



MASTERARBEIT | MASTER'S THESIS

Titel | Title

Intergenerational Justice in a Changing Climate

verfasst von | submitted by

Gerrit Friedrich

angestrebter akademischer Grad | in partial fulfilment of the requirements for the degree of
Master of Arts (MA)

Wien | Vienna, 2024

Studienkennzahl lt. Studienblatt | Degree
programme code as it appears on the
student record sheet:

UA 066 941

Studienrichtung lt. Studienblatt | Degree
programme as it appears on the student
record sheet:

Masterstudium Philosophie

Betreut von | Supervisor:

Univ.-Prof. Dr. Angela Kallhoff

Abstract (german)

Die vorliegende Arbeit untersucht die Bedeutung der intergenerativen Gerechtigkeit im Kontext des Klimawandels, angesichts der globalen klimatischen Veränderungen und deren weitreichenden Auswirkungen auf gegenwärtige und zukünftige Generationen. Die zentrale Frage lautet: "Welche Eigenschaften müssen Klimaschutz- und Anpassungsmaßnahmen aufweisen, um Generationengerechtigkeit für zukünftige Generationen zu gewährleisten?"

Es werden mehrere Thesen herausgearbeitet, die die Notwendigkeit der Generationengerechtigkeit in der Klimapolitik unterstreichen. Erstens ist langfristiges Denken und nachhaltiges Handeln unabdingbar. Zweitens müssen die Prinzipien der Gerechtigkeit und Fairness in die Klimapolitik integriert werden. Drittens erfordern effektive Klimaschutz- und Anpassungsstrategien globale Kooperation und inklusive, partizipative Ansätze. Methodisch stützt sich die Untersuchung auf eine umfassende Literaturrecherche und die theoretische Analyse ethischer Theorien und deren Anwendung auf Klimaschutz- und Anpassungsmaßnahmen.

Die Schlussfolgerungen der Arbeit verdeutlichen, dass Generationengerechtigkeit durch eine Kombination nachhaltiger und gerechter Maßnahmen erreicht werden kann. Dies umfasst die Reduktion von Treibhausgasemissionen, die Förderung erneuerbarer Energien und die Anpassung an klimatische Veränderungen, unter Berücksichtigung der Rechte und Bedürfnisse betroffener Personen. Abschließend wird betont, dass die erfolgreiche Umsetzung solcher Maßnahmen eine starke politische Unterstützung und die Einhaltung ethischer Prinzipien erfordert, um eine gerechte und nachhaltige Zukunft zu gewährleisten.

Abstract (english)

This paper examines the importance of intergenerational justice in the context of climate change, in light of global climate change and its far-reaching effects on present and future generations. The central question is: "What qualities are required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations?"

Several arguments are put forward that underline the need for intergenerational justice in climate policy. Firstly, long-term thinking and sustainable action are essential. Secondly, the principles of justice and fairness must be integrated into climate policy. Thirdly, effective climate change mitigation and adaptation strategies require global cooperation and inclusive, participatory approaches. Methodologically, the study is based on a comprehensive literature review and the theoretical analysis of ethical theories and their application to climate change mitigation and adaptation measures.

The conclusion of the work makes it clear that intergenerational justice can be achieved through a combination of sustainable and equitable measures. This includes the reduction of greenhouse gas emissions, the promotion of renewable energy and adaptation to climate change, taking into account the rights and needs of affected people. In conclusion, it is emphasized that the successful implementation of such measures requires strong political support and adherence to ethical principles to ensure a just and sustainable future.

Table of Contents

Table of Contents.....	1
I. Foreword.....	3
1. Introduction.....	4
Research question.....	7
Objectives and Methodology.....	8
Limitations and Expected Outcomes.....	10
Outline of the Thesis.....	13
2. Theoretical Framework.....	15
Intergenerational Justice: Concepts and Principles.....	15
Definition and Relevance of Intergenerational Justice.....	16
Principles and Theories of Intergenerational Justice.....	17
Climate Change and Ethical Implications.....	19
Ethical Implications of Climate Change.....	19
Climate Change and Intergenerational Justice.....	20
Climate Change, Environmental Ethics, and Distributive Justice.....	21
Ethical Theories and Frameworks.....	22
Sustainability and Future Generations.....	23
Sustainability and Intergenerational Justice.....	24
Ethical Dimensions of Sustainability.....	25
Dimensions of Sustainability and Future Generations.....	26
Philosophical Perspectives on Sustainability.....	27
Ethical Theories and Approaches.....	29
Consequentialist Theories.....	29
Deontological Theories.....	30
Ethics of Care.....	32
Intergenerational Justice through a Pluralist Lens.....	33
Conclusion.....	35
3. Climate Change and Intergenerational Justice.....	37
Climate Change and its Impact on Future Generations.....	38
Intergenerational Justice and Climate Change.....	39
Ethical Theories and Intergenerational Justice in the Context of Climate Change.....	41
Policy and Governance for Intergenerational Justice in Climate Change.....	43
What is at stake?.....	45
Conclusion.....	47

4. Qualities in Climate Mitigation Measures for Intergenerational Justice.....	49
Qualities for Intergenerational Justice in Climate Mitigation Measures.....	50
Equity, Fairness, and Global Cooperation in Intergenerational Justice.....	52
Philosophical Arguments and Policy Frameworks for Intergenerationally Just Mitigation Measures.....	53
Conclusion.....	55
5. Qualities in Climate Adaptation Measures for Intergenerational Justice.....	57
Qualities for Intergenerational Justice in Climate Adaptation Measures.....	58
Inclusive and Participatory Approaches in Adaptation Strategies.....	59
Ethical Considerations and Policy Frameworks for Intergenerationally Just Adaptation Measures.....	61
Conclusion.....	62
6. Integration and Trade-offs.....	64
Integration of Mitigation and Adaptation Measures.....	65
Trade-offs between Mitigation and Adaptation Strategies.....	67
Complexities of Decision-Making and Policy Trade-offs.....	68
Interdisciplinary Perspectives on Integration and Trade-offs.....	70
Conclusion.....	72
7. Conclusion.....	74
Summary of Key Findings and Arguments.....	75
Towards Intergenerational Justice.....	76
Practical Recommendations.....	77
And now.....	79
II. References.....	81

I. Foreword

Over the past few years, my focus has centered on the pressing issue of climate change and its profound societal implications. Beyond the realm of scientific facts, I view climate change as an ethical dilemma that permeates every layer of our existence.

Navigating through various global events, from regional floods in Germany and South Africa to the COVID-19 pandemic and Russia's invasion of Ukraine, posed challenges in narrowing down the scope of my paper. These events prompted a reconsideration of the core question I aimed to address.

In 2019, the European Union declared a climate emergency as temperatures rose by 0.8°C, and deforestation claimed 1.01 million hectares of the Amazon rainforest annually (cf. European Parliament 2019). Current research indicates a temperature increase of 1.1°C, with deforestation escalating to 1.16 million hectares yearly. While greenhouse gas emissions rose to a new record of 57.4 Gt in 2022, an increase of 66% compared to 1990 (cf. UNEP 2023). Despite the bleak outlook of these catastrophes on an individual level, I remain hopeful.

Three key observations contribute to my optimism on a global scale. Firstly, the world does not inherently care; it is our responsibility to preserve habitable land. Secondly, people have the capacity to change, and although progress may be slow, awareness is on the rise. Thirdly, historical precedents, such as the successful resolution of the ozone layer depletion, inspire confidence in our ability to overcome global challenges.

While we understand the necessary steps to avert worst-case scenarios outlined in IPCC reports, implementing changes on an individual level, such as adopting a CO₂-neutral or positive lifestyle proves daunting and often impractical. Collective action appears more promising, but without government support and the rectification of misconduct by powerful corporations and industries, such efforts may be futile.

This is where we start.

1.Introduction

“The things of nature do not really belong to us; we should leave them to our children as we have received them.” - Oscar Wilde (1882)

In my research leading to this paper, my belief that intergenerational justice is a crucial concept that must be considered when discussing topics regarding climate change – namely climate mitigation and climate adaptation measures – strengthened. Intergenerational justice adds several crucial factors to the debate on climate change: long-term thinking, equity and fairness, sustainability, implications on policy integration and ethical responsibility. While these considerations are not exclusively, intergenerational justice adds an important perspective to the debate on climate ethics as intergenerational justice refers to the principle that present generations should act in a way that does not compromise the ability of future generations to meet their own needs. Framed negatively one can say, “Currently living people are obliged not to violate the rights of future generations” (Meyer 2003). This principle is particularly important in the context of climate change, as the actions of current generations are directly impacting the ability of future generations to live in a world that is safe, healthy, and sustainable.

The quote above, attributed to Oscar Wilde captures this notion. A more poignant reiteration has been used through the 1980s and 90s: “We do not inherit the Earth from our ancestors; we borrow it from our children.”¹ Turning around the thought that we – the current generation – can and should use the world and nature to our liking as we inherited it.

The pressing issue of climate change has captured global attention, as its far-reaching consequences are increasingly recognized and felt across various spheres of society. As the Earth's climate continues to change due to human activities, it poses significant challenges for present and future generations (cf. Stabinsky 2020, 288f.). Within this context, the concept of intergenerational justice has emerged as a vital framework for evaluating and addressing the fair distribution of the burdens and benefits related to climate mitigation and adaptation measures.

Intergenerational justice, at its core, concerns the fair treatment and consideration of future generations in decision-making processes that impact their well-being. It recognizes that actions taken today to mitigate and adapt to climate change will shape the conditions and opportunities available to those who will inherit the planet – or from whom we borrowed it. Thus, it becomes

¹ Additionally, some assert that the quote is a Native American proverb or originates from other indigenous cultures.

imperative to examine the qualities and attributes that climate mitigation and adaptation measures must possess in order to achieve intergenerational justice for future generations.

By exploring the intersection of intergenerational justice and climate change, this thesis aims to shed light on the ethical dimensions and considerations that should inform policy formulation and decision-making processes. It seeks to address the fundamental question of a fair distribution of resources, opportunities, and burdens between present and future generations.

To comprehend the significance of this inquiry, it is essential to explore the broader context of climate change and its implications for both present and future societies. Additionally, understanding the theoretical foundations and philosophical perspectives related to intergenerational justice will provide a conceptual framework for analyzing the qualities that climate-related measures should possess.

Through this investigation, we will not only gain insights into the specific challenges associated with intergenerational justice in the context of climate change but also contribute to the ongoing discourse surrounding climate policy formulation, decision-making, and sustainable development. By elucidating the qualities needed for climate mitigation and adaptation measures to accomplish intergenerational justice, this research aims to inform and guide the development of more equitable and sustainable solutions for the benefit of future generations.

The phenomenon of climate change and its implications have become central concerns for societies worldwide. The Earth's changing climate, largely attributed to human activities, poses significant challenges that transcend national borders, socio-economic disparities, and temporal boundaries. As the impacts of climate change continue to unfold, the concept of intergenerational justice has gained prominence as a vital ethical framework within the field of philosophy.

The field of philosophy offers valuable insights into the ethical dimensions of intergenerational justice and its application to climate change. Philosophers have examined the moral obligations and responsibilities that present generations bear towards future generations, particularly regarding issues of sustainability, environmental stewardship, and justice. Moreover, philosophical theories and frameworks provide a robust foundation for critically analyzing the qualities required of climate-related measures to accomplish intergenerational justice.

To comprehend the relevance of intergenerational justice within the field of philosophy, it is crucial to explore philosophical perspectives on ethics and intergenerational relationships. Philosophers such as Hans Jonas, John Rawls, and Tracey Skillington have contributed seminal works that discuss the ethical implications of responsibility towards future generations, intergenerational justice, and climate change. These philosophical perspectives offer valuable

insights into the normative principles that should guide decision-making processes regarding climate mitigation and adaptation.

This thesis seeks to make a meaningful contribution to the ongoing discourse within the field by exploring the connections between intergenerational justice, climate change, and philosophy. Through an analysis of philosophical frameworks, ethical theories, and current discussions, the research aims to establish a thorough understanding of the topic. Furthermore, it aspires to offer valuable insights that can serve as practical guidance for policymakers, stakeholders, and society. By bridging the gap between philosophy and climate science, this research endeavors to foster a more nuanced and ethically informed approach to climate mitigation and adaptation. By recognizing the importance of intergenerational justice, we can strive towards climate-related policies and measures that promote fairness, sustainability, and the long-term well-being of future generations.

The issue of intergenerational justice in the context of a changing climate is a subject of active debate and scholarly inquiry. Various theories, perspectives, and philosophers have contributed to the discourse surrounding this complex topic (e.g. Tremmel 2006; Gardiner et al. 2010; Kallhoff 2015; Jafry, Helwig, and Mikulewicz 2018 and Duyck, Jodoin, and Johl 2020). By examining key debates and theories, this thesis seeks to provide a comprehensive understanding of the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations.

One key debate in the field of intergenerational justice revolves around the question of temporal discounting (Nolt 2019, 346ff.). Temporal discounting refers to the tendency to give less weight to the well-being and interests of future generations compared to the immediate concerns of the present. Some argue that this discounting is unjust and undermines intergenerational justice, as it fails to adequately consider the long-term consequences of our actions. Others contend that a certain degree of discounting is morally justifiable, given the uncertainties associated with future outcomes and the need to address pressing present challenges. Exploring this debate is crucial to understanding the ethical complexities inherent in climate mitigation and adaptation measures.

In addition to debates, several philosophical theories and frameworks have shaped discussions on intergenerational justice and climate change. One influential theory is the "ethics of care," which emphasizes the moral responsibility to protect and nurture future generations (cf. Whyte and Cuomo 2019, 234ff.). The ethics of care highlights the interconnectedness between humans and their natural environment which emphasizes the need for empathy, responsibility, and sustainable practices in addressing climate change. Examining this theory provides valuable

insights into the qualities that climate measures should possess to promote intergenerational justice.

The works of prominent philosophers have also made substantial contributions in this field. Hans Jonas, in his seminal work "The Imperative of Responsibility," argues for an ethics based on future generations and calls for a fundamental reorientation of human actions to ensure the well-being of future inhabitants on Earth (Jonas 1984). John Rawls, within his theory of justice, provides a framework for considering intergenerational justice and the fair distribution of resources across generations (Rawls 1999). Derek Parfit, through his exploration of personal identity and the non-identity problem, raises important questions about how our choices today affect the identity and well-being of future individuals (Parfit 1984).

By engaging with these debates, theories, and last-century philosophers, this research aims to critically evaluate and synthesize their insights. Complemented by recent inquiries by Gardiner, Skillington, and the IPCC reports, we can gain a more comprehensive understanding of the qualities necessary for climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. Which leads us to the question at hand.

Research question

"What qualities are required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations?"

The significance of this research stems from the urgent need to address climate change and its impact on future generations. Climate change poses substantial challenges, such as rising global temperatures, sea-level rise, extreme weather events, and ecological disruptions (cf. Caney 2020). The decisions made today regarding climate mitigation and adaptation measures will have far-reaching consequences for the well-being and opportunities of future generations – good and bad. The sixth assessment report's Working Group II, published by the IPCC, has pinpointed 127 key risks (IPCC 2022a, 4). Hence, it is essential to identify the specific qualities that mitigation and adaptation measures should possess to ensure intergenerational justice.

The motivation behind choosing this topic lies in the recognition of the ethical obligations we have towards future generations. By focusing on intergenerational justice in the context of climate change, this research seeks to foster a deeper understanding of the moral

responsibilities we bear and the principles that should guide decision-making processes. By shedding light on the qualities required of climate-related measures, this research aims to inform policymakers, stakeholders, and society at large, enabling them to make more informed and ethically sound choices.

While existing literature has explored various aspects of climate change and intergenerational justice, there are still gaps and limitations that this research seeks to address. The existing body of work often focuses on the scientific, economic, and policy dimensions of climate change, while ethical considerations, particularly intergenerational justice, are not as extensively explored. By filling the gap, this research seeks to contribute to the emerging field of climate ethics and provide practical guidance for policymakers and decision-makers.

Furthermore, although there are studies that discuss the ethical implications of climate change on future generations (cf. Nolt 2017), few have specifically focused on identifying the qualities required of climate mitigation (cf. Shue 2017) and adaptation (cf. Heyward) measures to accomplish intergenerational justice. This research aims to address this limitation by conducting a comprehensive analysis of the relevant literature, philosophical perspectives, and ethical theories to discern these essential qualities.

By bridging these gaps and addressing the limitations in the existing literature, this research seeks to advance our understanding of the ethical dimensions of climate change and provide practical insights into achieving intergenerational justice through climate-related measures.

Objectives and Methodology

The specific objectives and goals of this research are as follows:

1. To identify and analyze the key qualities that climate mitigation and adaptation measures should possess to accomplish intergenerational justice for future generations.
2. To examine the ethical frameworks, theories, and philosophical perspectives that shape the concept of intergenerational justice in the context of climate change.
3. To assess the practical implications and challenges associated with incorporating intergenerational justice considerations into climate policy and decision-making processes.
4. To provide practical insights and recommendations for policymakers, stakeholders, and society at large to promote intergenerational justice through climate-related measures.

This thesis encompasses an interdisciplinary approach that integrates ethical, philosophical, and policy perspectives. The research will primarily draw on relevant literature, philosophical theories, and ethical frameworks to analyze and evaluate these qualities. Furthermore, it will explore case studies and examples of climate-related measures to illustrate the practical implications of intergenerational justice considerations.

The research methodology for this master thesis on "Intergenerational Justice in a Changing Climate" will involve a combination of philosophical analysis and interdisciplinary research methods. By employing these approaches, the study aims to provide a comprehensive exploration of the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations.

1. **Philosophical Frameworks:** The research will draw upon relevant philosophical frameworks and ethical theories to analyze the concept of intergenerational justice and its application to climate change. Philosophical perspectives such as consequentialism, deontology, virtue ethics, and the ethics of care will be explored to understand their implications for climate-related measures. These frameworks will provide a theoretical foundation for evaluating the qualities necessary to achieve intergenerational justice.
2. **Interdisciplinary Engagement:** Given the interdisciplinary nature of the research topic, engagement with experts, scholars, and practitioners from fields such as philosophy, environmental studies, climate science, and policy will be sought. This interdisciplinary engagement will provide valuable perspectives, insights, and feedback, enriching the research findings and enhancing their practical applicability.
3. **Literature Review:** A comprehensive literature review will be conducted to examine existing scholarly works, academic papers, reports, and policy documents related to intergenerational justice and climate change. This review will help identify key debates, theories, and empirical studies that shed light on the qualities required for climate mitigation and adaptation measures. The review will also highlight any gaps or limitations in the existing literature, providing a basis for the research's contribution to the field.
4. **Textual Analysis:** Textual analysis will be employed to analyze and interpret philosophical texts, academic papers, policy documents, and relevant literature. Through a systematic examination of these sources, the study will identify and extract key arguments, concepts, and principles related to intergenerational justice and climate change. The

analysis will provide insights into the qualities that have been proposed or discussed in the literature.

5. **Case Studies:** The research will include the analysis of case studies to illustrate the practical implications of intergenerational justice considerations in climate mitigation and adaptation measures. These case studies may involve the evaluation of specific policies, projects, or initiatives implemented in various geographical contexts. By examining real-world examples, the research will assess the effectiveness and challenges associated with incorporating intergenerational justice principles into climate-related decision-making processes.

