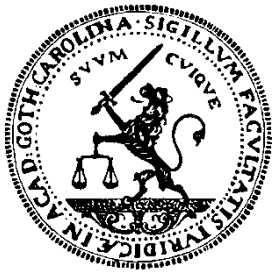

FACULTY OF LAW

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# The Principle of Precaution and its Role in the European Convention on Human Rights

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# Summary

The thesis explores whether the precautionary principle can be reconciled with and integrated into the European Convention on Human Rights ("ECHR"), particularly in the context of climate change. It examines whether the European Court of Human Rights ("ECtHR" or "Court") addresses climate change issues through the precautionary principle by including precautionary reasoning in its assessments.

This thesis is crucial due to the increasing severity of climate change impacts, particularly in Europe, where temperatures have risen significantly above global averages, affecting the enjoyment of human rights. Understanding the potential integration of the precautionary principle within the ECHR framework is essential to enhance the protection of human rights against the risks of harm arising from climate change.

This thesis employs a combination of traditional doctrinal analysis and theoretical perspectives. It critically analyses legal materials, international documents, case law, and doctrinal literature to interpret the precautionary principle within environmental law and explore its possible integration or reconciliation with the ECHR. The study particularly focuses on the recent Grand Chamber ("GC") case, *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, to assess whether the Court applied precautionary reasoning and to understand the Court's approach to climate change issues.

In conclusion, this thesis finds that although the ECtHR has engaged with precautionary reasoning in some cases, the application of the precautionary principle in climate change cases remains limited. Thus, the ECtHR has been cautious in integrating environmental principles into its human rights jurisprudence. Nevertheless, the integration of the precautionary principle could enhance the Court's capacity to address climate change, ensuring that the rights protected by the ECHR remain practical and effective amid environmental challenges.

Keywords: precautionary principle, positive obligations, European Convention on Human Rights, precautionary measures, climate change, environmental law

# Preface

I would like to express my heartfelt gratitude to my beloved family, Meliha, Kamer and Deniz, whose unwavering support and encouragement have been my guiding light throughout this journey. Your love, understanding, and belief in me have made all the difference.

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# 1 Introduction

The year 2023 has been officially recognised as the warmest on record based on global temperature data dating back to 1850.[1] According to the Copernicus Climate Change Service of the European Union, while the average temperature increase was close to 1.5 °C globally, temperatures in Europe surpassed average levels by 2.2 °C above pre-industrial levels throughout the year.[2]

Over the past three decades, Europe has experienced a temperature increase that exceeded twice the global average, marking the highest rate among all continents. A recent report from the World Meteorological Organization warns that as this warming trend persists, the continent will face increasingly severe consequences, including exceptional heatwaves, wildfires, destructive floods, and other climate change impacts affecting the environment and future generations.[3] Unfortunately, each passing year foreshadows dire observations concerning climate change, underscoring the critical importance of precaution as a fundamental concept now more than ever.

This alarming trend underscores the urgent need for robust legal mechanisms to address climate change impacts. However, despite the temperature increase in Europe being twice the global average and the effects of climate change being imminent, the ECtHR, as the regional court, only recently ruled on the state "*climate action*"[4] cases.[5] Given the complexity, severity and uncertainty of climate change impacts, it is crucial to examine the precautionary principle which could enhance the protection of the Convention rights against environmental risks. Thus, this thesis aims to explore whether the ECHR could provide protection by means of integrating the precautionary principle in climate action cases. Subsequently, it seeks to determine whether the ECHR can reconcile and integrate the precautionary principle and whether the precautionary principle has been developed within the case law.

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[1] 1850 to 1900 is considered the pre-industrial era, before the widespread burning of fossil fuels significantly altered atmospheric composition and contributed to global warming. Thus, 1850 was chosen as a reference point for global temperature data as it was deemed to be aligned with the pre-industrialization period, as outlined in Article 2/1 (a) of the Paris Agreement. See; The Copernicus Climate Change Service (C3S) of the European Union, 'Climate Indicators - About the Data' <https://climate.copernicus.eu/climate-indicators/about-data#Temperatureindicator> accessed 6 March 2024.

[2] Nuria Lopez, 'Copernicus: 2023 Is the Hottest Year on Record, with Global Temperatures Close to the 1.5°C Limit' (The Copernicus Climate Change Service (C3S) of the European Union 2024) Press Release <https://climate.copernicus.eu/copernicus-2023-hottest-year-record> accessed 29 February 2024.

[3] 'State of the Climate in Europe 2021' (World Meteorological Organization (WMO) 2022) WMO-No. 1304 4 <https://library.wmo.int/idurl/4/58204> accessed 1 March 2024.

[4] The Court used this terminology, which refers to both climate change mitigation and adaptation. See; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4).

[5] ibid; *Carême v France* [2024] ECtHR 7189/21; *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* [2024] ECtHR 39371/20.

Furthermore, examining the application of the precautionary principle within the framework of the ECHR is essential for understanding how human rights law can intersect with environmental concerns, particularly in the face of escalating climate-related risks and harms in Europe. The recent Grand Chamber decisions,[6] as well as adjourned cases,[7] show that the ECtHR holds the potential to provide essential guidance on state climate change action as a regional human rights court.

However, except for the pending cases concerning climate change, the Court has shown the tendency to find the complaints inadmissible on the grounds that the individual applicants were not sufficiently affected, or the consequences were too remote.[8] The victim status stipulated by Article 34 of the ECHR, in principle, seeks the victim to be directly affected by an act or omission and does not allow *in abstracto* violation claims to be filed.[9] This requirement consequently affects the understanding of fundamental concepts, such as risk and threat of harm, between ECHR and the precautionary principle in environmental law. Therefore, this thesis delves into concepts of risk and threat of harm from the point of view of the precautionary principle.

In order to answer the question of whether the precautionary principle could be reconciled or integrated within the ECHR, one needs to understand what the precautionary principle means. Therefore, the first substantive chapter starts with a brief explanation of the evolution and development of the precautionary principle, including both international documents and case law. It then delves into the elements of the precautionary principle, as these elements shape the understanding and the implementation of the principle. The concept of risk is explored, highlighting its role as a notional framework rather than a direct element of the precautionary principle. Subsequently, it is discussed whether risk and threat of harm are distinctive elements under the principle. The analysis continues with the element of scientific uncertainty and what it could mean as a standard of burden of proof and causation. Finally, the chapter assesses cost-effective measures, bearing in mind the capability and effectiveness standards that are included within the formulation of the principle.

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[6] For further information see; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4); *Carême v. France* (n 5); *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* (n 5).

[7] *Uricchiov v. Italy and 31 Other States and De Conto v. Italy and 32 Other States* ECtHR 14615/21 and 4620/21; *Müllner v. Austria* ECtHR 18859/21; *Greenpeace Nordic and Others v. Norway* ECtHR 34068/21; *The Norwegian Grandparents' Climate Campaign and Others v. Norway* ECtHR 19026/21; *Soubeste and four other applications v. Austria and 11 Other States* ECtHR 31925/22, 31932/22, 31938/22, 31943/22 and 31947/2; *Engels v. Germany* ECtHR 46906/22.

[8] *Carême v. France* (n 5); *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* (n 5).

[9] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 460; *Carême v. France* (n 5) paras 83–85.

In Chapter 3, the thesis explores whether the elements of the precautionary principle described within the second chapter are integrated into the reasoning of the Court. The answer to this question is elaborated particularly through the lens of the *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* case. This chapter examines the ECtHR's interpretation of scientific uncertainty, risk, threat of harm, and burden of proof through a four-dimensional causation assessment introduced by the Court. Subsequently, it is discussed how the Court aims to balance matters concerning admissibility while upholding (positive) obligations to mitigate environmental harm and protect human rights under climate change pressures.

Furthermore, the thesis briefly examines ECtHR's considerations on admissibility considering the stringent requirements for proving the direct impact of environmental harm on individuals, which significantly shapes the interpretation of the precautionary principle within the scope of the ECHR. Lastly, while trying to find an answer to whether there is a positive obligation to take precautionary measures, it delves into the distinctive contents of positive obligations and what these would mean from the point of the precautionary principle. In this regard, it scrutinises the positive obligation to develop an effective framework and effective national procedures. Eventually, it concludes that the ECtHR integrates the precautionary principle in a limited manner by utilising precautionary reasoning in its assessment.

## 1.1. Statement of the Problem

The precautionary principle, as applied in environmental law, is characterised by its proactive approach, necessitating preventive measures in the face of uncertain risks of climate change. In contrast, the practice of the ECtHR tends to be rather reactive, especially due to the interpretation of harm and risk, despite the well-established rule that positive obligations include taking preventive measures. However, considering that the ECHR does not even explicitly regulate the right to a healthy environment, the development of the environmental aspect of human rights occurs through case law. This is achieved especially by means of the Court's doctrine of interpreting the Convention as a living instrument, in light of present-day conditions. This disparity raises questions about whether it is possible to integrate the precautionary principle's key elements – risk, threat of harm, scientific uncertainty, and cost-effective measures – into human rights adjudication, particularly under Articles 2, 8, and 34 of the Convention. The problem extends to the challenges in such integration or reconciliation and exploring theoretical and practical implications, contributing to the discourse on balancing environmental protection and human rights.

## 1.2. Aim of the Research and the Research Question

This thesis aims to dissect the challenges and opportunities of reconciling and integrating the precautionary principle into the framework of ECHR. It

scrutinises key concepts such as risk, threat of harm, causation, the burden of proof and obligations. By doing so, the thesis seeks to shed light on the feasibility of harmonising proactive environmental protection with the ECHR through a rights-based approach. The significance of this thesis lies in its contribution to understanding the gaps and challenges associated with integrating the precautionary principle into human rights adjudication. Through a nuanced exploration of theoretical and practical implications, it seeks to provide valuable insights into the ongoing discourse on striking a balance between environmental protection and the safeguarding of human rights.

