

The Ethics of Climate Change

Damian J Bridge

Bachelor of Economics (Hons) (Sydney); Master of Finance (International Finance) (UNSW);

Certified Practicing Accountant (CPA); Chartered Financial Analyst (CFA); Chartered Accountant (CA); Fellow, CPA Australia (FCPA); Senior Fellow, Higher Education Academy (SFHEA)

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Abstract

This thesis examines the ethics of climate change and associated mitigation programs, motivated by the need for the world to not only make significant changes, but to consider who should drive such change and whether the actions undertaken are considered from an ethical perspective. This thesis by publication comprises two studies. The first is a systematic literature review of the ethics of climate change published in *Accounting and Finance* and the second is a qualitative study of the ethics of the Green New Deal, under review at the *Journal of Accounting Literature*.

Climate change has impacted the world as we know it and will continue to do so unless radical steps are taken. These steps involve complex ethical decisions that will need to be made by leaders worldwide. The systematic literature review undertaken on the ethics of climate change from 1992 to 2020 reveals three key areas of research: the ethics of who bears the cost of climate change, market solutions, and geoengineering and non-market solutions. Emerging research areas relate to the ethics of population, displacement and resettlement, and leadership. This study reveals an intrinsic relationship between ethics and climate change that extends beyond a purely economic and emissions-based perspective. An ethical perspective must be utilised to ensure that any amelioration efforts are equitable and consider those at the margins, including those in developing nations.

The second study builds on the findings of the first and attempts to understand the major ethical, equity, and leadership issues that may arise when governments plan massive infrastructure and amelioration programs such as the United States' Green New Deal (GND). The methodology developed here could be applied to the plans being created in other developed countries such as

Canada and Korea. A qualitative approach was used to analyse the ethical issues associated with the Green New Deal via semi-structured interviews with 34 published authors of academic articles dealing with the ethics of climate change and 2 industry participants. This study identifies three key themes arising from the proposed implementation of the Green New Deal. Firstly, the GND has the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption. Secondly, the GND will present opportunities for economic and climate success, but some groups may suffer due to its implementation. Thirdly, those that have the capacity, wealth, leadership, and ability should lead climate change initiatives. This may require market solutions in the short-term to reach 2050 net zero targets. This study is the first qualitative study undertaken on the Green New Deal, contributing to the development of the scant literature on this topic and also informing the practical implementation of wholesale infrastructure plans.

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Statement of Original Authorship

I, Damian John Bridge, hereby certify that this thesis, entitled *The Ethics of Climate Change* submitted for examination in the degree of Master of Research, is the result of my own original work and that where reference is made to the work of others, acknowledgement is duly given. This thesis has not been submitted for a higher degree at any other university or institution.

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Damian Bridge

29th July 2022

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Chapter 1 : Introduction

1.1 Chapter Overview

Humankind is at a crossroads in its efforts to deal with the intergenerational issue of climate change. The Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report has identified an increase in the number of significant climate events including floods and drought (Blair et al., 2006). With climate change comes inertia regarding the problem faced in reversing current trends. As one can expect, this has created much debate as to what can be done to attempt to stop climate change. Much of this discussion, however, addresses the economic impacts of climate change and mitigation decisions. With this in mind, human beings must be at the centre of such discussions rather than governments and businesses (O'Brien et al., 2010). This thesis by publication comprises two studies that attempt to address this perspective. An overview of the first study, *The Ethics of Climate Change: A Systematic Literature Review* is presented in Section 1.2, and a summary of the second study, *The Ethics of Climate Change and the Green New Deal: A Qualitative Study* is provided in Section 1.3. Section 1.4 concludes this chapter with a thesis outline.

1.2 The Ethics of Climate Change: A Systematic Literature Review

Without doubt, climate change is the biggest issue facing the modern world. It has the potential to impact life as we know it for both current and future generations. It is also one of the most widely discussed issues in the media, particularly during times of government elections. One aspect not often discussed is the issue of ethics as it relates to climate change. The first study in this thesis addresses this perspective by undertaking a systematic literature review using the methodology described by Linnenluecke et al. (2020). Using the bibliographic mapping approach

(Linnenluecke, 2017) in addition to triangulation, 500 research papers were identified as relating to Ethics and Climate Change from an initial sample of 1988 papers identified in the Clarivate Analytics Web of Science. These 500 papers were then analysed using Bibliometrix™ version 3, an R tool for the comprehensive analysis of Bibliometrix data. The data was then analysed using Biblioshiny, a web-based version of Bibliometrix™.

This analysis identified the most cited research papers in the areas of Ethics and Climate Change based on citation network mapping. Three key areas were identified, namely: who bears the cost of climate change, market solutions, and geoengineering and non-market solutions. The principal findings of this analysis are that ethics must be considered as part of any analysis of climate change. Additionally, we need strong progressive policy to deal with the challenges the world faces and any attempts to deal with the issue require an integrated approach.

This study also addresses emerging areas of research based on the Google Scholar algorithm that is similar to the Bibliometrix™ global citation score detailed above (Beel & Gipp, 2009). Three areas of emerging research were identified, including population ethics, displacement and resettlement ethics, and the ethics of leadership.

Overall, this study reveals an intrinsic relationship between ethics and climate change that extends beyond just the purely economic and emissions-based discussion often favoured by the media and politicians alike. This study also addresses the key developing research areas that may provide avenues for future research. One of these is the ethics of leadership, which is addressed in the second study of this thesis.

1.3 The Ethics of Climate Change and the Green New Deal: A Qualitative Study

This study builds on the work undertaken in the first study and examines whether the leadership shown by the proponents of the Green New Deal (GND) has any ethical implications. In 2019 Alexandra Ocasio-Cortez (AOC) and Ed Markey submitted legislation to the US Senate known as the Green New Deal. One of the building blocks of this program was that there should be radical change and justice for the vulnerable including people of colour, their communities, and migrants. This study finds that the syntax of the Green New Deal focuses heavily on its benefits and not the negatives that may arise.

This qualitative study was undertaken based on grounded theory as described by Salmons et al. (2015). A series of interviews were conducted with 36 participants of which 34 were published academic authors in this field as well as 2 industry participants. Interviewees were asked a series of six open-ended questions, the responses to which were then analysed using Nvivo 12 software. The interview analysis methodology is described in Anfara Jr et al. (2002). Analysis of the responses identified three key themes. Firstly, wholesale infrastructure plans such as the GND have the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption of such a program. Secondly, such plans will present opportunities for economic and climate success, but some groups may suffer because of its implementation. Thirdly, those who have the capacity, wealth, leadership, and ability should lead climate change initiatives. These findings are indeed consistent with the first study that suggests issues around leadership will be a critical area of future research.

1.4 Thesis Outline

This thesis proceeds in the following manner. Chapter 2 presents the study *The Ethics of Climate Change: A Systematic Literature Review* and Chapter 3 comprises the study *The Ethics of Climate Change and the Green New Deal: A Qualitative Study*. Chapter 4 concludes the thesis.

Chapter 2 : The Ethics of Climate Change: A Systematic Literature Review

2.1 Introduction

The issue of climate change has generated thousands of hours of media discussion and thousands of inches of column space in newspapers and magazines. Anecdotally, it seems that two camps have emerged: those that believe the science of climate change and those opposed to such beliefs. These two logics are engaged in different debates on what is essentially a similar issue: one group is focused on the problem while another is focused on the definition of the problem (Hoffman, 2011). This paper seeks to look beyond the polarising commentary described by Hoffman (2011) and explore the major ethical issues of climate change. Much of the climate change debate is focused on the potential legal and economic ramifications, but there is a need to also consider climate change as an ethical problem (Gardiner, 2004; Singer, 2006). This means any future actions to address climate change will require a fundamental paradigm shift in ethics (Jamieson, 1992), as according to Nolt (2011, p. 701) “greenhouse gas emissions have effects much longer-lasting than those contemplated by established ethical theories.”

The topic of climate amelioration efforts gained renewed prominence with the election of President Joe Biden and the “Green New Deal” proposed by US Representative Alexandria Ocasio-Cortez and Senator Ed Markey. Such a significant restructure of a global economy potentially has many risks, including a focus on economic considerations at the expense of ethical implications. Grasso (2013, p. 388) states that climate change is “an unfamiliar moral problem we do not know well”. The International Panel on Climate Change (IPCC) highlights the need for societal transformation and rapid implementation in order to limit global warming damage to 1.5 degrees, as any warming

beyond 2 degrees is likely to result in compound effects that threaten basic human existence (Cuomo, 2011; Hoegh-Guldberg et al., 2018; Roy et al., 2018). This paper underscores the necessity of including an ethical lens in the implementation of climate amelioration efforts. By conducting a systematic literature review of papers related to the ethics of climate change from 1992 to 2020, we identify three key areas of research, namely who bears the cost of climate change, market solutions, and geoengineering and non-market solutions. Emerging research areas include population ethics, displacement and resettlement ethics, and the ethics of leadership.

This paper makes several contributions to the literature and practice. First, by providing a summary of key research developments pertinent to the ethics of climate change, it identifies major ethical issues and also serves as a baseline for further analysis in this evolving research field. Second, given that most governments now seem focused on climate change as a real threat, this paper allows us to consider the impact of any policy with due consideration of the ethics of such policies.

This paper proceeds as follows. Section 2.2 provides a brief background of the ethics involved in climate change, and Section 2.3 describes the research methodology. The key research areas are then discussed in Section 2.4, and emerging areas are explored in Section 2.5. Section 2.6 concludes the paper with a discussion of the key findings and avenues for future research.

2.2 Background

In the 1950s, it became clear that our planet was at risk. Coordinated scientific experiments during the International Geophysical Year (IGY) of 1957-58 sparked research interest regarding humanity's impact on the world (Korsmo, 2007). Roger Revelle and Hans Suess showed in 1957 that carbon dioxide had increased in the atmosphere as a result of the consumption of fossil fuels

(Munk, 1997). Manabe and Wetherald (1967) found that a doubling of carbon dioxide would raise the temperature of the atmosphere by 2.3 degrees Celsius. Scientists also started discussing the real possibility of the collapse of the Antarctic ice sheets (Mercer & Emiliani, 1970). Climate change gained further international attention in 1969 with the establishment of Greenpeace by Irving and Dorothy Stowe (Weyler, 2010).

One of the first significant conferences on climate change, “Man’s Impact on the Global Environment”, was held at the Massachusetts Institute of Technology in 1970. The conference included scientific and non-scientific participants, including representatives of “governmental agencies, governmental spin offs, foundations, businesses, and universities” (Gagnon, 1973, p. 279). This conference marked the general expansion of the issue of climate change into mainstream view, raising issues such as ethics and equality.

In 1999, the first Intergovernmental Panel on Climate Change (IPCC) published their report and confirmed the real threat of climate change and rising temperatures, rejecting the idea that climate change and rising temperatures were not caused by carbon dioxide (IPCC, 1990). This was followed by the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, where the concept of mandatory limits on greenhouse gas emissions was raised (Palmer, 1992; Panjabi, 1997). The 1995 report again identified that climate change would see 46 million people at risk of flooding due to storm surges while a one metre sea level rise would impact 118 million people (IPCC, 1995). The 1997 Kyoto protocol at the UN Framework Convention on Climate Change (UNFCCC) (Oberthür & Ott, 1999) saw most of the world’s industrialised nations sign an agreement to reduce emissions. The 2001 IPCC report is widely believed to be the point at which the concept of climate change was globally accepted (McCarthy et al., 2001; Trenberth, 2001).