These research methods are appropriate for this study's objectives as they allow for a comprehensive exploration of intergenerational justice in the context of a changing climate. The combination of philosophical analysis, literature review, textual analysis, and case studies facilitates a holistic understanding of the qualities required for climate mitigation and adaptation measures to achieve intergenerational justice. Employing these diverse methodologies, the study aims to offer both theoretical insights and practical examples, culminating in actionable recommendations for policymakers, stakeholders, and researchers engaged with the challenges of climate change and intergenerational justice.

Limitations and Expected Outcomes

It is important to acknowledge certain limitations and delimitations inherent to the study. These considerations may influence the generalizability, applicability, and ethical aspects of the research.

1. **Scope and Generalizability:** The research conducted for this master thesis will have specific boundaries and limitations in terms of geographical scope, time constraints, and the availability of relevant data and literature. Therefore, the findings and conclusions may not be universally applicable and may require further investigation and adaptation to different contexts. The research will strive to provide insights and recommendations that are relevant and transferable within the identified scope.
2. **Data and Information Availability:** The availability and accessibility of data, particularly in the context of climate change, can pose challenges during the research process. This may result in limitations in the quantity or quality of data utilized for analysis. Moreover,

navigating the abundance of data poses another challenge, as the sheer volume may introduce complexities. It is crucial to stay informed with the latest information to uphold the research's relevance and accuracy.² Efforts will be made to gather comprehensive and reliable data from credible sources, but the inherent limitations and biases in the available data should be acknowledged.

3. **Interdisciplinary Complexity:** Given the interdisciplinary nature of the research topic, there may be inherent complexities in integrating philosophical analysis with empirical data, scientific models, and policy considerations. The integration of multiple disciplines and perspectives may introduce challenges in terms of reconciling different methodologies, terminologies, and epistemological frameworks. These complexities will be addressed by adopting a careful and critical approach to the analysis and interpretation of interdisciplinary sources.
4. **Ethical Considerations:** Researching intergenerational justice and climate change raises ethical considerations. It is essential to ensure the ethical treatment of research subjects and the responsible use of data and information. Additionally, the researcher should be mindful of any potential conflicts of interest or biases that may influence the interpretation of findings and maintain objectivity throughout the research process.
5. **Complex Nature of Intergenerational Justice:** Intergenerational justice is a multifaceted and evolving concept with various interpretations and understandings. The complexity of intergenerational justice and its application to climate change may pose challenges in reaching definitive conclusions. The research will strive to provide a comprehensive analysis within the given scope, but it is important to acknowledge the ongoing debates and diverse perspectives within the field of intergenerational justice.

By acknowledging these limitations and delimitations, the research aims to ensure transparency and integrity in its findings and conclusions. Despite these constraints, this research contributes to existing knowledge and addresses pressing societal, cultural, and philosophical issues related to climate change and intergenerational justice.

1. **Addressing Climate Change and Ethical Considerations:** Climate change is a global challenge with far-reaching implications for present and future generations. By examining the qualities needed for climate mitigation and adaptation measures to

² For Example, the *Handbook of the Philosophy of Climate Change* published late in 2023 by Gianfranco Pellegrino and Marcello Di Paola was not included. Simply highlighting the complexities involved in tackling a contemporary debate.

achieve intergenerational justice, this research directly engages with the ethical dimensions of climate change. It highlights the moral obligations and responsibilities we have towards future generations and emphasizes the need to consider intergenerational justice in climate-related decision-making processes.

2. **Bridging Philosophy and Climate Change:** This research bridges the field of philosophy with the complex and pressing issue of climate change. It brings philosophical frameworks, ethical theories, and philosophical analysis to bear on the practical challenges of mitigating and adapting to climate change. By integrating philosophical perspectives, the research enriches the understanding of the ethical implications and considerations inherent in climate-related measures and contributes to the interdisciplinary discourse on climate change.
3. **Practical Guidance for Policymakers and Decision-Makers:** The research aims to provide practical guidance for policymakers, stakeholders, and decision-makers involved in climate mitigation and adaptation efforts. By identifying the qualities required for intergenerational justice, the research offers insights into policy formulation, planning, and implementation. It assists in the development of climate-related measures that are ethically grounded, equitable, sustainable, and sensitive to the needs of future generations.
4. **Shaping Sustainable and Just Futures:** As climate change increasingly impacts ecosystems, societies, and vulnerable populations, the research on intergenerational justice assumes broader societal and cultural relevance. It contributes to envisioning and striving for sustainable and just futures, emphasizing the importance of intergenerational equity and fairness in addressing the challenges of a changing climate. By incorporating the perspective of future generations, the research seeks to foster a sense of responsibility and stewardship towards the planet and its inhabitants.
5. **Informing Climate Policy and Advocacy:** The findings of this research have the potential to inform climate policy and advocacy efforts. By identifying the qualities necessary for climate-related measures to accomplish intergenerational justice, the research provides a solid foundation for advocating for policies that prioritize the well-being and rights of future generations. It equips policymakers, activists, and advocates with evidence-based arguments to support the integration of intergenerational justice considerations into climate change strategies.

Overall, the significance and relevance of this research lie in its contribution to the understanding of intergenerational justice in the context of a changing climate. By addressing the broader ethical dimensions of climate change and providing practical insights, it seeks to foster sustainable and just decision-making, influence policy formulation, and contribute to the ongoing dialogue surrounding climate change and intergenerational justice.

Outline of the Thesis

The first chapter of this master's thesis marked our beginning to the journey to explore the intricate relationship between intergenerational justice and the ever-evolving climate. The overarching question that guides our inquiry is: "What qualities are required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations?" This chapter introduced the research topic, laying the groundwork for subsequent exploration.

We begin by highlighting the pertinence of intergenerational justice within the context of climate change. The planetary shifts brought about by climate change have far-reaching consequences that extend beyond the present moment, raising ethical concerns about the fairness of burdens and benefits across generations. The imperative to address these concerns underscores the significance of our research.

Chapter 2 delves into the theoretical underpinnings and philosophical frameworks that underlie the intricate relationship between intergenerational justice and climate change. We dissect key concepts such as intergenerational equity, justice, and sustainability. By engaging with ethical theories and approaches, we navigate the complex terrain of climate change ethics. Philosophers and thinkers serve as guiding lights, illuminating the philosophical dimensions of our investigation.

The third chapter takes a deep dive into the tangible impacts of climate change on future generations. Backed by the scientific consensus, we unravel the causes and projected consequences of this global phenomenon. While the scientific evidence is essential, the ethical implications of these impacts are equally significant. The violation of intergenerational justice principles due to climate change serves as a clarion call for urgent action.

The fourth chapter leads us into the realm of climate mitigation. We explore the integration of mitigation measures and intergenerational justice, recognizing the pivotal role mitigation plays in securing the well-being of future generations. The chapter investigates the qualities required for intergenerationally just mitigation, shedding light on the significance of emission reduction, renewable energy transition, and sustainable development. Additionally, we acquire the ethical

concepts of equity, fairness, and global cooperation on our journey, which support the realization of intergenerational justice in mitigation strategies.

Chapter 5 shifts our focus to climate adaptation, an indispensable facet of addressing intergenerational justice. As we scrutinize the qualities essential for intergenerationally just adaptation, we explore the concepts of resilience, vulnerability reduction, and adaptive capacity-building. With an emphasis on inclusivity, we delve into the need for participatory approaches in designing adaptation strategies. This chapter also unpacks the ethical considerations and policy frameworks that guide just adaptation measures.

The sixth chapter traverses the intricate terrain of integrating mitigation and adaptation measures. Recognizing their symbiotic relationship, we uncover the potential trade-offs and synergies that emerge from combining these strategies. In doing so, we confront the complexities of decision-making processes and policy trade-offs, where the pursuit of intergenerational justice may demand difficult choices. We engage interdisciplinary perspectives to tackle the challenges of balancing and integrating these measures effectively.

As we approach the conclusion of our journey, Chapter 7 encapsulates the insights gained from our exploration. We reiterate the key findings, arguments, and theories that have shaped this thesis. By addressing the main research question, we draw comprehensive conclusions that underscore the essence of intergenerational justice in a changing climate. Reflecting on the implications of our research, we unpack practical recommendations for policymakers, stakeholders, and future research endeavors. Ultimately, this chapter concludes by reinforcing the urgency and responsibility to collaboratively shape a sustainable and just future for all.

2.Theoretical Framework

This chapter serves as a critical foundation for examining the complex relationship between intergenerational justice and climate change in the master thesis titled "Intergenerational Justice in a Changing Climate." This chapter aims to establish the theoretical underpinnings necessary for understanding the concept of intergenerational justice and its implications for climate mitigation and adaptation measures.

The objectives of this chapter are threefold. First, we aim to provide a clear definition and conceptual understanding of intergenerational justice, specifically relating to climate change. This involves exploring the principles and theories that shape our understanding of justice between present and future generations. Second, we will examine the ethical implications of climate change, recognizing its disproportionate impact on future generations. By engaging with ethical theories and frameworks, we can assess the moral dimensions of climate change and highlight the obligations we have towards future generations. Lastly, we will explore the concept of sustainability and its relevance to intergenerational justice. Sustainability encompasses the long-term well-being of both human and non-human entities, including considerations of ecological integrity, social equity, and economic viability. Understanding sustainability and its relationship to intergenerational justice is crucial for identifying the qualities required of climate mitigation and adaptation measures to uphold the well-being of future generations.

Through this exploration of theoretical foundations, key concepts, and ethical theories, we aim to establish a robust framework that will guide our analysis in subsequent chapters. By examining intergenerational justice within the context of climate change, we can gain a deeper understanding of the qualities necessary for climate mitigation and adaptation measures to accomplish intergenerational justice for future generations.

Intergenerational Justice: Concepts and Principles

Intergenerational justice serves as a fundamental concept in understanding the ethical dimensions of climate change and the pursuit of sustainability. This section of Chapter 2 delves into the concept of intergenerational justice, its relevance within the context of climate change, and the principles and theories that underpin its understanding. Additionally, it explores influential philosophical perspectives that contribute to the discourse on intergenerational justice.

Definition and Relevance of Intergenerational Justice

By providing a clear definition and understanding of intergenerational justice, we can highlight its significance in addressing the moral obligations between present and future generations. Specifically, we explore how intergenerational justice pertains to climate change, emphasizing the ethical considerations encompassing the impact of climate change on future generations.

Intergenerational justice, at its core, embodies the notion of fairness and equity between different generations. It acknowledges that the actions, decisions, and policies of the present have far-reaching consequences for future generations. By recognizing the long-term temporal dimension of justice, we acknowledge our moral responsibility to ensure the well-being and rights of those who will come after (cf. Meyer 2003).

In the context of climate change, intergenerational justice takes on heightened importance. Climate change is not a transient issue; it poses enduring challenges that will persist for generations to come. The ethical considerations surrounding climate change stem from the recognition that our actions today can fundamentally alter the conditions under which future generations will live – making the “permanent asymmetry in power-relations between living people and those who will live in the future” (ibid.) painstakingly clear.

Future generations face the potential harms and injustices resulting from climate change, including increased frequency and severity of natural disasters, resource scarcity, environmental degradation, and social and economic disruptions (cf. IPCC 2022a, 18). By addressing intergenerational justice, we seek to mitigate these risks and ensure that our response to climate change considers the interests and well-being of future generations.

Intergenerational justice serves as a guiding principle in formulating climate mitigation and adaptation measures. It urges us to reflect upon the long-term implications of our decisions and actions, prompting us to prioritize sustainability and fairness. By incorporating intergenerational justice into our policy-making and decision-making processes, we can foster a more equitable distribution of climate-related benefits and burdens across present and future generations.

Considering that intergenerational justice requires us to adopt a forward-thinking perspective, this compels us to acknowledge that our choices today will shape the world inherited by future generations. It calls for intergenerational solidarity, recognizing the interconnectedness of human societies across time. By embracing intergenerational justice, we can strive towards a more sustainable and just future.

In the subsequent chapters of this thesis, we will build upon this conceptual foundation to explore the qualities and principles required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. By examining different ethical

frameworks, philosophical perspectives, and practical approaches, we aim to provide insights and recommendations for fostering intergenerational justice in the face of a changing climate. By understanding the definition and relevance of intergenerational justice, we lay a solid groundwork for the subsequent analysis and exploration of the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for the betterment of future generations.

Principles and Theories of Intergenerational Justice

One of the key principles we explore is the Principle of Equal Opportunity (cf. Rawls 1999). This principle underscores the importance of ensuring fairness and equal access to resources and opportunities for future generations. In the face of climate change, it becomes crucial to consider the potential disparities and disadvantages that future generations may face. By incorporating the Principle of Equal Opportunity into our decision-making processes, we strive to create a level playing field, where all individuals, regardless of their birth year, have equal chances to thrive and pursue their aspirations.

Furthermore, Rawls proposed principles of justice that encompass intergenerational concerns and provide a framework for evaluating the fairness and distribution of resources over time. His theory of justice as fairness emphasizes the need to address the disadvantages and vulnerabilities that future generations may face. By incorporating Rawlsian principles into our analysis, we can assess the ethical dimensions of climate change and strive for a just distribution of benefits and burdens across generations.

Another principle we examine is the Principle of Sustainability. Traditionally, sustainability is often categorized into three domains: economy, environment, and society. However, the UN's 17 Sustainable Development Goals demonstrate the intricate connections among these dimensions as efforts are made to strike a balance. Sustainability encompasses the need to adopt practices and policies that ensure the long-term well-being of current and future generations. It emphasizes the responsible use of resources, the preservation of ecological integrity, and the mitigation of harmful environmental impacts. By embracing the Principle of Sustainability, we acknowledge the interconnectedness of human societies and the environment, recognizing that our actions today should not compromise the ability of future generations to meet their needs.

A philosopher that is closely connected to this debate is Hans Jonas. Jonas offers valuable perspectives on the ethical responsibilities we bear towards future generations in the context of environmental sustainability. Jonas argues that we have an obligation to consider the long-term

consequences of our actions, making decisions that protect and preserve the natural world for future generations (cf. Jonas 1984). By exploring Jonas's ideas, we gain insights into the moral imperatives associated with climate change and the importance of intergenerational justice in shaping our response to this global challenge.

Furthermore, we discuss the Principle of Intergenerational Equity. This principle highlights the importance of fairness in the distribution of resources and burdens across generations (cf. Pegram 2020). It calls for an equitable allocation of both the benefits and costs associated with climate mitigation and adaptation measures. By considering the Principle of Intergenerational Equity, we seek to address the potential inequities that may arise from climate change ensuring that burdens and responsibilities are shared in a just and equitable manner, especially since “children’s rights have been largely overlooked in international negotiations” (Pegram 2020, 259).

We also explore the contributions of Derek Parfit, whose exploration of personal identity and the continuity of interests sheds light on the concept of intergenerational justice. Parfit's work challenges our traditional understanding of individuality and self-interest which raises important questions about our moral obligations towards future generations. By considering Parfit's insights, we can deepen our understanding of the ethical implications of climate change and the concerns this raises for intergenerational justice.

By exploring these principles and theories of intergenerational justice, we aim to develop a comprehensive understanding of the qualities required for climate mitigation and adaptation measures. These principles provide a framework for assessing the ethical dimensions of our actions and policies, helping us navigate the complex challenges posed by climate change. They guide us in our quest to accomplish intergenerational justice, ensuring that our decisions and measures promote fairness, sustainability, and equity for the benefit of future generations.

In addition to these principles and philosophers, we consider the perspectives of other relevant thinkers and theories that contribute to our understanding of intergenerational justice and its implications for climate change. By examining a diverse range of philosophical perspectives, we enrich our analysis and broaden our perspectives on the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice.

By integrating these philosophical perspectives into our exploration, we aim to develop a comprehensive understanding of intergenerational justice in the context of a changing climate. These perspectives challenge us to reflect critically on our moral obligations towards future generations and guide us in formulating ethical and just responses to the challenges posed by climate change. In the subsequent chapters, we will build upon these conceptual foundations to

explore practical approaches and qualities that can help achieve intergenerational justice in climate mitigation and adaptation, ensuring a sustainable and just future for generations to come.

In the subsequent chapters, we will build upon this conceptual foundation to delve deeper into specific aspects of climate mitigation and adaptation, examining the qualities and approaches necessary to achieve intergenerational justice. By integrating these principles and theories into our analysis, we aim to contribute to the ongoing discourse of how to address the moral and ethical challenges of climate change in a way that upholds intergenerational justice and secures a sustainable future for all.

Climate Change and Ethical Implications

Climate change poses significant ethical challenges that demand thorough examination and analysis from a philosophical perspective. These challenges intersect in the domain of equity and equality, encompassing responsibility, recognition and solidarity (cf. Stabinsky 2020, 288f.). This section of Chapter 2 delves into the ethical implications of climate change, particularly in relation to intergenerational justice. It explores how climate change impacts future generations and raises concerns regarding justice between generations. Additionally, it analyzes the links between climate change, environmental ethics, and distributive justice. Finally, it explores different ethical theories and frameworks that shed light on the ethical dimensions of climate change.

Ethical Implications of Climate Change

Climate change presents us with a complex web of ethical considerations. We begin by acknowledging the inherent intergenerational injustice embedded/webbed in its consequences. The impacts of climate change, such as rising sea levels, extreme weather events, and ecological disruptions, disproportionately affect future generations who have had little to no role in causing the problem. This raises profound moral questions about the fairness and equity of burden-sharing across generations (cf. Caney 2020).

Moreover, climate change presents us with ethical dilemmas that demand thoughtful reflection and action. One key question revolves around responsibility. Who bears responsibility for the causes and consequences of climate change? Is it solely the current generation, or should historical emissions and actions be taken into account? Examining these questions helps us

understand the moral dimensions of accountability and the need for collective action to address climate change.

Fairness is another ethical consideration that emerges in the context of climate change. As the impacts of climate change are distributed unevenly across the globe, questions arise regarding the fair distribution of benefits and burdens. Developing nations often bear a disproportionate burden, while wealthier nations have historically contributed more to greenhouse gas emissions. Exploring these issues of fairness is crucial for promoting intergenerational justice and ensuring an equitable response to climate change.

Additionally, climate change challenges us to rethink our relationship with nature and the environment (cf. Göpel 2016, 9). It raises questions about our moral obligations towards non-human species and the preservation of biodiversity. The loss of ecosystems and the destruction of habitats due to climate change necessitate ethical reflections on our responsibility to protect and sustain the natural world.³

By engaging with these ethical dimensions, we can develop a deeper understanding of the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice. By recognizing the moral responsibilities and obligations we have towards future generations, we can shape our approach to climate change in a way that is guided by ethical considerations.

Climate Change and Intergenerational Justice

Climate change poses significant challenges for the generations to come, with far-reaching consequences that extend beyond the present. As we explore these implications, we recognize the potential loss of vital resources, including access to clean air and water, arable land, and biodiversity. Future generations face the risk of compromised livelihoods, diminished quality of life, and even existential threats due to the adverse impacts of climate change (cf. IPCC 2021).

At the heart of the intergenerational justice discourse lies the concept of intergenerational equity. It emphasizes the need for fairness and justice in addressing climate change and its consequences across generations. Ensuring intergenerational equity entails equitable distribution of both the benefits and burdens associated with climate change. Future generations should not bear an unfair share of the costs and should have access to the opportunities

³ It is important to note that climate change is not primarily a question of guilt, as “there has been no purposefully destructive actor intending to destroy the climate system” (Kallhoff 2021, 45) – even though there are conflicting priorities resulting in inaction based.

necessary for their well-being and development, e.g. a stronger institutional commitment to conserving resources for the benefit of future generations (cf. Skillington 2020, 46).