Research Question: Can the precautionary principle be reconciled with and integrated within the ECHR? If yes, how?

## 1.3. Significance of the Study

In April 2024, the Grand Chamber of the ECtHR decided on three climate cases: *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*,[10] *Carême v. France*,[11] and *Duarte Agostinho and Others v. Portugal and 32 Others*.[12] These recent decisions regarding climate change highlight the evolving dynamics of addressing climate-related issues within the ECtHR's human rights framework.

To better understand this contemporary and developing intersection, the entry point of this thesis is chosen to be the precautionary principle since the principle was invoked within the applications filed to the ECtHR, and the Court integrated precautionary reasoning in its judgements.[13] Thus, the examination of key elements associated with the precautionary principle, provides a comprehensive understanding of the complexities involved in integrating environmental considerations into human rights adjudication. By elucidating concepts of threat of harm, risk, causation and burden of proof within the framework of ECHR, this thesis contributes to enhancing the discourse on balancing environmental protection and human rights. Thereby it is aimed to contribute to future legal decisions and policy development.

The identification of challenges in the reconciliation/ integration process aims to offer valuable insights for policymakers, legal practitioners, and scholars seeking to navigate the evolving landscape of environmental and human rights law. By identifying areas for improvement and suggesting potential solutions, this thesis informs efforts aimed at strengthening the legal framework for addressing environmental challenges via the precautionary principle within the context of human rights protection. Overall, the

[10] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4).
[11] *Carême v. France* (n 5).
[12] *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* (n 5).
[13] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) paras 26, 314; *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* (n 5) paras 63, 142.

significance of this study lies in its contribution to advancing both environmental protection and human rights through a nuanced understanding of the precautionary principle by exploring theoretical and practical implications.

## 1.4. Scope and Limitations

Acknowledging the importance of other regional courts such as African Court on Human and Peoples' Rights or Inter-American Court of Human Rights to the norm emergence of precautionary principle; the scope is intentionally narrowed to the ECHR to provide a focused analysis of a specific regional human rights system, allowing for a detailed examination of the practices and jurisprudence of the ECtHR. Hence, it is essential to note that discussions related to human rights law within this study specifically pertain to the ECHR.

The precautionary principle extends beyond climate change mitigation and adaptation, encompassing interconnected aspects of environmental law such as biodiversity or sustainability, etc. However, the precautionary principle is solely examined within the scope of climate change. Narrowing the scope allows for a more in-depth examination of the ECtHR's approach of assessing the positive obligations arising out of climate change.

Although the precautionary principle is examined within both disciplines, the objective of this thesis is not to compare both disciplines in a general manner. Acknowledging that the comparison of the disciplines is relevant, the relationship between international environmental law and human rights law will not be included.

In the third chapter, when addressing admissibility issues, the discussion will centre on the individual. Although it is closely related to the topics of victim status or *locus standi*, these will not be presented as a separate discussion under Article 34. The focus will remain on the Court's interpretation of the complex and polycentric nature of climate change and how that relates to the substantive rights of the individual under the Convention. Furthermore, the procedural distinction between individual and association *locus standi* will not be examined. Nonetheless, a brief mention may be necessary to elucidate the Court's reasoning in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*.

Lastly, the integrative nature of law requires and evokes many concepts such as sustainable development, intergenerational burden-sharing, equality, proportionality, progressive realisation and margin of appreciation concerning the socio-economical decision-making etc., especially while discussing the element of cost-effectiveness. Although these matters are closely connected, they raise a whole gamut of issues that will not be elaborated upon. However, it may be briefly necessary to touch upon some of

these aspects within the scope of the thesis to clarify the discussed matter, albeit in a limited and concise manner.

## 1.5. Methodology

The precautionary principle within environmental law, within the second chapter, is discussed using the traditional doctrinal analysis methodology. This involves employing classic legal argumentation drawn from various sources of law, such as conventions, case law, customary law, and doctrinal literature, to present a nuanced interpretation of the law.

In terms of the integration or reconciliation of the precautionary principle to the ECHR, traditional doctrinal analysis alone would be insufficient. Therefore, while presenting the precautionary principle within the framework of the ECHR, the thesis relies on a theoretical perspective, as the ECHR does not explicitly refer to the precautionary principle or the right to a healthy environment. Bearing in mind that notions such as risk, harm, etc., are also essential elements within human rights, a teleological approach would provide a flexible and contextually relevant framework for interpretation.

Additionally, throughout the discussion of the selected elements in the third chapter, I will also engage in traditional doctrinal analysis of existing literature and case law of the ECtHR. To address the possible integration and reconciliation of the precautionary principle into the ECHR, a critical, qualitative analysis of legal materials will be conducted. This involves systematically identifying the selected elements, delving into their legal meaning, and exploring underlying standards within the established framework. The analysis considers whether cases interpreting the selected elements would cohesively form a system and identify ambiguities and criticisms within the law.

# 2 Precaution in Environmental Law

Although climate change is inevitable, there remains considerable uncertainty regarding the precise nature of its impacts ("what kind of harm") and timing ("when").[14] Aiming to improve the chances for a safe environment and climate, environmental law has developed different approaches to risk. Louka states that *la raison d'être* of environmental policies is the prevention of environmental harm.[15] This involves focusing on identified risks or hazards and remedying actual damage.[16] This preventive approach was expanded via the concept of precaution. To better understand the concept of precaution, Randall explains that the 'pre' affix suggests a temporal approach to harm, risk and certainty where it is expected to intervene 'before'. He states that precaution provides an 'early warning' that aims to tackle the factors or the agent causing the risk before it becomes widespread or embedded in *status quo* practices.[17] Agreeing with Randall, I deem it necessary to add that the distinctive feature is not always temporal. Both prevention and precaution stipulate an intervention at an early stage, but the perception of the risk or threat varies. In other words, the nature of risk plays a role in defining the difference between 'precaution' and 'prevention', where precaution requires anticipatory action also in response to scientifically uncertain risks of environmental harm.[18] Prevention, however, presupposes that the risks are more or less known and by setting standards that contain a margin of safety, harm can be avoided or redressed.[19]

Precaution serves as a means of risk management, entailing taking proactive measures to address potential harm or adverse effects in situations where scientific knowledge is uncertain in the light of the knowledge available at the time. In other words, precaution, at its core, embodies a proactive stance towards mitigating risks, particularly those associated with acts, omissions, policies or regulations that may have uncertain yet potentially significant adverse effects. It acknowledges the inherent complexity of our interconnected world, where acts or omissions can yield unforeseen consequences, sometimes with irreversible ramifications. Therefore, integration of precaution into legal frameworks can foster a more proactive

[14] Lauren Hartzell-Nichols, *A Climate of Risk - Precautionary Principles, Catastrophes, and Climate Change* (Routledge 2017) 19.
[15] Elli Louka, *International Environmental Law - Fairness, Effectiveness, and World Order* (Cambridge University Press 2006) 50, 51.
[16] Aline L. Jaeckel, *The International Seabed Authority and the Precautionary Principle Balancing Deep Seabed Mineral Mining and Marine Environmental Protection* (Brill Nijhoff 2017) 29.
[17] Alan Randall, *Risk and Precaution* (Cambridge University Press 2011) 7; Jessica Almqvist, 'A Human Rights Approach to Risk: The Case of Human Germline Editing' (2021) 43 Loyola of Los Angeles International Law and Comparative Law Review 185, 185,186.
[18] Jacqueline Peel, 'Precaution' in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law* (2nd edn, Oxford University Press 2021) 303.
[19] Alan Randall (n 17) 6,7.

approach to risk management, ensuring the protection of not only the environment but also human rights and future generations.

The terminology employed in delineating the concept of precaution within the context of this research is of importance in shaping our understanding. The utilisation of the term 'principle' over 'approach', 'standard', or 'rule' is a deliberate choice aimed at elucidating the normative underpinnings and standards inherent in the concept of precaution. Thus, despite the views that principle or approach etc., can be used interchangeably,[20] I believe the distinction between precaution as a 'principle' and precaution as an 'approach', etc., extends beyond mere semantics. It hints at underlying political divergences regarding its acceptance and implementation.[21] Notably, certain states, such as the United States, express a preference for the term 'approach', highlighting it is less stringent on risk management, regulatory frameworks, bindingness, and overall positive obligations.[22] There may be many reasons and deeper discussion of what a principle, rule or standard means within the scope of public international law. However, such discussions are not within the scope of this study. In the context of discussions on precaution, the term 'principle' connotes a normative framework with guidelines and standards, serving as a theoretical basis with ethical and justice dimensions that provide a general framework.[23] On the other hand, terms such as approach, rule or standard imply a more flexible and adaptable stance towards risk management and regulatory approach.

The Permanent Court of Arbitration ("PCA") acknowledged the meaning behind the different preferences on terminology in its *Iron Rhine* case. It addressed the different preferences on terminology such as 'rule' or 'principle' within the realm of environmental law. It held that such preferences would affect both the normative classification and contribution of environmental treaty law or principles to the development of customary international law.[24] Without referring to a certain principle of environmental

[20] See; Jacqueline Peel, 'Precaution - A Matter of Principle, Approach or Process?' (2004) 5 Melbourne Journal of International Law 483; Jacqueline Peel (n 18) 312.
[21] Jacqueline Peel (n 20) 486; Nicolas de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (2nd edn, Oxford University Press 2020) 174.
[22] Donald K. Anton and Dinah L. Shelton, *Environmental Protection and Human Rights* (Cambridge University Press 2011) 81; Contrary, it is also argued that the terminology preference does not cause any substantive difference and can be used interchangeably. By referring to the Rio Convention in both French and English, it is elaborated that the terminology discrepancy exists only due to drafting or translation without any underlying substantive meaning. See, Aline L. Jaeckel (n 16) 21, 22.
[23] Jacqueline Peel (n 20) 485; Philippe Sands and others, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 189; Lavanya Rajamani and Jacqueline Peel, 'International Environmental Law: Changing Context, Emerging Trends, and Expanding Frontiers', *The Oxford Handbook of International Environmental Law* (2nd edn, Oxford University Press 2021) 14, 159.
[24] *Iron Rhine Arbitration (Belgium/ Netherlands)* [2005] Permanent Court of Arbitration 2003-2 [58-60, 223]; Philippe Sands and others (n 23) 187, 188.

law, the PCA used the term 'principle'[25] throughout the judgment. It set forth that emerging principles within environmental law, regardless of their current legal status, often incorporate concepts of prevention (of harm), sustainable development, and protection.[26] Furthermore, PCA set forth that environmental law does not stand as an alternative, and the duty to prevent environmental harm has become "a principle of general international law".[27] Nevertheless, as this distinction is an ongoing debate,[28] it is essential to clarify that this thesis does not delve into the broader implications of what the principle means within public international law and how preferring the term "principle" would shape the normative status of the precautionary principle.