While much of the discussion is scientific or economic in nature, the issue of the ethics of climate change has evolved over time. For instance, the American Petroleum Institute began espousing false information about climate change in 1980 (Franta, 2021). In 1989, a group of fossil fuel companies created the Global Climate Coalition as a tool to stop any attempts to regulate climate change, now numbering more than 2000 organisations (Brulle, 2021). This demonstrates that opposition to climate change is not a new phenomenon.

Governments around the world are attempting to deal with climate change, including efforts to subsidise renewable energy and implement carbon taxes. However, these policies inherently involve considerations of ethics and equality and there is a strong need to address these issues, which is the focus of this systematic literature review.

2.3 Methodology

This systematic literature review of the ethics of climate change is conducted using bibliographic mapping as outlined in (Linnenluecke et al., 2020). Bibliographic mapping is a well-established approach to understanding a field of research and its most influential publications (Linnenluecke, 2017). Data is collected in line with the methodology of Janssen et al. (2006), wherein a comprehensive dataset of relevant publications is compiled by undertaking an advanced Boolean search within the Clarivate Analytics Web of Science (WoS) database.

2.3.1 Keywords search

Publications including books and journal articles were identified by undertaking an advanced search within the Clarivate Analytics Web of Science (WoS) database using the search terms

“Ethics” and “Climate Change”. Additional researchers were consulted as the most suitable search terms to minimise any potential bias. A total of 1,988 records were identified.

2.3.2 Data cleaning

The initial dataset of 1,988 records was filtered to only include those articles in the WOS Core Collection, resulting in 1,820 records. The article name, author, and a summary of each record was downloaded in Microsoft Excel and assessed for inclusion in this review. Additional researchers reviewed this process to minimise any potential subjective bias. This triangulation process led to the exclusion of papers relating primarily to fields such as medicine, education, and religion. The final dataset comprised a total of 500 records.

2.3.3 Citation map and identification of key research areas

The final dataset of 500 records was exported to BibliometrixTM version 3, an R tool for the comprehensive quantitative analysis of bibliometric data. This data was then analysed using Biblioshiny, a web-based interface for BibliometrixTM. Figure 2.1 presents a timeline of research activity, demonstrating a marked increase in publications on finance and ethics from 2008. This may reflect negotiations of the Kyoto Protocol at the 2007 United Nations Climate Change Conference, which led to the acknowledgement of issues of inequality and may have spurred renewed research interest (Parks & Roberts, 2010).

Figure 2.1: Publications on Ethics and Finance (per year) from 1992 to 2020

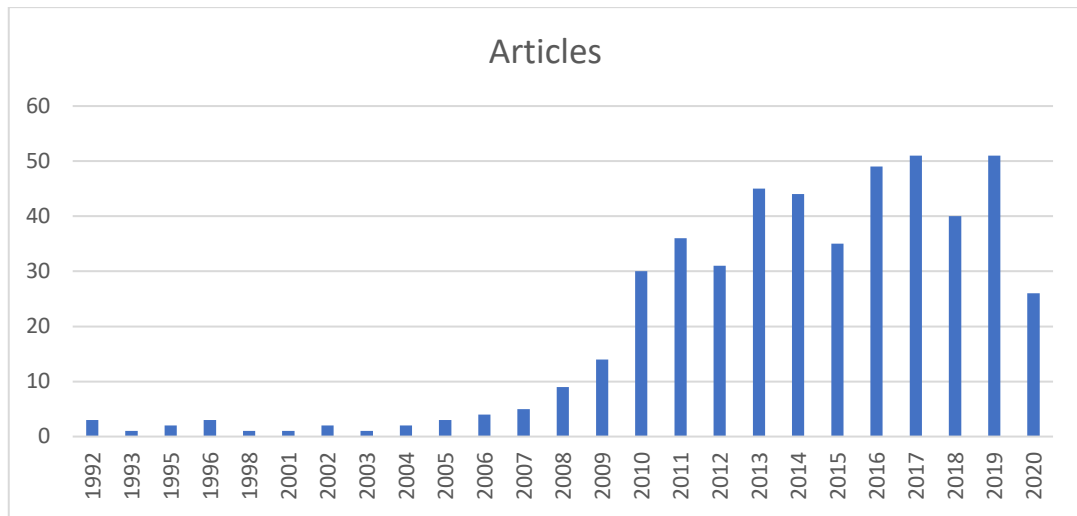
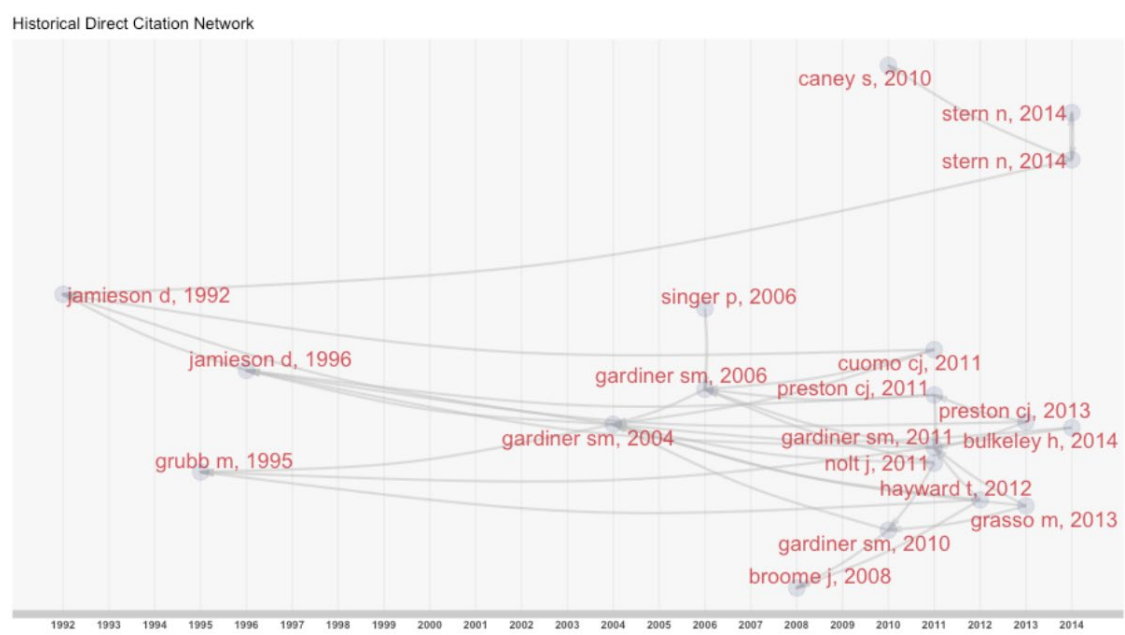


Figure 2.2 presents the citation map, representing the 19 most highly cited publications within the dataset. Each paper is displayed as a node, with lines representing the link between them. This analysis enables us to understand the relationship and development of research within the field of the ethics of climate change over time. These 19 publications are detailed in Table 2.1. The key research areas identified from the citation map are who bears the cost of climate change, market solutions, and geoengineering and non-market solutions. These research areas are described in detail in the following sections.

Figure 2.2: Historical Direct Citation Network



These papers are displayed as nodes along a timeline along with their linkages. Older papers are displayed on the left-hand side and newer papers are on the right-hand side. For full details of each paper, refer to Table 2.1.

Table 2.1: Top 19 most cited publications

<i>The Ethics of Who Bears the Cost of Climate Change</i>					
Author	Year	Title	LCS	GCS	Publication Details
Jamieson D	1992	Ethics, Public Policy, and Global Warming	26	100	<i>Science Technology & Human Values</i>
Grubb M	1995	Seeking Fair Weather - Ethics and the International Debate on Climate-Change	22	83	<i>International Affairs</i>
Jamieson D	1996	Ethics and Intentional Climate Change	23	134	<i>Climatic Change</i>
Gardiner SM	2004	Ethics and Global Climate Change	58	272	<i>Ethics</i>
Gardiner SM	2006	A Perfect Moral Storm: Climate Change, Intergenerational Ethics and the Problem of Moral Corruption	47	184	<i>Environmental Values</i>
Singer P	2006	Ethics and Climate Change: A Commentary on MacCracken, Toman and Gardiner	11	35	<i>Environmental Values</i>
<i>The Ethics of Market Solutions</i>					
Author	Year	Title	LCS	GCS	Publication Details
Caney S	2010	Markets, Morality and Climate Change: What, if Anything, is Wrong with Emissions Trading?	6	28	<i>New Political Economy</i>
Stern N	2014	Ethics, Equity and the Economics of Climate Change Paper 1: Science and Technology	6	29	<i>Economics and Philosophy</i>
Stern N	2014	Ethics, Equity and the Economics of Climate Change Paper 2: Ethics and Politics	7	24	<i>Economics and Philosophy</i>

Ethics of Geoengineering and Non-Market Solutions

<i>Author</i>	<i>Year</i>	<i>Title</i>	<i>LCS</i>	<i>GCS</i>	<i>Publication Details</i>
Broome J	2008	The Ethics of Climate Change	10	68	Scientific American
Gardiner SM	2010	Ethics and Climate Change: An Introduction	11	38	Wiley Interdisciplinary Reviews-Climate Change
Gardiner SM	2011	Some Early Ethics of Geoengineering the Climate: A Commentary on the Values of the Royal Society Report	13	64	Environmental Values
Preston CJ	2011	Re-Thinking the Unthinkable: Environmental Ethics and the Presumptive Argument Against Geoengineering	11	49	Environmental Values
Cuomo CJ	2011	Climate Change, Vulnerability, and Responsibility	9	59	Hypatia-a Journal of Feminist Philosophy
Nolt J	2011	Nonanthropocentric Climate Ethics	8	17	Wiley Interdisciplinary Reviews-Climate Change
Hayward T	2012	Climate Change and Ethics	11	27	Nature Climate Change
Grasso M	2013	Climate Ethics with a Little Help from Moral Cognitive Neuroscience	6	13	Environmental Politics,
Preston CJ	2013	Ethics and Geoengineering: Reviewing the Moral Issues Raised by Solar Radiation Management and Carbon Dioxide Removal	6	63	Wiley Interdisciplinary Reviews-Climate Change
Bulkeley H	2014	Contesting Climate Justice in the City: Examining Politics and Practice in Urban Climate Change Experiments	6	97	Global Environmental Change-Human and Policy Dimensions

This table is sorted by Historical Direct Citation Network group in ascending order. The Local Citation Score (LCS) refers to the number of citations of the publications within the collection studies. The Global Citation Score (GCS) refers to the number of citations in the Web of Science for each publication.

2.4 Key Research Areas

This section explores the three key research areas in more detail, namely who bears the cost of climate change (Section 2.4.1), market solutions (Section 2.4.2), and geoengineering and non-market solutions (Section 2.4.3).

