not human beings. In this regard, the map of reasons proposed so far might not be sufficient to ethically discuss CCMI in all the relevant ways.

This is because, as I mention above, the claim that farm animals have moral status, and that they have full moral status like human beings, are controversial assumptions. If they don't, we should not take them into consideration in the ethical evaluation of CCMI, and we should do so if they do have moral status. In this regard, moral status of farm animals is a third relevant reason in the map of reasons that play a role in the ethical evaluation of CCMI, and chapter 4 of this thesis clarifies this reason at length.

To sum up, this section started with a definition of ethical justification of an action as all-things-considered moral rightness of an action, and continued by highlighting the map of reasons to be considered in assessing whether the action of CCMI is ethically justified. These are a reason of fairness (discussed in chapter 2), a consequentialist reason (discussed in chapter 3), and a lack of moral status reason (discussed in chapter 4).

Chapter 2: CCMI and Fairness

In this chapter, I deal with fairness as the first reason that weighs in the ethical evaluation of CCMI as introduced in the previous chapter. In this regard, the chapter asks the question of whether CCMI is fair, but also provides arguments to justify a negative answer to this question. In other words, in this chapter I defend the overall claim that CCMI is unfair.

In the first section, I will elucidate which conception of fairness I use, and I will link this conception of fairness to the discussion of fairness in the context of climate change mitigation. In the second section, I will defend the claim that CCMI is best seen as a mitigation cost (MC), and therefore it falls within the ethical issue around climate change, which consists in pinning down how to fairly distribute MCs, as per Gardiner et al. (2010, p.3 and p. 14) that I mention in the previous chapter. In the third section I defend the claim that CCMI is unfair by assessing it against different principles of fair distribution of MCs, showing that regardless of which of these principles is applied to fairly distribute MCs, none of them makes it fair to distribute any MC to farm animals, and insofar as CCMI is a subset of MCs, no principle makes CCMI fair.

Before turning to the next section, it is important to recall that throughout this chapter I assume that farm animals have the same moral status as human beings, which is a crucial assumption for most of the arguments that follow. This controversial claim will be further analysed in chapter 4.

Section 2.1: Which Conception of Fairness and Fair Distribution of MCs

In this section I explain which conception of fairness I use throughout the thesis and its connection to fair distribution of MCs. The conception of fairness I use is directly indebted to the work of John Broome from his paper *Fairness*. (Broome 1990) For him, the first thing to note about fairness and distribution is that "fairness is only concerned with claims" (ibid. p. 94)

But what are claims? For Broome, in the distribution of a certain good, one of the reasons why a certain candidate should get the good is that the candidate has a claim to it. In this regards, for Broome, claims are "duties owed to the candidate herself" (ibid. p. 92) in respect to that good. At this point, an example might clarify. Let's take a life-saving pill and two terminally ill recipients that could get the pill and survive from it. Both recipients have an equal claim to the pill insofar as we have an equal duty towards them, such as the duty or obligation to equally care for their lives. In this case, Broomean fairness would require that both candidates get the pill. [8]

How does this view about fairness apply to the fair distribution of MCs? The first thing to note is that MCs are negative goods, or evils, or burdens (see section 1.1) rather than a good like the life-saving pill in the example above. In this sense, a fairness claim in respect to MCs is a claim *not* to be burdened with MCs, like the fairness claim of the recipient of the pill is a claim to be given the pill. In this regard, I assume one can talk about fair distribution of a good and an evil in equal terms. For example, there is such a thing as a fair distribution of a pleasant cake among possible recipients of that cake, just like there is such a thing as a fair distribution of a bottle of poison among possible recipients of that bottle of poison.

Second, starting from the position that the ethical issue of climate change is an issue of fair distribution of MCs (see section 1.1), this idea expressed in Broomean terms would be that the total amount of MCs should be distributed fairly to possible recipients of MCs such as persons, where fairly here means according to how strong their claims not to be burdened with MCs are.

Now, what constitutes the general claim of a person not to be burdened with MCs? As seen above, a fairness claim is an obligation towards the possible recipient of the good or evil. In the case of MCs, the obligation might be that no person should be burdened, or an obligation we have towards a person to treat her with respect so that she doesn't suffer from burdens, or an obligation we have to maintain the wellbeing of persons above a certain threshold, which might be surpassed because of burdens. In this sense, all the

entities that are subject of this obligation not to be burdened are addressees of fairness claims in respect to burdens such as MCs.

Now, the addressees of fairness claims not to be burdened with MCs I have discussed so far are only persons. But can farm animals be included in this category? I claim that they can, and propose an argument in multiple steps to show why. First, I defend the very general claim that farm animals can have fairness claims:

(1) If we have a duty towards X, X has fairness claims;

(2) If X has moral status, we have a duty towards X;

(3) Farm animals have moral status;

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(C) Farm animals have fairness claims.

Premise (1) is but Broome's definition of fairness claims as seen above. Premise (2) is Warren's definition of moral status I take from her (1997) and I explain in section 1.3. Premise (3) is my overall assumption in this chapter, with which I deal in depth only in chapter 4.

Secondly, this argument could be instantiated with a particular duty, i.e., the duty not to burden, which is necessary to have a general fairness claim not to be burdened:

(1) If we have a duty not to burden X, X has fairness claims not to be burdened;

(2) If X has moral status, we have a duty not to burden X;

(3) Farm animals have moral status;

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(C) Farm animals have fairness claims not to be burdened.

Premise (1) is again Broome's definition of fairness claims as duties, and it is simply instantiated with the duty not to burden. Premise (2) is an extended version of Warren's definition of moral status taken from this passage: "if an entity has moral status, then we may not treat it in just any way we please; we are morally obliged to give weight in our deliberations to its needs, interests, or well-being." (Warren 1997, p. 3) Looking at my definition of burden as distress, hardship, worry (section 1.1), this is compatible with Warren's phrasing in terms of preservation of needs, interests or well-being, hence premise (2) is a justified extension of her definition of moral status. Premise (3) is again what I assume in this chapter and defend in chapter 4.

Lastly, the conclusion that farm animals have fairness claims not to be burdened implies that they have fairness claims not to be burdened with MCs only if there are some MCs that are burdens for farm animals. In other words:

(1) Farm animals have fairness claims not to be burdened;

(2) Some MCs are burdens to farm animals;

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(C) Farm animals have fairness claims not to burdened with some MCs.

Premise (1) is the conclusion of the previous argument and for the moment, I assume premise (2) is true, since I will only defend it in the next section in which I show that some mitigating actions do burden farm animals, and CCMI is the quintessential example of these actions. Hence, the preliminary conclusion is that farm animals have fairness claims not to be burdened with some MCs, or in other words, farm animals are addressees of fairness claims not to be burdened with MCs. Whether these claims are stronger than those of other addresses in the general distribution of MCs will be discussed through the following analysis of the various principles of fair distribution of MCs.

Summing up this section, I have provided with a clarification of the conception of fairness I use throughout the thesis, which I take from the work of John Broome. This is a conception of fairness based on positive claims of recipients to a certain good or negative claims of recipients to a certain evil. Moreover, fairness claims are for Broome synonymous of duties that we have to those recipients in respect to a good or an evil, as for example the duty we have to preserve the life of people which makes them have a positive claim to life-saving goods or a negative claim to life-threatening evils.

Moreover, in this section I have elucidated how this conception of fair distribution ties to the discussion of climate ethics, shaped as the discussion of fair distribution of MCs among recipients. In addition, I have provided arguments to show that farm animals also have fairness claims not to be burdened, while I have left open the question of whether MCs are burdens to farm animals and therefore farm animals have a fairness claim not to be burdened with MCs, to which I now turn.

Section 2.2: MCs as Burdens to Farm Animals and CCMI

In this section, I defend premise (2) of the last argument in the previous section, i.e., some MCs are burdens to farm animals. This is best seen by using the very topic of this thesis,

that is CCMI. As seen in section 1.2, CCMI is beneficial in mitigating climate change, yet in this section I show that it is also a burden to farm animals. To see this, I will first take the examples of CCMI I give in section 1.2 and analyse them again from the perspective of their being burdens to farm animals.

The first example was the use of feedlots in cattle farming, which as I explain in section 1.2 is beneficial in mitigating climate change. At the same time feedlots fare badly when it comes to animal welfare. The European Food Safety Authority Panel on Animal Health and Welfare puts it this way:

> Major welfare problems in cattle kept for beef production [in intensive/feedlot farms] were respiratory diseases linked to overstocking, inadequate ventilation, mixing of animals and failure of early diagnosis and treatment, digestive disorders linked to intensive concentrate feeding, lack of physically effective fibre in the diet, and behavioural disorders linked to inadequate floor space, and co-mingling in the feedlot. (EFSA Panel on Animal Health and Welfare (AHAW) 2012, p. 2669)

In sum, the use of feedlots in intensive cattle farming is both a burden for animals and a burden that helps slowing down climate change by directly or indirectly reducing GHGs emissions. In this regard, the use of feedlots is a MC that burdens farm animals, hence farm animals have a fairness claim not to be burdened with this MC as per the argument of the previous section.