However, it is noteworthy that the ECtHR, in *Tătar v. Romania*, has referred to the precautionary principle as a 'principle', emphasising its role in the adoption of effective and proportionate measures aimed at preventing the risk of serious and irreversible damage to the environment in the absence of scientific or technical certainty.[29] Therefore, as this thesis aims to explore the potential reconciliation or integration of the precautionary principle within ECHR, I find it more coherent to proceed based on the convergence points already recognised by the Court. This approach aligns with the overarching goal of the thesis, which seeks to examine the compatibility and harmonisation of environmental imperatives with human rights considerations within the ECHR framework.

The interpretation of precaution within environmental law is subject to diverse perspectives and interpretations rather than being rigidly defined. Despite being incorporated or implied in numerous multilateral agreements, declarations, or sources of international law over three decades,[30] there is still no consensus on what this principle means.[31] This chapter, therefore, endeavours to elucidate the multifaceted nature of precaution as a principle of environmental law and trace its evolution and development. Subsequently, the chapter delves into the selected elements of the precautionary principle,

[25] *Iron Rhine Arbitration (Belgium/ Netherlands)* (n 24) para 223.
[26] ibid 58.
[27] ibid 59.
[28] See; Nicolas de Sadeleer (n 21) 136, 449–485; Donald K. Anton and Dinah L. Shelton (n 22) 81–85; Daniel Bodansky, 'Prologue to a Theory of Non-Treaty Norms' in Mahnoush H. Arsanjani and others (eds), *Looking to the Future: Essays on International Law in Honor of W. Michael Reisman* (Martinus Nijhoff Publishers 2011) 128,129.
[29] *Tătar v. Roumanie* [2009] ECtHR 67021/01 [109]; As *Tătar v. Roumanie* is available only in French, the translation was based on the following article; Yann Kerbrat and Sandrine Maljean-Dubois, 'The Role of International Law in the Promotion of the Precautionary Principle' [2019] HAL Sciences Humaines et Sociales 275, 279.
[30] Philippe Sands and others (n 23) 217,218; See also; Arie Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (Daniel Bodansky and David Freestone eds, Kluwer Law International 2002) 63; Daniel Bodansky, 'Deconstructing the Precautionary Principle', *Bringing New Law to Ocean Waters*, vol 47 (2004) 381.
[31] Per Sandin, 'Dimensions of the Precautionary Principle' (1999) 5 Human and Ecological Risk Assessment: An International Journal 889, 890.

including notions of risk, harm, and scientific certainty. This segmentation[32] is guided by keywords drawn from international environmental materials such as the Rio Declaration,[33] United Nations Framework Convention on Climate Change ("UNFCCC"),[34] Paris Agreement,[35] etc., to provide a basis for a coherent comparison with human rights norms within the purview of the ECHR.

## 2.1 Evolution and Development

International environmental law has evolved across gradual phases, starting from mirroring advancements in scientific knowledge during the industrialisation process. This was followed by the adoption of emerging technologies and awareness shifts in political spheres due to limitations on the exploitation of natural resources towards the transformations in the international legal framework.[36] In general terms, this evolution occurred from remedying actual damage (principle of no harm), towards preventing identified hazards (principle of prevention), which developed into the incorporation of the rationale of acting at an early stage in response to threats of environmental harm, including in situations of scientific uncertainty (principle of precaution).[37] Supporting this argument, Brunneé explains that as environmental issues became more urgent and the need for proactive approaches became clearer, this preventive aspect gained prominence within the environmental context. Moreover, early cases such as the *Trail Smelter* case[38] demonstrate that the 'no harm' rule implicitly included a duty to proactively prevent harm from occurring.[39] Therefore, the principle of precaution in international environmental law represents a gradual shift in focus rather than a separate rule from the 'no harm' or prevention principle.

Emerging in the late 1960s from the Swedish Environment Protection Act, the concept of precaution was introduced as a means to reverse the burden of proof. This implied that the mere risk of environmental harm sufficed to take protective measures or even ban the activity in question.[40] It was developed

[32] Although the selected elements are not chosen the same, I was inspired by Sandin's research concerning the segmentation. See; ibid 890, 891.
[33] 'Rio Declaration on Environment and Development, A/CONF.151/26 (Vol. I)'.
[34] United Nations, 'United Nations Framework Convention on Climate Change, A/AC.237/18' (1992).
[35] United Nations, 'Paris Agreement', (2015) U.N. Doc. FCCC/CP/2015/L.9/Rev/1, doesn't explicitly refer to the precautionary principle. Nevertheless, it contains corresponding key elements such as 'scientific knowledge', 'risk' or 'early warning' are of guidance.
[36] Philippe Sands and others (n 23) 22–49.
[37] Sumudu A. Atapatu, *Emerging Principles of International Environmental Law* (Transnational Publishers 2006) 203, 204; Aline L. Jaeckel (n 16) 29.
[38] *Trail Smelter Arbitration (United States/ Canada)* (Arbitrational Tribunal).
[39] Jutta Brunnée, 'Harm Prevention' in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law* (2nd edn, Oxford University Press 2021) 272; Alexander Proelß, *Internationales Umweltrecht* (Alexander Proelß ed, 2nd edn, De Gruyter 2022) 108.
[40] Ulrich Beyerlin and Thilo Marauhn, *International Environmental Law* (Hart Publishing 2011) 47.

as a principle within German law as the '*Vorsorgeprinzip*'[41] followed by several European states recognising it as a core principle of environmental law.[42] This domestic norm emergence was continued by the Vienna Ozone Convention[43] and the accompanying Montreal Protocol[44] and a regional conference regarding the protection of the North Sea,[45] through which the precautionary principle entered the international domain. The principle gained further legitimacy by linking it to the right to health and development, as standard approaches to risk management proved to be insufficient.[46] Correlatively, the precautionary principle gained widespread recognition in international legal circles during the 1990s,[47] especially within the UN Conference on Environment and Development in 1992, namely the Rio Declaration. The International Law Commission ("ILC") reaffirmed the precautionary principle as "*a very general rule of conduct of prudence*" through which states ought to continually reassess their preventive obligations in order to remain abreast with advancements in scientific knowledge.[48] Thus, agreeing with Bodansky, it is safe to state that the precautionary principle became one of the most prominent concepts of international environmental law considering its action-oriented potential.[49] Nevertheless, international courts and tribunals have not explicitly interpreted the components and requirements of the precautionary principle in the context of climate change yet.

However, disputes related to environmental protection, practices of international courts and tribunals, as well as the states appearing before them, offer guidance that helps illuminate the meaning and implications of the precautionary principle. For instance, although the International Court of Justice ("ICJ") refrained from explicitly endorsing the precautionary principle, Judge Weeramantry's and Judge Palmer's dissenting opinions in

[41] The principle was grounded on the health and well-being of humankind and sustainability of the ecosystem. 'Fortschreibung des Umweltprogramms der Bundesregierung (Report of the German Federal Government's Environmental Program)' (Deutscher Bundestag 1976) Umweltbericht '76 Drs. 7/5684 8; Didier Bourguignon, 'Das Vorsorgeprinzip, Begriffsbestimmungen, Anwendungsbereiche und Steuerung' [2016] European Parliament 5, 6.
[42] Ulrich Beyerlin and Thilo Marauhn (n 40) 48.
[43] 'The Vienna Convention for the Protection of the Ozone Layer' (1985) pt Preamble.
[44] 'Protocol on Substances That Deplete the Ozone Layer', *Montreal Protocol* (1987).
[45] ' Ministerial Declaration Calling for Reduction of Pollution' (1987) para XVI.
[46] 'Fortschreibung des Umweltprogramms der Bundesregierung (Report of the German Federal Government's Environmental Program)' (n 41) 8; Nicolas de Sadeleer (n 21) 137; Philippe Sands and others (n 23) 218.
[47] Arie Trouwborst, *Evolution and Status of the Precautionary Princinple in International Law* (n 30) 16–33; Nicolas de Sadeleer (n 21) 138; 'Bergen Ministerial Declaration on Sustainable Development in the Economic Commission for Europe (ECE) Region, para 7; United Nations Environment Programme (UNEP) Governing Council Decision 15/ 27 (1989) on the Precautionary Approach to Marine Pollution; 1990 Bangkok Declaration on Environmentally Sound and Sustainable Development in Asia and the Pacific.'
[48] International Law Commission, 'Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with Commentaries' (2001) 163.
[49] Daniel Bodansky (n 30) 381.

the *Nuclear Tests* case underscored its growing recognition as an essential tool in navigating evidentiary challenges posed by environmental harm.[50] Similarly, in the *Gabčíkovo-Nagymaros Project* case, while the ICJ didn't directly address the principle, it indirectly tackled uncertainties over future harm, shedding light on its application in treaty obligations.[51] In the *Pulp Mills* case of 2010, ICJ acknowledged the importance of a 'precautionary approach' in interpreting the Uruguay River Statute. It rejected the notion that the 'precautionary approach' operates as a reversal of the burden of proof.[52] Although this indicates the recognition of the principle, it is rather in a constrained manner.[53]