2.4.1 *Who bears the cost of climate change?*

This research area comprises several studies published between 1992 – 2006 and examines who bears the cost of climate change, namely whether it is borne by those who caused the problem or those that are most impacted. Climate change has been described as a “perfect moral storm¹” that is vulnerable to moral corruption (Gardiner, 2006, p. 397). The costs of climate change are not purely economic; there are also ethical costs (Gardiner, 2004). Jamieson (1992, p. 144) notes that climate change “will have impacts that are so broad, diverse, and uncertain that conventional economic analysis is practically useless.”

Gardiner (2006, p. 401) notes that the source of “climate change is located deep in the infrastructure of current human civilisation; hence, attempts to combat it may have substantial ramification for human social life.” Slowing global warming will involve large economic costs and require significant lifestyle changes (Jamieson, 1992). Any discussion of the ethics of climate change should therefore include an analysis of who bears the cost of climate change. Overwhelmingly, poorer countries are more affected by climate change and fail to receive any

¹ A “perfect moral storm” is described by Gardiner (2006) based on the Hollywood movie *The Perfect Storm* that documented a fishing boat dealing with the convergence of three bad storms.

benefits from the activities that caused climate change in the first place (Jamieson, 1996). Grubb (1995) notes that although climate change is a global problem driven by economic development in addition to energy and land usage, the costs of climate change are largely transferred to developing countries. Grubb (1995) and Jamieson (1996) indicate that developed nations should take the lead in dealing with climate change, and mitigation projects should be implemented in an ethical manner that does not disadvantage developing countries. Indeed, Grubb (1995) calls for the most vulnerable to be compensated and protected from further costs associated with climate change.

If climate change is viewed as a moral issue, then change can be cooperative as opposed to coercive in nature. Climate change must be addressed from physical, economic, and ethical perspectives (Geva, 2008). At present, those who have benefited most from the development and industrialisation associated with climate change do not bear full responsibility for rectification. This also applies to the intergenerational costs of climate change, wherein the costs of climate change caused by our parents may end up being borne by our grandchildren if changes are not made (Gardiner, 2006). Additionally, those that are disadvantaged the most (i.e., developing countries) may not significantly benefit from any decisions to improve the environment, but in fact may potentially be worse off.

2.4.2 Market solutions

There is a limited number of studies in this research area, published between 2010 and 2014. These papers examine the utility of economic-based market solutions to the issue of the ethics of climate change. Stern (2014a) notes that regardless of a person's ethical persuasion, there is no doubt that the world needs to take strong action as it pertains to climate change. Stern (2014a, 2014b) argues

that economists typically underplay the ethics involved in policy making, noting that “our political and social decision-making systems have often led to outcomes that are discriminatory and unethical; slavery and denying the vote for women were unethical but were strongly defended at the time.” Climate change is complex and multi-faceted and cannot be expressed as a simple economic model. There is a need for “equitable access to sustainable development” (Stern, 2014b, p. 447) such that rich countries support mitigation and reduction methods by fostering growth and poverty alleviation in developing nations. Stern (2014b, p. 495) further notes that most approaches to equity have “serious problems scientifically, ethically and economically.” Caney (2010) reiterates this point that costs must be shared in an equitable fashion, pointing to the inequitable distribution of climate change costs via current emissions schemes.

This research area indicates the need for strong, progressive policy agendas that break down the status quo. Further, governments need to not only address climate change but also consider the ethical issues contained in such policy. This consideration must not be merely superficial, but of significant detail and complexity in order to provide a solid foundation for the resolution of the effects of climate change.

2.4.3 Geoengineering and non-market solutions

Both geoengineering and non-market solutions are examined from an ethical perspective by several authors in papers published between 2008 – 2014. Geoengineering refers to large scale artificial intervention in the climate and has recently gained prominence as a potential solution to climate change (Gardiner, 2010), either as an emergency measure until the climate is able to stabilise or an ongoing means to preserve habitable living conditions (Preston, 2011, 2013). It represents a move from a climate impacted by population to one managed by the

population, and describes a future wherein humanity is effectively “living under managed skies” (Preston, 2011, p. 461).

Geoengineering is widely viewed as an acceptance of humanity’s failure to address climate change through other means (such as market solutions discussed in the previous section). However, refusing to explore this possibility is viewed by others as a type of eco-fascism, in that not taking geoengineering action may cause widespread harm. Preston (2011, p. 459) notes that “concerns about social justice and geopolitical stability are clearly some of the most important ethical issues that geoengineering faces.”

Grasso (2013) argues that we must adopt a consequentialist approach to climate ethics, wherein actions to prevent climate change are assessed based on the outcomes they produce (i.e., the consequences). Consequentialism is “closer to the moral process and judgements human beings normally use when faced with issues like climate change that involve impersonal notions of harm” Grasso (2013, p. 377). Hayward (2012, p. 846) presents the notion of biological citizenship where people have a focus on “being rather than having.”

Researchers agree that we need an integrated approach that combines mitigation and adaptation (Caney, 2010; Grasso, 2013; Hayward, 2012). Here mitigation entails protecting nature from society (long-term prevention) while adaptation seeks to protect society from nature (short-term prevention). There is debate within the literature about mitigation and adaption at both the level of individuals and the level of corporations and governments. Cuomo (2011) argues that there has been too much focus on the need for individuals to reduce emissions, diverting attention from the responsibilities of corporations and governments for climate change remediation efforts. Attempts to monetise the costs and benefits of climate change are not borne solely by those responsible,

with a disproportionate amount borne by developing nations. The UK Royal Society, cited by Preston (2015, p. 23) states “the greatest challenge to the successful deployment of geoengineering may be the social, ethical, legal, and political issues associated with governance, rather than scientific and technical issues.”

Overall, this research area explores whether geoengineering is an ethical solution, either in terms of a short-term emergency measure until the climate is able to stabilise or an ongoing measure to preserve habitable living conditions. The key issue raised is one of responsibility: do we try to fix the problem at its source, or do we attempt to repair a broken system? Additionally, there is the issue of responsibility and mitigation. Is this the remit of individuals, organisations, or governments? Further, how do we monetise the costs and benefits of any remediation efforts?

2.5 Emerging Research Areas

To identify emerging topics in climate change and ethics research, a detailed search was undertaken using Google Scholar to identify papers published between 2016 - 2020². These publications were manually assessed by triangulation with additional researchers to identify three key emerging research areas: population ethics (Section 2.5.1), displacement and resettlement ethics (Section 2.5.2), and the ethics of leadership (Section 2.5.3).

² Beel and Gipp (2009) note that the Google Scholar algorithm is similar to the Global Citation Score used within Bibliometrix™.

2.5.1 Population ethics

The emerging research area of population ethics is both important and complex, as significant actions on climate change can impact populations in developing and developed nations. Arrhenius et al. (2021, p. 1) note that “we do not know what to do about intergenerational policy until we know what to do about population ethics.” Budolfson and Spears (2021) suggest that the principal question of population ethics is one of “how policy-makers should weigh changes in average wellbeing against changes in population size”. Any controls on population size or movement need to be ethically examined prior to implementation.

2.5.2 Displacement and resettlement ethics

Migration and displacement due to climate change are projected to increase over the coming decades, with resettlement programs across multiple continents where populations face high climate risks, such as the Maldives, Marshall Islands, Kiribati, and Tuvalu (Draper & McKinnon, 2018; Wyman, 2017). We have an ethical obligation to help climate migrants; however, much of the current debate focuses on whether developed nations should accept these stateless climate migrants, and if so, how many (Eckenwiler, 2018). Draper and McKinnon (2018, pp. 1-2) argue that the “focus on an idealized international climate migrant has made the ethics of climate-induced community-level resettlement less visible than it should be”. In doing so, developed nations largely avoid any sanctions or implementation of changes in energy policy or technology necessary to reduce the disproportionate climate change burden borne by developing nations (Sovacool et al., 2016).

2.5.3 Ethics of leadership

Change requires good leadership founded on ethical principles, “including the willingness to understand and respond constructively to resistance” (Taylor et al., 2020, p. 16). Crosweller and Tschakert (2020, p. 1) note that “climate change, extreme events, and related disasters pose significant challenges not only for the poorest and most vulnerable populations, but also for leaders in disasters and emergency management.” Ethical leadership, which involves qualities such as care and compassion, must be displayed at both the country and corporation level. For example, developed nations such as the United States must take charge of global climate change action and protect less developed nations who largely bear the consequences of unchecked industrialisation responsible for our current climate predicament. Any such policy or climate change amelioration efforts must be grounded in ethical principles (Taylor et al., 2020). At the corporation level, there is a positive relationship between ethical leadership and organisational behaviour relating to environmental citizenship (Khan et al., 2019). Researchers also point to the need for intergenerational leadership in today’s globalised world, indicating that corporations should play a leading role to alleviate current intergenerational imbalances (Puaschunder, 2016, 2018).

2.6 Conclusion

This paper reveals the intrinsic relationship between ethics and climate change that extends beyond a purely economic and emissions-based perspective. By conducting a systematic literature review of the ethics of climate change research from 1992 to 2020, we identify three key research areas, namely who bears the cost of climate change, market solutions, and geoengineering and non-market solutions.

Climate change is complex and multi-faceted and cannot be expressed as a simple economic model. As a result, market solutions present a challenge in capitalism-based economies and societies. Instead, an ethical perspective must be utilised to ensure that any amelioration efforts are equitable and consider those at the margins, including those in developing nations. There is a need for strong, ethical policy that goes beyond simple cost and benefit analysis; recent discussion of “Green New Deals” proposed in developed nations is encouraging in this regard. Geoengineering as a potential solution may be ethically fraught due to its inherent supposition that the environment should change to meet the needs of the population rather than the opposite.

We also identify three key emerging research areas relating to population ethics, displacement and resettlement ethics, and the ethics of leadership. These research areas provide avenues for future research, particularly framed by a consideration of the disparity between those that cause climate change and those affected by it.

Chapter 3 : The Ethics of Climate Change and the Green New Deal:

A Qualitative Study

3.1 Introduction

“I urgently appeal, then, for a new dialogue about how we are shaping the future of our planet. We need a conversation which includes everyone.” Pope Francis (2019).

“I don't know what word in the language... applies to people of that kind who are willing to sacrifice the literal existence of organized human life... so they can put a few more dollars in highly overstuffed pockets.” Noam Chomsky (Democracy Now, 2018).

According to the Pew Research Center (2021), two thirds of Americans believe that the government should do more to address climate change. This perspective has been widely discussed and debated, particularly in the wake of environmental disasters such as wildfires and floods. Many such arguments are couched in terms of the economic benefits and costs of amelioration efforts (i.e., the impact of lost coal export revenue and associated legal responsibilities). This paper proposes a third dimension, namely the issue of ethical responsibilities. Indeed, analysis shows that most politicians see climate change as an economical or technical issue and fail to consider the human and social dimensions (Willis, 2017). An interest in the ethics of climate change is necessary in order to include all groups of people in any solution under consideration (Yu et al., 2021).