The notion of intergenerational equity prompts us to consider the distribution of climate-related benefits and burdens. It calls for a just allocation of resources, mitigation efforts, and adaptation measures to address climate change impacts. By examining the principles of fairness and equity, we can identify the qualities required of climate mitigation and adaptation measures to achieve intergenerational justice.

Furthermore, the ethical implications of climate change extend beyond intergenerational justice alone. Climate change raises profound moral questions about our responsibilities towards the environment, other species, and the vulnerable populations most affected by its consequences (IPCC 2022a, 1). It prompts us to reflect on our ethical obligations to act as stewards of the Earth and to mitigate the harm caused by climate change.⁴

In the subsequent chapters, we will delve deeper into the practical aspects of climate mitigation and adaptation measures. By grounding our analysis in the ethical dimensions of climate change and intergenerational justice, we aim to develop a comprehensive understanding of the qualities necessary to address the challenges posed by climate change in a just and equitable manner for the sake of both present and future generations.

Climate Change, Environmental Ethics, and Distributive Justice

Climate change presents a significant challenge, not only to human societies but also to the natural environment. As we reflect on the ethical considerations surrounding climate change, we recognize the moral responsibility to preserve the environment and its resources for the well-being and flourishing of both current and future generations. This recognition brings to the forefront the principles and values of environmental ethics.

Environmental ethics urges us to consider the inherent value of nature and the interdependence between humans and the natural world. It calls for a holistic approach that acknowledges our ethical obligations towards the environment and its diverse ecosystems. By recognizing the intrinsic worth of the environment, we can develop a moral framework that guides our actions in mitigating climate change and ensuring the preservation of a healthy planet for future generations. To put it into perspective, “[h]umans are relative newcomers. The Earth is around 4.6 billion years old, and multicellular life evolved 2.1 billion years ago, yet the oldest fossil

⁴ A more detailed exploration of the ethical theories by David Hume and Aldo Leopold, which provide insights into our moral responsibilities towards the environment and vulnerable populations, would extend beyond the scope of this thesis. Suggested further reading: *An Enquiry Concerning the Principles of Morals* by David Hume and *A Sand County Almanac* by Aldo Leopold.

remains of anatomically modern *Homo sapiens sapiens* date back a mere 195,000 [300,000] years, or 0.004% [0.006%] of the planet's history" (Gardiner and Thompson 2019, 1).

Distributive justice plays a crucial role in addressing the ethical implications of climate change. It raises fundamental questions about fairness, equality, and the allocation of resources in the context of climate mitigation and adaptation measures. Distributive justice principles help us navigate the challenges of resource allocation, ensuring that the burdens and benefits related to climate change are distributed in a just and equitable manner.

In examining distributive justice in the context of climate change, we explore how to address questions of fairness in determining who bears the costs of climate change and who benefits from mitigation and adaptation measures. We consider the need to prioritize the most vulnerable populations and communities disproportionately affected by climate change, as distributive justice requires us to rectify existing inequalities and promote equitable outcomes.

By analyzing the principles of distributive justice in relation to climate change, we can develop a deeper understanding of the qualities required for climate mitigation and adaptation measures. This understanding enables us to strive for just and equitable outcomes, ensuring that future generations are not unduly burdened and that the benefits and opportunities arising from climate action are shared fairly.

Ethical Theories and Frameworks

Consequentialist theories provide a consequentialist perspective on climate change focused on the evaluation of outcomes and consequences. Utilitarianism, for instance, assesses the overall happiness or well-being resulting from climate mitigation and adaptation measures. Consequentialist environmental ethics applies this framework specifically to environmental issues, considering the ecological consequences and the overall welfare of present and future generations (cf. Hiller 2019). By analyzing the consequences of climate change and the effectiveness of mitigation and adaptation measures, consequentialist theories offer valuable insights into the ethical evaluation of climate action.

On the other hand, deontological theories emphasize the moral duties and obligations associated with climate change. Kantian ethics, for example, highlights the importance of treating individuals and future generations as ends in themselves, rather than merely means to an end. Rights-based approaches focus on recognizing and protecting the rights of present and future generations, advocating for their entitlements and justice in the face of climate change (cf. Hale 2019 and Brundtland 1978, *Our Common Future*). By exploring deontological theories, we

can gain a deeper understanding of the moral imperatives and responsibilities related to climate change and intergenerational justice.

Virtue ethics provides a different perspective by focusing on the virtues and character traits necessary to address the ethical challenges of climate change. It emphasizes the cultivation of virtues such as wisdom, justice, and courage to guide our actions towards intergenerational justice. Virtue ethics encourages us to develop a moral character that prioritizes the well-being of future generations and embodies a sense of responsibility towards the environment (cf. Sandler 2019; Whyte and Cuomo 2019). By exploring virtue ethics, we can uncover the virtues necessary to navigate the complexities of climate change and promote intergenerational justice. In addition to virtue ethics that grounds its foundations in classical philosophy (especially Aristotle) this research focuses on ethics of care which emerged more recently in the context of feminist ethics, e.g. Carol Gilligan.

By considering these different ethical theories and frameworks, we broaden our understanding of the moral implications of climate change. Each perspective offers unique insights into the values, principles, and virtues necessary to address the intergenerational justice concerns posed by climate change. Integrating these ethical theories and frameworks into our analysis allows us to assess climate mitigation and adaptation measures from various ethical standpoints, contributing to a comprehensive evaluation of their qualities and effectiveness in accomplishing intergenerational justice.

In the subsequent chapters, we will build upon these ethical foundations to examine and evaluate specific qualities required of climate mitigation and adaptation measures to achieve intergenerational justice. By integrating ethical theories and frameworks into our analysis, we strive to develop a robust framework for guiding climate action and ensuring a just and sustainable future for all generations to come.

Sustainability and Future Generations

This section of Chapter 2 explores the concept of sustainability and its relationship to intergenerational justice in the context of a changing climate. It delves into the ethical dimensions of sustainability and its application in addressing the challenges of climate change. Additionally, it analyzes the various dimensions of sustainability – environmental, social, and economic – and their implications for future generations. Furthermore, it examines philosophical perspectives on sustainability, such as weak sustainability, strong sustainability, or ecological integrity.

Sustainability and Intergenerational Justice

The concept of sustainability has a crucial role in achieving intergenerational justice. By examining the interconnections between sustainability and climate change, we gain insights into how sustainable practices can contribute to mitigating and adapting to the effects of climate change, while safeguarding the interests of future generations.

Sustainability is fundamentally linked to intergenerational justice as it encompasses the ethical responsibility to ensure the well-being and quality of life for both current and future generations. As it was put in *Our Common Future*: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987, part 1, chapter 2, paragraph 1). Sustainability recognizes the interconnectedness of human activities, the environment, and the social and economic systems. By adopting sustainable practices, we strive to minimize the depletion of natural resources, reduce environmental degradation, and promote social equity and economic prosperity for present and future generations.

Within the context of climate change, sustainability becomes even more critical. The impacts of climate change such as rising temperatures, extreme weather events, and loss of biodiversity, pose significant challenges to the well-being of future generations. As working group III noted, “[c]onsideration of climate justice can help to facilitate shifting development pathways towards sustainability, including through equitable sharing of benefits and burdens of mitigation, increasing resilience to the impacts of climate change, especially for vulnerable countries and communities, equitably supporting those in need” (IPCC 2022b, 56). That means, that sustainable practices and policies that prioritize the preservation and restoration of ecosystems, the reduction of greenhouse gas emissions, and the promotion of renewable energy sources are essential for mitigating the adverse effects of climate change and ensuring a sustainable future. Integrating sustainability principles into decision-making processes helps address intergenerational justice concerns. By considering the long-term impacts of our actions and policies, we can minimize harm to future generations and promote their well-being. Sustainability requires us to balance the needs of the present with the needs of future generations (cf. Brundtland 1987), recognizing that our choices today can – and will – have far-reaching consequences for future generations.

By exploring sustainability in the context of intergenerational justice, we lay the groundwork for understanding the qualities required of climate mitigation and adaptation measures. The examination of sustainability principles provides us with a framework to evaluate the effectiveness of these measures in achieving intergenerational justice. It guides us in identifying

approaches that minimize harm to future generations while fostering ecological integrity, social equity, and economic stability.

In the subsequent chapters, we will delve deeper into the different dimensions of sustainability, including environmental, social, and economic aspects, to explore their implications for future generations. By understanding the complexities of sustainability and its intersection with intergenerational justice, we can develop a comprehensive framework for climate action that ensures a sustainable and just future for all.

Ethical Dimensions of Sustainability

Sustainability is not merely a technical or scientific concept but also a deeply ethical one. It requires us to consider the long-term impacts of our actions and decisions on the well-being of both present and future generations.

At its core, sustainability is guided by inherent values that reflect our moral commitments. These values include the preservation of ecological integrity, which recognizes the interconnectedness and interdependence of all living beings and ecosystems. It emphasizes the importance of maintaining the health and balance of natural systems for the benefit of current and future generations.

Equity and justice are also essential ethical considerations within the framework of sustainability. Sustainable practices and policies should promote fairness in the distribution of resources and opportunities, ensuring that no particular group or generation disproportionately bears the burdens or reaps the benefits. By addressing social inequalities and promoting inclusivity, sustainability can contribute to a more just and equitable society for all.

The well-being of present and future generations is a central ethical concern of sustainability. It requires us to consider the quality of life, health, and prosperity of both current and future individuals. Sustainable development aims to meet current needs while ensuring that future generations can also meet theirs. This intergenerational perspective recognizes that we are temporary custodians of the Earth and that our actions should not undermine the well-being and opportunities of future generations. Göpel underscores this point by stating, "[t]echnically, no one should have to suffer from hunger and extreme poverty any longer. So reaching sustainability is not about more and more output of everything for everyone but about getting the right outputs in the right places into the right hands" (Göpel 2017, 101).

To deepen our understanding of the ethical dimensions of sustainability in the context of climate change, we draw upon various ethical frameworks. Consequentialist theories, such as utilitarianism, analyze the outcomes and consequences of our actions, guiding us towards

choices that maximize overall well-being for both present and future generations. Deontological theories, such as rights-based approaches, emphasize moral duties and principles that should guide our actions in relation to sustainability. These frameworks help us reflect on the ethical implications of our decisions and behaviors in achieving sustainability goals.

Virtue ethics also offer valuable insights into the ethical dimensions of sustainability. By focusing on the cultivation of virtuous character traits, such as wisdom, compassion, and environmental stewardship. Virtue ethics encourages us to embody and promote values and behaviors that contribute to a sustainable future. It emphasizes the importance of personal and collective virtues in addressing the challenges posed by climate change and ensuring the well-being of future generations.

By exploring the ethical dimensions of sustainability, we gain a deeper understanding of the values and principles that support sustainable practices and policies. This understanding informs our evaluation of climate mitigation and adaptation measures, helping us discern the qualities required to accomplish intergenerational justice for future generations.

Dimensions of Sustainability and Future Generations

Sustainability encompasses multiple aspects that are interconnected and integral to the well-being and flourishing of both present and future societies.

The environmental dimension of sustainability is of paramount importance when considering the needs of future generations. It entails the preservation and conservation of natural resources, ecosystems, and biodiversity. By adopting sustainable practices, we aim to ensure that future generations inherit a planet with intact ecosystems, clean air and water, and a rich biodiversity. This dimension recognizes the intrinsic value of nature and emphasizes the importance of our stewardship role in protecting and restoring the environment for the benefit of future generations. Already today, “[i]ndigenous communities and other marginalized populations are most impacted by [...] dirty energy investments, despite the fact that they are least responsible for the climate crisis and are on the frontlines of fights to protect clean air, water, land and natural resources” (Silverman 2020, 254).

The social dimension of sustainability is equally crucial in addressing the needs and well-being of future generations. It encompasses considerations of equity, social justice and inclusivity. Sustainable development requires us to create societies that are fair, just, and inclusive, where all individuals have equal access to opportunities, resources, and basic needs. By addressing social inequalities and promoting social cohesion, we can build a foundation for future generations to thrive in a just and equitable society.

The economic dimension of sustainability focuses on the responsible management of resources and the equitable distribution of wealth. Sustainable economic practices aim to meet the needs of both current and future generations. This includes adopting sustainable production and consumption patterns, promoting circular economy approaches, and ensuring that economic growth is aligned with social and environmental considerations. By integrating sustainability into economic systems, we can create a more equitable and resilient economy that benefits present and future generations (cf. Göpel 2017, 62).

By examining these dimensions of sustainability, we gain a comprehensive understanding of the qualities required to accomplish intergenerational justice for future generations. A holistic approach that considers the environmental, social, and economic aspects of sustainability is essential in addressing the challenges posed by a changing climate. Future generations deserve a world that is environmentally resilient, socially just, and economically sustainable. “More so, with the burdens, benefits, and responsibility for climate change unevenly distributed between the developed and the developing countries, climate justice is capable of bridging the gap between climate change science and social justice as it addresses the challenge from a ‘people’ and ‘social’ dimension” (Mattar and Mbakwem 2018, 489).

In the subsequent chapters, we will build upon this dimension of sustainability to explore specific climate mitigation and adaptation measures. By evaluating these measures through the lens of sustainability and intergenerational justice, we can identify the qualities and approaches that are most effective in achieving a just and sustainable future for all.

Philosophical Perspectives on Sustainability

One philosophical perspective on sustainability is the concept of weak sustainability. According to this perspective, different forms of capital, including natural, human, social, and manufactured capital, are seen as substitutable. Weak sustainability argues that as long as the total amount of capital remains constant or increases over time, the well-being of future generations can be maintained. However, this perspective has been criticized for its narrow focus on the quantitative aspects of capital, neglecting the qualitative aspects and the unique value of natural capital (cf. Brennan and Lo 2002).

In contrast, the perspective of strong sustainability advocates for the preservation and enhancement of natural capital as a fundamental prerequisite for human well-being and intergenerational justice. Proponents of strong sustainability argue that natural capital, including ecosystems, biodiversity, and ecosystem services, possesses an inherent value that should not be compromised or sacrificed for short-term economic gains. E.g. in *Our Common Future*, also

known as the Brundtland report, “[a] first priority is to establish the problem of disappearing species and threatened ecosystems on political agendas as a major resource issue” (Brundtland 1987, part 2, chapter 6, paragraph 57). They emphasize the importance of protecting the integrity and resilience of ecosystems to ensure the long-term sustainability of human societies and the well-being of future generations. “[T]he case for the conservation of nature should not rest only with development goals. It is part of our moral obligation to other living beings and future generations” (Brundtland 1987, part 1, chapter 2, paragraph 55).

Another important concept in philosophical discussions on sustainability is ecological integrity. Ecological integrity recognizes the intrinsic value and integrity of ecosystems, highlighting their importance for the well-being of both present and future generations. It emphasizes the interconnectedness and interdependence of ecological systems and emphasizes the need to maintain the health, functioning, and diversity of ecosystems. Ecological integrity emphasizes our ethical responsibility to preserve and protect ecosystems, not only for their instrumental value but also for their inherent worth and the well-being they provide to all living beings.

By considering these philosophical perspectives on sustainability, we gain a deeper understanding of the ethical dimensions and values that underlie our approach to intergenerational justice and the well-being of future generations. These perspectives challenge us to question our current practices and policies, urging us to adopt a more holistic and long-term perspective that values the preservation and enhancement of natural capital and the integrity of ecosystems.

In the subsequent chapters, we will further explore these philosophical perspectives on sustainability and their implications for climate mitigation and adaptation measures. By integrating these perspectives into our analysis, we can identify the qualities and strategies necessary to accomplish intergenerational justice and create a sustainable future that upholds the well-being of present and future generations.

By examining the concept of sustainability, its ethical dimensions, and the philosophical perspectives surrounding it, this section of Chapter 2 establishes a theoretical framework for understanding the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. It provides a comprehensive analysis of sustainability in relation to intergenerational justice, laying the groundwork for the subsequent examination of climate mitigation and adaptation strategies.

Ethical Theories and Approaches

This section of Chapter 2 explores various ethical theories and approaches that are pertinent to the study of intergenerational justice in the context of a changing climate. It examines consequentialist theories, deontological theories, and virtue ethics, shedding light on their implications for climate mitigation and adaptation.

Consequentialist Theories

Consequentialist ethical frameworks prioritize the consequences or outcomes of actions in determining their moral value. Two prominent consequentialist theories, utilitarianism, and consequentialist environmental ethics, offer insights into the ethical considerations surrounding climate change.

Utilitarianism as a consequentialist theory, advocates for actions that maximize overall well-being or utility. In the context of climate change, utilitarianism would prioritize mitigating and adapting to climate change to achieve the greatest overall benefit for society. It considers the aggregate well-being of both current and future generations, aiming to minimize harm and maximize the overall happiness and welfare for the greatest number of people.

Consequentialist environmental ethics provides a framework for applying the principles of consequentialism to environmental issues, with a particular focus on pressing concerns like climate change. This ethical perspective prioritizes the examination of the outcomes of human actions on the environment and emphasizes the impact on both human and non-human entities. The objective is to evaluate the impact of these actions on the well-being of ecosystems, biodiversity, and the overall health of the planet, either contributing to or mitigating their effects. In this context, Avram Hiller raises a thought-provoking point by Robert Elliot regarding the potential tension between certain judgments within consequentialist environmental ethics. “But this type of anti-interference judgment seems at odds with consequentialism: typical consequentialists hold that what matters in the evaluation of an action is only the outcome of the action, and if two actions lead to states of affairs that are otherwise identical, then the actions should be judged equally.” (Hiller 2019, 203) Hiller highlights a seeming contradiction where judgments against interference, which might entail refraining from human intervention in natural processes, appear at odds with the fundamental principles of consequentialism.⁵

Hiller's quote prompts reflection on the challenges and nuances within consequentialist environmental ethics. On one hand, there is a commitment to evaluating actions based on their

⁵ In other words: the moral evaluation of an action depends only on its consequences.

outcomes, considering the broader ecological consequences of human behavior. On the other hand, the notion of anti-interference judgments introduces a layer of complexity, questioning whether there are circumstances where non-intervention should be favored despite similar outcomes. This tension is resolved partially by Hiller as he states that “an impacted ecosystem has less value than an otherwise identical, undisturbed one simply because systemic good is greater when a system that has historically not been inhabited by humans remains free from human interference” (ibid.) but “human actions can contribute positively to overall value if they are done in accord with natural systems, in the same way, that the action of any organism is good when it is done in accord with its natural ecosystem” (ibid.).

This tension highlights the ongoing discourse within environmental ethics, as scholars and ethicists navigate the intricate landscape of balancing human impact on the environment with the overarching principles of consequentialism. It underscores the need for a nuanced and adaptable ethical framework that can address the multifaceted challenges presented by environmental issues like climate change.

By exploring consequentialist theories, we gain insight into the ethical implications of climate change and the importance of considering the overall consequences of our actions. These theories provide a framework for decision-making regarding climate mitigation and adaptation measures. They guide us in evaluating the potential impacts of different strategies and interventions on future generations, ensuring that our actions align with the principles of intergenerational justice and maximize the well-being of all affected by climate change.

In the subsequent sections of this chapter, we will further examine deontological theories, such as Kantian ethics or rights-based approaches, as well as virtue ethics, and their contributions to the understanding of intergenerational justice in the context of climate change. By integrating these ethical theories and approaches into our analysis, we can develop a comprehensive understanding of the qualities and principles required for climate mitigation and adaptation measures that achieve intergenerational justice for future generations.