The second example was intensive road transport of sows. Fewer trailers on the road implies less CO_2 emissions from their engine (a climate change mitigation benefit) as seen in section 1.2, while the welfare of sows that are overstuffed in trailers will be reduced, as they would experience behavioural distress from lack of space during transportation. In this regard, a European Community report on animal welfare during transportation compiled by the Scientific Committee on Animal Health and Animal Welfare maintains that:

> The provision of adequate space allowances during pig transport involves giving pigs sufficient space to carry out necessary functions, such as resting, drinking and feeding. […] Pigs have some degree of leg disorder which results in much greater difficulty in standing during vehicle movement in this species than in other ungulates. Old sows and heavy animals have the greatest problems in this respect, if the vehicle is driven well all pigs will lie down during transport given sufficient space. (EC Scientific Committee on Animal Health and Animal Welfare 2002, p. 42)

These are but two examples of CCMI that are also burdens to farm animals, yet Rossi and Garner spend an entire section of their paper on intensification giving empirical data to support the view that all intensive animal farming scores badly when it comes to burdening farm animals, which they also express in terms of reduction of animal welfare. (Rossi and Garner 2014, p. 492-494). I am here willing to assume this view, and insofar as CCMI is a subset of all intensive animal farming, CCMI is a burden to farm animals.

Coming back to the last argument in the previous section, repeating it with the last conclusion about CCMI (premise 2):

(1) Farm animals have fairness claims not to be burdened;

(2) CCMI is a burden to farm animals;

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(C) Farm animals have fairness claims not to burdened with CCMI.

Now, it is important to note that the conclusion of this argument doesn't imply that CCMI is unfair, as having a fairness claim is only the premise of being considered as the possible recipient of a fair distribution. In this sense, Broome's theory as I have explained it so far only elucidates what fairness consists of, but not how a good or burden should be fairly distributed.

An example might clarify. Imagine there is an estate of 10 dollars and two possible recipients who have a fairness claim to that estate of 12 and 13 dollars respectively. So far, Broome's theory only says that fairness consists in considering these claims as the reason why the recipients should get a certain portion of the estate, and these claims are duties we owe (or the estate owner owes) to the recipients in respect to the estate. A person who has no claim to that estate (in virtue of not being the subject of obligation in respect to that estate) is simply not included in the set of recipients of that estate. It is easy to see that this conception of fairness doesn't say anything about how much of that 10 dollars' estate each recipient should get.

In the case of climate ethics and the fair distribution of MCs, so far I have argued that farm animals, just like persons, should be included in the set of possible recipients of that negative estate, as they have fairness claims not to be burdened with it, just like persons have fairness claims not to be burdened with it. This is because, as I mentioned in chapter 1, I am assuming that farm animals have the same moral status as human beings and that we have the same obligations to them as we do to human beings. Insofar as

fairness claims depend on obligations (this being the Broomean conception of fairness as I report at the beginning of this chapter), farm animals fall within the consideration of fair distribution of MCs just like persons. In other words, farm animals fall within the debate about fairness and climate change.

Whether it is fair or unfair for farm animals to be burdened with MCs is a different question with which I deal in the remainder of this chapter, and which needs to be addressed through an analysis of the principles of fair distribution of MCs that are used precisely to figure out who should fairly be burdened with MCs among all the possible recipients who have a fairness claim not to be burdened with MCs.

To sum up, in this section I have given arguments to defend the claim that some MCs are burdens to farm animals, and specifically that CCMI is a burden to farm animals. I have done so by referencing analysis of experts showing that practices of intensification are harmful to farm animals, and in this regard they are burdens to them. Following the argument from the previous section, I have concluded that farm animals have fairness claims not to be burdened with CCMI, and in this regard they are possible addressees of fairness claims in respect to the global discussion of climate ethics, i.e., how to fairly distribute MCs. I now turn to the analysis of whether a fair distribution of MCs would allocate MCs to farm animals.

Section 2.3: Principles of Fair Distribution of MCs and Why CCMI Is Unfair

In this section I defend the claim that CCMI is unfair. I do so by assessing whether any of the principles of fair distribution of MCs, which indicate how much of the negative estate of MCs should be distributed to which recipients, make MCs to animals and CCMI fair. I conclude that no principle of fair distribution of MCs makes MCs to animals and CCMI fair.

I begin this discussion by proposing a thought experiment, which is a variation of another thought experiment proposed by Peter Singer in his paper on climate change (Gardiner et al. 2010, p. 187), and which I believe facilitates the discussion of the different principles of fair distribution of MCs I deal with below.

> Imagine a village in which villagers have treated their land so badly that there is
> almost no food left and everyone will soon starve to death. One day a magician
> comes and gives them a magic pill that will perfectly restore the land once
> swallowed in its entirety. Unfortunately, the pill is poisoned, and it will cause
> excruciating pain for a number of days to the one who swallows it. It must be noted

that some villagers consciously treated the land worse than others, and some other villagers are much more resistant to the poison than others, to the extent that they would suffer many fewer days from the pill. One of the villagers' cows can also swallow the pill, and she would suffer from the poison for the same number of days as the average villager.

What is the fair *thing to do?*

(1) randomly select a villager and give the pill to him/her;
(2) give the pill to the villager who was treating the land the worst;
(3) give the pill to the villager who is most resistant to the poison;
(4) give the pill to the cow.

In answering this question, my strong intuition is that regardless of which option among (1), (2), and (3) is preferred, option (4) is *not* the fair option, and I believe this intuition is not uncontroversial. However, different people might have different intuitions about the thought experiment, hence I will give arguments to support mine. More precisely, I will show that no principle of fairness in relation to MCs gives the result that option (4) is the fair option in the thought experiment.

Before doing so in the following subsections, some words needs to be spent to explain how the thought experiment is exactly supposed to model the actual ethical issue of climate change. In Singer's original idea, the scenario of the village is a model of the actual planet earth, and the threat to the lives of the villagers is actual climate change. [9] In the thought experiment above, one could substitute ruined land and the danger from it with the actual atmosphere of the earth polluted with excessive GHGs. At the same time, swallowing the pill is the effective action that would help solving the problem at the price of a certain hardship or distress for its receiver. Like a MC in the real world, the pill is a burden for whoever is taking it, yet it is effective in mitigating the problem.

The arguments that follow in this chapters are arguments attempting to show that option (4) in the thought experiment is unfair, while also supporting the idea that MCs to animals in the actual planet earth such as CCMI are unfair. These arguments rest on the assessment of existing principles of fair distribution of MCs, showing that the intuition that option (4) in the experiment—and its counterpart of MCs to farm animals in the real world scenario of climate change—is not the fair option is supported by these principles, i.e., no

principle of fair distribution of MCs makes it fair for farm animals to be burdened with MCs such as CCMI.

Before assessing these principles of fair distribution of MCs in the following sections, I need to spend some words to explain how they relate to the conception of fairness I discuss above. Recall that recipients of MCs in the fair distribution are things that have fairness claims not to be burdened with MCs, and that fairness claims are duties we owe to these recipients in respect to the evil to be distributed. How to then decide how much of this evil is fairly distributed to a certain recipient?

In an example in the previous section I ask a similar question in respect to a much easier issue than MCs: how much of a 10 dollars' estate is fairly distributed among two recipients who have a fairness claim to it of respectively 12 and 13 dollars. Broome's answer to this kind of problem is that it is fair to distribute the estate proportionally to the claims. (Broome 1990, p. 95) In this thesis, I accept Broome's answer that proportional distribution is fair for simple cases like this, but I also maintain that in the case of fair distribution of MCs, fairness requires a slightly different approach, as the issue of distribution of MCs is more complex than examples like the one of the 10 dollars' estate.

To see what I mean by this, I begin by explaining the line of thought proposed by Brad Hooker in respect to fairness. To paraphrase, Hooker maintains that the conception of fairness is about qualifying a certain distribution of a good/evil among recipients that have a fairness claim to the good, or a fairness claim not to get the evil. So far, this is precisely what Broome maintains too. However, Hooker adds that fairness claims to a certain good/evil must consider how much the recipients *deserve* the good/evil or *need* the good/not to get the evil. (Hooker 2005, p. 350)

An example might clarify. Take Jack and Jill who both have a fairness claim to an estate. If Jill's claim originated from her work as an assassin for the estate owner, while Jack's claim originated from his work as a gardener, according to Hooker's view of fairness, it is required to adjust Jack and Jill's claims to the estate, taking into consideration that Jill *deserves* her claim less (as it is morally blameworthy to be an assassin) than Jack does (as it is morally neutral to be a gardener). In this regard, Jill's claim to the estate could be reduced by a certain amount X and Jack's could be increased by a certain amount Y in view of their different desert to the estate. At the same time, Jack might also *need* his claim to the estate more (he's poor) than Jill needs hers (she's rich), and according to Hooker's view of fairness, it is required to adjust Jack and Jill claims to the estate taking into consideration their different needs. For example, Jill's claim to the estate could be reduced

by a certain amount Z and Jack's could be increased by a certain amount Q in view of their different need for the estate.

Now, whether Hooker is right to believe that fairness in general requires consideration of desert and need of the addressees of fairness claims, I believe the particular issue of fairness and MCs does require consideration of desert and need of recipients in adjusting their fairness claims not to be burdened with MCs. This is best seen by looking at the principles of fair distribution of MCs discussed in the literature of climate ethics, which are principles of fairness that allocate MCs proportionally to fairness claims only when fairness claims are adjusted to desert and need of the recipients. In other words, the principles of fair distribution of MCs adjust fairness claims of the recipients of MCs according to how much of the MCs estate these recipients deserve, and/or how much of the MCs estate they need (or better, they *don't* need since they MCs estate is a negative estate and not a good).

In the next subsections, I will discuss all these principles at length in respect to how they adjust fairness claims according to desert and need of the recipients, as well as clarify what desert and need mean in respect to MCs and these principles. For now, the point is only to maintain that fair distribution of MCs requires answering the question of by how much claims should be adjusted in view of desert and need of the recipients before allocating the negative estate of MCs, a point that will be further clarified in the various subsections dedicated to the principles of fair distribution of MCs, to which I turn next.