In 2019, Alexandria Ocasio-Cortez (colloquially referred to as AOC) rose from relative obscurity to be elected to the United States House of Representatives for New York's 14th Congressional

District. Alongside Senator Ed Markey, AOC submitted legislation to the US Senate known as the Green New Deal (GND) outlining a plan to tackle climate change. This built on an earlier iteration that asked policy makers to go back to the future and revisit the New Deal great depression years and propose radical reforms (Aşıcı & Bünül, 2012; Barbier, 2010; Luke, 2009). Intrinsic to this plan is the idea that there should be justice for vulnerable communities, people of colour, the poor, and migrants (amongst many others) as it is expected that these people will suffer the most from climate change (Buller, 2020). The GND legislation proposed a 10-year plan to discontinue the use of fossil fuels, develop infrastructure, and reinvigorate the US economy. The plan, as it currently reads focusses heavily on the benefits of the plan as opposed to any negatives that may arise. Additionally, Presidential hopeful Senator Bernie Sanders produced a fully costed version of the plan, including a greater level of detail (Galvin & Healy, 2020).

As Ciulla (2004) notes that the (moral) failures and triumphs of leaders carry a greater impact than those of non-leaders, if our leaders fail to address the ethical impacts and responsibilities of a Green New Deal, the implications are likely to be significant. However, we need to be careful that any proposed solutions do not create other problems; for example, we can't ban coal overnight if it causes immeasurable suffering in developing nations (Jamieson, 1996). The wide-reaching consequences of climate change also calls for drastic solutions; one such casualty may be the concept of market solutions despite the insistence of large corporations, governments, and neoliberals (Kolk & Pinkse, 2007).

The AOC and Markey policy created much debate along bipartisan lines with many believing that such an ambitious plan would "ruin" the United States economy. However, the idea of a GND is not limited to the United States; other countries including the European Union, Korea, United

Kingdom, and Canada have developed their own versions (MacArthur et al., 2020; Maya-Drysdale et al., 2020).

The motivation of this paper is to provide a detailed ethical analysis based on qualitative research as to the ethical considerations of the GND. When reading the proposal, much is made of the benefits of this plan but there is little if no discussion of the negative impacts of the plan. This raises the issue that there may be ethical issues that arise that have not been considered and may impact on the wider community.

A study such as this makes several important contributions. Principally amongst them is the identification that such a massive program, whether it be in the U.S. or another jurisdiction, must not only be addressed from the perspective of what is economically feasible or complies with domestic or international law. This study finds that there needs to be greater ethical consideration and any policy needs to be address ethical and equity issues. This paper finds that there are likely to be winners and losers in such a plan. The need arises to ensure that poorer nations are not disadvantaged and that there is justice for all parties, particularly from the perspective of intergenerational justice. The major benefit of this study is that it represents one of the first efforts to investigate the current version of the GND and its implications for populations from an ethical and equity perspective.

This qualitative study utilises an interview approach drawing on grounded theory (Salmona et al., 2015) to explore the ethics of the Green New Deal. Conducting semi-structured interviews with 34 published authors of academic articles dealing with the ethics of climate change and 2 industry participants, this paper identifies three key implications. Firstly, the GND has the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption.

Secondly, the GND will present opportunities for economic and climate success, but some groups may suffer due to its implementation. Thirdly, those that have the capacity, wealth, leadership, and ability should lead climate change initiatives.

This paper proceeds as follows. Section 3.2 presents a review of the relevant literature and develops the research questions. Section 3.3 describes the research methodology, followed by an in-depth examination of the three key themes in Sections 3.4 – 3.6. Section 3.7 provides a discussion and of the main findings and Section 3.8 concludes with suggestions for future research.

3.2 Literature Review

There is limited research regarding the Green New Deal, largely due to the newness of the plan and the time it takes to develop such literature. A search on Google Scholar³ for articles written after 2017 using search terms such as “What is the Green New Deal” and “Green New Deal Ethics” reveals no qualitative or quantitative studies regarding the ethics of the GND. MacArthur et al. (2020) note that there is a global movement of coordinated government policy to address the interrelated issues of climate change, energy security, and environmental degradation. Gustafson et al. (2019) believe climate change requires solutions of a similar scale to the problem, such as the Green New Deal, which proposes a transition to 100% clean energy, green jobs, investment in green technology research and development, sustainable infrastructure, and clean air and water guarantees. Mastini et al. (2021) suggest that the decarbonisation of the economy in line with the Green New Deal may provide a valuable alternative to market-based approaches. Such a scheme

³ Google Scholar is widely viewed as an effective means to search popular literature as the algorithm takes into account an article’s citation count (Beel & Gipp, 2009)

would provide protections to citizens impacted by environmental factors as well as a transition capability from brown to green jobs; however White (2020) surmises that any efforts to decarbonise will require enormous amounts of creative labour and new methods of collaboration. This section explores the need for a specific ethical focus (Section 2.1), climate inequality (Section 2.2), and ethical considerations (Section 2.3).

3.2.1 Why do we need a specific ethical focus?

As described in Bridge (2021), the ethical aspects of climate change are far reaching and of critical importance and should therefore be included in any conversation about climate change solutions. In other words, an ethical focus must be at the forefront of any policy that drives change. However, self-deception allows people to act in a manner that is self-interested, while they believe their personal moral principles remain intact (known as “ethical fading”). Tenbrunsel and Messick (2004) note that an “ethical decision often involves a trade-off between self-interest and moral principles. By avoiding or disguising the moral implications of a decision, individuals can behave in a self-interested manner and still hold the conviction that they are ethical persons.” As such, legislators may believe that the critical decisions that they are making incorporate an ethical lens when in fact they are acting in their own self-interest (Tenbrunsel et al., 2010).

Implicit bias is also an issue, wherein we associate stereotypes with certain groups of people without being aware of it. Phrases such as “greenies” and the “lunatic left” serve to discredit those proposing radical changes. Regarding the Green New Deal, it is therefore easy for legislators to dismiss climate warriors such as AOC, Markey, and Sanders. It is also necessary to consider unconscious biases (Fiarman, 2016), situational factors (Tenbrunsel, 1998), and biases contained within predictions of the future (Epley & Dunning, 2006). Cognitive dissonance also affects

climate change solutions, as despite being presented with alternative evidence, people remain wed to their original beliefs. We are dealing with the implication that any spending (especially that facilitated by government) is good, and in many economies such as Australia (coal) and Canada (oil), any plans to address climate change will have massive economic implications. It is thus necessary to view the Green New Deal on its own merit and without bias. This study examines the Green New Deal, which purportedly has an ethical basis, to determine if this is indeed the case. The first research question seeks to determine whether there are ethical issues and as a result, equity issues, that may arise with the promulgation of the Green New Deal. These may be inadvertent or a function of ethical fading and cognitive dissonance. Therefore, the first research question is as follows:

RQ1: Are there ethical and equity issues associated with the implementation of wholesale infrastructure plans such as the GND?

3.2.2 Does climate inequality exist?

According to Galvin and Healy (2020) the economic rationalisation of such a plan is based on Keynesian economic demand side principles. These are the same principles relied on by President Franklin D Roosevelt to kickstart the US economy in the depths of the great depression. That is, the government creates as much money as needed and withdraws money from circulation by taxes, fees, and security issuance. Galvin and Healy (2020) note that Sanders' version requires a 40% increase in taxes, similar to increases during World War 2. This is an apt comparison as we are currently facing a war on climate change, and such a war leads to climate inequality. A mere 10% of the global population is responsible for 50% of emissions, and the highest emission countries have the greatest concentration of political and economic power (for example the United States

and European Union) (Pettifor, 2020). This relationship has a significant role in both environmental degradation and preventing climate action (Knight et al., 2017). Income inequality also increases carbon emissions (Jorgenson et al., 2016). The second research question addresses the potential inequality of the Green New Deal wherein some parties may economically benefit while others are disadvantaged to reduce emissions, despite the best intentions of the creators. Therefore, the second research question is as follows:

RQ2: Are there parties that will benefit from the Green New Deal while others are disadvantaged?

3.2.3 Ethical considerations

Energy is critical to human and sustainable development (Mundaca et al., 2018). A low carbon transition program must distribute the costs and benefits in an equitable manner with an awareness of the relationship between energy systems and social justice (Jenkins et al., 2018; MacArthur et al., 2020). This means that any program with the capacity to cause widespread social and structural change must address economic, legal, and ethical perspectives. This “triple bottom line” approach to decision-making should form the basis of any discussion, with ethics as its foundation.

Boatright (2012) notes that there are two schools of thought to consider. One is that law and ethics are related to different perspectives of our lives, with law governing our public life and ethics our private life. A second perspective is that the law includes or covers the ethics of business, such that ethical laws that apply to business have been enacted by legislators. Boatright (2012) then goes on to state that the law is in fact not always appropriate for regulating some aspects of business as not everything that is immoral is illegal. This can be said to apply to any solution to the problem of climate change. For example, an action that may see a temporary increase in sea

levels may be deemed legally and economically feasible in Australia given the utilitarian long-term benefits, even though it may have devastating effects on South Pacific micro nations, Therefore, we need to consider more than the law in our decision-making. Boatright (2012, p. 10) summarises this by noting that “reliance on the law alone is a prescription for disaster.”

Discussing the issue of ethics as it relates to Corporate Social Responsibility (CSR), Geva (2008) suggests that ethics should play a part in all domains of responsibility. If this applies in business, it should of course also apply to those that legislate for business. Pettifor (2020, p. 7) notes the need to focus on more than a globalised financial system and instead seek a “more balanced system of economic and ecological justice.” As such, the third research question examines whether the Green New Deal will favour its sponsor, the United States, to the detriment of smaller members of the global community. Cuomo (2011) suggests that those countries most responsible for climate change should endeavour to address the issue without imposing a burden on those countries that did not cause the problem or benefit from it. At a fundamental level this is consistent with Chancel and Piketty (2015) who believe that any funding for a global adaptation fund used to reduce emissions should come from the wealthiest countries, namely the United States and Europe. Therefore, the third research question is as follows:

RQ3: Should those responsible for climate damage be responsible for leading efforts to fix the damage?

3.3 Research Methodology

This qualitative study utilises an interview approach drawing on grounded theory (Salmona et al., 2015) to explore the ethics of the Green New Deal. The concept of grounded theory, originally

created by Glaser and Strauss (2017), is based on the idea that a theory is generated and then data is collected and analysed in a systematic way. Grounded theory is applied in this research in the form of data collection using an interview format, transcription of this data, and finally analysis using NVivo 12 software. This method is based on the use of in depth interviews using open ended questions, which may be adjusted as theory emerges (Noble & Mitchell, 2016).

The methodology behind the analysis of the interviews is described in detail by Anfara Jr et al. (2002) and Noble and Mitchell (2016) who demonstrate that the coding of the data is an iterative process. This is illustrated in Table 3.1, where key research questions are related to the coded data that is collected. According to Strauss and Corbin (1990) there are three stages of data analysis. The first of these is line by line coding to identify key concepts. NVivo 12 was used to facilitate this stage of analysis. Concepts and phrases are highlighted as belonging to sub-categories which are then refined into categories. The idea is that the researcher is attempting to identify key themes within the data analysed. The next stage is axial coding (Noble & Mitchell, 2016) whereby relationships are now identified in the data between categories and connections identified. These connections are described in Table 3.1 as sub-themes. Once completed, we have selective coding which involves identifying a core category and relating it to other categories. These are described in Table 3.1 as key themes. Once completed, relationships can be authenticated using other data sources as described below.