Deontological Theories

Deontological ethical frameworks prioritize moral duties, principles, and rights as the basis for ethical decision-making. Two notable deontological theories, Kantian ethics, and rights-based approaches, offer valuable insights into the ethical considerations surrounding climate change.

Kantian ethics, named after the philosopher Immanuel Kant, emphasizes the importance of moral duties and principles that are based on reason and rationality. According to Kant, individuals have a moral obligation to act in accordance with universalizable principles or

maxims. Applied to climate change, Kantian ethics highlights the importance of recognizing and fulfilling our moral duties towards future generations. It emphasizes the inherent worth and dignity of all individuals, including those who have not yet been born, and underscores the need for intergenerational justice. Climate mitigation and adaptation measures, guided by Kantian ethics, would prioritize the protection of future generations' rights and well-being as an ethical imperative.

Rights-based approaches, another deontological perspective, focus on the recognition and protection of individual rights – argued for by Thomas Nagel. These approaches posit that individuals have certain inherent rights that should be respected and upheld. In the context of climate change, rights-based approaches emphasize the rights of present and future generations to a safe and healthy environment, access to resources, and the opportunity to thrive. Evaluating climate mitigation and adaptation measures through a rights-based lens involves considering whether these measures respect and uphold the rights of individuals, both current and future, to live in a sustainable and just world.

However, rights-based approaches have their shortcomings. As Lukas Meyer suggests, considerations based solely on the rights of future generations may not fully account for all the concerns we might have for them (cf. Meyer 2003). Meyer proposes that widely shared concerns about the continuation of human life on Earth at a high level of well-being may be partly accounted for by an obligation toward future people that goes beyond their rights vis-à-vis current people (cf. *ibid.*). This implies a need to explore and integrate additional ethical considerations outside of a strict rights-based framework to comprehensively address the multifaceted challenges posed by climate change.

In the context of climate change and intergenerational justice, Meyer's proposition, which extends beyond rights-based approaches, suggests that shared concerns for the well-being of human life on Earth necessitates obligations that surpass the mere recognition of rights. This prompts a deeper exploration of ethical principles guiding sustainable development, equitable resource distribution, and environmental mitigation efforts. Furthermore, one can advocate for an expanded ethical perspective that transcends a strictly human-centered view, emphasizing our responsibilities to the entire ecosystem. This holistic approach invites a broader consideration of intergenerational justice within the framework of ecological ethics.

In any case, by exploring deontological theories, we gain a deeper understanding of the moral duties, principles, and rights that underpin intergenerational justice. These theories provide ethical guidance for evaluating climate mitigation and adaptation measures, ensuring that they align with our moral obligations and respect the rights of all individuals, including future

generations. By incorporating deontological perspectives alongside consequentialist theories and other ethical frameworks, we can develop a comprehensive understanding of the qualities and principles required for climate mitigation, and adaptation measures that achieve intergenerational justice for future generations.

Ethics of Care

The ethics of care offers a distinct perspective centered on relationships, empathy, and the moral responsibility to care for others. In the context of addressing climate change, this ethical approach emphasizes the interconnectedness of individuals, communities, and the environment, guiding decision-making processes towards fostering a just and sustainable world for present and future generations.

As Kyle Whyte and Chris Cuomo phrased it, “Ethics of care understand moral agents as deeply and inextricably embedded in networks of ethically significant connections and conceive of caring as exercising responsibilities and virtues that maintain and positively influence relationships and general flourishing within those overlapping networks” (Whyte and Cuomo 2019, 234) This perspective places a profound emphasis on the interconnectedness of individuals within ethical networks. In the context of caring, moral agents are not isolated entities but are intricately woven into relationships that contribute to overall well-being and flourishing. The exercise of responsibilities and virtues within these networks becomes a vital aspect of caring, aligning with the core principles of the ethics of care.

The ethics of care calls for individuals to cultivate virtues such as empathy, compassion, and responsiveness. When applied to climate change, these virtues become fundamental in guiding ethical decision-making. Empathy prompts individuals to understand the experiences and vulnerabilities of those affected by climate change, fostering a sense of interconnectedness and shared responsibility. It encourages us to prioritize the well-being of communities, particularly those disproportionately impacted by environmental changes.

Compassion plays a crucial role in addressing climate-related challenges, urging individuals to respond with kindness and a genuine concern for the suffering of others. It emphasizes the moral duty to alleviate the burdens placed on vulnerable communities and ecosystems. Responsiveness, a key virtue in the ethics of care, calls for adaptive and attentive actions in the face of changing environmental conditions, recognizing the dynamic nature of ecosystems and communities.

The ethics of care, as a relational approach, guides our actions towards creating a just and caring community that extends beyond human-centric perspectives. It prompts us to consider

the needs and vulnerabilities of both human and non-human entities, emphasizing the intrinsic value of all life. By embracing the ethics of care, individuals and societies are encouraged to prioritize collaborative efforts, mutual support, and sustainable practices that enhance the resilience of communities and ecosystems.

Feminist care ethics provides a valuable lens through which the ethics of care can be further understood and extended. Recognizing the gendered aspects of caring in oppressive contexts aligns with the ethics of care's acknowledgment of the societal dynamics shaping caregiving roles. The emphasis on mutually beneficial caring relationships, the significance of care work associated with marginalized groups, and the attention to contextual nuances all resonate with the core principles of the ethics of care (cf. Whyte and Cuomo 2019, 241). Moreover, the call for caring and caretaking as remedies for addressing historical injustices aligns seamlessly with the ethics of care's emphasis on repair and the cultivation of ethical practices, rooted in concrete and contextual understanding.

In summary, the ethics of care provides a valuable ethical framework for addressing climate change and promoting intergenerational justice. By cultivating virtues such as empathy, compassion, and responsiveness, we can navigate the complexities of climate-related challenges with a focus on building resilient and caring communities. Integrating the ethics of care alongside other ethical theories enriches our understanding of the relational qualities and approaches necessary for climate mitigation and adaptation measures that prioritize the well-being of present and future generations.

Intergenerational Justice through a Pluralist Lens

While all three theories individually are applied to climate change, the approach I want to take is a pluralist one. Therefore we emphasize here the importance of adopting a pluralist lens in addressing the ethical challenges of climate change, specifically focusing on intergenerational justice. This pluralist approach, rooted in moral value pluralism, allows decision-makers to consider a diverse range of ethical perspectives, including deontology, consequentialism, and virtue ethics (cf. Mason 2006). By integrating these perspectives, decision-makers can conduct comprehensive analyses and develop responses that reflect the complexity of the issues at hand.

Firstly, the pluralist approach facilitates a thorough examination of ethical issues related to intergenerational justice. Decision-makers can explore a wide spectrum of considerations,

encompassing rights, duties, consequences, and more, across social, economic, and environmental dimensions. However, the abundance of perspectives may complicate decision-making and hinder effective prioritization of actions.

Secondly, acknowledging the diversity of ethical viewpoints and values within society promotes inclusivity and respect for varying perspectives. While fostering collaboration among stakeholders enriches the decision-making process, accommodating diverse perspectives may prolong deliberation processes and dilute the effectiveness of actions.

Thirdly, the pluralist approach enables a nuanced understanding of the complexities and uncertainties surrounding climate change's impacts on future generations. By considering various ethical theories, decision-makers gain insights into the ethical dilemmas and trade-offs involved. Yet, the complexity introduced by multiple ethical theories may obscure clear pathways for action.

Nevertheless, the flexibility inherent in the pluralist approach empowers decision-makers to respond effectively to the diverse and evolving challenges presented by climate change. By recognizing that ethical considerations can vary significantly across different contexts and circumstances, decision-makers can tailor their strategies to suit specific needs and challenges. This adaptability is crucial in navigating the complexities of climate change, where solutions must be contextually appropriate and responsive to the unique circumstances of each situation. Moreover, the pluralist approach provides a structured framework for resolving conflicts that may arise between competing ethical principles or values. In addressing intergenerational justice issues related to climate change, decision-makers often encounter conflicting perspectives on how to balance present needs with the interests of future generations. Commonsense morality (cf. Jamieson 2014, 144ff.) may struggle to adequately address these complex dilemmas, as it tends to rely on established norms and principles within a specific cultural or social context, which may not fully account for the diverse range of values and interests at play. In contrast, moral value pluralism is better equipped to deal with the issue at hand by acknowledging the multiplicity of moral values and encouraging individuals to consider a wide range of ethical perspectives. The pluralist lens allows for constructive dialogue and negotiation, enabling decision-makers to find common ground and develop solutions that integrate multiple ethical considerations. This process of conflict resolution is essential for fostering consensus and promoting effective action in ethically challenging situations.

Lastly, promoting interdisciplinary collaboration is essential for gaining a comprehensive understanding of the ethical implications of climate change for future generations. Intergenerational justice issues encompass a wide range of social, economic, environmental,

and political dimensions, each requiring expertise from various fields of study (cf. Gardiner 2010, 3). By bringing together experts from diverse disciplines such as environmental science, economics, ethics, sociology, and law, decision-makers can enrich their analysis and develop more holistic approaches to addressing these complex issues. Interdisciplinary collaboration enables decision-makers to explore the interconnectedness of different aspects of intergenerational justice, identifying synergies and trade-offs between environmental sustainability, social equity, economic development, and cultural preservation. This holistic approach facilitates the development of integrated strategies that account for the multifaceted nature of climate change and its impacts on future generations. By engaging with a diverse range of perspectives and expertise, decision-makers can develop more informed and effective responses to the ethical challenges posed by climate change, ultimately contributing to a more just and sustainable future for all.

In conclusion, adopting a pluralist lens offers a holistic, inclusive, and adaptive approach to addressing the complex ethical challenges posed by climate change. By integrating various ethical perspectives, decision-makers can develop responses that reflect the interests and values of the broader community, ensuring a more just and sustainable future for all.

Conclusion

This chapter provided a comprehensive exploration of the theoretical framework necessary for understanding intergenerational justice in the context of a changing climate. The key concepts, theories, and philosophical frameworks discussed in this chapter have laid the groundwork for analyzing the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations.

Throughout this chapter, we have examined the concept of intergenerational justice and its relevance in the context of climate change. We have discussed different principles and theories that inform our understanding of intergenerational justice, such as the Principle of Equal Opportunity, the Principle of Sustainability, and the Principle of Intergenerational Equity. We have also explored influential philosophical perspectives and theories on intergenerational justice.

Furthermore, this chapter has explored the ethical implications of climate change and the linkages between climate change, environmental ethics, and distributive justice. We have

examined different ethical theories and frameworks, such as consequentialism, deontology, and ethics of care, to gain insights into the ethical dimensions of climate change.

Moreover, we have discussed the concept of sustainability and its relationship to intergenerational justice. We have explored the ethical dimensions of sustainability and its application in the context of climate change. Additionally, we have analyzed the different dimensions of sustainability – environmental, social, and economic – and their implications for future generations. We have also examined philosophical perspectives on sustainability, including weak sustainability, strong sustainability, and ecological integrity.

In establishing this robust theoretical framework, we have paved the way for the subsequent chapters of this thesis. This theoretical foundation will guide our analysis of the qualities required for climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. It will inform our investigation into the specific strategies, policies, and approaches that can contribute to intergenerational justice in the face of a changing climate.

3. Climate Change and Intergenerational Justice

In the previous chapters of this thesis, we have established the significance of intergenerational justice in the context of a changing climate and explored the theoretical frameworks and ethical theories that inform our understanding of this concept. Now, in Chapter 3, we delve deeper into the specific relationship between climate change and intergenerational justice, focusing on the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations.

The primary objective of this chapter is to explore the intricate connection between climate change and intergenerational justice, shedding light on the ethical implications that arise from the impacts of climate change on future generations. By investigating this relationship, we aim to identify the key qualities and characteristics that climate mitigation and adaptation measures should possess to effectively address intergenerational justice concerns.

To achieve this objective, we will embark on a comprehensive examination of the multifaceted dimensions of climate change and its repercussions on future generations. We will explore the scientific consensus on climate change, highlighting the anticipated environmental, social, and economic consequences that future generations are likely to face. This exploration will serve as a foundation for understanding the urgency and necessity of integrating intergenerational justice into climate action.

Furthermore, we will draw upon the ethical theories and frameworks discussed in the previous chapter to critically analyze the ethical implications of climate change on intergenerational justice. We will consider the principles of fairness, equity, and responsibility in evaluating the moral obligations that we owe to future generations. By applying these ethical lenses, we aim to develop a nuanced understanding of the qualities required of climate mitigation and adaptation measures to ensure intergenerational justice.

Throughout this chapter, we will engage with academic literature, empirical studies, and real-world examples, to illustrate the complexities of the climate change-intergenerational justice relationship. By examining policy and governance approaches, case studies, and the potential trade-offs involved, we will strive to uncover the practical implications of intergenerational justice in climate change decision-making.

To sum up, Chapter 3 will serve as a crucial bridge between the theoretical foundations established in the earlier chapters and the subsequent analysis and recommendations. By exploring the relationship between climate change and intergenerational justice, we can lay the

groundwork for understanding the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. This thesis will now further explore the intricate ethical implications of climate change on intergenerational justice.

Climate Change and its Impact on Future Generations

Climate change is an existential threat that has garnered significant attention in recent decades. Scientific consensus unequivocally affirms that climate change is primarily caused by human activities, particularly the emission of greenhouse gasses resulting from the burning of fossil fuels, deforestation, and industrial processes (cf. IPCC 2022a, 7f.). The consequences of climate change have far-reaching implications for both the present and future generations as “[h]uman-induced climate change is already affecting many weather and climate extremes in every region across the globe” (IPCC 2021, 3).

In considering the impact of climate change on future generations, it is essential to recognize the wide range of anticipated consequences by the IPCC. Rising sea levels pose a significant threat to coastal regions and island nations, displacing populations and causing the loss of valuable ecosystems. Extreme weather events, including hurricanes, droughts, and floods, are becoming increasingly frequent and severe, leading to extensive damage to infrastructure, agriculture, and human lives. Moreover, climate change disrupts delicate ecological systems, threatening biodiversity and the intricate web of life on which humanity depends.

Future generations will bear the brunt of these adverse effects. They will face the challenge of adapting to a changing climate, grappling with resource scarcity, and striving to maintain their quality of life in the face of environmental degradation. The repercussions of climate change extend far beyond environmental concerns, permeating various aspects of human existence, including social, economic, and political dimensions (cf. IPCC 2022a, 12 and Skillington 2020, 129).

The urgency of addressing climate change cannot be overstated. The longer we delay taking meaningful action, the greater the burden we place on future generations (cf. Gardiner 2011, intergenerational buck-passing). The window of opportunity to mitigate the worst impacts of climate change is rapidly closing. By implementing effective climate mitigation measures, such as reducing greenhouse gas emissions and transitioning to renewable energy sources, we can help alleviate the severity of future climate-related challenges.

One dilemma articulated by Anthony Giddens in his 2009 book “The Politics of Climate Change” is known as Giddens’ Paradox. This paradox highlights a critical issue: the most severe impacts

of climate change are not immediately visible or tangible, leading often to neglect or delay of significant action. This is because the immediate costs and efforts required to mitigate climate change seem unnecessary or less pressing when compared to more immediate concerns. However, by the time these effects become clearly noticeable and undeniable, it may be too late to prevent catastrophic outcomes (cf. Giddens 2009, 2f.).

For now we focus on the need to address climate change as our moral obligation to safeguard the interests of future generations. Failing to act now would not only exacerbate the hardships future generations will face, but also perpetuate intergenerational injustice. We have a responsibility to protect the well-being of, and ensure a sustainable future for all, regardless of their temporal location in the timeline of humanity. However, the challenge lies in determining how this can be achieved.

To summarize, climate change poses a significant threat to future generations, with far-reaching consequences across multiple domains. The urgency to address this global challenge lies in our duty to prevent further harm and promote intergenerational justice. Recognizing the impact of climate change on future generations serves as a powerful motivator for the exploration of the qualities required for climate mitigation and adaptation measures. In the following subchapters, we will delve into the ethical dimensions of climate change and intergenerational justice.

Intergenerational Justice and Climate Change

Intergenerational justice serves as a moral framework that focuses on the fair treatment and distribution of resources and opportunities between present and future generations. It recognizes the interconnectedness of human existence across time and highlights our ethical obligations towards those who will come after us. In the context of climate change, intergenerational justice takes on heightened significance due to the long-term and far-reaching impacts of climate change on future generations.

At its core, intergenerational justice emphasizes fairness and equity. It calls for the consideration of the needs and interests of future generations in decision-making processes, acknowledging that our actions today have profound consequences for the well-being of those who will inhabit the planet in the future or, as proposed earlier, those from whom we borrow the planet. By recognizing the moral obligations we have towards future generations, intergenerational justice urges us to take responsibility for the effects of climate change and to mitigate them to the best of our abilities.

Climate change presents complex ethical dimensions that intersect with intergenerational justice. The consequences of climate change, such as rising temperatures, sea-level rise, and extreme weather events, disproportionately impact future generations who have had little to no role in causing the problem. These effects pose challenges to intergenerational justice, as they compromise the rights and well-being of future individuals and communities.

The ethical implications of climate change become particularly salient when considering decision-making regarding climate mitigation and adaptation measures. Effective climate mitigation measures aim to reduce greenhouse gas emissions, transition to renewable energy sources, and promote sustainable practices. Similarly, adaptation measures seek to enhance resilience and protect vulnerable communities from the impacts of climate change. To achieve intergenerational justice, these measures must be guided by ethical principles that have the interests and needs of future generations in mind.

Key ethical considerations in the decision-making process include ensuring fairness and equity in the distribution of climate-related benefits and burdens, avoiding the transfer of excessive costs to future generations, and promoting inclusivity and participation of diverse voices in shaping climate policies. However, weaknesses in international climate negotiations can hinder these principles. For example, budgetary constraints may prevent lower-income countries from participating fully or sending larger delegations, resulting in underrepresentation (cf. Krause 2018, 516). The principles of precaution and prevention also play a crucial role, as they call for taking proactive measures to minimize the risks and uncertainties associated with climate change, thereby safeguarding the interests of future generations. But this is not the current state- rather, climate change calls “for a shift in the normative hierarchy for decision-making” (ibid.) because of an “uneven distribution of both responsibilities for and repercussions of climate change” (ibid.).

In conclusion, intergenerational justice is of paramount importance in the context of climate change. It emphasizes fairness, equity, and the moral obligations we have toward future generations. Climate change raises significant intergenerational justice concerns, as it threatens the well-being and rights of future individuals and communities. To accomplish intergenerational justice, climate mitigation, and adaptation measures must be guided by ethical principles that prioritize the interests of future generations and ensure a sustainable and just future. In the subsequent chapters, we will delve deeper into the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations in the face of a changing climate.

Ethical Theories and Intergenerational Justice in the Context of Climate Change

Understanding intergenerational justice in the context of climate change requires a robust examination of various ethical theories and approaches that shed light on our moral obligations towards future generations. By exploring different ethical frameworks, we can gain a deeper understanding of the qualities that are required of climate mitigation and adaptation measures to accomplish intergenerational justice. Here we will build upon our theoretical framework and examine consequentialist theories, deontological theories, and virtue ethics to analyze their contributions to the discourse on intergenerational justice and climate change.

Consequentialist theories, such as utilitarianism and consequentialist environmental ethics, focus on the consequences or outcomes of actions. These theories emphasize maximizing overall well-being or achieving the best consequences for the greatest number of people. In the context of climate change, consequentialist frameworks can inform the evaluation of climate policies and actions by assessing their potential impact on future generations. As stated before, they can help identify mitigation and adaptation measures that have the greatest positive consequences for future well-being, considering factors such as reducing greenhouse gas emissions, promoting sustainability, and safeguarding the interests of future generations.