Subsection 2.3.1: Historical Principles of Fair Distribution of MCs and CCMI

The first class of principles of fair distribution of MCs I deal with is what Singer calls historical principles, (Gardiner et al. 2010, p. 187) referring to the fact that they look at the past of villagers in the thought experiment (or polluting countries or people in the actual situation of climate change) in deciding who should fairly be burdened with MCs. In the thought experiment above, option (2) is supposed to model the preferred option in case of applying historical principles, as what some villagers have done in the past, i.e., consciously treating the land more badly than others, is what counts in deciding who should fairly get the poisoned pill.

Philosopher Henry Shue summarises this kind of principles in these terms: "we are justified in assigning additional burdens to the party who has been inflicting costs upon us," (ibid., p. 103) where justification here is to be understood as what fairness requires. In the case of the village, the reckless villagers have been inflicting more costs upon the other

villagers by consciously wrecking the land more than others in the past, and therefore fairness requires that they should be burdened with the pill. Despite some differences, both Singer and Shue relate historical principles of fairness to the common sense intuition of the "polluter pays" principle, or "you broke it, now you fix it" idea.

Looking at actual climate change, historical principles of fairness modelled by option (2) in the thought experiment point to those countries or people who have been emitting the larger amount of GHGs in the past. In this regard, economist Nicholas Stern, who authored one of the leading studies on the effects of climate change, reports that "the currently rich countries are responsible for around 70 percent of the existing stock [of GHGs in the atmosphere]." (ibid., p. 66) This figure points to the fact that rich countries have been polluting substantially more than poor countries, and therefore they are the fair recipients of extra MCs according to historical principles of fairness.

Now, it is important to note that taking the conception of fairness as I define it at the beginning of the chapter offers a different way of understanding historical principles. Recall that, following Hooker, fair distribution deals with fairness claims adjusted to desert and need of claim holders. I argue that historical principles look at the desert—or blame to be more precise—in adjusting fairness claims.

The villager who is most responsible for consciously wrecking the land in the past *deserves* more than anybody else to be burdened with the pill, as he/she is to blame more than anybody else for failing not to wreck the land even if he/she knew about the wrongs of acting in such way. The same goes for rich countries and the issue of actual climate change. In other words, using the idea of adjusted fairness claims seen above to express historical principles, these principles might be formulated as follows:

(HP) the more X deserves to be burdened with MCs, the more we should diminish X's fairness claim not to be burdened with MCs;

Since the reckless villager of option (2) deserves to be burdened more than anybody else (as he/she is to blame or held responsible more than anybody else), his/her fairness claim not to be burdened will be the smallest, and it is fair for him/her to be burdened with the pill, and it is unfair to burden anybody else. Similarly, rich countries or people, after GHGs were understood to be so dangerously polluting by causing climate change, [10] deserve to be burdened with MCs more than anybody else, as they are to blame more than anybody else for failing to avoid what they could have avoided, i.e., considerably maintaining their GHG emissions at harmful levels. In this regard, their fairness claims not to be burdened

with MCs is smaller than that of poor countries, hence it is fair to distribute more MCs to rich countries.

Now, counterarguments have been given against historical principles, attempting to show that historical principles of fairness are not the appropriate principles to guide fair distribution of MCs. For example, Shue points to the fact that rich countries could not be held responsible for something that they didn't know was harmful, and this is the case of the current harms from climate change, which might be caused by GHGs emitted prior to the time when this harm was understood. He also mentions that people living in highly polluting countries today might not be held responsible for some wrongdoing done decades ago by their dead ancestors. Hence it is unclear that historical emissions are the right guide to decide fair distribution of MCs. (ibid., p. 104-5) Singer also raises the point that historical GHG emissions might in fact have been justified because of the positive consequences of economic growth of which these emissions were a by-product. (ibid., p. 189), therefore historical emissions are not so straightforwardly an indication of wrongdoing and blame.

These are good arguments, yet they don't cause a problem to the claim I want to make in this subsection, as my point here is not to argue that historical principles of fairness are the appropriate principles to figure out the fair distribution of MCs. What I want to argue is that even if these principles were the appropriate ones, they would still not make it fair to allocate MCs to farm animals, hence they would not make CCMI fair as CCMI is a subset of MCs as shown above. To defend the claim that it is unfair to burden farm animals with MCs according to historical principles, I propose the following formalised argument before turning to clarifying and defending its various premises:

(1) If X doesn't deserve any MCs, X's fairness claim not to be burdened with MC is max;

(2) If X's fairness claim not to be burdened with MCs is max, it is unfair to burden X with MCs;

(3) If X is not a moral agent, X doesn't deserve any MCs;

(4) Farm animals are not moral agents;

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(C) It is unfair to burden farm animals with MCs.

Premise (1) corresponds to the definition of historical principles (HP) I give above, where "max" here means that X's fairness claim not to be burdened with MCs is higher than any

other possible recipient in the distribution. Premise (2) maintains that if a fairness claim is max, it is unfair to burden its holder, as it is unfair to burden a recipient X if all other recipients have a smaller claim not to be burdened than X. Premise (3) is but an instantiation of one of the conditions of moral agents as per Gruen's definition of moral agency I explain in section 1.3 above. In this regard, Gruen holds that only moral agents can deserve (or be praised/blamed to use her exact words), and therefore things that are not moral agents cannot deserve anything, let alone MCs. In the same section, I also defend premise (4) when I maintain the farm animals lack the necessary conditions of moral agency, and therefore they are not moral agents. Hence follows the conclusion that it is unfair to burden farm animals with MCs when historical principles are applied. [11]

  To conclude, in this subsection I have explained the historical principles of fair distribution of MCs, and how they are best seen as principles that adjust fairness claims not to be burdened with MCs according to the desert of recipients. I have also argued that these principles don't make it fair for farm animals to be burdened with MCs, hence they don't make CCMI (a subset of MCs) fair, or they make CCMI unfair.

Subsection 2.3.2: Time-Slice Principles of Fair Distribution of MCs and CCMI

In this subsection I look at a second category of principles of fair distribution of MCs, showing that, just like the historical principles I explain above, they don't make it fair for farm animals to be burdened with MCs, i.e., they make CCMI unfair.

  This second category of principles of fairness to allocate MCs is what Singer calls time-slice principles. (Gardiner et al. 2010, p. 190) Given that there are good arguments to discard historical principles as I show above, Singer says that "it would therefore be fairer to make a fresh start now and set standards that look to the future rather than to the past, […] to wipe the slate clean." (ibid. p. 190) How then to allocate MCs so their distribution is fair without considering past and desert like historical principles do?

Subsection 2.3.2.1: Greater Ability to Pay Principle

One way to allocate MCs so their distribution is fair without considering past and desert of recipients is the so-called greater ability to pay principle, a subcategory of time-slice principles. Shue formulates the greater ability to pay principle as follows:

> Among a number of parties, all of whom are bound to contribute to some common endeavour, the parties who have the most resources normally should contribute the most to the endeavour. (Gardiner et al. 2010, p. 105)

In the case of the thought experiment with the village I give above, this principle is supposedly modelled through option (3), i.e., to give the pill to the villager who has most resources, in the sense that he or she is more resistant to the poison than anybody else. In the case of actual climate change, the principle points to rich countries or people, making it fair for them to be burdened with MCs, as they have more resources than poor countries or people, or they are more resilient to MCs than poor countries, or they are less afflicted by the bad consequences of climate change. In short poor countries have a greater need not be burdened with MCs than rich countries.

There are of course counterarguments to the use of the greater ability to pay principle to fairly distribute MCs. For example, a rich country who has just become rich without any GHG emissions might find the idea of being burdened with more MCs unfair, as it is not its responsibility to pay for somebody else's mess. This country might claim that it doesn't deserve to be burdened with MCs.

This is a good argument against the greater ability to pay principle, however just like the case of historical principles in the previous subsection, my point here is not to defend the greater ability to pay principle, but rather to show that even if it was the right principle to decide how to distribute MCs fairly, it would still not make it fair for farm animals to be burdened with MCs, or it would make CCMI unfair.

To see this, I look at Hooker's conception of fairness and the idea that fairness claims are adjusted in relation to the holder's need. In his paper, the example is a person who requires a life-saving pill vs a person who requires exactly the same pill, yet in the second case the pill is required only to save her little finger. (Hooker 2005, p. 349) The first person clearly needs the pill more than the second person, therefore the fairness claim to the pill of the first person is adjusted to match her greater need.

Following this line of thought by Hooker, I claim that the greater ability to pay principle rests on fairness claims not to be burdened with MCs that are adjusted in relation to the need of recipients. A simple definition of the principle based on need-adjusted claims could read as follows:

> (GAPP) The more X needs not to be burdened with MCs, the more we should increase X's fairness claim not to be burdened with MCs

For example, let's take a rich country. Arguably, its need not to be burdened with MCs is smaller than that of poor country, as an MC to a rich country would make that country worse off by a smaller degree in terms of basic needs than the same MC to a poor country.

Another more concrete example might clarify further. Take a carbon tax of 5% in Norway. This would have a smaller impact to the basic needs and welfare of Norwegians than the same carbon tax in Congo would have to the basic needs and welfare of Congolese people, as basic needs in Norway are met even if the tax is in place, while Congolese people who already struggle to meet basic needs might risk not meeting them if an extra burden such as the carbon tax is in place. In other words, Norwegians would be more resilient to a given MC than Congolese people. The ability to pay an MC of recipient X is how much recipient X needs not to be burdened with an MC in order to avoid a considerable impoverishment of their situation, or how resilient is recipient X to the MC.