3.3.1 Interview sample

A total of 36 participants were identified including 34 published authors of academic articles primarily dealing with the ethics of climate change and 2 industry participants. The academics were identified in Bridge (2021). The chosen sample was triangulated with a leading academic in

the field of climate change and qualitative research. Approximately 60% of participants were at the Professor or Emeritus Professor level while about 20% identified as Associate or Assistant Professor. The remainder held titles such as Lecturer and Senior Lecturer, apart from 6% that identified as industry participants. Further, 94% held the academic designation of Doctor of Philosophy.

3.3.2 Interview format

Semi-structured interviews were utilised to facilitate open and free-flowing discussion in order to capture participants' true feelings that may not be available from strict survey information (Labuschagne, 2003). Grounded theory supports this approach as it enables the use of open-ended questions to gauge a participant's reaction to a question and then allows further exploration of key discussion areas. This approach can greatly improve our understanding of this developing field, and the appropriate ethics approval was provided by Macquarie University. To understand the ethical implications of the Green New Deal and put the research questions in context, six interview questions were asked of participants (see Appendix Table 1). The research questions were used as the basis of all interviews but were asked in an open-ended manner so that topics could be explored in detail as participants responded to the initial prompt question. The aim of the interviews was ultimately two-fold, namely, to understand the ethical issues associated with the Green New Deal and explore whether there were any other issues that needed to be considered in such an analysis. Due to travel restrictions and with most participants located overseas, interviews were conducted by way of a Zoom call, with an average length of approximately one hour. Each interview was recorded, transcribed, and converted to Microsoft Word for analysis.

3.3.3 Analysis of interview data

The interview transcripts were analysed using a tandem top-down and bottom-up approach. Firstly, a top-down approach was undertaken by reading through the transcripts to gain an understanding of the broad themes present within the data and whether there were indeed significant ethical considerations of the Green New Deal. Secondly, a bottom-up approach was undertaken via NVivo12 software analysis of the transcripts. This software utilises a data-driven coding methodology consistent with grounded theory. The NVivo software is best described as a user-driven coding tool that enhances the categorisation of thoughts and concepts across many transcripts in a systematic and structured way to facilitate analysis; the software does not undertake analysis itself. Keywords were collected and summarised to form subthemes. Once this data was brought into a manageable format, keywords and comments were grouped together into nodes, leading to the identification of three key themes mapped to the three research questions (Table 3.1). These key themes are discussed in detail in the following sections.

Table 3.1: *Key themes arising from semi-structured interviews with academics from the fields of sustainability, ethics, and climate change*

The Green New Deal (Research questions 1, 2 & 3)		
RQ1: Are there ethical and equity issues associated with the implementation of wholesale infrastructure plans such as the GND?	RQ2: Are there parties that will benefit from the GND while others are disadvantaged?	RQ3: Should those responsible for climate damage be responsible for leading efforts to fix the damage?
Key Themes		
1. Wholesale infrastructure plans such as the GND have the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption.	2. Wholesale infrastructure plans such as the GND will present opportunities for economic and climate success, but some groups may suffer due to its implementation.	3. Those that have the capacity, wealth, leadership, and ability should lead climate change initiatives.
Sub-themes		
1A Equity 1B Justice 1C Ethical Considerations	2A Winners (Economic Advantages, Green Industries, Investment and Innovation) 2B Losers (Business, Developing Countries, Fossil Fuel and Automotive Industries, Marginalised Communities)	3A Impact, Leading and Making Change 3B Climate Targets and Taxation

To add to this analysis, the interview transcripts, observations, and developed themes were triangulated with memorandum created by the interviewer and documents including the Green New Deal and Pope Francis' Encyclical (see Figure 3.1 and Table 3.2). Triangulation of findings is useful as it improves the reliability of findings given the variables and their interpretation may be complex. Analysing multiple sources of evidence is widely viewed to add to the validity of findings (Anfara Jr et al., 2002).

Figure 3.1: Sources

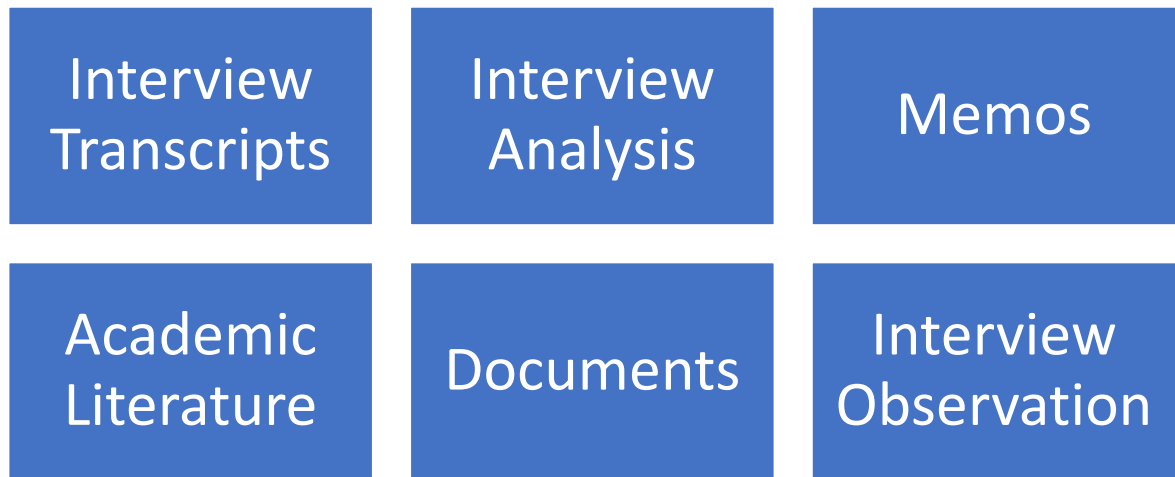


Table 3.2: Triangulation of findings

Key themes	Interviews	Observations	Memos	Documents
1. Wholesale infrastructure plans such as the GND have the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption	✓	✓	✓	✓
1A Equity	✓	✓	✓	✓
1B Justice	✓	✓	✓	✓
1C Ethical Considerations	✓	✓		✓
2. Wholesale infrastructure plans such as the GND will present opportunities for economic and climate success, but some groups may suffer due to its implementation.	✓	✓	✓	✓
2A Winners (Economic Advantages, Green Industries, Investment and Innovation)	✓	✓	✓	✓
2B Losers (Business, Developing Countries, Fossil Fuel and Automotive Industries, Marginalised Communities)	✓	✓	✓	
3. Those that have the capacity, wealth, leadership, and ability should lead climate change initiatives.	✓	✓	✓	✓
3A Impact, Leading and Making Change	✓	✓	✓	✓
3B Climate Targets and Taxation	✓	✓		✓

3.4 Wholesale infrastructure plans such as the GND have the potential to present equity, justice, and ethical issues that must be considered as part of any intended adoption

This key theme encompasses the sub-themes of equity (Section 3.4.1), justice (Section 3.4.2), and ethical considerations (Section 3.4.3). The GND attempts to tie concerns about equity or justice with climate policy but after that “things get very murky” (Respondent 19), with other respondents noting that one needs to be sceptical of purportedly sustainable programs.

3.4.1 Equity

The concept of equity (and related terms equality and inequality) was identified on 93 occasions during the interviews. Participants noted that wholesale infrastructure plans are likely to involve equity issues, and these must be addressed. They also expressed concerns regarding short-term political processes that may serve to exacerbate equity issues. Considering this, when reading the GND there is much made of the beneficiaries of the deal, namely the parties expected to be protected, but little discussion of those that may be impacted. Optimistically, Respondent 33 identified that perhaps a plan could either solve some of the existing inequality but at least not exacerbate the issues, especially those hardest impacted in tropical regions.

Further to this was the theme of inequality. As stated by Respondent 15, the opportunity exists that “if you can address economic inequality and the environmental issues kind of in the same package.... You stand a lot more chance of making progress.” The inherent focus of the GND is to benefit the proposing country (i.e., the United States), which may create “more inequality” globally (Respondent 30), leading to “inevitable” equity issues between the first and third world (Respondent 25). Participants also expressed concerns regarding intergenerational equity issues if the GND adopts a short-term implementation focusing solely on the current generation.

Respondent 26 raised the idea that there may be equity issues in the long term as opposed to short term, again suggesting intergenerational issues. With all these plans there is also the idea that the methods by which they are implemented will have the greatest equity impact. That is, are plans focused on the cities, with the idea that any new economic policies will generate inequality with the wealthiest benefiting? New economic policies may generate inequality by benefiting the wealthiest, for example by creating solar and wind farms in rural areas of the US for the gain of urban beneficiaries.

Respondent 19 stated “if you’re going to do it, you’re going to need to mobilize you know, the voters and leadership, who honestly don’t give a damn about equality” and Respondent 8 noted that “no one in the US talks about equity and climate.” This is consistent with the idea raised by Respondent 23 that there is “a big gap between what the law says on paper and how it is implemented.” These responses suggest that legality will be an issue and that there is a need for legal scholars to help create appropriate regulations to ensure all groups are treated equitably when decarbonising the economy.

Equity can be viewed as a moving scale in that the GND may appear more equitable than other plans, but not actually be that equitable. This means that the “different elements need to be quite carefully managed” (Respondent 7) to avoid some groups being unfairly economically impacted. Respondent 14 noted that policies arising from the GND are likely to stimulate innovation, which may lead to equity issues if technology patents are utilised to restrict access to such innovative technologies (in the form of prohibitive cost or difficulty), further exacerbating inherent inequality. It is imperative that revenues flow in an equitable manner throughout the transition process.

3.4.2 *Justice*

The concept of justice (and related terms fairness and structural employment) has become more recognised as an environmental problem in the wake of President Joe Biden's appointment of a Deputy Director of Energy Justice. For the GND to be perceived as just and fair, Respondent 13 notes that "so much comes down to the details of the implementation...and it's difficult to say from the outset whether such a program is or isn't going to be socially just." Much of the discussion regarding the GND has been about whether it will work in principle with little attention paid to the fairness of the project. Respondent 30 suggests that when we put this in context and focus on fairness "we risk creating more and more inequality." As stated by Respondent 20, we run the risk that the "intent is good, but the implementation is unfair." For example, taxes collected from the sale of petrol/gasoline currently go towards road maintenance, but this is not the case with electric vehicles. If not managed correctly we may have users of older vehicles, perhaps from a lower socio-economic class, bearing a greater cost of road maintenance with the benefits being consumed by higher socio-economic classes. Similarly, subsidies offered on the purchase of new electric vehicles may only assist wealthier consumers, with less wealthy consumers missing out. Respondent 12 noted the need for a strong democracy to create a sustainable economy that promotes justice, but also conceded that such democratic processes tend to "be slow at generating rapid change." Further, Respondent 17 expressed that "environmental justice is going to be at the heart of everything that you do, but it's less clear what....[is meant] by that."