On the other hand, deontological theories, such as Kantian ethics and rights-based approaches, prioritize moral duties and principles. These theories emphasize the inherent rights and dignity of individuals and advocate for the adherence to universal moral principles. In the context of intergenerational justice and climate change, deontological perspectives can guide the evaluation of climate policies and actions based on their alignment with moral obligations towards future generations. They can help identify measures that respect the rights of future individuals, promote justice, and uphold the principles of fairness and equity in the distribution of climate-related benefits and burdens.

Ethics of care presents an alternative viewpoint, prioritizing relational values and the nurturing of compassionate virtues that guide ethical conduct. When applied to the realm of climate change and intergenerational justice, ethics of care become a valuable framework for identifying the qualities necessary for addressing the ethical complexities posed by environmental challenges. Virtues such as empathy, compassion, attentiveness, and a commitment to relational well-being become pivotal in influencing decision-making processes concerning climate mitigation and adaptation. Through the cultivation of these virtues, individuals, communities, and institutions can instill a sense of interconnected responsibility, thoughtful consideration for the long-term

consequences of actions, and a dedication to fostering justice across generations. This approach ensures that present-day choices contribute to the sustained well-being and harmony of future generations within the intricate web of relational care.

By analyzing these ethical theories and approaches, we can gain a comprehensive understanding of the ethical dimensions of intergenerational justice in the context of climate change. Each framework provides unique insights and perspectives on how to achieve intergenerational justice through climate mitigation and adaptation measures. Consequentialist theories highlight the importance of positive outcomes, deontological theories emphasize moral duties and principles, and virtue ethics focus on cultivating virtues necessary for addressing the challenges of climate change.

Recognizing that each ethical theory provides valuable insights while also having limitations, using a pluralistic approach becomes essential. By embracing a pluralistic perspective, one can draw on the strengths of consequentialism, deontology, and virtue ethics in a complementary fashion, leveraging the nuanced guidance each theory offers to navigate the multifaceted challenges presented by climate change as seen in the following two examples.

Carbon Pricing Mechanisms, such as carbon taxes or cap-and-trade systems, are essential tools in the fight against climate change, aiming to internalize the ecological impact of greenhouse gas emissions. Pluralism enriches this approach in several ways. From a Utilitarian perspective, carbon pricing incentivizes emission reduction by holding polluters accountable for their impact, thus promoting both economic efficiency and environmental welfare. On the other hand, Deontologists emphasize our duty to protect the environment and future generations, seeing carbon pricing as a means to discourage harmful practices and encourage sustainable alternatives. The pluralist approach ensures that policymakers strike a balance between these perspectives, framing carbon pricing not just as an economic tool but also as an ethical imperative that acknowledges both the consequences, such as reduced emissions, and our duties towards environmental stewardship.

In the transition to renewable energy sources, pluralism continues to play a vital role. Consequentialists highlight the positive outcomes of reduced greenhouse gas emissions associated with embracing renewables, contributing to global well-being and long-term sustainability. Meanwhile, Deontologists underscore our responsibility to future generations, seeing the shift to clean energy as essential for ensuring a habitable planet.

for posterity. Pluralism informs policies in this transition phase, ensuring that they not only promote renewable energy access but also address social justice concerns. For example, policies aimed at ensuring marginalized communities benefit from the renewable energy transition reflect both considerations of consequences and ethical responsibilities, illustrating the holistic approach facilitated by pluralism in addressing complex environmental challenges.

In the subsequent chapters, we will build upon these ethical foundations to identify and evaluate the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. By integrating these ethical theories and approaches into our analysis, we can develop a comprehensive framework that guides the formulation and implementation of climate policies and actions, ensuring that they align with the principles of intergenerational justice and contribute to a sustainable and just future for all.

Policy and Governance for Intergenerational Justice in Climate Change

The achievement of intergenerational justice in the context of climate change relies heavily on effective policy and governance mechanisms. Here we will explore the role of policy and governance in promoting intergenerational justice and examine the current landscape of international agreements, national policies, and institutional mechanisms aimed at addressing climate change and its ethical implications for future generations.

At the international level, various agreements, such as the Paris Agreement, have been established to foster global cooperation in mitigating climate change and adapting to its impacts. These agreements recognize the importance of intergenerational justice by emphasizing the need for collective action and long-term sustainability. They provide a framework for countries to set emissions reduction targets, implement adaptation measures, and support climate finance initiatives.

Regarding the assessment report on biodiversity and ecosystem services UN member states signed off the IPBES⁶ (2019) warnings, “but with few exceptions, they do not act as though they have appreciated the severity of the crisis” (Black et al. 2022, 20). This highlights that the issue is inaction on the agreements and not a lack of knowledge. Therefore, the effectiveness of international agreements in achieving intergenerational justice depends on their implementation,

⁶ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

enforcement, and inclusivity. Challenges such as differing national interests, insufficient financial support, and limited accountability mechanisms can hinder the effectiveness (cf. IPCC 2022a, 29).

National policies play a crucial role in translating international commitments into actionable measures. Governments have the responsibility to develop comprehensive climate change policies that address the unique challenges faced by their respective countries. These policies should incorporate principles of intergenerational justice by considering the needs and rights of future generations. They should prioritize sustainable development, promote renewable energy sources, and encourage sustainable practices in various sectors (cf. Göpel 2016, 106; IPCC 2022a, 11 and IPCC 2022b, 52). Furthermore, national policies should address issues of equity and ensure that the burdens and benefits of climate mitigation and adaptation are distributed fairly across different societal groups.

Institutional mechanisms, including governmental agencies, regulatory bodies, and non-governmental organizations, play a critical role in the implementation and oversight of climate change policies. They provide the necessary expertise, resources, and platforms for effective decision-making and collaboration. However, institutional arrangements can also pose challenges to intergenerational justice. Power dynamics, vested interests, and limited representation of future generations in decision-making processes can hinder the equitable distribution of resources and the consideration of long-term sustainability.

To improve the effectiveness of policy and governance for intergenerational justice in climate change, several improvements can be considered. Strengthening international cooperation and accountability mechanisms can enhance the implementation of international agreements and ensure that commitments are upheld (cf. IPCC 2022b, 32). Enhancing transparency, inclusivity, and public participation in decision-making processes can promote intergenerational justice by considering diverse perspectives and safeguarding the interests of future generations (ibid.). Additionally, integrating intergenerational justice considerations into the design and evaluation of national policies can help ensure their alignment with the principles of fairness, equity, and long-term sustainability (ibid.).

In the paper *Environment of Peace* by SIPRI (Black et al. 2022, 22) the COVID-19 pandemic provided a striking example of how governments around the world faced a crucial choice between cooperation and competition and, unfortunately, often chose the latter. Faced with the more salient and equally shared threat of COVID-19, governments had the opportunity to approach vaccination as a global good, funding the production and distribution of vaccines on the basis of need. This cooperative approach was strongly advocated by global leaders,

including the World Health Organization (WHO) and United Nations Secretary-General António Guterres, who warned of the dangers of vaccine nationalism (cf. *ibid.*).

Despite these calls for global solidarity, nationalism prevailed. Most governments failed to engage seriously with the WHO's COVAX initiative, which was designed to ensure equitable access to vaccines worldwide. Instead, wealthier nations prioritized their own populations, securing large quantities of vaccines through bilateral deals with manufacturers (cf. *ibid.*). This competitive approach led to significant disparities in vaccine access, with low- and middle-income countries struggling to obtain sufficient doses.

In conclusion, policy and governance play a vital role in achieving intergenerational justice in the face of climate change. International agreements, national policies, and institutional mechanisms provide the framework and tools for addressing climate change and its ethical implications for future generations. However, challenges such as nationalism persist in effectively implementing these measures and ensuring the equitable distribution of burdens and benefits. By improving international cooperation, strengthening accountability, promoting inclusivity, and integrating intergenerational justice considerations, we can enhance the effectiveness of policy and governance in accomplishing intergenerational justice for the well-being and sustainability of future generations.

What is at stake?

In order to delve deeper into the complexities of intergenerational justice in the context of climate change, it is crucial to analyze specific examples that highlight the challenges and opportunities associated with climate mitigation and adaptation measures. These case studies will allow us to assess the qualities required of such measures to accomplish intergenerational justice for future generations. They involve three straightforward steps: firstly, envisioning the scenario and recognizing that in the context of climate change, some of these examples are more tangible than others. Secondly, acknowledging potential complications or caveats. Thirdly, determining the actions needed to address objections and transform the thought experiment into a feasible reality.

Renewable Energy Transition as Mitigation

Imagine the transition from fossil fuels to renewable energy sources: by reducing greenhouse gas emissions and promoting sustainable energy production, this transition aims to mitigate the

impacts of climate change on future generations. **However**, the implementation of renewable energy projects can also have social and environmental consequences. For instance, large-scale solar or wind energy projects may encroach upon ecologically sensitive areas or displace local communities. **To achieve** intergenerational justice, it is essential to carefully consider the siting and design of renewable energy projects, ensuring minimal environmental harm and equitable distribution of benefits among communities.

Coastal Protection as Adaptation

Imagine the construction of seawalls or the restoration of natural coastal ecosystems: coastal areas are particularly vulnerable to the impacts of climate change, such as rising sea levels and increased storm events. Implementing adaptation measures can protect current and future generations from the devastating effects of coastal inundation. **However**, these measures can have unintended consequences, such as altering coastal ecosystems, disrupting natural processes, or displacing communities. **To achieve** intergenerational justice, coastal protection and adaptation measures should be implemented in a manner that preserves ecosystem integrity, respects the rights and needs of local communities, and incorporates long-term planning to accommodate future changes in sea levels.

Climate Education and Awareness

Imagine that climate education can, by fostering a sense of responsibility and empowering individuals, make people become agents of change. These awareness initiatives play a vital role in equipping future generations with the knowledge and skills necessary to address climate change and can have long-term positive impacts. **However**, the quality and accessibility of climate education can vary significantly, particularly in marginalized communities or developing regions. **To achieve** intergenerational justice, it is important to ensure equitable access to comprehensive and accurate climate education for all, regardless of socioeconomic status or geographic location.

By analyzing these cases, we can evaluate the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. These qualities include environmental sustainability, social equity, community engagement, long-term

planning, and the consideration of diverse perspectives. It is crucial to adopt an interdisciplinary approach that integrates scientific knowledge, ethical principles, and stakeholder engagement to navigate the complexities and trade-offs inherent in climate action. Only by doing so can we strive for climate measures that not only address the urgent challenges of today but also uphold intergenerational justice and secure a sustainable future for generations to come.

Conclusion

In conclusion, Chapter 3 has explored the qualities required of climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. Through an examination of ethical theories and approaches, policy and governance considerations, and examples illustrating the complexities of intergenerational justice in climate change, several key findings and insights have emerged.

Firstly, it is evident that intergenerational justice is a crucial ethical consideration in the context of climate change. The impacts of climate change pose significant challenges to future generations, including rising sea levels, extreme weather events, resource scarcity, and ecological disruptions. Acknowledging and addressing these challenges through climate mitigation and adaptation measures is essential to uphold intergenerational justice.

Secondly, ethical theories and approaches provide valuable frameworks for understanding intergenerational justice and guiding decision-making in climate action. Consequentialist theories highlight the importance of maximizing overall well-being, deontological theories emphasize moral duties and principles, and ethics of care emphasize cultivating a sense of interconnected responsibility, thoughtful consideration for the long-term consequences of actions, and a dedication to fostering justice across generations.

Moreover, policy and governance play a critical role in promoting intergenerational justice in climate change. International agreements, national policies, and institutional mechanisms shape the implementation of climate mitigation and adaptation measures. However, there are challenges and opportunities in ensuring the effectiveness of these approaches, including the need for improved coordination, equitable distribution of resources, and the integration of intergenerational justice considerations.

The case studies presented further demonstrate the complexities involved in achieving intergenerational justice in climate action. Renewable energy transition, coastal protection, and climate education highlight the diverse dimensions and trade-offs that need to be carefully considered. Environmental sustainability, social equity, community engagement, long-term

planning, and accessibility to comprehensive climate education emerge as key qualities required of climate mitigation and adaptation measures.

The findings and insights from this chapter have significant implications for subsequent chapters and the overall research investigation. They provide a foundation for further analysis of specific climate policies, economic implications, technological advancements, and social dimensions in relation to intergenerational justice. By integrating these insights, the subsequent chapters can offer a comprehensive examination of the qualities required to accomplish intergenerational justice in a changing climate.

4. Qualities in Climate Mitigation Measures for Intergenerational Justice

In Chapter 4, we embark on a crucial exploration into the core principles guiding the attainment of intergenerational justice through climate mitigation measures. Building upon prior discussions encompassing intergenerational justice, the ramifications of climate change, and ethical doctrines, this chapter lays the foundation for an exploration into the attributes imperative for climate mitigation to safeguard the interests of generations yet to come. By dissecting these attributes, our aim is to furnish invaluable perspectives shaping the formulation and execution of effective climate mitigation strategies that lay a paramount emphasis on intergenerational justice.

Within these pages, we will scrutinize the role of emission reduction in climate mitigation endeavors and its pivotal influence on intergenerational justice. The imperative to curtail emissions looms large, as it stands to mitigate the adversities that lie in wait for future generations due to the consequences of a changing climate.

Additionally, the spotlight will turn to the significance of transitioning to sustainable energy sources. In doing so, we unravel the criticality of adopting sustainable alternatives while diminishing reliance on fossil fuels. This shift towards sustainable energy holds the promise of bestowing upon us an energy framework that is not only equitable, but is also sustainable and ushers in a new era of intergenerational justice.

Delving further, we shall probe the role of sustainable development within the ambit of climate mitigation strategies. This exploration underscores the harmonious integration of economic, societal, and environmental aspects, spotlighting the necessity for all-encompassing, forward-looking approaches in redressing the concerns of intergenerational justice.

Furthermore, the chapter will unearth the dimensions of fairness, equity, and global collaboration in the pursuit of intergenerational justice through climate mitigation endeavors. By dissecting the apportionment of responsibilities and rewards across diverse nations and generations, we highlight the gravity of international collaboration in the combat against climate change.

Finally, we shall deliberate upon the philosophical arguments and policy frameworks that constitute the bedrock of intergenerationally just mitigation measures. Through an examination of ethical doctrines and policy paradigms, we aspire to unravel the attributes that are vital to aligning climate mitigation with the principles of intergenerational justice.

In summary, the fourth chapter endeavors to present a comprehensive dissection of the qualities intrinsic to climate mitigation measures for intergenerational justice. By investigating the imperatives of emission reduction, the transition to sustainable energy, sustainable development, equity, impartiality, and global unity, we aspire to enrich the comprehension of how climate actions can optimally serve the prospects of generations yet to come. These insights are poised to illuminate ensuing chapters and significantly enrich the overarching research exploration into intergenerational justice amidst an evolving climate landscape.

Qualities for Intergenerational Justice in Climate Mitigation Measures

In initiating our investigation, it's essential to establish a clear understanding of intergenerational justice in the context of climate mitigation. Intergenerational justice refers to the ethical principle that mandates fair treatment for both current and future generations. This principle emphasizes the obligation to account for the well-being and interests of generations to come when making decisions and implementing actions related to climate change.

Henry Shue wrote that the main task of mitigation in the context of climate change “is to arrange the earliest possible exit from the now-dominant fossil-fuel regime and to make the transition to affordable non-carbon energy” (Shue 2017, 472). Therefore, making it obvious for climate mitigation measures to commit to the reduction of emissions when upholding intergenerational justice. The urgency to curtail greenhouse gas emissions is crucial in mitigating the adverse effects of climate change on future generations. By significantly lowering emissions, we can help prevent or mitigate the long-term consequences that could disproportionately impact the quality of life and well-being of future generations.

The transition to renewable energy sources is a pivotal aspect of addressing the challenges posed by climate change and achieving intergenerational justice. This transition involves shifting our energy production and consumption from fossil fuels, such as coal, oil, and natural gas, to sources that are naturally replenished and have a significantly lower impact on the environment. Renewable energy sources include solar, wind, hydroelectric, geothermal, and biomass (cf. IPCC 2022a, 26).

The rationale behind transitioning to renewable energy sources is multi-faceted. First, the reduction of greenhouse gas emissions is a primary goal. Fossil fuel combustion is a major source of greenhouse gas emissions, primarily carbon dioxide, which contributes to the greenhouse effect and global warming (cf. IPCC 2022b, 19). Renewable energy sources emit

minimal to no greenhouse gasses during operation, significantly reducing the carbon footprint and mitigating the adverse effects of climate change.

Moreover, this transition contributes to the mitigation of air pollution. Fossil fuel combustion releases not only carbon dioxide, but also pollutants that can harm air quality and human health, such as sulfur dioxide, nitrogen oxides, and particulate matter. By transitioning to renewables, we can alleviate air pollution and reduce related health issues. In addition to environmental benefits, the shift to renewable energy sources enhances energy security and independence (cf. *ibid.*, 52). Renewable energy sources are inherently domestic and diverse, reducing reliance on imported fossil fuels and enhancing energy security. This reduces the vulnerability of economies to energy supply disruptions and price fluctuations in global fuel markets. Furthermore, this transition has the potential to stimulate job creation and economic growth. The renewable energy sector offers opportunities for job creation, spanning various stages of the supply chain, including manufacturing, installation, maintenance, and research. When approached with a long-term strategy, this has the potential to invigorate both economic growth and regional development.

From a technological perspective, the shift to renewables fosters innovation and the development of advanced technologies (cf. *ibid.*, 36). As these technologies mature and become more cost-effective, they contribute to broader technological progress and competitiveness. A notable advantage of renewable energy sources is their long-term sustainability. Unlike fossil fuels, which are finite and deplete natural resources over time, renewables are essentially inexhaustible. They offer a sustainable energy supply for future generations. Additionally, transitioning to renewables contributes to environmental conservation. Many renewable energy sources, such as solar and wind power, have minimal land and water footprint compared to fossil fuel extraction and power generation. This reduces habitat disruption, water consumption, and ecosystem degradation.

However, this transition is not without its challenges. These challenges include intermittency (since sunlight and wind availability vary), energy storage requirements, grid integration, technological deployment, policy frameworks, and initial capital investments. Overcoming these challenges requires a combination of research, development, government support, market incentives, and international cooperation.

In the context of intergenerational justice, the transition to renewables ensures that we do not burden poorer states (cf. Shue 2017, 468) and future generations with the environmental and economic consequences of our energy choices. By reducing greenhouse gas emissions,

mitigating climate change, and preserving natural resources, this transition contributes to a more equitable and sustainable future for all.

Shifting away from fossil fuel-based energy systems and embracing sustainable and renewable alternatives is crucial for intergenerational justice. This transition not only reduces greenhouse gas emissions but also ensures a sustainable energy infrastructure capable of meeting the needs of future generations without compromising their well-being.

Furthermore, the concept of sustainable development plays a critical role in climate mitigation efforts. Sustainable development integrates economic, social, and environmental dimensions with the goal of fulfilling present needs, without undermining the ability of future generations to meet their own needs. By incorporating sustainable development principles into climate mitigation strategies, we can ensure intergenerational justice by balancing economic advancement, social welfare, and environmental stewardship.