What about farm animals? In order to defend the claim that the greater ability to pay doesn't make it fair for farm animals to be burdened with MCs, I propose the following formalised argument before turning to clarifying and defending its various premises:

(1) The more X needs not to be burdened with MCs, the greater X's fairness claim not to be burdened with MCs;
(2) The greater X's fairness claim not to be burdened with MCs, the more unfair to burden X with MCs;
(3) Farm animals greatly need not to be burdened with MCs;
--
(C) It is greatly unfair to burden farm animals with MCs.

Premise (1) is but a rephrasing of the definition of the greater ability to pay principle above (GAPP). Premise (2) simply states that claims influence how fair a certain distribution is, which is but Broome's definition of fairness as seen in section 2.1 above. As to premise (3), its truth hinges on empirical questions such as whether farm animals could be considered resilient to MCs such as CCMI, and how much they need not to be burdened with MCs to maintain an acceptable level of basic needs and welfare.

A relevant way to answer these questions is to compare farm animals that are burdened with CCMI and a person burdened with generic MCs, showing how much worse off farm animals can get through CCMI compared to a person burdened with MCs.

At first, this might look as an impossible comparison, as interpersonal welfare comparison, let alone interspecies welfare comparison, is often deemed impossible. However, I am willing to assume that at least a part of welfare in both human beings and farm animals can be measured through health states.[12] Moreover, recall that in this chapter I am assuming that farm animals and humans have the same moral status, hence not only their welfare might be comparable to humans', but it also counts as much as that of humans from a moral perspective. [13]

Now, I begin my defence of premise (3) above by restating what The European Food Safety Authority Panel on Animal Health and Welfare says about cattle and feedlots:

> Major welfare problems in cattle kept for beef production [in intensive farms] were respiratory diseases linked to overstocking, inadequate ventilation, mixing of animals and failure of early diagnosis and treatment, digestive disorders linked to intensive concentrate feeding, lack of physically effective fibre in the diet, and behavioural disorders linked to inadequate floor space, and co-mingling in the feedlot. (EFSA Panel on Animal Health and Welfare (AHAW) 2012, p. 2669)

It seems that in order to diminish the welfare of people or country in similar terms as the passage above through an MC, it would require that the MC is dramatically more burdening than actual MCs realistically implemented today. In other words, there is no carbon tax of 5%, or realistic quota of CO_2 emissions implemented in current international treaties, or discomfort from use of public transport instead of private, that would reduce health of people or countries to the point sketched in passage above of the cattle/feedlot picture. And this is likely to be the case for other forms of intensification, such as sows transported in trailers I explain in chapter 1. In this regard, MCs to farm animals through CCMI are on the average more welfare costly than MCs to people or countries.

As the example of Norway and Congo above shows, need is measured in basic needs, which can plausibly be seen as health states. For example, when Congolese people are burdened with an MC, their need not to be burdened (or their adjusted fairness claim not to be burdened) is measured through how worse off in terms of health states this MC would make them compared to another country. If this difference in welfare through an MC for Congolese people is X, Norwegians would get X-Y (where Y is larger than 0) with the same MC, hence their fairness claim not to be burdened with that MC is smaller than Congolese people according to the greater ability to pay principle of fairness.

Following what I show above with farm animals and CCMI, the claim is that an equally effective MC would reduce welfare by X+Z (where Z is larger than 0), i.e., more than it would in poor countries such as Congo. In this regard, farm animals greatly need not to be burdened with MCs, which is premise (3) above.

Two things might be objected at this point. The first is that this argument rests on the assumption that CCMI is as effective as a generic MC to countries, such as a carbon tax. The objection is justified, and I will dedicate a later part of the thesis (chapter 3 on the consequentialist reason) to explain how effective and efficient CCMI really is, showing that in fact the practice is not very effective or efficient compared to generic MCs to human beings. Mitigation ineffectiveness and inefficiency of CCMI would then strengthen the argument above based on needs, as if CCMI is less effective and less efficient than other forms of MCs, farm animals need not to be burdened with CCMI even more.

A second objection might be that interspecies welfare comparison is unjustified even if we compare farm animals and human beings through measurable health states, as farm animals such as cattle and sows might be more physically resistant to pain, distress, hardship, diseases than the average human being given the same treatment. Insofar as the greater ability to pay principle is based on adjusting fairness claims on physical resistance rather than generic need, farm animals should be more burdened with MCs as they are more physically resistant than human beings to similar treatments.

For example, being locked in a crowded feedlot might impose less hardship to a cow than to a human being locked in a crowded cell, as it might be the case that cows are much more physically resistant than human beings. Moreover, this difference could be so much so that (1) being locked in a feedlot could impose much less physical hardship to the cow than things like a carbon tax impose physical hardship to the human taxpayer, for example by preventing her from being able to afford a more expensive electric bike instead of a normal bike (I take it that the former is less physically demanding to operate than the latter). Or even more, (2) the hardship to the cow from the crowded feedlot is much less than the physical hardship of having to use public transport instead of private to commute to work for a human recipient of MCs.

I find conclusions (1) and (2) highly implausible. Even if it is true that cows experience less physical hardship from crowded feedlots than human beings do from crowded cells, the difference seems to me to be a long way away from being so much that a carbon tax would be physically tougher to human beings than feedlots to cows, let alone discomfort from public transport.

Yet, some people might still not be convinced, and find (1) and (2) plausible. In this regard, a response to them could be the expert claim that the health of farm animals is in fact more fragile than one might think at first sight. For example, The Farm Animal Welfare Committee holds that farm animals are unlike wild animals, as they come to "live in a state of intrinsic dependence on humans," (FAWC 2014, p. 23) Moreover, according to the same panel of experts from FAWC, the priorities for those who look after farm animals is that farm animals are free from distress, diseases, discomfort. (ibid., p. 5) This seems to be a *prima facie* reason to believe that farm animals are not more physically resistant than human beings in terms of health problems induced by MCs, as these recommendations mirror physical recommendations to doctors for human patients. In fact, given their dependency to human beings expressed above, farm animals might be seen as even less resistant than human beings.

Now, given the reasons I just spelled out, I think we are justified in believing that premise (3) in the formalised argument above is true, i.e., farm animals greatly need not to be burdened with MCs. Hence follows the conclusion that the greater ability to pay makes it greatly unfair for farm animals to be burdened with MCs. In this regard, CCMI is greatly unfair according to the principle.

It remains true that other recipients might need not to be burdened with MCs more than farm animals. For example, it might be true that some people in poor countries whose basic needs are already at risk would need not to be burdened with MCs more than farm animals, and in this regard they might have a greater need not to be burdened with MCs than farm animals. As made explicit in the defence of premise (3) above, once we assume that humans have the same moral status of farm animals, the claim that there are other recipients that need not to be burdened more than farm animals depends on empirical questions about things like reduction of welfare and physical resistance to MCs of farm animals compared to humans.

In this regard, in order to show that MCs to farm animals such as CCMI are perfectly unfair according to the greater ability to pay principle, that is to say that in order to show that there are no other recipients of MCs that are more unfairly burdened with MCs than farm animals according to the greater ability to pay principle, we should be able to show that these empirical propositions are true:

(3*) Farm animals need not to be burdened with MCs more than any other recipient;

or

(3**) MCs reduce welfare of farm animals more than the welfare of any other recipients of MCs;

Now, trying to argue for (3*) or (3**), if possible at all, would go beyond the space of this thesis. Therefore, I'm willing to leave open the question of whether the greater ability to pay principle makes MCs to some recipients more unfair than MCs to farm animals. In this regard, it is possible that some MCs to farm animals are fair, since there might be other recipients to which is more unfair to distribute MCs.

However, it remains true that the greater ability to pay principle makes greatly unfair to burden farm animals with MCs as concluded in the formalised argument above, which is the compatible with claim I defend in this subsection, i.e., CCMI (a subset of MCs) is unfair according to the greater ability to pay principle.

Subsection 2.3.2.2: Equality Principle

For Peter Singer, there is a second principle of fair distribution of MCs that falls within the category of time-slice principles. (Gardiner et al. 2010, p. 190) This is the principle according to which every recipient should get the same amount of MCs regardless of their desert and need. For example, if there is a cake to distribute among some children, this equality principle would give the same slice to each child regardless of their need (i.e., how hungry they are or how able to cope with not getting cake) or desert (what they did in the past to deserve a bigger slice).

Now, in respect to the much more complex issue of distributing MCs fairly, I believe that fairness requires adjusting fairness claims according to desert and need as I show in the case of historical principles and the greater ability to pay principle. In this sense, the equality principle is never discussed as a principle of fair distribution of MCs. [14]

It seems that Singer discusses the equality principle as a principle of fair distribution of MCs only because the consequences of the practical implementation of it to MCs he proposes would benefit the worse off. More specifically, Singer would allocate the same per capita emissions to every person, yet given the higher climate change footprint of rich people compared to poor people, the latter could benefit by selling their quotas to the rich. Given Singer's utilitarian framework, I believe that if a different implementation of the equality principle would not result in similar benefits for the worse off, Singer would not so easily defend it as a possible principle of fair distribution of MCs.

I nonetheless discuss the equality principle as a possible principle of fair distribution of MCs here, as I will show that even if this principle was the right principle to apply in the distribution of MCs, it would still not make it fair for farm animals to be burdened with MCs, i.e., CCMI would be unfair. To show this, I first propose the formalised argument before turning to clarifying and defending its various premises:

1) If X doesn't have a duty to mitigate climate change, X's fairness claim not to be burdened with MC is max:

2) If X's fairness claim not to be burdened with MCs is max, it is unfair to burden X with MCs;

3) If X is not a moral agent, X doesn't have a duty to mitigate climate change;

4) Farm animals are not moral agents:

--

C) It is unfair to burden farm animals with MCs.