The International Tribunal for the Law of the Sea ("ITLOS") has taken a more liberal stance in interpreting the precautionary principle compared to the ICJ. In the *Southern Bluefin Tuna* cases, ITLOS acknowledged scientific uncertainty regarding conservation measures and urged parties to act with prudence and caution to prevent harm to the tuna stock, reflecting a precautionary approach despite not explicitly mentioning the principle in its order.[54]

In its *Advisory Opinion on Responsibilities and Obligations in the Area*, ITLOS Seabed Disputes Chamber emphasised that states are obligated to apply a precautionary approach in their activities. Although the Chamber did not definitively rule on the international legal status of precaution, it noted that the principle is directly relevant to the responsibility to 'ensure' as written within the United Nations Convention on the Law of the Sea. However, it clarified that the term 'ensure' does not imply a guarantee of a specific outcome but "to adopt "laws and regulations" and to take administrative measures".[55] Instead, it set forth that it may be characterised as an obligation of conduct rather than an obligation of result and as an obligation of "due diligence" within the framework of international law terminology.[56] It set forth that the incorporation of the precautionary approach into numerous

[50] *Dissenting Opinions by Judge Weeramantry and Judge ad hoc Sir Geoffrey Palmer, Request for an Examination of the Situation in Accordance with Paragraph 63 of the Courts Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case* (International Court of Justice) 342, 412.
[51] *Case concerning the Gabčíkovo-Nagymaros Project (Hungary/ Slovakia)* (International Court of Justice) [53–56, 140].
[52] *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (International Court of Justice) [164].
[53] Lavanya Rajamani and Jacqueline Peel (n 23) 314–316.
[54] *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures* (International Tribunal for the Law of the Sea) [77, 79, 80]; Jacqueline Peel (n 18) 314–316.
[55] *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)* (International Tribunal for the Law of the Sea) [119].
[56] ibid 110, 120, 124–125.

international treaties reflected Principle 15 of the Rio Declaration and suggested a trend towards its recognition as customary international law.[57]

Precaution has also been addressed in human rights courts and commissions. In an advisory opinion, the Inter-American Court of Human Rights underscored precautionary principle avails itself as a due diligence obligation in determining state compliance with obligations under the American Convention on Human Rights as it is deemed to be related to the rights to life and personal integrity, even in the absence of scientific certainty.[58] Similarly, in *Tătar v. Romania*, ECtHR recognised the importance of the precautionary principle in support of its finding of a violation of Article 8 of the ECHR.[59] In *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*,[60] the Court implicitly referred to the principle by referencing to UNFCCC Article 3 (3).

The precautionary principle can be found in various cases, over sixty multilateral treaties[61] and soft or hard law instruments.[62] Yet, there is no consistency in its formulation and no conclusive understanding of how the principle should be interpreted or what standards it brings. There are many critiques concerning the ambiguity of the principle and the core meaning of it.[63] These can be generally summed up under the following grounds: There is no precise statement of the desired environmental goal or the agreed-upon conditions that trigger the application of the principle. Additionally, the jurisdictional scope, the measures that must be taken, and the specification of activities requiring the principle to be applied are not clearly defined.[64] Understanding the demand for clarity, I disagree with these expectations due to two main reasons. First, as this is a principle, it is not a hard rule by its nature nor descriptive, but it lays down a common guideline/ understanding, such as principles of good faith or no harm, etc. Secondly, attempting to establish 'agreed-upon' conditions would contradict the very essence of the principle that seeks to mitigate risk against or cover 'uncertainty'. In other words, I think that this ambiguity serves not only to broaden the interpretation

[57] ibid 135.
[58] *The Environment and Human Rights (State Obligations in Relation to the Environment in the Context of the Protection and Guarantee of the Rights to Life and to Personal Integrity – Interpretation and Scope of Articles 4(1) and 5(1) of the American Convention on Human Rights)* [2017] Inter-American Court of Human Rights OC-23/17 [175–180] (In Spanish, translated via DeepL).
[59] *Tătar v. Roumanie* (n 29) para 109.
[60] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 420.
[61] Arie Trouwborst, 'Prevention, Precaution, Logic and Law - The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions', (2009) 2 Erasmus Law Review 105, 185; Ulrich Beyerlin and Thilo Marauhn (n 40) 49,50.
[62] Nicolas de Sadeleer (n 21) 138.
[63] See; Cass R. Sustein, 'Beyond the Precautionary Principle' (2003) 151 University of Pennsylvania Law Review 1003; Daniel Bodansky (n 30) 381,382; H. Orri Stefansson, 'On the Limits of the Precautionary Principle' 39 Society for Risk Analysis 1204–1206.
[64] Lauren Hartzell-Nichols (n 14) 24, 25.

of the principle's purpose to encompass the widest possible[65] environmental protection but also to be evolutive. Hence, in my opinion, such an interpretation of the precautionary principle is in accordance with the *in dubio pro natura* principle,[66] and the dynamism of the living instrument doctrine, which consequently reduces the risk of it becoming outdated.

## 2.2 Key Elements of the Precautionary Principle

Despite the various formulations, the precautionary principle as outlined in the Rio Declaration is acknowledged repeatedly, either explicitly or implicitly,[67] such as the 2012 UN Conference on Sustainable Development (Rio+20) and the subsequent adoption of the 2030 Agenda for Sustainable Development. [68] In other words, while there is not a universally agreed-upon formulation of the precautionary principle, Principle 15 of the Rio Declaration has been widely acknowledged despite its non-binding nature. Hence Principle 15 of the Rio Declaration will be used as a basis to select key elements while examining the elements of the precautionary principle within this subchapter.[69]

Given the lack of a unanimous definition of the precautionary principle, the key elements associated with the principle are also subject to interpretation. Therefore, within this subchapter, I will deconstruct Principle 15 to analyse the underlying concepts or elements of the precautionary principle, although the principle is referred to in various sources of domestic and international law.

Principle 15 stipulates the following: (i) states shall widely employ a precautionary approach according to their capabilities; (ii) scientific uncertainty cannot justify postponing cost-effective measures, i.e. state inaction/ omission; (iii) in case of threats of serious or irreversible damage. Drawing from this wording, Trouwborst and other authors who take a similar approach have outlined the following elements of the principle: (i) A threat of harm, (ii) uncertainty, (iii) action/ legal consequence.[70] While I concur with the initial two elements, I dissent from the inclusion of "action/ legal consequence" as an element of the principle. Yet, I relate to their perspective

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[65] "*(...) the precautionary approach shall be widely applied by States (...)*" 'Rio Declaration on Environment and Development, (n 33) Principle 15.

[66] Arie Trouwborst, 'Prevention, Precaution, Logic and Law - The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions', (n 61) 108.

[67] For a list of formulations of the precautionary principle in international environmental treaties, see Jacqueline Peel (n 18) 308, 309.

[68] Paris Agreement, pt Preamble stipulates that parties are guided by the UNFCCC's principles. United Nations, General Assembly, 'The Future We Want, A/RES/66/288' (2012) paras 14, 15; United Nations, General Assembly, 'Transforming Our World: The 2030 Agenda for Sustainable Development, A/RES/70/1' (2015) para 12.

[69] For further definitions of the principle, see; Arie Trouwborst, *Precautionary Rights and Duties of States* (Martinus Nijhoff Publishers 2006) 31.

[70] ibid 30.

on establishing a correlation between positive obligations and the precautionary principle. Nevertheless, I think that 'action or legal consequence' addresses what legal function the precautionary principle serves rather than answering the question of "when" or under which circumstances the principle is invoked.[71] Subsequently, I believe that the precautionary principle can serve as a trigger for (positive) obligations, which encompass the concept of 'action' within their classification. In other words, the precautionary principle can be a trigger or justification for 'action' or legal consequence that is the (positive) obligation.[72] Thus, I distinguish the precautionary principle as a trigger from the precautionary measure, which is the content or the scope of the obligation.[73]

Indeed, this line of argumentation also addresses the criticism of the principle's ambiguity, which arises from its lack of specificity regarding the measures to be taken or the activities that require its application. Rather than viewing (positive) obligations as an element of the precautionary principle, I believe it is more accurate to consider these two concepts as mutually reinforcing, facilitating the interpretation of the content and scope of both the principle and the (positive) obligation. My argument is supported by Stoyanova, who examines positive obligations by distinguishing the trigger, content and scope of the obligation which will be elaborated within the third chapter while examining the principle within the ECHR.[74]

Furthermore, I think that the precautionary principle can trigger a negative obligation instead of merely being a due diligence or positive obligation. For instance, if a chosen forestation method or species selection might affect the dynamics of the ecosystem, causing a possible unwanted climate change in an area, refraining from the forestation could be deemed as a negative obligation as it occurs as non-interference. Nevertheless, throughout the thesis, the focus will remain on positive obligations. In conclusion, the subsequent subsection will elucidate the concept of risk and the elements of the precautionary principle.

### 2.2.1 The Concept of Risk

Trouwborst states that risk sets a framework for understanding the principle but is not an element *per se* and adds that there is a substantial overlap between the structure of the risk concept and the precautionary principle.[75] Bodansky offers a different perspective concerning risk by suggesting that the application of the precautionary principle is warranted only when a certain

[71] Bodansky deconstructs the precautionary principle by discussing the questions of 'when' and 'what function'. See; Daniel Bodansky (n 30) 383–389.
[72] See; Vladislava Stoyanova, *Positive Obligations under the European Convention on Human Rights: Within and beyond Boundaries* (1st edn, Oxford University Press 2023) 18-20.
[73] ibid.
[74] ibid.
[75] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 29.

threshold of risk is surpassed.[76] However, the wording of the principle (in the Rio Declaration) stipulates for the principle to be "widely applied".[77] As the wording indicates a broad approach, its application could be deemed as a general rule rather than an exception where it is only sought in case of reaching a certain threshold of risk, especially in case of protective measures.[78] Illustratively, the application of the principle could manifest as a general legal norm, such as the no harm principle, without necessitating the cultivation of a certain threshold of risk or a sense of imminent harm. However, this proposition represents my perspective of *de lege ferenda*.