In conclusion, we explored the qualities necessary for climate mitigation measures to achieve intergenerational justice, securing the interests of future generations. The importance of emission reduction has been identified, highlighting the need to curtail greenhouse gas emissions to mitigate climate change's impacts. Additionally, the subchapter showed the significance of transitioning to renewable energy sources and integrating sustainable development principles into climate mitigation efforts. Addressing these qualities, climate mitigation measures can effectively contribute to intergenerational justice, fostering a sustainable and equitable future for all generations.

Equity, Fairness, and Global Cooperation in Intergenerational Justice

Equity and fairness are fundamental principles that must be upheld to achieve intergenerational justice in climate mitigation. The concept of equity encompasses the fair distribution of burdens and benefits across different countries and generations. It recognizes that historical emissions, economic disparities, and vulnerability to climate impacts vary among nations and generations. To accomplish intergenerational justice, mitigation measures should aim for an equitable distribution of responsibilities and outcomes, considering the capacity of each country and generation to contribute and adapt to climate change. This includes addressing the disproportionate burden placed on vulnerable communities and ensuring their access to necessary resources and support.

In addition to equity, global cooperation and collaboration are crucial for achieving intergenerational justice in climate mitigation (cf. Skillington 2017, 22). Climate change is a global challenge that requires collective action and shared responsibility (i.a. Krause 2018, 513). Effective mitigation and adaptation efforts necessitate cooperation among nations, as well as collaboration between governments, civil society, and other stakeholders. Global cooperation enables the sharing of knowledge, resources, and technologies, fostering a more comprehensive and coordinated response to climate change. By working together, countries can overcome the barriers that individual nations may face and achieve greater progress towards intergenerational justice.

Furthermore, global cooperation should be guided by a sense of urgency and a long-term perspective. Climate change is a multi-generational issue that demands sustained commitment and collaboration beyond short-term political cycles. It requires setting aside national interests in favor of the collective good and the well-being of future generations. This includes supporting vulnerable nations and communities, promoting technology transfer, and providing financial assistance to developing countries to enhance their capacity for climate mitigation and adaptation (cf. IPCC 2022b, 52).

Here, we explored the significance of equity, fairness, and global cooperation in achieving intergenerational justice in climate mitigation and adaptation measures. The concept of equity in the distribution of burdens and benefits, and considering the historical context and varying capacities among countries and generations is pertinent. The chapter emphasizes the importance of global cooperation and collaboration in addressing climate change, as well as the need for collective action and shared responsibility.

Philosophical Arguments and Policy Frameworks for Intergenerationally Just Mitigation Measures

At the heart of achieving intergenerational justice within climate mitigation lie two core principles: equity and fairness. These are fundamental principles in the pursuit of justice and equality, yet they encompass distinct meanings, applications, and focuses.

Equity, at its core, pertains to the fair treatment of individuals or groups based on their unique circumstances and needs. It recognizes that not everyone starts from the same position and seeks to address disparities or inequalities by distributing resources, opportunities, or burdens in a manner that accounts for these differences. The focus of equity lies in achieving equality of outcomes, even if it requires unequal treatment to ensure that everyone has access to the same

level of opportunity and well-being. In application, equity is often seen in contexts where there are systemic barriers or historical injustices that have created unequal starting points for individuals or groups. It aims to level the playing field and promote fairness by addressing these underlying disparities.

Fairness, on the other hand, emphasizes impartiality and just treatment without bias or favoritism. It ensures that decisions, actions, and interactions are conducted in accordance with established principles or norms, regardless of individual differences or circumstances. Fairness focuses on the processes and procedures used to reach outcomes, rather than the outcomes themselves. It seeks to ensure that everyone is treated equitably and that decisions are made based on objective criteria, without discrimination or prejudice. Fairness applies in a wide range of situations, from legal proceedings and organizational policies to everyday interactions and transactions. Its primary goal is to uphold principles of justice and equality by ensuring that everyone is treated fairly and without undue advantage or disadvantage.

This means, while equity aims to achieve fairness by addressing disparities and promoting equality of outcomes, fairness emphasizes impartiality and just treatment in decision-making processes and interactions. For our research question this entails that mitigation efforts must ensure an even-handed allocation of obligations and outcomes, considering each nation's and generation's capacity to contribute and adapt to climate change. Furthermore, this necessitates addressing the disproportionate impact on vulnerable communities and guaranteeing their access to essential resources and support.

Working in tandem with equity, global cooperation is pivotal for realizing intergenerational justice in climate mitigation. Climate change transcends borders, demanding collaborative action and a shared commitment. Effective mitigation and adaptation hinge on cooperation among nations and various stakeholders, including governments and civil society. Global cooperation facilitates the exchange of knowledge, resources, and technologies, enabling a coordinated response to climate change. By uniting efforts, countries can collectively overcome challenges that individual nations might face, thereby making significant strides toward intergenerational justice.

Moreover, global cooperation must be driven by both urgency and a long-term perspective. Climate change spans generations, necessitating enduring commitment and collaboration beyond short-term political cycles. It requires putting aside national interests for the collective good and the well-being of future generations. This includes aiding vulnerable nations and communities, promoting technology transfer, and providing financial support to developing countries to bolster their capacity for climate mitigation and adaptation.

The importance of equity, fairness, and global cooperation in achieving intergenerational justice within climate mitigation and adaptation cannot be highlighted enough. In summary, the subchapter emphasizes the significance of global cooperation and collaboration in addressing climate change collectively, underlining the need for shared responsibility. By upholding principles of equity, fairness, and global cooperation, climate mitigation and adaptation efforts can better realize intergenerational justice and contribute to a sustainable and equitable future for all generations.

Conclusion

The chapter casts a spotlight on the profound significance of specific qualities that underpin climate mitigation measures aligned with intergenerational justice. At the forefront stands the imperative of emission reduction, a paramount quality that directly influences the curbing of climate change's adverse repercussions on forthcoming generations. The restraint of greenhouse gas emissions resonates as a linchpin action, pivotal for attenuating long-term consequences and shielding the welfare of posterity.

Hence, the transition to renewable energy sources takes center stage as a crucial quality fostering intergenerational justice. Departing from the moorings of fossil fuel-based energy not only yields climate mitigation but also serves as an anchor to sustainable development. This transition substantiates an ecological legacy that eschews environmental degradation, nurturing a future bedecked with sustainability.

These qualities encompass the principle of sustainable development, which includes economic, social, and environmental dimensions. The integration of these aspects ensures long-term well-being for future generations. The chapter assures that orchestrating this combination guarantees the ability of the future to meet its needs without compromising the prospects of succeeding generations. At the core of intergenerational justice lies equity, fairness, and global collaboration. Equity ensures a balanced distribution of responsibilities and rewards for mitigation across nations and time periods, preventing the escalation of existing inequalities and promoting fairness.

Global cooperation becomes essential for upholding intergenerational justice. Climate change, a complex challenge, extends beyond national boundaries, requiring collective action that transcends borders. This collaborative effort is grounded in shared responsibility, uniting nations in the pursuit of intergenerational justice.

The chapter revisits its key themes by drawing on philosophical theories and policy frameworks. Ethical theories such as utilitarianism, deontology, and sustainability ethics offer valuable insights into the virtues essential for achieving intergenerational justice. These theories emphasize the importance of considering the well-being and rights of future generations as guiding principles in decision-making. On a practical level, policy frameworks and international agreements serve as navigational tools in this journey. The Paris Agreement and the Sustainable Development Goals provide concrete measures for implementing intergenerationally-just mitigation strategies on a global scale.

As the chapter integrates its findings into the broader research landscape, a comprehensive view emerges. Achieving intergenerational justice in the context of a changing climate is a complex endeavor with various dimensions. The identified qualities – emission reduction, renewable energy transition, sustainable development, equity, fairness, and global cooperation – call for integration into both mitigation and adaptation strategies. Policymakers and stakeholders must converge in this effort, crafting a cohesive approach that addresses the needs, rights, and welfare of both present and future generations.

5. Qualities in Climate Adaptation Measures for Intergenerational Justice

As we confront climate change and strive for a sustainable future, the task at hand involves not only effective climate mitigation but also resilient adaptation strategies. The unfolding impacts of climate change underscore a critical imperative: ensuring that our adaptation efforts align with the principles of intergenerational justice, safeguarding the well-being and rights of future generations.

The focus of Chapter 5 is to explore the essential qualities that underpin climate adaptation measures in their pursuit of intergenerational justice. By delving into these qualities and dissecting the strategies that embody intergenerationally just adaptation, this chapter aims to illuminate a path forward – one that addresses the current, future, and aspirational needs of societies amidst climate challenges.

The first objective of the following chapter involves a deep dive into the core attributes essential for climate adaptation measures that align with intergenerational justice. “In the context of climate change, adaptation does not refer to any response to climate change but to actions directed toward successfully living with the environmental changes associated with climate change” (Heyward 2017, 474). This exploration aims to uncover the fundamental elements that ensure fairness and efficacy within adaptation strategies.

The aim is to prevent potential cases of maladaptation. Maladaptation, in philosophical terms, exposes the intricacies of human decision-making in response to environmental challenges. It signifies a disharmony between our actions and the dynamic interconnections of the ecological system. Examining maladaptation prompts reflection on ethical considerations, human responsibility, and the imperative for sustainable decision-making. It challenges us to reassess the ethical frameworks guiding our choices and acknowledges the profound implications of maladaptation for current and future generations.

Next, we delve into the concepts of resilience, vulnerability reduction, and adaptive capacity. These concepts are pivotal in the landscape of intergenerationally just adaptation. By analyzing them, we seek to identify the specific approaches that bolster society's ability to navigate and adapt to the challenges posed by climate change.

Another vital aspect involves exploring the significance of inclusivity and participation in shaping equitable adaptation strategies. Acknowledging the diverse perspectives and needs of various

stakeholders – including marginalized communities, indigenous groups, and future generations – becomes crucial for ensuring just and balanced adaptation outcomes.

Finally, the chapter turns its attention to the ethical considerations and policy frameworks guiding intergenerationally just adaptation measures. By examining ethical viewpoints and policy constructs, we aim to uncover the guiding principles and guidelines that steer decision-making and action within the context of adaptation.

Through the seamless interweaving of these objectives, this chapter endeavors to enrich our understanding of intergenerational justice in a changing climate, by shedding light on the qualities indispensable for climate adaptation measures to carry the mantle of intergenerational justice. This chapter paves the way for the development and implementation of more equitable and sustainable adaptation strategies. These strategies, rooted in consideration for both present and future generations, foster a world that prioritizes the well-being and rights of all who inhabit it.

Qualities for Intergenerational Justice in Climate Adaptation Measures

In a changing climate, the imperative to ensure intergenerational justice becomes increasingly critical. Climate adaptation measures play a crucial role in safeguarding the well-being and rights of future generations. Chapter 5 explores the qualities required for climate adaptation measures to effectively accomplish intergenerational justice, recognizing the unique challenges and opportunities presented by a changing climate.

Firstly, it is essential to establish a clear understanding of intergenerational justice in the context of climate adaptation. Intergenerational justice refers to the fair and equitable treatment of present and future generations, ensuring that the impacts of climate change and adaptation efforts do not disproportionately burden future generations. This includes acknowledging the rights, needs, and interests of future generations in decision-making processes. To achieve intergenerational justice in climate adaptation, several qualities are necessary.

One such quality is resilience. Resilience entails building systems, communities, and ecosystems that can withstand and recover from climate-related shocks and stressors (cf. IPCC 2022a, 6f.). This involves developing adaptive strategies, enhancing infrastructure, and fostering social cohesion to minimize the adverse impacts of climate change on future generations.

Furthermore, vulnerability reduction is crucial for intergenerational justice in adaptation measures. Climate change often exacerbates existing vulnerabilities, disproportionately

affecting marginalized communities and future generations (cf. *ibid.*, 12f.). To address this, adaptation efforts should prioritize reducing vulnerability by addressing social inequalities, ensuring equitable access to resources and opportunities, as well as promoting inclusive decision-making processes (cf. IPCC 2022b, 55).

In addition to resilience and vulnerability reduction, adaptive capacity-building is a key quality required for intergenerational justice in climate adaptation. This involves enhancing the ability of societies to adapt to changing climatic conditions through knowledge sharing, technology transfer, capacity development, and fostering a culture of innovation. By empowering communities and institutions with the necessary skills and resources, adaptive capacity-building strengthens society's ability to respond to climate change impacts effectively.

By analyzing these qualities, Chapter 5 aims to provide a comprehensive understanding of the qualities required for intergenerationally just climate adaptation measures. It recognizes the need to integrate resilience, vulnerability reduction, and adaptive capacity-building into adaptation strategies to ensure the well-being and rights of future generations. Through this exploration, we can identify effective approaches and strategies to foster intergenerational justice in the face of a changing climate.

Inclusive and Participatory Approaches in Adaptation Strategies

“Maladaptation can be avoided by flexible, multi-sectoral, inclusive, and long-term planning and implementation of adaptation actions with benefits to many sectors and systems” (IPCC 2022a, 28). The IPCC report states that maladaptation can be avoided, and furthermore, designing and implementing adaptation strategies through inclusive and participatory processes is essential for several reasons. Primarily, it ensures that the voices and experiences of marginalized communities, indigenous groups, and future generations are adequately represented and taken into account. These stakeholders often bear the brunt of climate change impacts and possess invaluable knowledge and insights on the specific challenges they face. Inclusive approaches enable their meaningful participation, empowering them to contribute to decision-making processes and shape adaptation strategies that address their unique circumstances.

Additionally, by engaging diverse stakeholders, inclusive and participatory approaches foster a sense of ownership and legitimacy. When individuals and communities have a stake in the decisions that affect them, they are more likely to support and actively participate in the implementation of adaptation measures. This bottom-up approach also enhances the

effectiveness and sustainability of adaptation strategies by incorporating local knowledge, perspectives, and adaptive practices that have proven successful in specific contexts.

Heyward (2017) asserts that "if adaptation is the strategy of maintaining certain core interests in the face of environmental changes associated with global climate change, and there is a core interest in maintaining one's cultural identity, then adaptation strategies should include measures to maintain the distinctive cultural identity of vulnerable groups such as the Inuit" (Heyward 2017, 480) This highlights the need for adaptation strategies to encompass cultural preservation, affecting the balance between mitigation and adaptation and influencing the types of measures deemed appropriate. Furthermore, Heyward emphasizes the importance of local involvement: "The need to encourage greater participation in communities affected by climate change is increasingly acknowledged. Indigenous communities have a deep understanding of their local environment and are observing the changes firsthand. Their understanding can obviously facilitate adaptive measures. More importantly, the community is the only entity that can decide what changes are both best suited to their new environmental conditions and most congruent with their way of life, beliefs, and values" (ibid., 482). This underscores the necessity of incorporating local knowledge and ensuring community autonomy in deciding adaptation strategies, fostering more effective and culturally appropriate responses to climate change.

Furthermore, inclusive governance structures and decision-making processes play a vital role in fostering intergenerational justice in adaptation measures. By involving youth representatives for future generations in the decision-making processes, their interests and rights can be safeguarded, ensuring that the adaptation strategies implemented today consider their long-term well-being. This approach acknowledges that the consequences of climate change will be felt most profoundly by future generations, making it imperative to include their voices and aspirations in shaping the adaptation agenda.

Inclusive and participatory approaches can be facilitated through various means, such as establishing multi-stakeholder platforms, engaging in community consultations, conducting participatory vulnerability assessments, and incorporating indigenous and traditional knowledge systems. These approaches foster collaboration, trust, and knowledge-sharing among stakeholders, leading to more robust and context-specific adaptation strategies.

By adopting inclusive and participatory approaches, adaptation measures can better address the unique needs and vulnerabilities of communities, promote intergenerational justice, and enhance the overall effectiveness and sustainability of climate adaptation efforts.

Ethical Considerations and Policy Frameworks for Intergenerationally Just Adaptation Measures

Recognizing the inherent ethical dimensions of climate adaptation, this subchapter explores the qualities required to ensure intergenerational justice and examines the policy frameworks that guide these efforts.

Designing and implementing intergenerationally just adaptation measures involves grappling with complex ethical considerations. These considerations encompass distributive justice, which focuses on the fair distribution of adaptation benefits and burdens across different generations and communities. By examining the distributional impacts of adaptation measures, policymakers can ensure that vulnerable populations and future generations are not disproportionately affected and that the benefits are equitably shared.

Procedural justice also plays a crucial role in intergenerationally just adaptation. It emphasizes the fairness and inclusivity of decision-making processes, ensuring that all stakeholders have the opportunity to participate in shaping adaptation strategies. By incorporating diverse perspectives and engaging marginalized communities, the decision-making processes can better reflect the interests and needs of those most affected by climate change, fostering a sense of ownership and legitimacy (cf. Heyward 2017, 482).

Rights-based approaches provide a normative framework for intergenerational justice in adaptation measures. They recognize the rights of present and future generations to a livable environment, access to resources, and the opportunity to participate in decision-making processes. Incorporating a rights-based perspective ensures that the rights and interests of future generations are taken into account when formulating and implementing adaptation policies.

Policy frameworks and international agreements play a crucial role in guiding intergenerationally just adaptation measures. For instance, the Sendai Framework for Disaster Risk Reduction provides a comprehensive approach to building resilience and reducing vulnerability to climate-related hazards. It emphasizes the importance of inclusive and participatory processes, the integration of local knowledge, and the protection of vulnerable groups. This aligns with the principles of intergenerational justice.

Similarly, the United Nations Framework Convention on Climate Change (UNFCCC), and its associated agreements such as the Paris Agreement, provide a policy framework for addressing climate change and promoting adaptation. These agreements emphasize the principles of equity, common but differentiated responsibilities, and the protection of vulnerable populations.

They call for international cooperation and financial support to ensure that adaptation efforts adequately address the needs of both present and future generations.

While these policy frameworks contribute to intergenerational justice in adaptation, they also have their strengths and limitations. Here we evaluated their effectiveness and identified potential areas for improvement. This includes enhancing financial mechanisms to support adaptation in developing countries, strengthening accountability mechanisms, and integrating a stronger focus on human rights and equity considerations.

In conclusion, by analyzing ethical frameworks and policy instruments, policymakers and researchers can identify the qualities required to achieve intergenerational justice in adaptation. By incorporating distributive justice, procedural justice, and rights-based approaches, and aligning with international agreements and policy frameworks, adaptation measures can effectively address the needs of present and future generations while fostering resilience and reducing vulnerability in the face of climate change.

Conclusion

Chapter 5 has explored the qualities required for intergenerationally just adaptation measures in the context of a changing climate. The key findings and insights from this chapter shed light on the essential elements needed to accomplish intergenerational justice for future generations in the face of climate change impacts.

One of the crucial qualities highlighted in this chapter is resilience. Building resilience is essential in adapting to the impacts of climate change and ensuring the ability of systems, communities, and individuals to withstand and recover from shocks and stressors. By investing in resilient infrastructure, ecosystems, and social systems, we can better safeguard the well-being of future generations.

Vulnerability reduction is another critical quality necessary for intergenerationally just adaptation. It involves addressing the disproportionate impacts of climate change on vulnerable populations and future generations. By prioritizing measures that reduce vulnerabilities and enhance the adaptive capacities of marginalized communities, we can strive for greater equity and justice in adaptation efforts.

Adaptive capacity-building is also integral to intergenerationally just adaptation. This includes knowledge sharing, technology transfer, and capacity development to enhance society's ability to adapt to changing climatic conditions. By empowering communities, promoting education and

awareness, and facilitating the exchange of best practices, we can enhance adaptive capacities across generations.