I begin by defending premise (1), which I believe is implicit in Singer's discussion on the equality principle. More specifically, I claim that the equality principle in the distribution of MCs requires that the equal claim not to be burdened with MCs is equal only among those recipients who have a duty to act on climate change.

An example might clarify. Imagine two parents and a child, and a burdensome task that must be carried out for the sake of the child's wellbeing—for example, driving her to school through traffic jams. Neither of the parents wants to carry out the task, so they decide to let the flip of a coin allocate the task. This might be seen as an uncontroversial way to implement an equality principle of fairness in the allocation of a burden. In other words, both parents have an equal fairness claim not to be burdened with the task, which doesn't depend on how each parent deserves the task or needs not to be burdened with it.

Now, one might ask whether these parents would have any role in the distribution of the task if they had no moral obligation or duty to take care of the child's wellbeing. To see this, let's imagine a stranger passing by the parents next to their car while they're tossing the coin to decide who will drive the child. It doesn't seem that the stranger should be included as a possible recipient of the task, or participant in the lottery, as she has no duty to the child. Or perhaps she should be included in the lottery, but only in virtue of her cosmopolitan duty to care for all human beings, including the child.

I believe that this example parallels the equality principle in the distribution of MCs discussed by Singer. In this sense, option (1) in the thought experiment with the village (i.e.,

a lottery among the villagers to decide who should be burdened) parallels the lottery among the two parents in the example above, as villagers share the duty to act on the polluted land through the pill like the parents share the duty to act for the benefit of their child.

Similarly, equal fairness claims not to be burdened with MCs required by the equality principle are equal only among those who share the duty to mitigate climate change, which is the duty shared among human beings as I explain in section 1.1. For all other addressees of fairness claims not to be burdened with MCs (i.e., those who don't share the duty to act on climate change), their fairness claims would be "max" according to the principle, where max simply refers to a fairness claim that is more than all those who share the duty. [15] In conclusion, if X doesn't have a duty to mitigate climate change, X's fairness claim not to be burdened with MC is max, which is premise (1) of the argument above.

As to premise (2), this is equal to premise (2) in subsection 2.3.1, and it simply states that if a fairness claim is max, it is unfair to burden its holder, as it is unfair to burden a recipient X if there are other recipients that have a smaller claim not to be burdened than X. Premise (3) is taken from Gruen's definition of moral agency seen in section 1.3, which says that only moral agents have duties. (Gruen 2011, p. 61) Premise (4) is also defended in the same section, where I claim that farm animals lack the necessary conditions for moral agency as spelled out in Gruen's definition of moral agency. (ibid.) Hence the conclusion that it is unfair to burden farm animals with MCs according to the equality principle follows, and insofar as CCMI is a subset of MCs, CCMI is unfair according to the equality principle.

Section 2.4: Conclusion of Chapter 2

In this chapter I have dealt with the first reason in the map of reasons to consider in the ethical evaluation of CCMI explained in section 1.4. This is a reason of fairness for CCMI, i.e., whether CCMI is fair. In this regard, the overall claim of this chapter is that CCMI is unfair.

I have defended the claim that CCMI is unfair first by clarifying which conception of fairness is justifiably used to assess actions such as CCMI, which are best seen as climate change mitigation costs to be distributed. In this regard, CCMI is unfair as it is unfair to distribute MCs to farm animals, and CCMI is but a subset of MCs.

I have shown so by first appealing to the reader's intuition through a thought experiment that models the ethical issue of climate change and distribution of mitigation costs. I have then continued my defence of the claim that CCMI is unfair by assessing

fairness and MCs to farm animals in view of the different principles of fair distribution of MCs, showing that none of them makes MCs to farm animals and CCMI fair.

The conclusion that CCMI is unfair should count in the overall ethical evaluation of CCMI, i.e., whether CCMI is ethically justified. The other reasons that should count along with unfairness are discussed in the following two chapters.

Chapter 3: CCMI and Consequentialism

This chapter deals with the second reason in the map of reasons to be considered in the ethical evaluation of CCMI (see section 1.4). After having delved into the first reason in the previous chapter, i.e., the fairness reason, and having defended the claim that CCMI is unfair, in this chapter I look at the consequentialist reason in the ethical evaluation of CCMI.

I first clarify what I mean by consequentialist reason, and how consequentialism applies to CCMI. Secondly, I defend the claim that the consequentialist reason ethically justifies CCMI only to a small degree. Alike the previous chapter, many arguments in this chapter rest on the assumption that farm animals have the same moral status as human beings, a controversial assumption which I clarify only in chapter 4.

Section 3.1: The Consequentialist Reason for CCMI

The idea behind the consequentialist reason is that in the ethical evaluation of an action, what counts is whether the consequences of that action bring about overall net good. For example, if by doing X I bring about 10 units of good and 5 units of evil, while by not doing X I bring about 3 units of good and 2 units of evil, the net good of doing X is higher than not doing X (i.e., 5 vs 1), hence action X is ethically justified according to the consequentialist reason. Following this definition, in the case of CCMI, CCMI is ethically justified according to the consequentialist reason if the consequences of CCMI bring about more overall net good than not carrying out CCMI.

When it comes to which conception of the good and bad one has to consider when assessing whether a consequence is good or bad, I am here willing to assume a welfarist position, i.e., good is an increase of welfare, and bad is a reduction of welfare of the members of the moral community, which I now temporarily assume includes both human beings and farm animals in view of their equal moral status as I mentioned in chapter 1. Moreover, I take it that the platitudes as to what constitutes welfare pointed out by Daniel

Hausman are rather uncontroversial. (Hausman 2012, p. 92) These are health, happiness, pleasure. Now that these clarifications are in place, I can attempt to list some negative and positive consequences of CCMI to give examples of what is taken into consideration in the consequentialist ethical framework.

In the previous chapter I already look at reduction of animal welfare through CCMI in terms of health, happiness and pleasure, and following the welfarist approach and conception of welfare indicated by Hausman, this reduction of welfare counts as a negative consequence of CCMI. Rossi and Garner point to many other negative consequences of intensification (hence of the CCMI subset as well) in their paper on intensification. (Rossi and Garner 2014) Citing various empirical evidence, they mention: nutritional problems in human beings (cheaper animal products thanks to intensification cause bigger consumption of these products, which cause several diseases that are less likely to occur in diets without these products—in this sense, human welfare is reduced) (ibid., p. 485); antimicrobial-resistance in human beings (antibiotics are given to animals in intensive farms, yet they end up in the organism of the final consumer of products derived from those animals—in this sense, human welfare is reduced); unsafe labour conditions (intensive animal farms account for more accidents and work-related diseases than extensive ones— in this sense, human welfare is reduced) (ibid., p. 488); environmental issues that eventually fall back on health issues in human beings (intensive animal farms use production processes that cause soil degradation and various types of pollution—in this sense, human welfare is reduced). (ibid., p. 491)

As to the positive consequences, I already mention the climate change mitigation benefits. Yet other positive consequences can be brought up. For example, CCMI tends to bring about economic wealth through farming efficiency at least to farmers, as well as to consumers who could benefit from cheaper products. This could be easily seen as an increase of welfare. And assuming for the sake of the argument that animal products are necessary in all diets, intensification of animal farming assures safety in the supply of these products. Insofar as food security increases general health, intensification contributes to human welfare.

Now, these lists of good and bad consequences of CCMI are likely to be incomplete, and very many debates on each of them could be had. For example, empirical evidence can be questioned, and so can the weight of each consequence in comparison to another.

Yet the point of this section is not to weigh all the consequences of CCMI that exist to come up with a clear-cut answer of whether it brings about net good, and therefore it is

ethically justified according to the consequentialist reason. The point is rather to show that consequences do play a role in all-things-considered ethical justification, and so they do in all-things-considered ethical justification of CCMI. In this regard, the consequentialist reason is a relevant reason to include in the map of reasons to take into consideration in the all-things-considered ethical evaluation of CCMI. [16]

Coming back to the thought experiment with the village might further clarify the consequentialist reason. Imagine that the cow is the only available recipient of the mitigating-yet-poisoned pill. Even though it's unfair for the cow to be burdened with the pill as showed in the previous chapter, the consequences of not burdening her with the pill would be so grim (the death of all villagers) that it would be uncontroversial to claim that it is ethically justified to give the mitigating-yet-poisoned pill to the cow. The consequences of this unfair action would clearly bring about so much good that unfairness is overridden in the ethical evaluation of giving the pill to the cow.

Or imagine a further variation of the thought experiment, in which the villagers can also swallow the pill as in the original formulation, yet the pill is perfectly effective in solving the problem only if it is the cow who swallows it, while if one of the villagers swallows the pill, this would only be 10% effective. Imagine further that both cow and the villagers would suffer the same amount of days from the poison. Burdening the cow with the pill would plausibly be more ethically justified than in the original experiment according to the consequentialist reason, despite the fact that such option would still be unfair as seen in the previous chapter.

Beside further clarifying the consequentialist reason, this variation of the thought experiment shows that the larger efficiency of giving the pill to the cow is what is weighed against the unfairness of such action. In the case of actual climate change, this would be like saying that if CCMI empirically turns out to be so much more effective given the same amount of burden than other MCs, this fact might ethically justify CCMI despite its unfairness according to the consequentialist reason.