When one thinks of justice, an immediate word that comes to mind is the concept of fairness. With this, will projects like the GND in fact be fair to all concerned? The issue raised here is whether implementation of such a plan can indeed proceed in a manner that is considered fair. The GND is relatively quiet on this concept with a focus on the beneficiaries. Coupled with this is the idea that much discussion of the GND has been about whether it will work in principle but little of the

fairness of the project. Justice raises the issue therefore of who will benefit and who will become disenfranchised. This also raises the issue of intergenerational justice and the fact that a GND needs to address this. Additionally, any continuation of the activities that release carbon are in fact an injustice, but the argument exists that we never actually eliminate inequality or injustice, you just tend to redistribute it. The idea that those impacted by the effects of say coal burning power stations (e.g., heightened health problems) and set to need to possibly transition to alternative employment means that they are inordinately affected before and after the change.

The concept of distributive justice has generated feelings within the interviewee sample that the GND is good in terms of intergenerational and distributive justice but there is a need to protect those employed in existing brown industries. This brings us to the key theme of structural employment and the notion that those with unskilled jobs will be the most impacted while not meeting the needs of those in the most marginal groups (Respondent 13). Additionally, some sectors will be affected more than others (e.g., coal). As identified by Respondent 19, there may in fact be an issue wherein geography may play a part in your ability to transition to a job in the green economy. Will we see those in blue collar jobs able to pivot to new roles? This raises the possibility that governments should provide funding to people to retrain, but in an equitable manner (i.e., if they have two kids and a mortgage, they need more than minimum government training assistance). Fairness would also imply that projects like the GND represent government social decisions and whether it is fair if the government bears the cost of people to look for new employment (Respondent 22). One would think so. This may be particularly relevant for those at the top end of the blue collar pay scale who may have training from a technical college or the like and be well paid, with transition to similar paid employment not possible. As stated by Respondent 32, “everyone needs to have a viable income” via retraining and work with a “meaningful

purpose.” This means that we should focus on the impacts on individuals and not just corporations (Respondent 34).

3.4.3 Ethical considerations

Participants raised a variety of ethical considerations related to the Green New Deal, with Respondent 2 noting that ethics requires society to take effective action against climate change. It must be acknowledged that the terms equity and ethics were at times used interchangeably by participants. In addition to the need for a just transition and equitable distributional impacts detailed in Sections 3.5.1 and 3.5.2, participants discussed the need to recognise past injustices and inequities (often a function of unequal urban development and other historical legacies) on the path to adoption of the GND (Respondents 13, 18). Respondent 21 raised the difficulty of “maximising the benefit for the most people” while others suggested that what we mean by net zero is in fact a fraught ethical issue.

When one considers climate action there is usually little discussion of ethics. However, Respondent 19 made the point that the GND brings with it implicit ethical considerations, such as just transitions, and distributional impacts detailed above. This represents a major advance in policy and associated discussion. The issue of ethics and the GND raises the idea of what this means for different parts of society. As stated by Respondent 13, “the major ethical issue would be effectively, whether you start from the situation as it is now, and you try to improve it, or whether you also recognise the past injustices and try to address them.” In fact, we can say that not doing anything is in fact unethical. Alternatively, a simpler perspective is, “is it enough, will it work” (Respondent 18).

Overall, it is evident that the GND and similar programs have a level of complexity that may not be evident in the detail presented to the American public, with inherent ethical and equity issues associated with the implementation of wholesale infrastructure plans.

3.5 Wholesale infrastructure plans such as the GND will present opportunities for economic and climate success but some groups may suffer due to its implementation

It is necessary to consider those who will benefit (Section 3.6.1) and those who may be disadvantaged (Section 3.6.2) with the implementation of the GND to ensure that the green transition is equitable and addresses its key goals.

When one thinks of change, one can also think of opportunity. According to interviewees there is likely to be investment and innovation in new projects, and this should have a positive impact in a similar manner to Roosevelt's original New Deal. That is, there is much to be gained from such a deal. In addition to safeguarding the environment itself, GND beneficiaries include more developed countries and green industries. An interesting observation from one interviewee was the idea that "unproductive" land could in fact now see itself as productive for its owners (e.g., development of a solar farm). Organisations willing to commit to green energy, for example, encourage investors to then invest in projects given that this represents a reduction in the risk of expected future cash flows.

However, when there are winners, there are also losers. The entire global population stands to be disadvantaged if the planet continues to slide toward uninhabitable conditions. In addition, developing countries, fossil fuel (coal, oil, and gas) and automotive industries, workers in existing brown jobs, and marginalised communities are also likely to be detrimentally affected by the GND.

3.5.1 Winners from the Green New Deal

Respondents indicated clear winners arising from implementation of the GND. The environment is an obvious beneficiary, in addition to more developed countries, green industries, and investment and innovation. As such, both environmental and economic benefits stand to be gained.

The environment is the most important beneficiary of the GND, with participants noting that the plan would protect the planet for future generations and provide immediate support for those countries that may become inhabitable without rapid action (Respondents 10, 15, 17, 27). In terms of environmental beneficiaries, Respondent 10 was able to clearly identify “future generations.” This was a common and clear theme amongst several respondents and if it holds true, provides hope for humankind. Additionally, Respondent 17, amongst others, reiterated the point that it will “probably do a very good job of protecting future generations”; however, it is difficult to determine what the impacts will be as it is “fairly abstract” now. Additionally, this would include disadvantaged communities (Respondent 27).

Developed countries such as the US stand to benefit from the GND and similar schemes that allow economies to transition to green technology and take on the role of a climate leader. This may result in economic advantages over less developed countries that do not choose to transition now or as quickly. Alternatively, the issue was raised that some nations will lose from climate change but also have the comparative advantage in other areas. Respondent 19 identified Australia as an example whereby perhaps it could be a leader in renewable technology given our climate, rather than digging up the country and exporting it overseas: “If you sort of support things like the Green New Deal, you can back away from that cliff.”

A clear standout economic winner is green industries such as renewable energy (Respondents 11, 22, 29), particularly “industries that are more flexible” (Respondent 11). For example, unproductive farming land could be converted to solar farms, benefiting both green industry and landowners throughout the GND transition. Utility providers also stand to benefit from greater energy generation efficiency, as they will be able to provide their services more efficiently with less. Participants also noted that increased investment in green industries and the development of innovative technologies would have a positive impact in a similar manner to Roosevelt’s original New Deal. Another interesting idea forwarded by Respondent 15 was that there may be what they referred to as “unintended beneficiaries” given the massive scale of transformation expected. This means there is going to be “vast amounts of money to be made and things like energy storage” (Respondent 15). As such, Respondent 15 notes that we may witness the rise of “green billionaires” who are likely to be “enabled” by the GND to facilitate a smooth economic transition.

Respondents also noted several additional beneficiaries, including governments, infrastructure providers, and lobby groups. A deal such as the GND is likely to allow governments to “tick the box” as to their environmental credentials and to retain their jobs over the transition period. Given the level of new infrastructure required, providers of such infrastructure are also likely to benefit economically. This goes hand in hand with the idea that potential beneficiaries may also include lobby groups.

As discussed earlier, there are issues around structural unemployment. The alternative to this is that there is an expectation that the GND will also create jobs. While many may lose jobs, those that can be retrained with medium to low technical skills will benefit from new green jobs as well as providing opportunities for those that are displaced. It is expected that the GND should ease the

transition for affected workers. In this manner, Respondent 15 noted that the middle class could emerge as “the real winners” of the GND.

3.5.2 Losers from the Green New Deal

While there may be many winners in the creation of a major infrastructure deal as identified above, there is also the possibility that some may suffer from its implementation. Respondents identified a range of losers from the GND, including developing countries, fossil fuel (coal, oil, and gas) and automotive industries, workers in existing brown jobs, and marginalised communities. Respondent 24 identified that if the program is unsuccessful, everyone will be a loser.

Developing countries, particularly those with hotter climates, stand to be the most impacted by the GND given that wholesale infrastructure plans tend to be implemented slowly and unevenly. This implies that human security may be an issue as land becomes unfit for purpose in some countries. Smaller nations may suffer because of the action or in fact inactions of the larger countries. An interesting observation relates to India and China, both nations that produce high levels of emissions. While China has made great strides to reduce emissions, India is unable to do so while they are a developing nation. The issue here lies in the fact that many feel these countries should be doing more. However, to require these countries (who have not benefitted from industrialisation as much as say the US or Canada) to drop emissions would seem to be blatantly unfair, and in the case of India and parts of China, potentially damaging. According to Respondent 8, fossil fuel companies often point the finger at China as a major polluter. However, from a historical context there is very little discussion around the small historical emissions they have produced. Developing countries lack the necessary funding and infrastructure to match green industry development and innovation in developed countries such as the US, and this rift is likely to widen

in the wake of the implementation of the GND. A few respondents provided a broad discussion regarding the issue of emissions and that some groups may be subsidised to assist in their emission reductions, but this may in fact represent a “free ride.” Another concern is that when we bring in a plan such as this, we need to ensure that emissions are reduced at a rapid enough pace and that those that lose from this are compensated.

In developed countries, businesses that do not diversify their portfolios are likely to be disadvantaged as opposed to businesses that embrace green technologies (for example, oil companies diversifying into wind power). A major issue here is that some companies are not making changes or only marginally so. Those who are not diversifying their portfolios stand to lose as opposed to green adopters. Those companies not making change and “sitting on their hands” stand to lose out as well as the investors in these organisations. That is, they are not forward planning but focusing on the immediate, which of course may have long term impacts. If businesses do not embrace the GND transition, or are slow to do so, they are likely to lose market share and investors. Many organisations with heavy infrastructure and high start-up costs will find it difficult to pivot; employees, shareholders, and the communities that support these industries will also be severely affected. As such, it is likely that fossil fuel companies will use their substantial power to oppose the GND by lobbying to exert political pressure on the GND policymaking process. This may result in a suboptimal GND policy that does not facilitate an appropriate green transition. Several participants expressed scepticism regarding a transition led by the private sector (Respondents 4, 30) as this is likely to lead to fossil fuel industries attempting to “feather their nest” (Respondent 20) without making appropriate changes.

The concept of disadvantaged communities is one that will always arise in any discussion of government policy. As discussed in Section 4, workers in existing brown jobs are likely to be

disadvantaged by the GND transition unless appropriate support and retraining is provided to smooth the path to new green jobs. For example, Respondent 13 noted that the GND pushes for a transition away from meat and dairy production, potentially limiting future employment opportunities for rural populations. Marginalised communities, including lower socio-economic groups and people of colour, are also likely to be adversely impacted despite the inherent aim of the GND to protect these communities. Respondent 28 noted that “the people who have the least economic power stand to lose the most” from the GND as these marginal groups have fewer choices and the proposed policies are likely to further limit these choices. Respondent 27 identified that schemes such as carbon capture technology and increased taxes to offset emissions may in fact be harmful to disadvantaged communities. This is also the case with other policies in that those countries with a lower socio-economic position ultimately have fewer choices and that laws and rules associated with climate change are in fact going to exacerbate those choices. The need therefore arises for the richer countries to take care of the working-class people. This will be discussed in more detail in the next section.

3.6 Those that have the capacity, wealth, leadership, and ability should lead climate change initiatives

This theme relates to the concept of responsibility and whether the world can trust those countries that caused so much damage to now take on responsibility for leading remediation efforts. The overwhelming belief from participants is that it is appropriate for the United States through the Green New Deal to take on this responsibility as long as it also assists developing nations. To achieve this, the GND is likely to require market solutions in the short-term.