Furthermore, I argue that the aim of the first sentence of Principle 15 is the implication for a general duty or obligation, whereas the second sentence suggests a heightened level of protection in case of threats of serious or irreversible damage. In a similar vein, this can be seen in Article 3 of the UNFCCC, where the first sentence indicates a general duty of care, whereas the following sentence stipulates a heightened level of protection in case of threats of serious and irreversible damage. I therefore agree with Trouwborst's interpretation as precaution itself is a means of risk management to prevent environmental degradation and to mitigate or adapt to climate change.[79]

Furthermore, by introducing risk as a dynamic of probability and gravity, Trouwborst states that risk can be used interchangeably with "threat".[80] I find this interesting as the author also implies that risk is not an element of the principle but rather a notional (abstract) framework, whereas threat of harm is.[81] This seems to suggest a gradation between the two concepts of risk and threat of harm where harm is on the more tangible side of the spectrum which doesn't seem quite different than Bodansky's view after all.

By merging both views of Bodansky and Trouwborst, my interpretation is that the gravity or threshold of risk serves as a guide for determining the content and scope of the "required" response of the state, i.e. the (positive) obligation rather than a narrowing determinant of when to apply the principle. In support of my argument, the International Law Commission stipulates that

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[76] Daniel Bodansky (n 30) 386–387.
[77] For a comparison of the wording of the precautionary principle that does not stipulate a risk threshold, see the first sentence of UNFCC; United Nations (n 34) art 3.3 "The Parties should take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects."
[78] In such case, the balancing factors shall not be forgotten; Principle 15 lays emphasis on cost-effective measures according to the capabilities of each State. Furthermore, this view is criticised by various authors that the adaptation of the precautionary principle as a general norm might cause a retarding effect on development. See; Marko Anteensuu, 'Defending the Precautionary Principle against Three Criticisms' (2007) 11 Trames Journal of the Humanities and Social Sciences 366.
[79] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 46, 47.
[80] ibid 29.
[81] ibid 26–29.

in each case, the primary obligation will determine what is "required".[82] Accordingly, the International Law Commission states that the conduct proscribed by an international obligation may involve an act or omission or a combination of both, including taking precautions.[83] In this vein, the primary obligation is clear as it is stated within the first sentence of Principle 15; "protect the environment" and requires taking precautions where risk is a determinant factor content and scope of the "required" response.

Moreover, such an approach to the gravity or threshold of risk would also avoid the formation of a hierarchical risk threshold between the principles of no harm, prevention, and the precautionary principle, demonstrating that they are not competing principles but rather complementary and overlapping ones.[84] This would also be consistent with the purpose of environmental law and the primary obligation as it broadens the umbrella of protection.

Requiring a state to do everything it reasonably can, i.e. according to its capabilities, in advance to avoid imminent environmental damage is structurally different from the requirement not to lose sight of the obligation of environmental protection in the event of scientific uncertainty about the occurrence of environmental harm.[85] Thus, risk as a framework of precautionary principle induces a continuing operation and effect. The International Law Commission explains that unless specified otherwise, it applies to activities as they are conducted over time.[86] Consequently, an activity that initially appears to carry no risk may later develop risk due to unforeseen events or developments. For instance, a coastal development project may seem to pose minimal risk of environmental harm, with assessments indicating no immediate threat to local ecosystems. However, as sea levels rise due to climate change, the same development may become increasingly vulnerable to coastal erosion and storm surges, leading to significant environmental degradation. A reservoir deemed perfectly safe at its inception could become hazardous following an earthquake, thereby making its continued operation a risky activity. Similarly, advancements in scientific knowledge might unveil inherent weaknesses in a structure or its materials, introducing a risk of failure or collapse.[87]

[82] International Law Commission, 'Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries' (United Nations 2001) 92.
[83] ibid 55.
[84] Aline L. Jaeckel (n 16) 36; Jonathan B. Wiener, 'Precautionary Principle' in Ludwig Krämer and Emanuela Orlando (eds), *Principles of Environmental Law* (6th edn, Edward Elgar Publishing 2018) 178 Wiener states that "prevention" is embedded into the definition of precautionary principle.
[85] Alexander Proelß (n 39) 125.
[86] International Law Commission (n 48) 151.
[87] ibid.

### 2.2.2 Threat of Environmental Harm[88]

"*In some cases what matters is the failure to take necessary precautions to prevent harm even if in the event no harm occurs.*"[89]

The existence of a threat of environmental harm is one of the fundamental driving forces behind the development of the precautionary principle. In my opinion, whether or how "threat" is distinguished from the concept of risk is not clear, as the threat of harm is intertwined with the concept of risk. Trouwborst elaborates on the relation between the two concepts via an equation: "risk = gravity x 'probability' of harm".[90] Via this equation, risk is defined through the gravity and probability of the threat of environmental harm (likelihood of the prediction, i.e. level of scientific (un)certainty).

Trouwborst categorises types and levels of environmental harm. Subsequently he points out that although environmental harm can indeed be irreversible in many cases, there is a 'risk worth taking' as scientists and policymakers differentiate between various types and degrees of harm. Furthermore, certain risks to environmental quality are seen as intolerable, which is mirrored in the precautionary principle as the 'threat of serious or irreversible damage'.[91] This premise divides the doctrine into two.

The first view stipulates that the severity of harm is a condition for the application of the precautionary principle. This reasoning is mainly based on society's impact on the environment and that it will never be possible to prevent all levels of anthropogenic harm. So, the scope of the precautionary principle does not encompass all degrees of environmental harm as such an approach would attach a utopian element to the principle, which cannot be sustained. Thus, such thresholds seem to have been introduced to exclude from the ambit of the principle those levels of harm that do not meet the requisite standards of 'serious' or 'irreversible'.[92] The first view conditions and limits the scope of application to a higher degree of threat of harm, i.e., serious or irreversible damage, by stating that the broad interpretation is not sustainable.

In my opinion, the first view seems to interpret the precautionary principle as an obligation of result, suggesting that extending its scope would mean aiming to 'prevent all levels of anthropogenic harm'. It opposes expanding

[88] Damage and harm will be used interchangeably.
[89] International Law Commission (n 82) 92.
[90] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 27, 29.
[91] Kevin R. Gray, 'International Enviromnental Impact Assessment - Potential for a Multilateral Environmental Agreement' (2000) 11 Colorado Journal of International Environmental Law and Policy, 98; For various sources of international law referencing to 'serious or irreversible damage' standard, see; Arie Trouwborst, *Precautionary Rights and Duties of States* (n 67) 39, 53.
[92] Daniel Bodansky (n 30) 387; Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 43.

the principle's scope on the grounds that doing so would entail striving for the result of 'prevention' of all levels of anthropogenic harm from occurring, which is an unattainable objective. Extending the principle in this manner is cautioned against, as it could lead to excessive intervention and prohibitive constraints on development and daily routine activities without achieving the desired (utopian) benefits. Wiener expresses that everything possesses risk, and engaging with the principle so that no harm will result would amount to 'prohibition'.[93]

However, I think engaging with the precautionary principle does not necessarily have to mean that it automatically restricts or withholds from a certain action or development. Accordingly, engaging with the principle does not automatically call forth precautionary measures. So, applying the principle and the precautionary measures could also be interpreted as a transition to more climate-resilient practices or even the mere consideration of the environment, e.g. doing a risk assessment, could also be an occurrence of the principle. Furthermore, Trouwborst explains that the aim of the precautionary principle is not to guarantee mere change from happening within the environment.[94] In other words, it does not envisage an excessive or prohibitive intervention. If the anticipated impact is not adverse, then the anticipated impact constitutes mere change and not harm,[95], which might not necessitate (prohibitive) precautionary measures.

The second view argues that the precautionary principle extends to all levels of environmental harm. However, the threat of serious or irreversible damage necessitates a heightened level of protection.[96] The second view indicates that the precautionary principle – as a trigger to further (positive) obligations, i.e. cost-effective (precautionary) 'measures' – can be categorised as an obligation of conduct. Distinguishing precautionary principle from precautionary measures, I think that merely the act of assessing whether there are reasonable grounds for a threat of environmental harm to occur, could be deemed as an implementation of the precautionary principle. Hence, incorporating the precautionary principle does not necessarily entail opposing or impeding every single action or omission but rather integrating the cautious approach into the decision process as one of the parameters, such as risk assessment. However, expressing such a viewpoint may dilute the impact of the precautionary principle by potentially watering down its effectiveness. Careful consideration is necessary to ensure that the implementation of the principle strikes a balance between proactive risk management and practical feasibility, thereby maximising its effectiveness.

[93] Jonathan B. Wiener (n 84) 175.
[94] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 66.
[95] ibid 292.
[96] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 43.

Lastly, I think one important question to ask is whether the phenomenon of climate change is defined as a serious or irreversible threat of harm. The answer to that question is implied in *Neubauer et al. v. Germany*. The Federal Constitutional Court of Germany elaborated that in the case of climate change, once a course of events is set in motion, it would become impossible to reverse.[97] Subsequently, it set forth that responsibility cannot be dismissed by claiming that a risk of future harm does not constitute present harm. Additionally, in the Paris Agreement[98] and the recent UNFCCC Conference of the Parties (COP 28), climate change was defined as an 'urgent' threat. However, urgency does relate to the question of 'when' rather than the degree of the threat of harm.

### 2.2.3 The Role of Scientific (Un)Certainty for the Standard of Causation and Burden of Proof

While defining the precautionary principle, scientific (un)certainty is frequently used.[99] Besides its meaning, it is also debated whether the application of the principle requires a minimum or maximum level of scientific uncertainty. A useful approach could be to first address the element of scientific uncertainty by clarifying what it does not mean. The scientific uncertainty element does not mean that protective measures triggered by the principle, shall be based on a purely hypothetical approach to risk, founded on mere conjecture.[100] This view addresses the question of whether there is a maximum level of uncertainty for the precautionary principle to be applied.