Inclusive and participatory approaches have been identified as crucial qualities for intergenerationally just adaptation measures. By engaging diverse stakeholders, including marginalized communities, indigenous groups, and future generations, we can ensure that their perspectives and needs are considered in decision-making processes. This inclusivity fosters a sense of ownership, strengthens adaptation strategies, and promotes intergenerational justice.

Moreover, ethical considerations play a vital role in guiding intergenerationally just adaptation. By incorporating principles of distributive justice, procedural justice, and rights-based approaches, we can ensure fairness, equity, and respect for the rights of present and future generations in adaptation policies and practices.

To accomplish intergenerational justice for future generations, it is essential to integrate these qualities into adaptation strategies. A holistic approach that combines resilience, vulnerability reduction, adaptive capacity-building, inclusive and participatory approaches, and ethical considerations will contribute to intergenerationally just adaptation.

The findings of Chapter 5 are interconnected with the overall research investigation and the thesis as a whole. They complement the insights gained from Chapter 4, which focused on qualities for intergenerationally just mitigation measures. Together, these chapters emphasize the importance of considering both mitigation and adaptation strategies to achieve intergenerational justice in a changing climate.

6. Integration and Trade-offs

Chapter 6 of this thesis aims to delve into the crucial topic of integrating climate mitigation and adaptation measures to achieve intergenerational justice in the face of a changing climate. As we have explored in previous chapters, intergenerational justice entails the ethical obligation to consider the well-being and rights of future generations when making decisions about climate change. It recognizes the interdependence between the actions we take today and the consequences they will have for the well-being of future generations.

The primary objective of this chapter is to explore the integration of climate mitigation and adaptation measures and examine the qualities required to ensure intergenerational justice. We will also delve into the potential trade-offs and synergies that may arise when pursuing both mitigation and adaptation strategies concurrently. Understanding these trade-offs and synergies is essential for effective decision-making and policy formulation.

To accomplish these objectives, this chapter will draw upon interdisciplinary perspectives, recognizing the complexity and multifaceted nature and challenges of climate change. By integrating insights from various fields, such as climate science, economics, social sciences, and ethics, we can develop a comprehensive understanding of the integration and trade-offs between mitigation and adaptation measures.

Through this exploration, we will shed light on the complexities of decision-making processes and the policy trade-offs involved in achieving intergenerational justice. Additionally, we will engage with diverse perspectives to address the challenges associated with integration and trade-offs, recognizing that no single approach or discipline can fully capture the intricacies of this issue.

By examining the integration of mitigation and adaptation measures and the potential trade-offs and synergies, this chapter seeks to provide valuable insights and recommendations for policymakers, practitioners, and researchers working towards intergenerational justice in the context of a changing climate.

In the following sections, we will explore the integration of mitigation and adaptation measures, examine potential trade-offs and synergies, discuss decision-making processes and policy trade-offs, and draw upon interdisciplinary perspectives to enhance our understanding of these crucial aspects.

Integration of Mitigation and Adaptation Measures

The integration of climate mitigation and adaptation measures is a crucial aspect of achieving intergenerational justice in the face of a changing climate. While mitigation focuses on reducing greenhouse gas emissions to mitigate the causes of climate change, adaptation aims to prepare societies and ecosystems for the unavoidable impacts. These two approaches are often seen as complementary, and their integration can lead to more effective and sustainable outcomes.

Integrating mitigation and adaptation measures is important for several reasons. First, it recognizes the interconnected nature of climate change and its impacts. By addressing both the causes and consequences of climate change, we can adopt a holistic approach that takes into account the complex interactions between greenhouse gas emissions, climate impacts, and societal vulnerabilities. This holistic approach is essential for achieving intergenerational justice, as it considers the well-being and rights of future generations in both the short and long term.

Furthermore, integrating mitigation and adaptation measures can yield synergistic benefits (cf. IPCC 2022a, 30). Synergy occurs when the combined effect of implementing both strategies is greater than the sum of their individual effects. For example, nature-based solutions, such as reforestation or wetland restoration, not only contribute to carbon sequestration (mitigation) but also enhance ecosystem resilience and provide protection against climate-related hazards (adaptation). Such synergistic approaches can lead to more efficient resource allocation, cost savings, and increased overall resilience.

To illustrate the benefits of integrating mitigation and adaptation, it is valuable to examine case studies or examples that showcase successful integration efforts and their impact on intergenerational justice. One such example is the city of Copenhagen in Denmark, which has embraced a comprehensive approach to climate action – the Copenhagen 2025 Climate Plan. The city has implemented initiatives such as enhancing public transportation infrastructure, promoting cycling, and increasing energy efficiency in buildings (mitigation). Simultaneously, Copenhagen has implemented measures to adapt to rising sea levels, including constructing flood barriers and implementing urban planning strategies that prioritize green spaces and water management (adaptation). The integration of these measures has not only reduced greenhouse gas emissions by 42% since 2005 (CNCA 2023) but also enhanced the city's resilience to climate impacts, ensuring the well-being of both present and future generations.

Another example is the Pacific Island nation of Kiribati (pronunciation *Kir-i-Bas*), which faces significant challenges due to sea-level rise and coastal erosion. Kiribati has taken an integrated approach to address these issues by implementing adaptation measures such as building sea

walls and relocating communities to higher ground. Simultaneously, the nation is committed to mitigating climate change through renewable energy projects and sustainable development initiatives. By integrating mitigation and adaptation measures, Kiribati aims to protect its people and culture while contributing to global efforts to reduce greenhouse gas emissions. This approach recognizes the need for immediate adaptation actions while also addressing the underlying causes of climate change.

These case studies demonstrate that the integration of mitigation and adaptation measures is not only essential for achieving intergenerational justice but also yields tangible benefits in terms of resilience, sustainability, and cost-effectiveness. By considering the experiences and successes of these examples, we can gain valuable insights into the qualities required for intergenerationally just climate mitigation and adaptation measures.

One example where the integration of mitigation and adaptation measures did not work out as planned is the case of the Yasuní-ITT Initiative in Ecuador (Collyns 2023). The initiative aimed to mitigate climate change by leaving oil reserves untapped in the Yasuní National Park, one of the most biodiverse areas in the world. In return, Ecuador sought financial compensation from the international community to offset the opportunity cost of not exploiting the oil. However, despite efforts to integrate mitigation (preserving the forest to reduce carbon emissions) and adaptation (protecting biodiversity and indigenous communities' livelihoods), the initiative faced challenges and ultimately did not achieve its objectives as planned. The funding mechanisms and international support for the initiative did not materialize as expected. In 2013, Ecuador withdrew from the initiative and decided to pursue oil extraction in the Yasuní National Park, citing the need for economic development. Ten years later a referendum was held and approved on banning oil exploitation in the Yasuní National Park, but has yet to be implemented.

This example illustrates the complexities and challenges of integrating mitigation and adaptation measures, especially when economic interests and international cooperation are involved. Despite the initial intentions to address both climate change mitigation and adaptation, the outcome did not align with the original objectives due to various factors, including financial constraints and conflicting priorities.

In the next sections, we will further explore the challenges and opportunities associated with integrating mitigation and adaptation measures, as well as the trade-offs that may arise. By understanding the complexities of integration, we can develop strategies and recommendations to guide policymakers, practitioners, and researchers in their efforts to accomplish intergenerational justice for future generations.

Trade-offs between Mitigation and Adaptation Strategies

While the integration of mitigation and adaptation measures is crucial for achieving intergenerational justice in a changing climate, it is important to acknowledge that trade-offs may arise between these strategies (cf. IPCC 2022b, 52). Trade-offs refer to situations where focusing on one aspect, such as mitigation or adaptation, may have unintended consequences or undermine the effectiveness of the other. It is necessary to identify and navigate these trade-offs to develop comprehensive and balanced approaches to climate action (cf. *ibid.*).

One potential trade-off between mitigation and adaptation strategies lies in the allocation of resources and priorities. Mitigation efforts often require significant investments in transitioning to renewable energy, reducing emissions, and implementing sustainable practices. However, directing substantial resources solely towards mitigation may divert attention and resources away from adaptation measures that address the immediate impacts and vulnerabilities of climate change. Conversely, an exclusive focus on adaptation may neglect the root causes of climate change and perpetuate a cycle of vulnerability without addressing the underlying drivers. Balancing resource allocation between mitigation and adaptation is thus crucial to ensure a comprehensive approach that addresses both the causes and consequences of climate change (cf. *ibid.*, 55).

Another trade-off emerges when considering the temporal dimension of mitigation and adaptation. As Henry Shue put it, “[w]hile mitigation is like the prevention of an affliction, adaptation is more like rehabilitation from the affliction [...]. In general, it is better to prevent a problem from occurring than to cope with it after it occurs” (Shue 2017, 466). To put this into perspective, mitigation measures often have long-term benefits, as reductions in greenhouse gas emissions take time to manifest and their impacts are realized over future generations. On the other hand, adaptation measures focus on immediate risks and vulnerabilities, aiming to protect current populations and ecosystems from climate impacts. This temporal disparity can create tensions between short-term needs and long-term goals. Striking a balance between immediate adaptation responses and long-term mitigation efforts is necessary to address the needs of both current and future generations. Showcasing that the relationship between mitigation and adaptation is more complicated than the affliction analogy suggests, as Shue pointed out himself (cf. *ibid.*)

Ethical considerations and intergenerational justice play a vital role in making trade-off decisions between mitigation and adaptation strategies. Intergenerational justice necessitates fairness and equity across generations, both present and future. When considering trade-offs, it is crucial

to assess the distributional impacts and ethical implications of different choices. For instance, prioritizing short-term mitigation measures that benefit the current generation but neglect the immediate adaptation needs of vulnerable communities may perpetuate intergenerational injustice. Similarly, neglecting mitigation efforts altogether may impose a disproportionate burden on future generations, compromising their well-being and opportunities.

Navigating trade-offs between mitigation and adaptation strategies requires a careful analysis of the potential impacts and consequences of different decisions. It is essential to engage in interdisciplinary dialogue, incorporating scientific, social, economic, and ethical perspectives to inform decision-making processes. Robust decision-making frameworks that consider the long-term implications, incorporate stakeholder perspectives, and prioritize intergenerational justice can guide policymakers and practitioners in striking a balance between mitigation and adaptation.

In summary, trade-offs between mitigation and adaptation strategies are inherent in addressing climate change and achieving intergenerational justice. Identifying potential trade-offs, understanding their implications, and incorporating ethical considerations are essential steps in developing comprehensive and balanced approaches to climate action. By navigating these trade-offs and ensuring the integration of both mitigation and adaptation measures, we can strive towards a sustainable and just future for all generations.

Complexities of Decision-Making and Policy Trade-offs

The pursuit of intergenerational justice in the context of climate change involves navigating complex decision-making processes and addressing policy trade-offs. Balancing the needs and priorities of mitigation and adaptation measures requires careful consideration of various factors and stakeholders involved. Understanding the complexities inherent in decision-making and policy trade-offs is crucial for developing effective strategies that promote intergenerational justice for future generations.

One of the main challenges in decision-making is the allocation of limited resources and efforts between mitigation and adaptation. Both mitigation and adaptation require substantial investments, and deciding how to prioritize these resources can be a complex task. On one hand, mitigation measures aim to address the leading causes of climate change by reducing greenhouse gas emissions and transitioning to sustainable practices. These measures require long-term planning, significant financial commitments, and changes to existing systems and industries. On the other hand, adaptation measures focus on building resilience and reducing

vulnerability to the current and expected consequences of climate change. These efforts often involve short-term actions to protect communities, infrastructure, and ecosystems from the immediate risks posed by changing climatic conditions. Balancing the allocation of resources between mitigation and adaptation is essential to address both the underlying causes and the immediate impacts of climate change.

In addition to resource allocation, decision-making processes must also consider the temporal dimension and uncertainty associated with climate change. Mitigation measures may have long-term benefits that extend over generations, while adaptation measures aim to address current vulnerabilities and protect present populations. Striking a balance between immediate needs and long-term goals requires careful consideration of the time horizons and impacts associated with different strategies. This complexity is further heightened by the uncertainty surrounding future climate projections, making it challenging to assess the effectiveness and long-term implications of different decisions.

Policy trade-offs arise when pursuing specific strategies or objectives in climate action, which may have unintended consequences or conflicts with other goals. For example, prioritizing certain adaptation measures in one region may divert resources from mitigation efforts in another, potentially leading to increased greenhouse gas emissions and exacerbating climate change in the long run. Similarly, policies aimed at reducing emissions in specific sectors may have trade-offs in terms of social equity, as they may disproportionately affect certain communities or industries.

The complexities of decision-making and policy trade-offs in addressing climate change are particularly evident when considering the disparities between poorer and richer states. As Shue highlights, "[p]oorer states do not have sufficient resources to fund mitigation as well as adaptation, and the poorest lack the resources to fund even their own adaptation to climate change of any severity" (Shue 2017, 248). This creates a significant dilemma for these nations, as it would be "utterly irrational for these poorer states to divert scarce resources into bearing a share of the global cost of mitigation through their use of lower-carbon but more expensive energy than they otherwise would when, as a result, they would be left with less adequate resources for their own adaptation" (ibid.) Without commitments from richer states to support an adequate share of adaptation costs, poorer states face a nearly insurmountable challenge, balancing immediate survival needs with the long-term imperative of reducing carbon emissions. Evaluating these policy trade-offs is crucial for ensuring that decision-making processes consider intergenerational justice and minimize adverse impacts on vulnerable populations and future generations.

To address the complexities of decision-making and policy trade-offs, interdisciplinary approaches and stakeholder engagement are essential. Incorporating scientific knowledge, social perspectives, economic considerations, and ethical principles can provide a more comprehensive understanding of the challenges and opportunities associated with different strategies. Collaborative decision-making processes that involve diverse stakeholders, including marginalized communities, indigenous groups, and future generations, can help ensure that the voices and needs of those most affected by climate change are heard and considered.

In conclusion, the complexities of decision-making and policy trade-offs in balancing mitigation and adaptation measures pose significant challenges in achieving intergenerational justice in a changing climate. Addressing these challenges requires careful consideration of resource allocation, temporal dynamics, uncertainties, and the potential trade-offs associated with different policy choices. By adopting interdisciplinary approaches, engaging diverse stakeholders, and prioritizing intergenerational equity, decision-makers can navigate these complexities and develop strategies that effectively promote intergenerational justice for future generations.

Interdisciplinary Perspectives on Integration and Trade-offs

Addressing the challenges of integrating climate mitigation and adaptation measures requires engaging with interdisciplinary perspectives that encompass various fields of knowledge. Climate change is a complex issue that spans scientific, economic, social, and ethical dimensions. Incorporating these different perspectives is essential for understanding the trade-offs involved in decision-making and maximizing intergenerational justice outcomes.

Climate science provides a foundation for understanding the physical processes and impacts of climate change. It offers insights into the urgency and severity of the challenges we face, and it helps identify the risks and vulnerabilities that future generations may encounter. By integrating scientific knowledge, decision-makers can make informed choices about the appropriate balance between mitigation and adaptation measures.

Economics plays a crucial role in assessing the costs, benefits, and trade-offs associated with climate action. Economic analyses can help identify the most efficient and cost-effective approaches to mitigation and adaptation. They also shed light on the distributional impacts of different strategies and highlight potential trade-offs between immediate economic growth and long-term sustainability. By considering economic perspectives, decision-makers can evaluate

the feasibility and economic viability of integrating mitigation and adaptation measures while promoting intergenerational justice.

The social sciences contribute valuable insights into understanding human behavior, societal norms, and cultural aspects related to climate change. They explore how individuals and communities perceive and respond to climate risks, as well as the social, political, and institutional factors that shape decision-making processes. Social sciences can inform the design of inclusive and participatory approaches, ensuring that the voices of marginalized communities, indigenous groups, and future generations are heard and respected. Integrating social perspectives helps identify potential conflicts, synergies, and trade-offs among different societal goals and values (cf. Heyward 2017, 482).

Ethical considerations are fundamental to achieving intergenerational justice in climate action. Ethical frameworks provide normative principles that guide decision-making processes and inform the qualities required for mitigation and adaptation measures. Perspectives such as distributive justice, procedural justice, and intergenerational equity help address questions of fairness, responsibility, and the allocation of burdens and benefits across generations. Ethical deliberation can contribute to reconciling trade-offs by ensuring that decisions prioritize the well-being and rights of future generations.

To facilitate informed decision-making and maximize intergenerational justice outcomes, it is essential to adopt approaches that incorporate multiple perspectives. This can be achieved through interdisciplinary collaboration and the creation of platforms for dialogue and knowledge exchange. Engaging scientists, economists, social scientists, ethicists, policymakers, and affected communities in joint efforts can help identify potential trade-offs, explore creative solutions, and promote comprehensive strategies that integrate mitigation and adaptation measures. Interdisciplinary approaches cultivate a holistic understanding of the challenges and opportunities associated with climate change, leading to more effective and equitable decision-making processes.

In conclusion, integrating climate mitigation and adaptation measures for intergenerational justice requires engaging with interdisciplinary perspectives. By incorporating insights from climate science, economics, social sciences, and ethics, decision-makers can address the challenges of trade-offs and maximize the benefits for future generations. Interdisciplinary approaches can cultivate and foster a comprehensive understanding of the complexities of climate change and ensure that decision-making processes consider diverse perspectives and values. By embracing interdisciplinary collaboration, we can strive towards integrated strategies that effectively achieve intergenerational justice in a changing climate.

Conclusion

Throughout this thesis, the central focus has been on exploring the qualities required of climate mitigation and adaptation measures to achieve intergenerational justice for future generations in the face of a changing climate. In Chapter 6, we delved into the crucial aspects of integration and trade-offs between mitigation and adaptation strategies, highlighting the complexities associated with decision-making processes and the need for interdisciplinary perspectives.

The key findings from Chapter 6 underscore the significance of integrating mitigation and adaptation measures for intergenerational justice. By adopting an integrated approach, we can address the interconnected challenges of reducing greenhouse gas emissions and building resilience to climate-related risks. Synergistic approaches that tackle both mitigation and adaptation simultaneously offer opportunities for maximizing co-benefits and optimizing resource allocation.

However, we also recognize that there are trade-offs inherent in the pursuit of intergenerational justice. Focusing too heavily on mitigation efforts may inadvertently undermine the effectiveness of adaptation strategies, and vice versa. It is essential to navigate these trade-offs carefully, considering the potential implications for future generations, and balancing the short and long-term benefits of different approaches.

Decision-making processes in the context of intergenerational justice are complex. Prioritizing resources and allocating efforts between mitigation and adaptation requires careful consideration of multiple factors, including scientific evidence, economic feasibility, societal values, and ethical principles. The ethical implications of these decisions cannot be overlooked, as they play a vital role in ensuring fairness, distributive justice, and the protection of the rights of present and future generations.

To address the challenges of integration and trade-offs, interdisciplinary collaboration is indispensable. By engaging with diverse fields such as climate science, economics, social sciences, and ethics, we can gain a comprehensive understanding of the complexities of climate change and develop informed and balanced strategies. Inclusive approaches that incorporate the perspectives and voices of marginalized communities, indigenous groups, and future generations are crucial to ensuring equitable and sustainable outcomes.

The integration of mitigation and adaptation is essential, as it allows for comprehensive and effective responses to the challenges of a changing climate. We must navigate the trade-offs associated with decision-making processes carefully, guided by ethical considerations and a long-term perspective. Interdisciplinary collaboration and inclusive approaches are necessary to

address the complexities of integration and trade-offs and to advance intergenerational justice in the face of a changing climate.