To sum up, in this section I have clarified what constitutes a consequentialist reason in moral deliberation. I have provided with a definition and clarified which version of consequentialism I assume. I have also given some examples of how this reason weighs in ethical evaluation of actions against other reasons in the map, such as the unfairness of the action in question.

In the case of MCs, this weighing up of the consequentialist reason is linked to the effectiveness of MCs in proportion to the extent of the burden for the recipient, which is to say that the reason is linked to the efficiency of MCs. In the next section I will give

arguments to show that the efficiency of CCMI is so small that the consequentialist reason only applies to a small degree, i.e., the consequentialist reason justifies CCMI only to a small degree.

Section 3.2: The Consequentialist Reason Justifies CCMI Only to a Small Degree

In explaining the consequentialist reason in relation to MCs above, I argued that the strength of this reason is based on the efficiency of MCs. To explain this further, let's first clarify effectiveness in relation to MCs through an example: if a person in the developed world has one fewer child than he/she wants, this MC is more effective in mitigating climate change than for the same person to live car free, as on the average the former action reduces 58.6 tonnes CO_2-equivalent (tCO2e) emission per year, while the latter reduces 2.4 tCO2e per year. (Wynes and Nicholas 2017)

Now, the consequentialist reason looks at how efficient a certain MC is, which is the proportion between the effectiveness of a certain MC and its burden. For example, if a person in the US uses a greener car, she reduces approx. 1.3 tCO2e emissions per year while, if she buys greener energy she reduces approx. 1.4 tCO2e per year. (ibid.) Now, suppose that a new, greener car would cost her 40k dollars and a lot of hassles, while buying greener energy would cost her 5 more dollars per month on her energy bill, and just little time looking for different suppliers. In this case, buying greener energy is not only more effective than buying a greener car, it is also more efficient. This is because the mitigation benefit of buying greener energy is somewhat similar to buying a greener car, while the burden of the former is dramatically smaller than the latter--as I mention above, the cost in dollars and effort necessary to get a greener car are much bigger than those necessary to buy greener energy. In other words, given similar output (mitigation effects), one action requires less input (burdens).

Now, as I claimed in the previous section, CCMI is not very efficient, hence the consequentialist reason justifies CCMI only to a small degree. This is because the burdening of CCMI to farm animals is much greater than the burdening of MCs to human beings, given similar effectiveness. In other words, if we take the thought experiment with the village and modify some elements from its original formulation, CCMI would be as if the cow would suffer many more days from the mitigating-yet-poisoned pill than the average villager, while the effects of the pill would be similar if the pill were swallowed by one of the villagers. In this case, the option of burdening the cow with the pill would not only be unfair,

but it would also be justified to a very small extent, if not at all unjustified according to the consequentialist reason.

For the real life situation of climate change, the way I will attempt to show how inefficient CCMI is, and therefore how poorly justified it is according to the consequentialist reason, is not by giving empirical data regarding the effectiveness of the different forms of CCMI and weighing their burdens. This would require a thesis on its own. [17] However, what can be said here is that CCMI is not a magic recipe to solve climate change, as the mitigation benefits of CCMI are just about the same as mitigation benefits from any human lifestyle action. For example, the reduction of GHG emissions from having one fewer trailer transporting sows on the road is exactly like the reduction from having one fewer trailer transporting TV sets, which can be achieved by consumers buying fewer TV sets. Or saving 50 hectares of carbon-absorbing forests by using feedlots instead of pasture is exactly like saving 50 hectares of carbon-absorbing forests by avoiding the construction of a shopping mall.

What really is different in CCMI compared to other MCs is the burdening part, as the burdens of CCMI to animals seem to clearly overshadow those of other MCs to human beings, given the same amount of mitigation benefits. To see this, one might just think of the stark difference between a number of people confined in feeding areas instead of a number of people having one fewer shopping mall, both for the sake of the same amount forest preservation. I take it as uncontroversial that no one would ethically prefer confining people in feeding areas to an extra shopping mall. Taking the passage from The European Food Safety Authority Panel on Animal Health and Welfare about cattle and feedlots I quote in section 2.2, and replacing the subject in that picture with human beings just gives the gist of the difference in burdens.

At this point, one might object that comparing burdens for farm animals with the same burdens for human beings is based on two problematic assumptions: 1) farm animals are as resistant to burdens as human beings and 2) we have the same moral obligations to farm animals as we do to human beings. I argued that the first assumption is correct in subsection 2.3.2.1 on the greater ability to pay principle of fairness, reporting that panels of veterinarians consider farm animals as physically needy and fragile as human beings, or even more than human beings due to millennia of genetic engineering towards dependency on them.

As to the second assumption, the idea that we have obligations to farm animals equals the claim that farm animals have moral status, as per the definition of moral status I explained in the previous chapter and that I take from Warren (1997), i.e., to have moral

status is for an entity "to be an entity towards which moral agents have, or can have, moral obligations". (p. 3) As mentioned in the introduction to this chapter, the arguments in this section do assume that farm animals have the same moral status as human beings, hence we have the same moral obligations to farm animals as we do to humans. This is a controversial assumption, which I discuss at length in the next chapter.

For the moment, the point here is to highlight that if this assumption on equal moral status is rejected or weakened by a certain degree (i.e., we don't have the same moral obligations to farm animals as we do to humans, i.e., farm animals don't have the same degree of moral status as humans), lack of moral status of farm animals, or lack of full moral status of farm animals might justify burdening them to a greater extent than burdening humans who enjoy full moral status. In other words, the arguments above highlight how the lack of moral status reason plays in relation to the consequentialist reason.

To sum up, in this section I have argued that the consequentialist reason justifies CCMI only to a small degree. I have done so by showing that CCMI is a very inefficient MC compared to other MCs that exist. This is because burdens to animals for mitigating benefits through CCMI are heavier compared to burdens to human beings. If the point of a consequentialist condition is to justify an action when it increases overall welfare, the great burdens of CCMI to farm animals point to the fact that these are so great that they might only be slightly overridden by the mitigation benefits, and if the consequences of CCMI even bring about net good, this would be rather small. In this sense, the consequentialist reason justifies CCMI only to a small degree.

Section 3.3: Conclusion of Chapter 3

In this chapter I have dealt with CCMI and consequentialism, i.e., how a consequentialist reason might ethically justify CCMI. I have first explained which version of consequentialism I assume, and delved into how it applies to the ethical justification of MCs in general.

I have concluded that the consequentialist reason justifies MCs in general according to how efficient they are, i.e., how effective they are in respect to the amount of burdens they require. Insofar as CCMI is not a very efficient MCs, the consequentialist reason justifies CCMI only by a small degree, which is the overall claim of this chapter.

Chapter 4: CCMI and Moral Status of Farm Animals

In the previous chapters I have assumed that farm animals have the same moral status as human beings, hence we have the same moral obligations to farm animals that we have to human beings. In this chapter, I assess this assumption and defend a weaker version of it, i.e., that farm animals have moral status to a smaller degree than human beings. However, I will also defend the claim that such degree of difference between moral status of farm animals and human beings is a small degree. In other words, in this chapter I defend the claim that the moral status of farm animals is less than human beings' only by a small degree, and the obligations we have to farm animals are weaker than those we have to human beings only by a small degree.

As seen in the previous chapters, the controversial assumption that farm animals have the same moral status of human beings is crucial for most of the arguments I use to defend these two overall claims: CCMI is unfair and the consequentialist reason ethically justifies CCMI only by a small degree. Weakening the assumption of equal moral status towards the different claim that farm animals have less moral status than human beings will make the arguments in the previous chapters weaker to a certain degree.

For example, CCMI might be less unfair than shown in chapter 2, since fairness claims of recipients (which depend on moral obligation we have towards these recipients as per the Broomean conception of fairness I explain in chapter 2) might decrease if we have weaker obligations to these recipients in view of their smaller degree of moral status. In this sense, fairness claims not to be burdened with MCs might decrease according to desert (historical principle), according to need (greater ability to pay principle), but also according to the general strength of obligation we have to the addressee in view of its moral status. Similarly, the consequentialist reason might justify CCMI to a larger extent than shown in chapter 3, since welfare of things with a smaller degree of moral status might weigh less than welfare of things with full moral status in the welfarist calculation of the net good brought about by a certain action.

This is why in chapter 1 I mention that lack of moral status in farm animals (i.e., farm animals have less moral status than human beings) is one of the reasons that should be taken into consideration in the ethical assessment of CCMI. Specifically, lack of moral status is the third moral reason I point to in the map of moral reasons for CCMI, which plays a role in the all-things-considered ethical justification of CCMI. In this sense, as moral status of farm animals is less than human beings' only by a small degree, the lack of moral

status reason for CCMI justifies CCMI only by a small degree, and the arguments in the previous chapters are weakened only by a small degree.

Section 4.1: Whether Farm Animals Have Moral Status at All

Before looking at the degree of moral status of farm animals compared to that of human beings, in this section I defend the claim that farm animals have moral status in the first place. Now, as seen in section 1.3 I define moral status as follows: to have moral status is for an entity "to be an entity towards which moral agents have, or can have, moral obligations". (Warren 1997, p. 3)

However, this simple definition doesn't say anything about what the grounds of moral status are, or in virtue of what property a being has moral status. For example, if the ground of moral status were the fact of being alive, only and all things that are alive would have moral status. Or if the ground of moral status were the fact of being a person, only and all persons would have moral status.

A vibrant philosophical debate exists about the grounds of moral status, and in this regard arguing at length for a specific and novel position within this debate is out of the scope of this thesis. Nonetheless, in what follows I will report and endorse arguments from philosophers that convincingly show that the ground of moral status is such that things like farm animals have moral status.