However scientific uncertainty is almost inevitable due to i.a. epistemological, ontological and anthropogenic reasons.[101] For instance, despite the accumulation of information and enhancement in analytical methodologies, we lack certain knowledge of what exactly is deemed 'normal' for a climate. As a result, certain risks or threats within climate change, as a variable, cannot be predicted unerringly.[102] Explaining the ontological reason behind the scientific uncertainty, Trouwborst illustrates it as the impracticality of attempting to count every grain of sand in the world.[103] Considering that incomplete scientific knowledge pertains to the understanding of the structure, functioning, and components of the everchanging ecosystems, as well as the cognitive deficits in human knowledge, there is a systemic indeterminacy.[104] In other words, while legal rationale tends to provide foreseeability, uncertainty is inherent to ecological

[97] *Neubauer, et al. v. Germany* (Bundesverfassungsgericht) [108].
[98] Paris Agreement (n 35) pt Preamble; 'Technical Dialogue of the First Global Stocktake, FCCC/SB/2023/9' (UNFCCC 2023) 4.
[99] I.a. UNFCCC (n 34) art 3.3; 'Rio Declaration on Environment and Development' (n 33) Principle 15.
[100] Joanne Scott, 'Legal Aspects of the Precautionary Principle' (British Academy 2018) 4.
[101] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 71–86.
[102] ibid 72–74.
[103] ibid 74.
[104] ibid 76.

risks. Uncertainty may be regarding insufficiency or imprecision if the scientific discipline is not yet developed or precise to explain the 'cause-effect' relationship. It may be due to inconclusiveness as regardless of the quality of the investigation or research science may fall short in answering or eliminating each uncertainty.[105]

There are discussions about whether the principle stipulates that precautionary measures should be taken because of uncertainty or despite the uncertainty.[106] By routing for the latter, Wiener states that the scientific uncertainty element asserts a stance on "knowledge" that does not qualify as a risk precluding measures to be taken.[107] Sadeleer states that the precautionary principle established a new dynamic between science and law, where science is consulted less for the knowledge but for the doubts and risks, it is in a position to raise.[108] Accordingly, some authors state that the "absence of evidence" shall not be understood as "evidence of absence" of environmental risk[109] which also sheds light on the reversed burden of proof argumentation.

Taking precautionary measures because of uncertainty might constitute a *conditio sine qua non*, by implying if there is no uncertainty, no precautionary measure is required.[110] Such a reading of the uncertainty criterion narrows the scope of the precautionary principle. An example of this approach is provided by Proelß. He argues that the International Law Commission, in its Draft Article 2,[111] implies that risks within the meaning of the prevention principle are characterised by the fact that the cause-effect relation is essentially known, whereas within the precautionary principle, the probability of the risk and the circumstances of causation are deemed to be uncertain.[112]

Trouwborst presents a third option by stating that uncertainty is not the direct motive for applying precautionary measures and adds that, as per the precautionary principle, environmental harm should be prevented and mitigated regardless of the presence of uncertainty.[113] This also hints that there is no minimum level of uncertainty that triggers the application of

[105] Nicolas de Sadeleer, 'The Principles of Prevention and Precaution in International Law: Two Heads of the Same Coin?' in Malgosia Fitzmaurice, David M Ong and Panos Merkouris (eds), *Research Handbook on International Environmental Law* (Edward Elgar 2010) 185, 186.
[106] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 82–96.
[107] Jonathan B. Wiener (n 84) 179.
[108] Nicolas de Sadeleer (n 105) 186.
[109] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki, 'The Precautionary Principle' in Malgosia Fitzmaurice, David M Ong and Panos Merkouris (eds), *Research handbook on international environmental law* (Edward Elgar 2010) 212; David E. Ervin and others, 'Transgenic Crops and the Environment: The Economics of Precaution' [2001] Western Journal of Agricultural Economics 5.
[110] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 92.
[111] International Law Commission (n 48) art 2.
[112] Alexander Proelß (n 39) 110.
[113] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 118.

precautionary measures. I agree with him because the precautionary principle is aimed to be widely applied, and the uncertainty criterion applies in case of a threat of serious or irreversible damage as a heightened level of protection, meaning that scientific uncertainty cannot be an excuse or reason to postpone cost-effective measures. Bodansky has an interesting approach towards the scientific uncertainty element, where he comments that this wording implies that precautionary measures can be avoided by presenting reasonings other than scientific uncertainty.[114] Bodansky's argument can also be traced in the argumentation of the Swiss Government in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland.* The Swiss Government argued they never relied on the reasoning of scientific uncertainty while refraining from applying precautionary measures.[115] I disagree with this argumentation, as scientific uncertainty is not the sole foundation or a precondition for the application of the principle. In short, I think that uncertainty by itself is not a *conditio sine qua non*, as explained above. Understanding that the decision to take precautionary measures would vary according to the capacity of a state, its cost-effectiveness, and also political and psychological reasons, the core value of protecting the environment shall not be forgotten. By being a principle of law, the precautionary principle contains a dimension of moral weight,[116] that aligns with i.a. *in dubio pro natura*, no harm, good faith, etc. Furthermore, the precautionary principle is not to be interpreted in a solitary manner, as it does not exist in a vacuum. I therefore think while interpreting the principle, it is important not to deliberately forsake the unitary and coherent nature of law in a manner that decreases the level of protection.[117]

Scientific uncertainty element is interlinked with i.a. causation and burden of proof. The correlation between the cause of the risk and the possible effect of the threat of harm does not need to be conclusively established or proven. However, there is a reasonableness standard that entails scientific reasoning rather than mere hypothetical conjecture.[118] This dynamic is reflected in the *Malaysia v. Singapore* case, where ITLOS upheld the precautionary principle to be applied implicitly, in which Singapore contested that there was 'no evidence' of serious or irreversible damage, through which it raised questions concerning the burden of proof. Despite scientific uncertainty regarding the possible serious impact,[119] the Tribunal set forth that 'prudence and caution' are required for taking precautionary measures that include assessing the risks

[114] Daniel Bodansky (n 30) 384.
[115] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 364.
[116] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 213.
[117] United Nations Environment Programme, 'Principles and Concepts of International Environmental Law (Part 2)' (United Nations) <https://globalpact.informea.org/sites/default/files/documents/Book%20–%20Principles%20and%20concepts%20of%20international%20environmental%20law%20%28Part%202%29.pdf> accessed 27 April 2023.
[118] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 109, 110, 227.
[119] *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), Provisional Measures* (International Tribunal for the Law of the Sea) [72, 95].

or effects as well as devising ways to deal with these risks.[120] Furthermore, it stipulated that the particular circumstances of the case cannot be excluded (*scientific uncertainty*) as the land reclamation works 'may' 'cause' possible implications (*risk*) which 'might' lead to adverse effects on the marine environment (*threat of harm*).[121]

Hence, reasonable grounds for concern regarding potential environmental harm are sought for the precautionary principle to be invoked.[122] While proof of the probability of harm is not necessary, there should be some form of scientific indication or warning suggesting that harm could result if precautionary measures are not implemented. Mere theoretical speculation about the possibility of harm occurring is deemed to be insufficient.[123] For instance, in the *Southern Bluefin Tuna* case, ITLOS decided to apply additional precautionary measures[124] despite scientific uncertainty regarding the efficiency or the outcome of the past conservation measures.[125] It was set forth that scientific evidence 'available' showed 'cause' for 'serious biological concern' that 'could' endanger the tuna stock.[126] Trouwborst explains that in principle, it is the responsibility of the state undertaking precautionary measures, or alternatively, the state contesting the absence of such measures by another state, to establish the existence of 'reasonable grounds' for concern regarding the potential occurrence of significant, serious, and/ or irreversible harm. He states that the precautionary principle has reduced the threshold of evidence required or, in some cases, shifted the burden of proof; it has not automatically shifted the burden of proof entirely.[127] The "threshold of evidence" that Trouwborst refers to is also mentioned within various conventions where it is stated as a "*reason to assume (...) even when there is no conclusive evidence of a causal relationship between inputs, and their alleged effects*"[128] or "*scientific research has not fully 'proved' a causal link*".[129]

Concerning this threshold of evidence, I believe the dissenting opinion of Judge Weeramantry in the case of *Request for Examination* is of guidance. This opinion presented an alternative of either placing the burden of proof on New Zealand or France. In accordance with *actori incumbit probatio*, the first

[120] ibid 99, 106.2.
[121] ibid 96.
[122] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 109, 110.
[123] ibid 118.
[124] *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures* (n 54) 90.1 (e).
[125] ibid 79.
[126] ibid 71, 74, 77, 79, 80; See also; Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 112.
[127] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 109, 110, 227; *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (n 52) para 164.
[128] 'Convention on the Protection of the Marine Environment of the Baltic Sea Area' para 3(2).
[129] 'Convention on the Protection and Use of Transboundary Watercourses and International Lakes' art 5(a).

alternative suggested for the burden of proof to be placed on New Zealand by asking for "*prima facie case*" of the threat of harm. The second alternative recognised the dynamics environmental law introduces: in case of threat of harm, the burden of proof is placed on the party causing the threat. He further commented that the second approach is sufficiently well-established in international law for the ICJ to act upon it.[130] Although the dissenting opinion introduced the burden of proof approaches as alternatives, I wonder whether a combination of both would be possible, considering that international courts are rather hesitant to apply the reversed burden of proof. That is a gradual burden of proof where a *prima facie* reasonable ground for concern is sought.[131] This would also be in accordance with the interpretation that various scholars agree upon; a purely hypothetical approach to risk founded on mere conjecture is not acceptable.[132] So, the initial burden of proof would require *prima facie* reasonableness,[133] that entails scientific reasoning that surpasses a mere hypothetical conjecture without seeking proof of the probability of harm. Once the *prima facie* burden of proof is fulfilled, it would shift to the party causing the threat of harm.