All respondents expressed the need for developed countries to make changes and address climate change by acting as “good global citizens” to take responsibility and assist developing countries. As developed countries are primarily responsible for environmentally damaging industries and have garnered significant economic benefits from these activities, they should utilise their wealth to reach emission targets and facilitate a global green transition. Developing countries such as China and India should not be expected to bear the costs of this transition as they have not benefited from industrialisation to the same extent.

Responsibility and leadership go hand in hand. An interesting analogy was offered by Respondent 12 who likened the need for climate change action to the emergency video on an aeroplane where people are asked to put their oxygen mask on first before helping those around them. In a similar manner, developed countries such as the US can implement a wholesale infrastructure plan such as the GND and then extend the benefits of such a plan to developing nations who lack the means to implement their own. The design of the GND is crucial; Respondent 23 raised the idea of “common but differentiated” responsibilities involving a range of actors to negotiate any gaps in implementation of the plan. In this way, actors must be “nimble enough” to adapt to changes (Respondent 15) and ensure a just and equitable implementation process. By leading through example, developed countries may strengthen global resolve for the green transition and its many benefits. However, participants also expressed concerns regarding “greenwashing” with much lip service given to change without any action, particularly if led by the government or market forces with strong ties to the fossil fuel industry (Respondents 20, 29, 31).

Participants noted that much of the discussion around climate targets involves meeting net zero by 2050, which will require market-based solutions to reduce global emissions. Plans such as the GND will need to be continually updated and revised in line with climate targets and any progress

achieved. Participants agreed that the US has a long way to go to meet its targets, but that re-entering the Paris Agreement was a positive step in the right direction. One viable short-term market solution is to increase taxation to fund the GNP transition; however, this must be distributed fairly among socio-economic classes.

3.7 Discussion

Drawing on interviews with 34 published authors of academic articles primarily dealing with the ethics of climate change and 2 industry participants, Sections 4-6 presents in-depth analysis of the three research questions of this study. Overall, it is clear that programs like the Green New Deal will involve several ethical and equity challenges that must be considered as part of any implementation. That is, ethics and equity must be considered and not just a focus on the economical and legal aspects. At the present time, the current plan focuses on the positives, but we need to address both sides of the coin. This goes hand in hand with the belief that there will indeed be winners in such a plan but also those that present as losing out from the policies. Finally, it is imperative that the rich nations lead the effort, making use of their wealth and technology. This means they need to take a moral responsibility to assist developing nations. It is also important that the media and political class understand these responsibilities and don't cloud the argument with reference to current large polluters such as China and India.

3.8 Conclusion

As described within the literature review, very little work has been undertaken on the Green New Deal in relation to ethics. A search could not find any qualitative studies of this kind, or indeed any at all. Therefore, it is believed that this paper is authentic in its originality as it explores new themes using the latest qualitative research techniques.

Programs such as the Green New Deal involve ethical and equity challenges that must be considered alongside economic feasibility and legal perspectives. It is imperative to consider who will benefit and who may be disadvantaged from implementation of the GND, particularly from the perspective of intergenerational justice. Developed nations such as the US can then utilise this knowledge to lead the transition effort, making use of their wealth and technology to assist developing countries. It is appropriate that the US leads efforts to ameliorate climate change given they have been one of the largest beneficiaries of industrialisation. By providing a novel qualitative analysis of the ethics of the GND, this paper contributes to the development of the scant literature on this topic and informs the practical implementation of wholesale infrastructure plans.

Following implementation of the GND (or a similar plan), future research could analyse realised outcomes relating to the ethical and equity challenges outlined in this paper. Further, researchers could examine whether the beneficiaries and those disadvantaged by the plan align with the projections of this study. It would be particularly interesting to assess the transition of fossil fuel companies towards new revenue sources and the shift from brown to green jobs. Future research assessing the role of the US as a global climate leader is also warranted as we move towards 2050 and net zero targets. It would also be interesting to investigate similar wholesale infrastructure plans developed by Canada, Korea, the UK, and EU and further examine the relationship between industrialisation, colonialism, and climate change.

Chapter 4 : Conclusion

4.1 Chapter Overview

This thesis has provided an avenue to explore the dual issues of climate change and ethics. Fundamental to the results is that ethics does matter when one raises the prospect of climate change and how this challenge should be addressed. This chapter provides a summary of the key findings of the two studies that comprise this thesis (Section 4.2), contributions (Section 4.3), a discussion of research limitations (Section 4.4), and directions for future research (Section 4.5).

4.2 Key Findings

The systematic literature review presented in Chapter 2 examined the ethics of climate change using BibliometrixTM software to aid the analysis. This study identified several critical issues, namely who bears the cost of climate change, market solutions, and geoengineering and non-market solutions. Fundamental to these discussions is the notion that any analysis or attempts to mitigate climate change must be considered from the perspective of an ethical lens.

The qualitative study presented in Chapter 3 analyses the ethics of the Green New Deal (GND) based on grounded theory and the use of Nvivo 13 analysis software. This study firstly revealed that while the GND has many positive aspects, it must also be analysed with the same ethical lens as there is the potential for such plans to present equity, justice, and ethical issues associated with their adoption. Secondly, while there may be many economic benefits and potential successes, there are also groups that stand to lose from implementation of such a plan. Therefore, these groups need to be considered as part of any program adoption. Thirdly, it is felt that those that have the capacity to lead climate change initiatives should indeed do so.

4.3 Contributions

This thesis provides a significant contribution to the study of ethics and climate change. Firstly, it provides a detailed summary of the significant research in the field and identifies areas for future research as well as the state of current research. Such a study is now able to form the basis of any future investigations. Secondly, it is one of the first studies to analyse the GND from an ethical perspective and hopefully this will prompt further research going forward. There is also the hope that any planned implementations will consider these findings as part of the implementation and legislation process.

4.4 Research Limitations

Research is subject to any number of limitations. First and foremost is the notion that any qualitative study would benefit from a larger sample size. Having said that, the 34 respondents did provide very rich data for the analysis in the second study. In order to overcome COVID-19 lockdown constraints, Zoom technology was utilised to facilitate interviews and discussions.

4.5 Future Research Directions

The first study (Chapter 2) was able to identify the current areas of research in the field of ethics and climate change. These include population ethics, displacement and resettlement ethics, and the ethics of leadership. This third area, namely the ethics of leadership, supplied the motivation to examine the GND (Chapter 3).

Additionally, the second study (Chapter 3) identified several possible future research areas. These include the ethical and equity challenges associated with the realised outcomes of the GND as well as whether the winners and losers from the plan are consistent with the projections of this study.

Employment and energy transitions also provide a rich vein for future analysis. Finally, with other countries such as the UK, Canada, Korea, and the EU looking to implement similar plans it will be interesting to see whether the same links between industrialisation, colonialism, and climate change are identified.

References

- Anfara Jr, V. A., Brown, K. M., & Mangione, T. L. (2002). Qualitative analysis on stage: making the research process more public. *Educational Researcher*, 31(7), 28-38.
- Arrhenius, G., Budolfson, M., & Spears, D. (2021). Does climate change policy depend importantly on population ethics? Deflationary responses to the challenges of population ethics for public policy. In M. Budolfson, T. McPherson, & D. Plunkett (eds.), *Philosophy and Climate Change*. Oxford University Press.
- Aşici, A.A. & Bünül, Z. (2012). Green New Deal: A green way out of the crisis? *Environmental Policy and Governance*, 22(5), 295-306.
- Barbier, E. (2010). How is the global green new deal going? *Nature*, 464(7290), 832-833.
- Beel, J., & Gipp, B. (2009). Google Scholar's ranking algorithm: the impact of citation counts (an empirical study). *Third International Conference on Research Challenges in Information Science, IEEE*, 439-446.
- Blair, T., Pachauri, R. K. & Pachauri, R. (2006). *Avoiding Dangerous Climate Change*. Cambridge University Press.
- Boatright, J. R. (2012). *Ethics and the Conduct of Business* (7th ed.). Pearson Prentice Hall, NJ, USA.
- Bridge, D. J. (2021). The ethics of climate change: a systematic literature review. *Accounting & Finance*, 62(2), 2651-2665.
- Brulle, R. J. (2021). Networks of opposition: a structural analysis of US climate change countermovement coalitions 1989–2015. *Sociological Inquiry*, 91(3), 603-624.
- Budolfson, M., & Spears, D. (2021). Population momentum, population ethics, and the prospects for fertility policy as climate mitigation policy. *The Journal of Development Studies*, 57(9), 1499-1510.
- Buller, A. (2020). Where next for the Green New Deal? *Renewal*, 28(1), 26-37.
- Caney, S. (2010). Markets, morality and climate change: What, if anything, is wrong with emissions trading? *New Political Economy*, 15(2), 197-224.
doi:10.1080/13563460903586202

- Chancel, L., & Piketty, T. (2015). Carbon and inequality: From Kyoto to Paris trends in the global inequality of carbon emissions (1998-2013) & prospects for an equitable adaptation fund. World Inequality Lab, available at: <https://halshs.archives-ouvertes.fr/halshs-02655266/>
- Crosweller, M., & Tschakert, P. (2020). Climate change and disasters: the ethics of leadership. *Wiley Interdisciplinary Reviews: Climate Change*, 11(2), 18.
- Cuomo, C. J. (2011). Climate change, vulnerability, and responsibility. *Hypatia*, 26(4), 690-714.
- Draper, J., & McKinnon, C. (2018). The ethics of climate-induced community displacement and resettlement. *Wiley Interdisciplinary Reviews: Climate Change*, 9(3), 7.
- Eckenwiler, L. (2018). Displacement and solidarity: an ethic of place-making. *Bioethics*, 32(9), 562-568.
- Epley, N., & Dunning, D. (2006). The mixed blessings of self-knowledge in behavioral prediction: enhanced discrimination but exacerbated bias. *Personality and Social Psychology Bulletin*, 32(5), 641-655.
- Franta, B. (2021). Early oil industry disinformation on global warming. *Environmental Politics*, 30(4), 663-668.
- Gagnon, J. H. (1973). Man's impact on the global environment: assessment and recommendations for action. *Human Ecology*, 1(3), 279-283.
- Galvin, R., & Healy, N. (2020). The Green New Deal in the United States: what it is and how to pay for it. *Energy Research & Social Science*, 67, 101529.
- Gardiner, S. M. (2004). Ethics and global climate change. *Ethics*, 114(3), 555-600. doi:10.1086/382247
- Gardiner, S. M. (2006). A perfect moral storm: climate change, intergenerational ethics and the problem of moral corruption. *Environmental Values*, 15(3), 397-413.
- Gardiner, S. M. (2010). Ethics and climate change: an introduction. *Wiley Interdisciplinary Reviews: Climate Change*, 1(1), 54-66.
- Geva, A. (2008). Three models of corporate social responsibility: interrelationships between theory, research, and practice. *Business and Society Review*, 113(1), 1-41.
- Glaser, B. G., & Strauss, A. L. (2017). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Routledge, New York, USA.
- Grasso, M. (2013). Climate ethics: with a little help from moral cognitive neuroscience. *Environmental Politics*, 22(3), 377-393.
- Grubb, M. (1995). Seeking fair weather - ethics and the international debate on climate-change. *International Affairs*, 71(3), 463-496.