Following Lori Gruen who uses a similar strategy in her *Ethics and Animals* (Gruen 2011), I believe that a fruitful way to tackle the discussion about the ground of moral status and whether farm animals have this property is introducing human exceptionalism. This is the view according to which "humans are the only beings that do or have X (where X is some activity or capacity)." (ibid., p. 5).

Now, assuming for the sake of the argument the claim that only human beings have moral status, finding what makes humans exceptional might reveal the ground of moral status. An example might clarify: if humans are the only beings that have the capacity to reason and humans are the only beings that have moral status, this might point to the fact that the ground of moral status is the capacity to reason.

However, this strategy is faulty, as it is not necessarily the case that if a property is had only by humans, that property is what constitutes the grounds of moral status. For example, humans are exceptional in the rate of biodiversity destruction, i.e., no other being destroys as much biodiversity as humans. However, it seems rather implausible that this property is what confers moral status to humans. Gruen puts the issue this way:

Though there are many ways that humans are different from other animals, the truly problematic feature of human exceptionalism is its second implicit claim: the normative claim that elevates humans above other animals. (ibid. p. 22)

In other words, from the empirical observation that humans are different from other things, one needs to show how these differences confer the kind of value to humans so that humans have moral status, while other things don't.

The list below includes the major candidates for this value-conferring property proposed by philosophers and reported in the entry about the grounds of moral status in the Stanford Encyclopaedia of Philosophy (Jaworska and Tannenbaum, 2018). In this regard, if X has one of the following properties, X has moral status.

1) Having cognitive capacities to various degrees of sophistication, or the ability to develop them. Along a degree of sophistication, cognitive capacities can go from second-order thinking and future-oriented type of reasoning, to basic sentience such as the capacity to suffer;

2) Having relationships with members of a biological or social community;

3) Not being designed by anyone to fulfil any purpose;

4) Being beautiful and harmonious, in the sense of the beautiful and harmonious functioning of things such as ecosystems and organisms.

Now, regardless of whichever of these properties is the one that confers moral status (i.e., the one that meets the normative claim as Gruen calls it in the passage above), after empirical observation one might ask whether these properties are not exclusive of human beings, therefore whether there is a reason for the claim that beings other than humans such as farm animals have moral status.

This seems to be the case. For example, it is true that farm animals have basic cognitive capacities such as the capacity to suffer. [18] And it is true that farm animals have relationships with members of their biological community. [19] And it is true that farm animals are not designed to fulfil any purpose. [20] And it is true that they are organisms with harmonious functioning, just like humans are. [21] Hence, if we accept 2), 3), or 4) as the ground of moral status, farm animals have moral status.

However, there is a challenging view on the grounds of moral status in relation to farm animals, which is accepting property 1) as the grounds of moral status and maintain

that sophisticated cognitive capacities are necessary for a thing to have moral status, as opposed to just basic cognitive capacity like the capacity to suffer. Insofar as farm animals don't have sophisticated cognitive capacities such as second-order or future-oriented thinking, animals lack moral status. [22]

However, at this point we might ask whether sophisticated cognitive capacities are really the grounds of moral status. I believe that the negative answer to this question is rather clear, since if cognitive capacities were the grounds of moral status, differently able people who don't have and won't develop these sophisticated capacities would have no moral status at all, which is a highly implausible conclusion considering our everyday practices.

In other words, I take it as uncontroversial that no one would claim that we have *no* moral obligations whatsoever to differently able people in view of their lack of sophisticated cognitive capacities and possibility to develop them, as even if we claim that we don't have some obligations to them (for example, the obligation to keep them alive), we would at least maintain that we have an obligation not to cause them unnecessary suffering. [23] In this regard, it is the capacity to suffer that grounds their moral status, and since farm animals are capable of suffering as well, they have moral status. [24]

This is the overall claim of this section, which in summary is based on the fact that all defensible grounds of moral status apply to farm animals: 1) having the cognitive capacity to suffer; 2) having relationships with members of their biological community; 3) not being designed; 4) being harmonious. At the same time, the only one possible ground of moral status that doesn't apply to them (i.e., having sophisticated cognitive capacities) is not a plausible answer to the question of the ground of moral status as seen above.

At this point, one might object that sophisticated cognitive capacities, even if they don't ground moral status or all obligations we owe to entities, might ground larger degree of moral status, hence stronger obligations to entities that do have these capacities. I deal with this point in the next section, as well as discussing how it relates to the lack of moral status reason and the ethical justification of CCMI.

Section 4.2: Degree of Moral Status of Farm Animals and CCMI

In this section, I defend the claim that farm animals have a degree of moral status that is close to that of human beings. In this sense, even if their moral status is not the full moral status we confer to human beings, they still have a large degree of moral status and therefore the lack of moral status reason ethically justifies CCMI only by a small degree.

This claim weakens the assumption I make throughout the first two chapters of thesis (i.e., farm animals have the same moral status of human beings), hence the arguments in those chapters that are based on this premise are weakened by a certain degree. For example, fairness claims of farm animals not to be burdened with MCs, which depend on our moral obligation to them as per the Broomean conception of fairness, might decrease compared to those of human beings in view of farm animals' smaller degree of moral status. Similarly, the smaller relevance of farm animals in view of their smaller degree of moral status compared to human beings might play a justificatory role in the consequentialist cost/benefit analysis of CCMI.

But why weakening the assumption that farm animals have the same moral status as human beings? A first *prima facie* reason is that such claim is highly counterintuitive. For example, if given the choice between an equal amount of suffering to a chicken and to a baby, I take it that the vast majority would prefer the suffering to the chicken. In this regard, the same moral obligation not to cause suffering might be stronger towards some beings (human beings) than others (farm animals), even though both beings have the same cognitive capacity to suffer. Following this intuition, if the obligation not to cause suffering is stronger for human beings as opposed to farm animals, it seems that farm animals have a smaller degree of moral status compared to human beings.

But assuming that human beings and farm animals have equal capacity to suffer, what makes the obligation not to cause suffering stronger for human beings than farm animals? Is there a characteristic of human beings that confer them this higher moral status? When it comes to suffering, this doesn't seem to be the case. As I have shown in the previous chapters, farm animals are uncontroversially considered sentient beings, and their physical needs are at least as strong as those of human beings. In the case of suffering, it seems that the only difference between a chicken and a human being is their being members of a different species. Following Lori Gruen, I here would like to accept her view that making moral distinctions based on morally irrelevant characteristics such as being a member of a different species—so called speciesism—is an indefensible position. (Gruen 2011, p. 195) Hence, when it comes to suffering, we are justified in keeping the assumption that we have the same degree of obligation to both farm animals and human beings, i.e., (1) they both have equal moral status.

However, it should be noted that the same moral obligation to an entity might be weaker for some entities than for others in view of entities having sophisticated cognitive capacities. For example, in respect to the obligation not to kill, DeGrazia says that

Persons ordinarily have an enormous stake in staying alive insofar as continued life is necessary for much of what they value prudentially, which is connected with long-term projects, plans, and relationships. With much less temporal self-awareness, mice presumably do not have the same stake in remaining alive as opposed to enjoying experiential well-being, or a good quality of life, while they are alive. (DeGrazia 2008., p. 187)

Similarly, insofar as natural behaviour in connection to members of the same species can be relevant to make long term life projects (imagine how crucial it is for human beings not to be prevented from talking to friends and family about long term life projects), since farm animals don't have the cognitive capacity to make long term life projects, the obligation to preserve natural behaviour in connection to members of the same species might be weaker for them than it is for human beings. As we consider the same obligation differently when it comes to farm animals and human beings, it seems that (2) farm animals have a smaller degree of moral status compared to human beings.

Therefore, given conclusions (1) and (2) in this section, there are reasons to believe that farm animals both have the same moral status as human beings and that they have a different degree of moral status from human beings depending on which cognitive capacities really confer moral status. Nonetheless, I believe we are justified in maintaining a view according to which farm animals have a degree of moral status that is close to that of human beings.

To see why this might be the case, let's start with the claim that higher cognitive capacities such as the capacity to make long term life projects are not a property that confers moral status. As seen above, if they were, we would not be able to explain why we find entities such as disabled persons who lack these capacities, or the ability to develop them, morally relevant. Now, it's however possible that the moral relevance of disabled persons is not perfectly equal to that of normal human beings. However, in view of the consideration we have for them in everyday practices, where these persons should be treated with highest respect despite of their disability, it is possible that higher cognitive capacities *only* confer a limitedly higher moral status. I take it that few people would maintain that we have much stronger obligations to normal human beings than we do to disabled human beings.

Following this line of thought, things that lack higher cognitive capacities but have the basic ones have a fairly similar degree of moral status. In other words, these entities have a degree of moral status that is close to that of the paradigmatic morally relevant

entity, i.e., normal human beings equipped with higher cognitive capacities or the ability to develop them. Hence, insofar as farm animals lack higher cognitive capacities, yet they possess the basic ones as seen above, their moral status is at least equal to disabled human beings, and at least close to that of normal human beings. In this regard, the lack of moral status reason justifies CCMI only to a small degree, which is the overall claim of this chapter.

Before concluding, it is also important to point out that, even if some forms of CCMI do involve practices that would make farm animals even worse off if they had higher cognitive capacities (see the example of natural behaviour in connection to members of the same species, which if hampered through intensification would make farm animals even worse off were they capable to reason about this painful treatment), all forms of CCMI do involve practices that make farm animals worse off in view of their basic cognitive capacity to suffer. This is of course no argument to show that farm animals have the same moral status as human beings, yet it does show that what counts most in the moral relevance of farm animals in respect to CCMI is their capacity to suffer rather than their lack of higher cognitive capacities.