Sadeleer asks, regarding the implementation of the scientific uncertainty element, whether there is a line between ignorance and uncertainty and to what extent a state is obliged to know. As an example to what extent a state is obliged to know, in *Malaysia v. Singapore*, although there was no scientific certainty regarding the threat of harm, ITLOS ordered precautionary measures to the parties, such as submitting a report and establishing a group of independent experts that focus on possible adverse impacts.[134] In a similar vein, in the *MOX Plant* case, ITLOS considered that prudence and caution necessitate cooperation in exchanging information concerning risks or effects of the operation.[135] Pyhälä et al. imply that the precautionary principle requires to be informed by science rather than the decision-makers waiting to be presented with scientific 'proof' of causal links between activities or omissions and harm before implementing precautionary measures.[136] Additionally, in accordance with my views within the previous paragraph, an answer to the extent of the knowledge standard can be found within Principle 15. The wording of Principle 15 acknowledges the different capacity levels, i.e. the scientific and economic resources, facilities, etc., which may vary for each state which hints to what extent a state is obliged to know. However, this

[130] *Dissenting Opinion, Request for an Examination of the Situation in Accordance with Paragraph 63 of the Courts Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case* (International Court of Justice) 348.
[131] Compare to; Donald K. Anton and Dinah L. Shelton (n 22) 117.
[132] Joanne Scott (n 100) 4.
[133] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 109, 110, 227.
[134] *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), Provisional Measures* (n 119) para 106.
[135] *The MOX Plant Case (Ireland v. United Kingdom), Provisional Measures* [2001] ITLOS Reports (International Tribunal for the Law of the Sea) [84].
[136] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 213.

shall not be interpreted in a way that causes precautionary measures to be neglected.

Lastly, in regard to knowledge, General Comment 25 notes that the precautionary principle requires states to refrain from interfering with the right to information and participation concerning scientific research and outcomes.[137] I think that this further indicates that the precautionary principle can, in fact, also trigger negative obligations.[138]

### 2.2.4 Cost-Effective Measures and Capability Standard within Environmental Decision-Making

As mentioned above, within this thesis, precautionary principle and measures are distinguished in a way that the precautionary principle can be a trigger for the application of the precautionary measures. In support of this argument, Zander proposes that the risk assessment phase ought to be separated from the risk management phase in order to decide upon the required response.[139] Thus, the understanding is that in case of a threat of serious or irreversible damage, states are expected to take 'cost-effective' (precautionary) measures.[140] However, it is not stipulated what entails a cost-effective measure. Therefore, there shall be several guidelines that enable assessing the necessary measures to be taken as per the specific circumstances of the case.

As it is evident within the name, effectiveness is a condition of the precautionary measure.[141] Trouwborst elaborates on the effectiveness of a measure by looking into whether the measure was taken in a timely manner and was tailored to the specific circumstances of the case.[142] Furthermore, the measure ought to be capable of achieving the desired level of environmental protection.[143] By these conditions of effectiveness, I wonder to what extent it is possible to assess whether a measure is capable of achieving the desired level of environmental protection, e.g. climate-change mitigation, especially because of the uncertainty of the cause-effect relation. Considering that various measures are taken simultaneously, their effect on environmental protection would be cumulative, although each measure is expected to be

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[137] 'General Comment No. 25 on Science and Economic, Social and Cultural Rights' (United Nations Economic and Social Council 2020) paras 56, 57. This further indicates that the precautionary principle can, in fact, also trigger negative obligations.
[138] See, 2.2.
[139] Joakim Zander, *Risk and Uncertainty: Basic Concepts and Tools for the Application of the Precautionary Principle'* (Cambridge University Press 2010) 32.
[140] For a comparison of formulation of the cost-effectiveness criterion in different sources of international law; see Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 272–274.
[141] *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures* (n 54) para 77.
[142] Arie Trouwborst, 'Prevention, Precaution, Logic and Law - The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions', (n 61) 110.
[143] Aline L. Jaeckel (n 16) 39.

taken under the specific circumstances of the incident. Thus, Jaeckel's formulation of effectiveness sheds light: She states that the objective is to establish measures that strike a balance between specificity for clarity and significance while also maintaining flexibility to accommodate adjustments in light of new information in the long or short term.[144]

Additionally, although the application of the principle shall be wide, each state is evaluated by their 'capabilities'. This roughly indicates two dimensions: Domestic and international. The international dimension of the notion of capability could be interpreted via the principle of common but differentiated responsibilities.[145] Thus, the (positive) obligation to take measures concerning global environmental challenges arising out of climate change should be proportionate to the developmental status of each state. This considers both the varying levels of contribution to these issues and the diverse capacities to address them. Furthermore, this raises questions concerning attribution, responsibility and capability, which are integral to the precautionary principle and not easily separable in this context.[146]

The cost-effectiveness criterion varies between the spectrum of acceptable levels of harm and the costs a state is willing to incur to mitigate or prevent such harm.[147] Aiming to strike a balance in risk management via the precautionary principle, among others, two methods stand out: Cost-benefit analysis and trade-off analysis.[148]

Cost-benefit analysis stipulates that risk management inherently involves a value judgment between environmental protection and socio-economic interests.[149] It is deemed to be incompatible with the precautionary principle by various scholars due to the following reasons:

(i) Economic accounting methods do not adequately address environmental justice arising out of climate change. Thus, accurately evaluating the economic impact of environmental decisions is complex.[150] (ii) Cost-benefit analysis is carried out with an emphasis on short-term analysis because the long-term losses (impacts) of environmental degradation are boiled down. Environmental processes often unfold over longer timeframes than market effects, making it difficult to predict and quantify their impacts. Uncertainty is a fundamental problem within the analysis.[151] (iii) Non-economic values

[144] ibid 40.
[145] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 280.
[146] ibid 271.
[147] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 215.
[148] ibid 215, 216.
[149] ibid 215; Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 249.
[150] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 215.
[151] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 67) 249-252; Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 105) 216; "*The environmental effects that lack markets are difficult to accurately value, and the costs may therefore be*

such as environmental protection and human lives are assigned a monetary value to enable their comparison with the costs associated with safeguarding them.[152] The non-linear responses of ecosystems further complicate economic assessments.[153]

Trouwborst explains the trade-off analysis as a method which refrains from assigning monetary values to non-monetary elements while balancing competing interests.[154] By endorsing the intrinsic value of the environment, climate or ecosystem, health, etc., the trade-off method challenges the material assumptions within the cost-effective analysis by considering both quantitative and qualitative factors.[155] As it refrains from assigning any quantifiable value to the environment, this approach is criticised due to favouring environmental protection in an unrealistic manner, to the extent of becoming cost-oblivious. In other words, the trade-off method raises concerns as it is prone to automatically weight environmental degradation as justifiable at any cost, regardless of the social and economic implications.[156] As the aim of this research is not to examine the economic decisions of states, such theories on risk analysis in economic decision-making processes will not be further elaborated upon. Concurring with Louka, it is evident that the implementation of cost-effective (precautionary) measures cannot be solely governed and regulated by legal frameworks.[157] This is because considerations such as the discretionary power of a state and the complexities of political and societal dynamics, which entail various trade-offs, play significant roles. Nevertheless, from a legal perspective these methods reveal that the implementation of the precautionary measures requires striking a balance between preventing environmental risks and the socio-economic implications of the activities that pose these risks.[158]

*Urgenda v. The Netherlands* precedent is of importance in shedding light on how to interpret striking such balance. The Supreme Court points out that the discretionary power of states to exercise climate policy is high. According to the Supreme Court, this discretionary power cannot be interpreted as unlimited, as the risk and severity of the consequences of climate change are of a life-threatening nature.[159] As a result, it stipulated that the state has a duty of care to take mitigation measures.[160] Furthermore, it concluded that

*incurred in large measure by future generations. These intergenerational effects are not part of benefit-cost efficiency analyses.*"

[152] Joakim Zander (n 139) 23.

[153] David E. Ervin and others (n 109) 3, 7.

[154] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 253.

[155] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 215; Joakim Zander (n 139) 22.

[156] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 273; Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 216.

[157] Elli Louka (n 15) 57.

[158] Minna Pyhälä, Anne Christine Brusendorff, and Hanna Paulomäki (n 109) 215.

[159] *Urgenda Foundation v. State of the Netherlands* [2019] Supreme Court of the Netherlands 19/00135 [4.74].

[160] ibid 4.83.

delaying mitigation efforts will substantially increase the costs. So, taking immediate action is more 'cost-effective'.[161]

Lastly, considering the integrative nature of law, i.a. the principles of proportionality, progressive realisation and non-regression are of guidance in assessing the cost-effectiveness.[162] For instance, the principle of proportionality infers that while precautionary measures should be efficient, they should not be more restrictive than necessary.[163] As the advantages of a precautionary measure are not solely limited to the protection of the environment, principles that arise out of human rights law, such as progressive realisation and non-regression, could also contribute to the interpretation.[164] For example, the need for continual improvement in environmental protection efforts, acknowledging that advancements may be gradual but should consistently move towards greater environmental viability that aligns with the framework of the precautionary principle. Accordingly, the non-regression principle underscores the importance of maintaining existing environmental standards and protections, preventing any backsliding in environmental progress achieved over time.

In conclusion, effective environmental decision-making requires balancing environmental protection with socio-economic considerations. While the precautionary principle emphasises the need for timely and effective measures to mitigate the risk, it also acknowledges the complexities of risk management in the face of uncertainty. Various methods, such as cost-benefit analysis and trade-off analysis, offer frameworks for decision-making. But they also present challenges in accurately evaluating the so-called value of environmental protection and human well-being. Ultimately, the integration of principles that originate from human rights can guide the assessment of cost-effectiveness and ensure that precautionary measures are both efficient and proportionate.