- Gustafson, A., Rosenthal, S. A., Ballew, M. T., Goldberg, M. H., Bergquist, P., Kotcher, J. E., Maibach, E.W. and Leiserowitz, A. (2019). The development of partisan polarization over the Green New Deal. *Nature Climate Change*, 9(12), 940-944.
- Hayward, T. (2012). Climate change and ethics. *Nature Climate Change*, 2(12), 843-848.
- Hoegh-Guldberg, O., Jacob, D., Bindi, M., Brown, S., Camilloni, I., Diedhiou, A., Djalante, R., Ebi, K., Engelbrecht, F., Guiot, J., & Hijioka, Y. (2018). Impacts of 1.5 C global warming on natural and human systems. *Global warming of 1.5 C. An IPCC Special Report*.
- Hoffman, A. J. (2011). Talking past each other? Cultural framing of skeptical and convinced logics in the climate change debate. *Organization & Environment*, 24(1), 3-33.
- Intergovernmental Panel on Climate Change (IPCC). (1990). *Climate change: The IPCC scientific assessment*. Cambridge University Press.
- Intergovernmental Panel on Climate Change (IPCC). (1995). *IPCC second assessment. A Report of the Intergovernmental Panel on Climate Change*. WMO-UNEP.
- Jamieson, D. (1992). Ethics, public-policy, and global warming. *Science Technology & Human Values*, 17(2), 139-153.
- Jamieson, D. (1996). Ethics and intentional climate change. *Climatic Change*, 33(3), 323-336.
- Janssen, M. A., Schoon, M. L., Ke, W., & Börner, K. (2006). Scholarly networks on resilience, vulnerability and adaptation within the human dimensions of global environmental change. *Global Environmental Change*, 16(3), 240-252.
- Jenkins, K., Sovacool, B. K., & McCauley, D. (2018). Humanizing sociotechnical transitions through energy justice: an ethical framework for global transformative change. *Energy Policy*, 117, 66-74.
- Jorgenson, A. K., Schor, J. B., Knight, K. W., & Huang, X. (2016). Domestic inequality and carbon emissions in comparative perspective. *Sociological Forum*, 31, 770-786.
- Khan, M. A. S., Ali, M., Usman, M., Saleem, S., & Jianguo, D. (2019). Interrelationships between ethical leadership, green psychological climate, and organizational environmental citizenship behavior: the moderating role of gender. *Frontiers in Psychology*, 10, 1977.
- Knight, K. W., Schor, J. B., & Jorgenson, A. K. (2017). Wealth inequality and carbon emissions in high-income countries. *Social Currents*, 4(5), 403-412.
- Kolk, A., & Pinkse, J. (2007). Multinationals' political activities on climate change. *Business & Society*, 46(2), 201-228.
- Korsmo, F. L. (2007). The genesis of the international geophysical year. *Physics Today*, 60(7), 38.

- Labuschagne, A. (2003). Qualitative research: airy fairy or fundamental. *The Qualitative Report*, 8(1), 100-103.
- Linnenluecke, M. K. (2017). Resilience in business and management research: a review of influential publications and a research agenda. *International Journal of Management Reviews*, 19(1), 4-30.
- Linnenluecke, M. K., Marrone, M., & Singh, A. K. (2020). Conducting systematic literature reviews and bibliometric analyses. *Australian Journal of Management*, 45(2), 175-194.
- Luke, T. W. (2009). A green new deal: why green, how new, and what is the deal? *Critical Policy Studies*, 3(1), 14-28.
- MacArthur, J. L., Hoicka, C. E., Castleden, H., Das, R., & Lieu, J. (2020). Canada's Green New Deal: forging the socio-political foundations of climate resilient infrastructure? *Energy Research & Social Science*, 65, 101442.
- Manabe, S., & Wetherald, R. T. (1967). Thermal equilibrium of the atmosphere with a given distribution of relative humidity. *Journal of the Atmospheric Sciences*, 24(3), 241-258.
- Mastini, R., Kallis, G., & Hickel, J. (2021). A green new deal without growth? *Ecological Economics*, 179, 106832.
- Maya-Drysdale, D., Krog Jensen, L., & Vad Mathiesen, B. (2020). Energy vision strategies for the EU Green New Deal: a case study of European cities. *Energies*, 13(9), 2194.
- McCarthy, J. J., Canziani, O. F., Leary, N. A., Dokken, D. J., & White, K. S. (2001). *Climate change 2001: impacts, adaptation, and vulnerability: contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Vol. 2). Cambridge University Press.
- Mercer, J. H., & Emiliani, C. (1970). Antarctic ice and interglacial high sea levels. *Science*, 168(3939), 1605-1606.
- Mundaca, L., Busch, H., & Schwer, S. (2018). 'Successful' low-carbon energy transitions at the community level? An energy justice perspective. *Applied Energy*, 218, 292-303.
- Munk, W. H. (1997). Tribute to Roger Revelle and his contribution to studies of carbon dioxide and climate change. *Proceedings of the National Academy of Sciences*, 94(16), 8275-8279.
- Noble, H., & Mitchell, G. (2016). What is grounded theory? *Evidence Based Nursing*, 19(2), 34-35. doi:10.1136/eb-2016-102306
- Nolt, J. (2011). Nonanthropocentric climate ethics. *Wiley Interdisciplinary Reviews: Climate Change*, 2(5), 701-711.

- O'Brien, K., Clair, A. L. S., & Kristoffersen, B. (2010). *Climate Change, Ethics and Human Security*. Cambridge University Press.
- Oberthür, S., & Ott, H. E. (1999). *The Kyoto Protocol: International Climate Policy for the 21st Century*. Springer Science & Business Media.
- Palmer, G. (1992). Earth summit: What went wrong at Rio. *Washington University Law Quarterly*, 70(4), 1005.
- Panjabi, R. K. (1997). *The Earth Summit at Rio: Politics, Economics and the Environment*. Northeastern University Press.
- Parks, B. C., & Roberts, J. T. (2010). 19 Structural obstacles to an effective post-2012 global climate agreement: why social structure matters and how addressing it can help break the impasse. In M. R. Redclift & G. Woodgate (eds.), *The International Handbook of Environmental Sociology*. Edward Elgar Publishing
- Pettifor, A. (2020). *The Case for the Green New Deal*. Verso Books.
- Preston, C. J. (2011). Re-thinking the unthinkable: environmental ethics and the presumptive argument against geoengineering. *Environmental Values*, 20(4), 457-479.
- Preston, C. J. (2013). Ethics and geoengineering: reviewing the moral issues raised by solar radiation management and carbon dioxide removal. *Wiley Interdisciplinary Reviews: Climate Change*, 4(1), 23-37.
- Preston, C. J. (2015). Framing an ethics of climate management for the anthropocene. *Climatic Change*, 130(3), 359-369.
- Puaschunder, J. (2016). Global responsible intergenerational leadership: the quest of an integration of intergenerational equity in Corporate Social Responsibility (CSR) models. *Annals in Social Responsibility*, 2(1), 1-12.
- Puaschunder, J. (2018). Intergenerational leadership: an extension of contemporary Corporate Social Responsibility (CSR) models. *Corporate Governance and Organizational Behavior Review*, 2(1), 7-17.
- Roy, J., Tschakert, P., Waisman, H., Abdul Halim, S., Antwi-Agyei, P., Dasgupta, P., Hayward, B., Kanninen, M., Liverman, D., Okereke, C., & Fernanda Pinho, P. (2018). Special Report on global warming of 1.5 C (SR15)-Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities.
- Salmona, M., Kaczynski, D., & Smith, T. (2015). Qualitative theory in finance: theory into practice. *Australian Journal of Management*, 40(3), 403-413.

- Singer, P. (2006). Ethics and climate change: a commentary on MacCracken, Toman and Gardiner. *Environmental Values*, 15(3), 415-422.
- Sovacool, B. K., Heffron, R. J., McCauley, D., & Goldthau, A. (2016). Energy decisions reframed as justice and ethical concerns. *Nature Energy*, 1(5), 1-6.
- Stern, N. (2014a). Ethics, equity and the economics of climate change paper 1: science and philosophy. *Economics and Philosophy*, 30(3), 397-444.
- Stern, N. (2014b). Ethics, equity and the economics of climate change paper 2: economics and politics. *Economics and Philosophy*, 30(3), 445-501.
- Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Sage, London.
- Taylor, P., Brown, D., & Burdon, P. (2020). Moral leadership and climate change policy: the role of the world conservation union. *Ethics, Policy & Environment*, 23(1), 1-21.
- Tenbrunsel, A. E. (1998). Misrepresentation and expectations of misrepresentation in an ethical dilemma: the role of incentives and temptation. *Academy of Management Journal*, 41(3), 330-339.
- Tenbrunsel, A. E., Diekmann, K. A., Wade-Benzoni, K. A., & Bazerman, M. H. (2010). The ethical mirage: a temporal explanation as to why we are not as ethical as we think we are. *Research in Organizational Behavior*, 30, 153-173.
- Tenbrunsel, A. E., & Messick, D. M. (2004). Ethical fading: the role of self-deception in unethical behavior. *Social Justice Research*, 17(2), 223-236.
- Trenberth, K. E. (2001). Stronger evidence of human influences on climate: The 2001 IPCC Assessment. *Environment: Science and Policy for Sustainable Development*, 43(4), 8-19.
- Weyler, R. (2010). Dorothy Stowe 1920 - 2010 Greenpeace cofounder, social justice advocate. Available from <https://wayback.archive-it.org/9650/20200213005614/http://p3-raw.greenpeace.org/international/en/news/features/Dorothy-Stowe230710/>
- White, D. (2020). Just transitions/design for transitions: preliminary notes on a design politics for a Green New Deal. *Capitalism Nature Socialism*, 31(2), 20-39.
- Willis, R. (2017). Taming the climate? Corpus analysis of politicians' speech on climate change. *Environmental Politics*, 26(2), 212-231.
- Wyman, K. M. (2017). Ethical duties to climate migrants. In *Research Handbook on Climate Change, Migration and the Law*. Edward Elgar Publishing.

Yu, C., Margolin, D. B., Fownes, J. R., Eiseman, D. L., Chatrchyan, A. M., & Allred, S. B. (2021).
 Tweeting about climate: which politicians speak up and what do they speak up about?
Social Media+ Society, 7(3), 20563051211033815.

Appendices

Appendix Table 1: Research Questions in Relation to Interview Questions

Research Question	Interview Questions
RQ1: Are there ethical and equity issues associated with the implementation of wholesale infrastructure plans such as the GND?	<p>Q1: Do you believe that the Green New Deal is equitable?</p> <p>Q2: What do you believe to be the major ethical issues of such a plan?</p> <p>Q6: Do you have any final comments?</p>
RQ2: Are there parties that will benefit from the GND while others are disadvantaged?	<p>Q3: Who do you believe will be the major beneficiaries of the Green New Deal?</p> <p>Q4: Who do you believe are the “losers” in such a plan?</p> <p>Q6: Do you have any final comments?</p>
RQ3: Should those responsible for climate damage be responsible for leading efforts to fix the damage?	<p>Q5: Is it appropriate that a country that caused so much damage through industrialisation is now attempting to lead the response?</p> <p>Q6: Do you have any final comments?</p>