Section 4.3: Conclusion of Chapter 4

In this chapter I have looked at the lack of moral status reason for CCMI. This says that if farm animals don't have moral status, we don't have any obligation to them and therefore we are justified in mitigating climate change through their burdens from CCMI. In this regard, a lack of moral status of farm animals would also undermine the arguments I give in the previous chapters, which rest on the assumption that farm animals have the same moral status of human beings. For example, obligation-based fairness claims not to be burdened with MCs could be lower for farm animals than human beings if we have weaker obligations to them in view of their smaller moral status. Similarly, the consequentialist cost/benefit analysis of CCMI would need to take a smaller degree of moral status of farm animals into consideration.

Nonetheless, in this chapter I have provided arguments to show that farm animals have indeed moral status, and they have a degree of moral status that is close to that of the paradigmatic example of entity with moral status, i.e., normal human beings with higher cognitive capacities or the ability to develop them. In this sense, the lack of moral status reason in the ethical assessment of CCMI justifies CCMI only by a small degree, which is the overall claim of this chapter.

Conclusion of the thesis

This thesis has dealt with the ethics of climate change mitigating intensification (CCMI). After providing clarification of the key concepts and the overall conceptual and empirical assumptions in chapter 1, I have analysed the three morally relevant reasons for CCMI in chapter 2 (reason of fairness), chapter 3 (consequentialist reason), and chapter 4 (lack of moral status reason). My overall claims in these chapters have been that (1) CCMI is unfair; (2) the consequentialist reason justifies CCMI only to a small degree; (3) the lack of moral status justifies CCMI only to a small degree.

      As I mention in the introduction to the thesis, I remain agnostic as to whether these conclusions in respect to the different reasons for CCMI make CCMI overall ethically justified, as this would require the ability of weighing up reasons of different sort against each other. As Broome argues, such ability might be beyond reach:

> When the judgement […] depends on a comparing reasons of different sorts, it often seems impossible to weigh the reasons against each other in a precise way. […] The impossibility might be in the nature of things: some reasons might simply be incommensurable with each other. Or it might be practical: we might have no practical way of making the comparison accurately, even though in principle the reasons might be commensurable. (Broome 1990, p. 100)

What I hope to have achieved with this thesis is providing clarity as to what should be taken in consideration in the ethical assessment of CCMI, and insofar as CCMI is a subset of intensification, this thesis might have pointed to considerations about intensification in general. I believe this is important as the discussion about the ethics of this practice often doesn't seem to sufficiently consider the complexity of the issue. This is despite the fact that the conclusion of intensification being morally wrong expressed in Singer (2006) is most likely true.

      Finally, it is fair to mention that when it comes to climate change mitigation benefits and animal farming, reducing consumption of animal products is a more effective action than CCMI alone. Among other reasons, this is because a portion of GHG emissions from animal farming comes from enteric methane emissions of farm animals, which would exist regardless of whether these animals are grown in intensive or extensive farms. In this regard, the best animal farming action to mitigate climate change is not to intensify the farm, but to close it down. However, considering that global consumer demand of animal

food products is "projected to grow by 70 percent by 2050," (Gerber et al. 2013, p. 83) the idea of farmers missing the business opportunity and close their farms seems rather unrealistic. This is why to mitigate part of the climate impact of this industry, CCMI is advocated.

Now, from an ethical point of view, what I have shown in this thesis is that CCMI remains an ethically questionable practice to say the least, whereas it is hard to find more philosophical consensus than the one about the duty to reduce consumption of animal products in our lives. For example, Derek Parfit claimed in a recent lecture that "it's absolutely clear that we should stop eating meat [and] that's over determined." [25] If the ethical choice is between CCMI and reducing consumption of animal products, the latter seems without doubt the more ethically justified thing to do.

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Footnotes

[1] https://www.living-land.org/ourvision/

[2] So far, the claims about climate change I have made rest on empirical findings which have a consensus within the scientific community of about 99,99% according to Powell (2015).

[3] There is an ongoing debate among philosophers about which moral perspective to assume in case of concern for future people as opposed to people living in the present. For reference, see Derek Parfit's *Energy Policy and The Further Future*, as well as Henry Shue's *Deadly Delays and Saving Opportunities*, both included in (Gardiner et al. 2010). This debate is beyond the scope of this thesis, and I will assume that future generations deserve the same ethical concern of present generations. Hence if there is an ethical obligation to do X concerning present generations, the ethical obligation to do X exists even if X concerns future generations. Moreover, I also assume that present and future generations also include present and future generations of farm animals.

[4] For reference, see Gesang (2017).

[5] A separate issue is how to allocate adaptation costs, which are costs for measures taken in order for populations and environments to be more resilient to the harms from climate change that cannot be mitigated. I do not deal with adaptation costs in this thesis.

[6] According to the Oxford Dictionary, a burden is a misfortune that causes worry, hardship, or distress. Here I simply avoid the term "misfortune" as it could unnecessarily complicate the definition, and simplify to defining burden as what causes worry, hardship, or distress. In other words, if X is caused to have a worry, or hardship, or distress, X has a burden.

[7] It is possible that the same amount of carbon absorbing forests is destroyed to produce feed for feedlot animals, yet studies show that, given the efficiency of feed used in feedlots, that is not the case. (Capper 2012 and Pashaei Kamali et al. 2016)

[8] In this example, this is not possible as there is only one pill for two candidates. Broome suggests that a lottery might be used in such cases, or even the destruction of the pill so that both claims are equally fulfilled, i.e., both are equally unfulfilled.

[9] In Singer's thought experiment, the threat is an overflowing giant sink in which villagers kept pouring waste.

[10] Singer estimates this moment to be around the year 1990. (ibid., p. 190)

[11] It remains true that recipients other than farm animals might have a "max" fairness claim not to be burdened with MCs. For example, other things might have fairness claims not to be burdened with MCs without being moral agents. In this case, it would be unfair to burden them as well as it is unfair to burden farm animals.

[12] For a lengthy defence of health as a fundamental component of welfare in human beings, and a lengthy defence of the measurability of health states, see Daniel Hausman's book *Valuing Health: Well-Being, Freedom, and Suffering*. (Hausman 2015)

[13] As mentioned, the issue of whether this is a justified assumption will be tackled in chapter four, in which I will discuss the degree of moral status of farm animals.

[14] In the entire anthology on climate ethics that is Gardiner et al. (2010), no other philosopher but Singer advances the equality principle as a principle of fair distribution of MCs.

[15] For example, the principle might dictate that all those who have a duty to act on climate change have a fairness claim not to be burdened with MCs at X, while all other recipients (i.e., those who don't have this duty) have a fairness claim at X+1, which is max.

[16] As Sinnott-Armstrong claims, a general justification for the consequentialist reason in any ethical evaluation is given by an irrefutable presumption that people make when ethically evaluating actions: "we morally ought to make the world better when we can." (Sinnot-Armstrong 2015) In other words, we ought to act in such a way that as a result of our actions, the world is better than it would be if we didn't act in such way. This is to say that if action X brings about net good (a better world), we ought to carry out action X, which is the most basic understanding and defence of the consequentialist reason as I expressed it in this chapter.

[17] Nonetheless, for some empirical data on effectiveness, see the literature from agricultural studies I mention in section 1.2.

[18] At this point one might ask whether farm animals are sentient beings in the first place, hence whether they can suffer. Leading animal welfare expert Ian J.H. Duncan puts the question of animal welfare and sentience as follows:

> Acceptance of the fact that welfare is all to do with feelings brings with it a huge, almost insurmountable problem, which is that we can never prove conclusively that any organism is sentient.

Subjective feelings are just that—subjective, and available only to the animal experiencing them. (Duncan 2006, p. 14)

Now, attempting to solve the insurmountable problem of consciousness, and answering the question of whether consciousness applies to farm animals as well as to human beings is largely beyond the scope of this thesis. In this regard, I follow panels of veterinarians in claiming that farm animals are capable of suffering, hence they are sentient. (FAWC 2014, p. 4-5)

[19] If nothing more, they surely have contact with members of their species when they are kept in farms.

[20] I here assume an atheist framework, according to which there is no designer of creatures that assigns purpose to them. However, if we take the designer to be a human designer, there is a sense in which farm animals are indeed designed to fulfil purposes such as human nutrition, agricultural labour, etc. Yet, following Brennan (1984), the idea behind this purposeless ground of moral status is that entities that have moral status are those without intrinsic purpose, and not just any purpose. In the case of farm animals, their purpose of serving human needs is a purpose that is given to them by humans, and it is not intrinsic to their being. If humans didn't exist, farm animals would only be animals with a certain degree of autonomy. On the other hand, a hammer would cease to be a hammer if humans were not there to hammer, and in this regard a hammer has a purpose that is intrinsic. According to Brennan, this is why a hammer has no moral status.

[21] For the grounds of moral status based on harmonious functioning of organisms and how this applies to animals, see Callicott (1980).

[22] Note that farm animals might in fact have high-order cognitive capacities. For an overview of where biology and other natural sciences stand on this issue, see chapter one of Gruen (2011).

[23] For a discussion on this, see Wasserman et al. (2017)

[24] Note that this doesn't imply that farm animals are moral agents, as the two concepts are independent from each other as I show in section 1.3.

[25] https://www.youtube.com/watch?v=xTUrwO9-B_I&t=2922s (33:45)