By considering the findings of Chapter 6 in conjunction with the broader research investigation, this thesis has shed light on the multifaceted nature of intergenerational justice in a changing climate. The qualities required for climate mitigation and adaptation measures to accomplish intergenerational justice are interconnected and interdependent. Achieving intergenerational justice necessitates not only the integration of these measures but also a thoughtful consideration of trade-offs and the active engagement of diverse perspectives.

7. Conclusion

Throughout this master thesis titled "Intergenerational Justice in a Changing Climate," we have delved into the complexities of addressing intergenerational justice in the face of a changing climate. Our primary research question has been focused on identifying the qualities required for climate mitigation and adaptation measures to accomplish intergenerational justice for future generations. As we conclude this thesis, it is essential to recapitulate the significance of our research and its contribution to the field.

The urgency of addressing intergenerational justice in the context of climate change cannot be overstated. The impacts of climate change are already being felt globally, and they will continue to intensify in the coming decades. Future generations will bear the brunt of the decisions we make today, and it is our moral and ethical responsibility to ensure that their rights and well-being are not compromised.

This research has aimed to shed light on the qualities necessary for climate mitigation and adaptation measures to achieve intergenerational justice. By taking a pluralist approach and recognizing the multifaceted nature of this issue, our research has embraced diverse perspectives and theories from various disciplines, including ethics, economics, and environmental studies. We have sought to provide a comprehensive understanding of the issues at hand to effectively safeguard the interests of both current and future generations. A pluralist account grounded in an emergency claim resulting from the impacts of climate change can be constructed to emphasize the urgency and necessity of adopting multifaceted ethical strategies. This pluralist approach has allowed us to examine the ethical considerations and trade-offs involved in decision-making processes, while also acknowledging the diverse values and priorities that stakeholders bring to the table. In doing so, we aim to contribute to a more inclusive and nuanced discourse on intergenerational justice, one that recognizes the complexity of the challenges ahead and seeks to address them through collaborative and interdisciplinary approaches.

In this concluding chapter, we will provide a summary of the key findings and arguments presented throughout the thesis. We will emphasize the importance of the identified qualities in accomplishing intergenerational justice and discuss their interconnectedness and interdependencies. Furthermore, we will reflect on the implications of our research findings for policymakers, stakeholders, and decision-makers involved in climate mitigation and adaptation efforts.

The purpose of this chapter is to provide practical recommendations that can inform policy and practice in the pursuit of intergenerational justice. We will suggest strategies for integrating the identified qualities into climate policies and practices to enhance their effectiveness. Additionally, we will emphasize the significance of public awareness, education, and engagement in fostering a collective commitment to intergenerational justice.

By concluding this thesis, the hope is to inspire action and stimulate further research in the field of intergenerational justice and climate change. The future of our planet and the well-being of future generations depend on our ability to integrate these qualities into our decision-making processes and policy frameworks. Let us now explore the conclusions drawn from our research and envision a sustainable and just future for all.

Summary of Key Findings and Arguments

Our research has encompassed a range of findings, arguments, and theories, highlighting the interconnectedness of these qualities and the need for an interdisciplinary approach.

To begin with, we have established the importance of addressing intergenerational justice in the context of climate change, recognizing the moral responsibility to safeguard the well-being and rights of future generations. To accomplish this, we have drawn upon relevant philosophers, ethical theories, and frameworks, which have provided a solid foundation for our analysis.

In terms of mitigation, we have emphasized the significance of emission reduction, as well as the transition to renewable energy sources. By reducing greenhouse gas emissions, we aim to mitigate the long-term impacts of climate change and prevent harm to future generations. Additionally, the shift towards renewable energy not only aids in mitigating climate change but also contributes to sustainable development goals and promotes intergenerational justice.

Regarding adaptation, we have highlighted several qualities that are crucial for achieving intergenerational justice. Resilience emerges as a critical aspect, focusing on building systems and communities that can withstand and recover from the shocks and stressors associated with climate change. Vulnerability reduction plays a pivotal role in adaptation efforts, aiming to address the disproportionate impacts of climate change on vulnerable populations and future generations. Furthermore, adaptive capacity-building, including knowledge sharing, technology transfer, and capacity development, is essential in enhancing society's ability to adapt to changing climatic conditions.

It is important to note that these qualities are not isolated entities but rather interdependent and interconnected. The effectiveness of mitigation measures is intricately linked to the success of

adaptation strategies, and vice versa. The integration of these qualities is crucial for achieving comprehensive and intergenerationally just climate action.

Throughout our analysis, an interdisciplinary approach has been adopted to comprehensively understand the complexities and challenges of addressing intergenerational justice in a changing climate. Insights from climate science, economics, social sciences, and ethics have been incorporated, allowing for a holistic understanding of the subject matter. This interdisciplinary lens enables us to navigate the trade-offs and synergies between mitigation and adaptation strategies, providing a comprehensive perspective on intergenerational justice.

Ethical theories and frameworks have also played a significant role in informing our analysis. By considering principles of distributive justice, procedural justice, and rights-based approaches, we have been able to evaluate the ethical implications and intergenerational justice considerations involved in climate mitigation and adaptation decision-making processes.

Hence, by integrating emission reduction, renewable energy transition, sustainable development, resilience, vulnerability reduction, adaptive capacity-building, and incorporating an interdisciplinary approach informed by ethical theories and frameworks, we can pave the way for a just and sustainable future. This research underscores the interconnectedness of these qualities and emphasizes the need for collective action and a long-term perspective to address the challenges of climate change and safeguard the well-being of future generations.

Towards Intergenerational Justice

The consequences of our research findings extend beyond academia and have significant repercussions for policymakers, stakeholders, and decision-makers in the field of climate mitigation and adaptation. Primarily, **long-term thinking** should be prioritized in policy and decision-making processes. It is imperative to consider the long-term consequences of current actions and to ensure that the interests of future generations are adequately addressed. Short-sighted approaches and immediate gains must be balanced against the objectives of long-term sustainability and intergenerational justice.

Moreover, **inclusive and participatory decision-making processes** are crucial. The perspectives and needs of marginalized communities, indigenous groups, and future generations should be actively included and taken into account. Their voices must be heard to ensure that the decision-making process is equitable and promotes intergenerational justice. This inclusivity can contribute to the design and implementation of more effective and contextually appropriate climate mitigation and adaptation measures.

Furthermore, **international cooperation** is paramount in addressing intergenerational justice in a changing climate. Climate change knows no borders, and its impacts are global. Collaboration between nations, regions, and stakeholders is necessary to address the global challenges of climate change, ensuring that future generations are not left bearing the burden of present inaction. Policy frameworks and international agreements, such as the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC), provide platforms for cooperation and should be strengthened to enhance intergenerational justice in climate action. By integrating these qualities, adopting a long-term perspective, promoting inclusive decision-making processes, and fostering international cooperation, we can effectively address the challenges posed by climate change and secure a just and sustainable future. It is our collective responsibility to take immediate action to safeguard the well-being and rights of future generations and create a world that is sustainable and just for all.

Practical Recommendations

Based on the research findings presented in this master thesis on "Intergenerational Justice in a Changing Climate," several practical recommendations can be made for policymakers, stakeholders, and relevant actors. These recommendations aim to guide the integration of the identified qualities into climate policies and practices, ultimately enhancing intergenerational justice for future generations. Additionally, the importance of public awareness, education, and engagement in fostering a collective commitment to intergenerational justice is emphasized.

1. **Integrate Interdisciplinary Approaches:** Policymakers and stakeholders should embrace interdisciplinary collaboration and engage experts from various fields, including climate science, economics, social sciences, and ethics. By incorporating diverse perspectives, a more comprehensive understanding of the complexities of climate change and intergenerational justice can be achieved, leading to more informed decision-making (cf. Gardiner 2010, 3).
2. **Establish Long-term Planning:** Climate policies and strategies should adopt a long-term perspective to account for the interests and well-being of future generations. This entails considering the potential consequences of decisions on future generations and prioritizing their rights and needs in policy formulation and implementation (cf. Skillington 2020, 72).

3. **Mainstream Mitigation and Adaptation:** Policymakers and stakeholders should aim for the seamless integration of mitigation and adaptation measures. Recognizing the interdependencies and synergies between these strategies, efforts should be made to avoid compartmentalization and implement integrated approaches that address both mitigation and adaptation simultaneously. This approach ensures that the well-being of future generations is safeguarded through emission reduction and resilience-building measures.
4. **Prioritize Vulnerable Communities and Future Generations:** Policymakers and stakeholders should prioritize the needs and perspectives of vulnerable communities and future generations in climate policies and actions. This includes actively involving marginalized groups, indigenous communities, and youth representatives in decision-making processes. Their inclusion ensures that the voices of those most affected by climate change and intergenerational injustice are heard and considered (cf. Robinson 2018).
5. **Strengthen International Cooperation:** Policymakers should emphasize international cooperation and collaboration in addressing climate change. Climate issues transcend national boundaries, and global challenges require global solutions. By strengthening existing international frameworks, such as the Paris Agreement and the UNFCCC, in addition to fostering cooperation between nations, progress towards intergenerational justice can be accelerated (cf. Skillington 2020, 130).
6. **Foster Public Awareness and Education:** Public awareness and education play a crucial role in fostering a collective commitment to intergenerational justice. Policymakers and stakeholders should invest in public awareness campaigns, educational programs, and capacity-building initiatives to enhance understanding of the challenges posed by climate change and the importance of intergenerational justice. By empowering individuals with knowledge and promoting behavioral change, a broad-based commitment to sustainable practices can be cultivated (cf. Black et al. 2022, 7).

7. **Encourage Active Engagement:** Policymakers and stakeholders should encourage active engagement and participation from the public, civil society organizations, and youth groups. Providing opportunities for meaningful participation and involvement in decision-making processes ensures a sense of ownership and collective responsibility. This engagement can lead to more inclusive and equitable climate policies that prioritize intergenerational justice.

The practical recommendations outlined above guide policymakers, stakeholders, and relevant actors in integrating the identified qualities into climate policies and practices to accomplish intergenerational justice. By embracing interdisciplinary approaches, long-term planning, mainstreaming mitigation, and adaptation, prioritizing vulnerable communities and future generations, strengthening international cooperation, fostering public awareness and education, and encouraging active engagement, we can collectively work towards a sustainable and just future for all generations. It is through concerted efforts and a shared commitment that we can ensure the well-being and rights of future generations are upheld in the face of a changing climate.

And now...

The research has made significant contributions to the field by highlighting the interconnectedness and interdependencies of these recommendations. The findings have underscored the importance of resilience, vulnerability reduction, adaptive capacity-building, inclusive and participatory approaches, ethical considerations, integration, and the management of trade-offs in achieving intergenerational justice. By integrating these qualities into climate policies and practices, future generations can be better equipped to confront the challenges of a changing climate.

It is evident that intergenerational justice requires a collective effort and global cooperation. The impacts of climate change transcend national boundaries, and a coordinated response is essential to protect the rights and well-being of future generations. The identified qualities should be integrated into national and international strategies to ensure a holistic approach to climate mitigation and adaptation.

As the world grapples with the urgent and complex challenges of climate change, the research findings highlight the need for immediate action. We have a responsibility to act now to create a sustainable and just future for all. The urgency of addressing climate change demands

transformative measures that go beyond incremental changes. It calls for ambitious targets, innovative solutions, and the mobilization of resources to build a resilient and equitable future. By recognizing the urgency to act now, we affirm our commitment to creating a world where intergenerational justice is upheld and future generations can thrive. It is our collective responsibility to pave the way for a sustainable and just future, and it is only through our united efforts that we can make this vision a reality.

II. References

- Black, Richard, Joshua Busby, Geoffrey D. Dabelko, Cedric de Coning, Hafsa Maalim, Claire McAllister, Melvis Ndiloseh, and Dan Smith. 2022. *Environment of Peace: Security in a New Era of Risk*. Stockholm: SIPRI. <https://doi.org/10.55163/LCLS7037>.
- Brennan, Andrew, and Norva Y. Lo. 2002. "Environmental Ethics." Stanford Encyclopedia of Philosophy (Summer 2022 Edition).
<https://plato.stanford.edu/entries/ethics-environmental/>.
- Brundtland, Gro H., and World Commission on Environment and Development. 1987. *Our Common Future*. New York: Oxford University Press.
- Caney, Simon. 2020. "Climate Justice." *Stanford Encyclopedia of Philosophy* (Winter 2021 Edition). <https://plato.stanford.edu/archives/win2021/entries/justice-climate/>.
- CNCA (Carbon Neutral Cities Alliance). 2023. "Copenhagen has major climate ambitions and aims to be the first carbon neutral capital in 2025".
<https://carbonneutralcities.org/cities/copenhagen/>. 10.12.2023, 18:51.
- Collyns, Don. 2023. "Ecuador prepares for 'once-in-a-lifetime' vote to stop oil drilling".
<https://www.theguardian.com/world/2023/aug/19/ecuador-prepares-for-once-in-a-lifetime-vote-to-stop-oil-drilling>. 10.12.2023, 19:38.
- Duyck, Sébastien, Sébastien Jodoin, and Alyssa Johl, eds. 2020. *Routledge Handbook of Human Rights and Climate Governance*. New York: Routledge.
- European Parliament. 2019. "The European Parliament declares climate emergency".
<https://www.europarl.europa.eu/news/en/press-room/20191121IPR67110/the-european-parliament-declares-climate-emergency>. 29.11.2019, 11:09.
- Gardiner, Stephen M., Simon Caney, Dale Jamieson, and Henry Shue, eds. 2010. *Climate Ethics: Essential Readings*. New York: Oxford University Press.

- Gardiner, Stephen M. 2010. "Ethics and Global Climate Change." In *Climate Ethics: Essential Readings*, edited by Gardiner, Stephen M., Simon Caney, Dale Jamieson, and Henry Shue, 3-35. New York: Oxford University Press.
- Gardiner, Stephen M. 2011. *A Perfect Moral Storm: The Ethical Tragedy of Climate Change*. New York: Oxford University Press.
- Gardiner, Stephen M., and Allen Thompson. 2019. "Introducing Contemporary Environmental Ethics." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 1-10. New York: Oxford University Press.
- Gardiner, Stephen M., and Allen Thompson, eds. 2019. *The Oxford Handbook of Environmental Ethics*. New York: Oxford University Press.
- Giddens, Anthony. 2009. *Politics of Climate Change*. Cambridge: Polity Press.
- Göpel, Maja. 2016. *The Great Mindshift: How a New Economic Paradigm and Sustainability Transformations Go Hand in Hand*. Cham: Springer International Publishing.
- Hale, Benjamin. 2019. "Rights, Rules, and Respect for Nature." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 211-222. New York: Oxford University Press.
- Heyward, Clare. 2017. "Ethics and Climate Adaptation." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 474-486. New York: Oxford University Press.
- Hiller, Avram. 2019. "Consequentialism in Environmental Ethics." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 199-210. New York: Oxford University Press.
- IPBES. 2019. *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, edited by Brondízio, E. S., Settele, J., Díaz, S., Ngo, H. T.. Bonn: IPBES secretariat. 978-3-947851-20-1.

- IPCC. 2021. “Summary for Policymakers.” In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Valérie Masson-Delmotte, Panmao Zhai, and Anna Pirani, 3-32. Cambridge: Cambridge University Press.
10.1017/9781009157896.001.
- IPCC. 2022a. “Summary for Policymakers.” In *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Hans-O. Pörtner and Debra C. Roberts, 3-33. Cambridge: Cambridge University Press.
10.1017/9781009325844.001.
- IPCC. 2022b. “Summary for Policymakers.” In *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Jim Skea, Priyadarshi R. Shukla, and Andy Reisinger. Cambridge: Cambridge University Press.
10.1017/9781009157926.001.
- Jamieson, Dale. 2014. *Reason in a Dark Time. Why The Struggle Against Climate Change Failed – And What it Means For Our Future*. New York: Oxford University Press.
- Jafry, Tahseen, Karin Helwig, and Michael Mikulewicz, eds. 2018. *Routledge Handbook of Climate Justice*. London: Routledge.
- Jonas, Hans. 1984. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Chicago: University of Chicago Press.
- Kallhoff, Angela, ed. 2015. *Klimagerechtigkeit und Klimaethik*. Berlin: De Gruyter.
- Kallhoff, Angela. 2021. *Climate Justice and Collective Action*. New York: Routledge.
- Krause, Dunja. 2018. “Transformative approaches to address climate change and achieve climate justice.” In *Routledge Handbook of Climate Justice*, edited by Tahseen Jafry, Karin Helwig, and Michael Mikulewicz, 509-521. N.p.: Routledge.

- Mason, Elinor. 2006. "Value Pluralism." *The Stanford Encyclopedia of Philosophy* (Summer 2023 Edition).
<https://plato.stanford.edu/archives/sum2023/entries/value-pluralism>.
- Mattar, Sennan, and Enyinnaya U. Mbakwem. 2018. "Climate migration: the emerging need for a human-centered approach." In *Routledge Handbook of Climate Justice*, edited by Tahseen Jafry, Karin Helwig, and Michael Mikulewicz, 479-493. London: Routledge.
- Meyer, Lukas. 2003. "Intergenerational Justice." *The Stanford Encyclopedia of Philosophy* (Summer 2021 Edition).
<https://plato.stanford.edu/archives/sum2021/entries/justice-intergenerational>.
- Nolt, John. 2019. "Future Generations in Environmental Ethics." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson. New York: Oxford University Press.
- Parfit, Derek. 1984. *Reasons and Persons*. Oxford: Clarendon Press.
- Pegram, Joni. 2020. "Overlooked and undermined: Child rights and climate change." In *Routledge Handbook of Human Rights and Climate Governance*, edited by Sébastien Duyck, Sébastien Jodoin, and Alyssa Johl. New York: Routledge.
- Rawls, John. 1999. *A Theory of Justice*. Cambridge: Harvard University Press.
- Robinson, Mary. 2018. *Climate Justice: Hope, Resilience, and the Fight for a Sustainable Future*. New York: Bloomsbury Publishing.
- Sandler, Ronald. 2019. "Environmental Virtue Ethics: Value, Normativity, and Right Action." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 223–233. New York: Oxford University Press.
- Shue, Henry. 2017. "Mitigation: First Imperative of Environmental Ethics." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 465-473. New York: Oxford University Press.

- Silverman, Allison. 2020. "Energy Justice. The intersection of human rights and climate justice." In *Routledge Handbook of Human Rights and Climate Governance*, edited by Sébastien Duyck, Sébastien Jodoin, and Alyssa Johl. New York: Routledge.
- Skillington, Tracey. 2016. *Climate Justice and Human Rights*. New York: Palgrave Macmillan.
- Skillington, Tracey. 2020. *Climate Change and Intergenerational Justice*. New York: Routledge.
- Stabinsky, Doreen. 2020. "Climate Justice and human rights." In *Routledge Handbook of Human Rights and Climate Governance*, edited by Sébastien Duyck, Sébastien Jodoin, and Alyssa Johl. New York: Routledge.
- Tremmel, Jörg, ed. 2006. *Handbook of Intergenerational Justice*. Cheltenham: Edward Elgar.
- United Nations Environment Programme. 2023. "Executive summary." In *Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again)*. Nairobi. <https://doi.org/10.59117/20.500.11822/43922>.
- Whyte, Kyle P., and Chris J. Cuomo. 2019. "Ethics of Caring in Environmental Ethics: Indigenous and Feminist Philosophies." In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 234-247. New York: Oxford University Press.