[161] ibid 4.71.
[162] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 148, 149; United Nations Environment Programme (n 117) 1–22.
[163] Aline L. Jaeckel (n 16) 41.
[164] United Nations Environment Programme (n 117).

# 3 Possible Integration and Reconciliation of the Precautionary Principle within the ECHR

This chapter examines whether the elements of the precautionary principle elaborated in the previous chapter have been integrated into the ECtHR's reasoning. The chapter does this by focusing on *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*. This allows us to understand the Court's approach to the dynamics of climate change.

Although the primary objectives of environmental law and human rights law differ, as well as their terminology, the reciprocal relationship between the two disciplines provides a common ground.[165] Relying solely on language or terminology for analysis may not be sufficient by itself. Yet, I believe it to be a good starting point to examine comparable contexts and concepts through varying terminology. Nonetheless, as Humphrey points out, the selection of language and disciplinary perspective inevitably influences the merits and application of certain concepts, in this case, the precautionary principle.[166]

It must be noted that regardless of the common ground of the two disciplines, the interpretation of the contexts of risk, threat of harm or cost-effective measures within the scope of the precautionary principle will differ. One reason for this discrepancy stems from the structural disparities between environmental law and human rights law. The latter is prone to rights-based reasoning, whereas the former is rather built on duty-based reasoning, considering that the environment is not a right-holder.[167] Therefore, while interpreting the precautionary principle through the lens of the ECHR, for instance, the mere threat of harm to the environment does not suffice, as the focus is on the victim and the threat of harm the individual(s) might experience.[168]

It is essential to mention that, although in a few instances, the Court has reiterated the importance of the precautionary principle and relied on precautionary reasoning in its case law.[169] However, in its recent decisions

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[165] For the relationship between environmental law and human rights law, see; Marie-Catherine Petersmann, *When Environmental Protection and Human Rights Collide: The Politics of Conflict Management by Regional Courts* (Cambridge University Press 2022) 17–113.

[166] Stephen Humphreys, *Human Rights and Climate Change* (Stephen Humphreys ed, 3rd edn, Cambridge University Press 2010) 3.

[167] See; Tiffany Challe, 'The Rights of Nature - Can an Ecosystem Bear Legal Rights?' <https://news.climate.columbia.edu/2021/04/22/rights-of-nature-lawsuits/> accessed 2 May 2024.

[168] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 17.

[169] *Tătar v. Roumanie* (n 29) paras 109-120 In para. 120; The Court recalls the importance of the precautionary principle (first enshrined in the Rio Declaration), which "*is intended to be applied with a view to ensuring a high level of protection of health, consumer safety and the*

concerning climate change, the Court had a reserved stance towards the precautionary principle, except for the implicit references to UNFCCC, Article 3. Nevertheless, the questions concerning the principle that were raised by the judges and the remarks of both the parties to the dispute are of guidance.

Due to the limited case law where the ECtHR engaged with the precautionary principle, the Court's interpretation of risk, threat of harm, causation and burden of proof is presented via a comparative methodology by reviewing its existing case law. Yet again, it is of vital importance to mention that the Court acknowledged that its existing case law cannot be applied to the context of climate change due to fundamental differences.[170] Accordingly, the Court set forth that it would be inadequate and inappropriate to directly apply existing environmental case law to the context of climate change.

The ECtHR deemed it necessary to adopt an approach that recognised and considered the unique aspects of climate change, tailored to address its specific characteristics.[171] Therefore, while drawing inspiration from the Court's existing case law, in a similar vein, this thesis aims to develop a more suitable and tailored approach to address the precautionary principle and its possible interpretation within the Convention. Although the ECtHR did not engage with the principle explicitly,[172] I believe the Court's interpretation of the elements of the precautionary principle can be found especially within the four gradual dimensions of causation it introduced.[173] In order to better understand the different dynamics, I use the structure ECtHR has adopted in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* as an entry point whilst presenting the corresponding concepts i.e. risk, threat of harm, scientific uncertainty, causation and burden of proof (and cost-effective measures).

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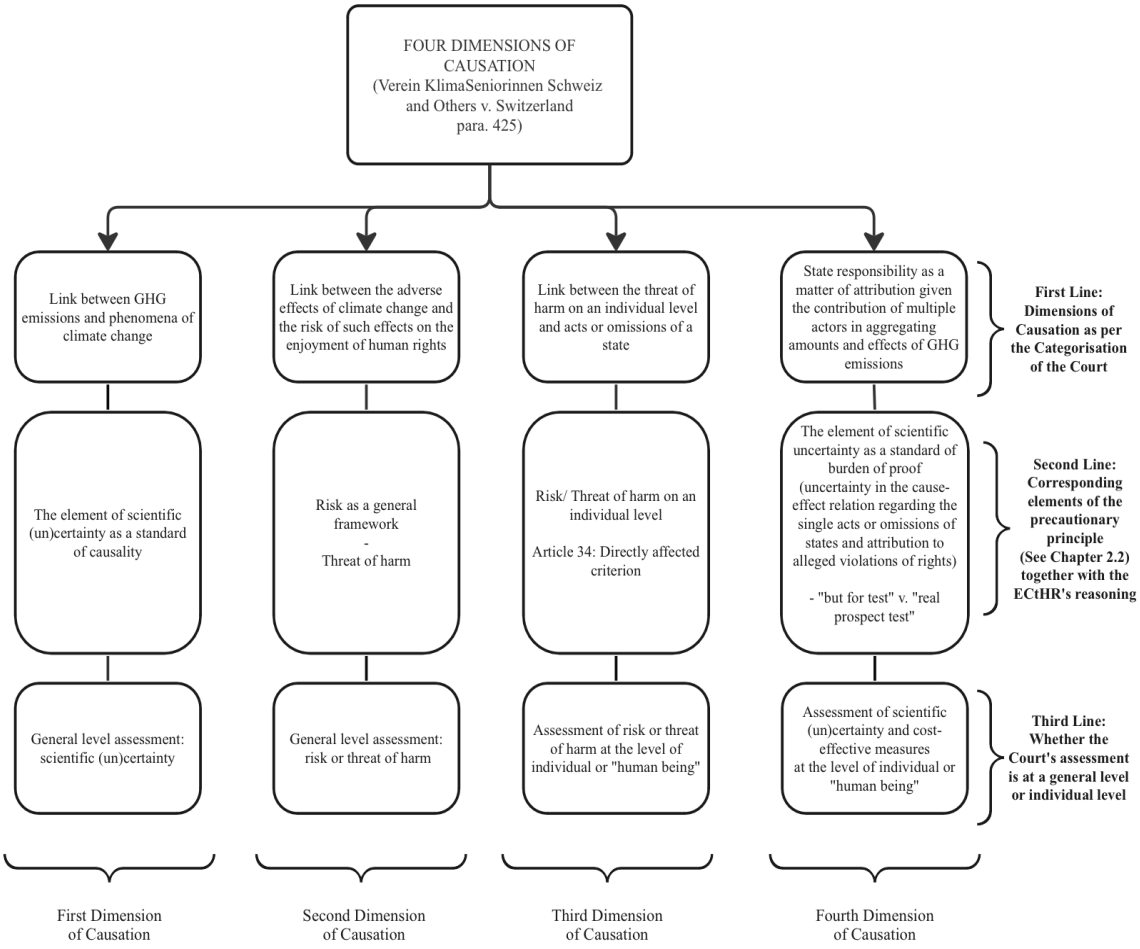
*environment in all Community activities*."; A direct reference to UNFCCC Article 3 (3) which is concerning the precautionary principle: *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 444; *Grand Chamber Hearing of Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (2024) 01:38:10 Judge Bårdsen: 'In Tătar v. Romania the Court recognised the importance of the precautionary principle.'; *Kotilainen and Others v. Finland* [2020] ECtHR 62439/12 [88, 89] Although this case does not concern the environment but a school shooting, the Court relied on precautionary reasoning, underlining that the authorities' failed their duty of diligence.

[170] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 422.

[171] ibid.

[172] See; ibid 420, 444.

[173] ibid 425; See also, Vladislava Stoyanova, 'KlimaSeniorinnen and the Question(s) of Causation' <https://verfassungsblog.de/klimaseniorinnen-and-the-questions-of-causation/> accessed 17 May 2024.




The first line presents the four dimensions of causation that the Court has designated in the judgment. The second line consists of the corresponding elements of the precautionary principle as per my interpretation in Chapter 2.2 above. By doing so, the aim is to present a possible comparison between the precautionary principle as it is discussed within the context of environmental law and how it might be integrated into the ECtHR's reasoning.

The third line aims to indicate how the Court approached each dimension of causation, i.e. whether the assessments and considerations were realised within a general, human being or individual level according to the specific circumstances of the case at hand. This division is necessary to understand the gradual reasoning of the Court.[174] The Court started with the more

[174] I developed this distinction within the dimensions of causation inspired by Stoyanova's division of concrete or reasonableness review of the regulatory framework. The general, human being and individual levels referred to in this study are elaborated under abstract and concrete review in Stoyanova's assessment under reasonableness discussions. While the individual level refers to concrete evaluation regarding certain applicant(s), the human being assessment is conducted in a more general manner where the specific circumstances of the applicant(s) in the concrete case is not discussed. For a comprehensive examination of these assessments, see; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 181–196.

generalised causation link related to a wider problem by finding that greenhouse gas ("GHG") emissions contribute to global warming and climate change.[175] It then tied the adverse effects of climate change to 'human beings' and how climate change affects or risks the enjoyment of human rights.[176] The level of human being also includes recognising vulnerable groups such as "*older women in Switzerland*"[177] who "*belong to a group which is particularly susceptible to the effects of climate change*".[178] Subsequently, the ECtHR assessed whether it is possible to narrow it down to the individual level.[179] However, although the Court referred to the 'individual level', its review of how the concrete applicants have been affected was confined to Article 34.[180] I will elaborate upon this in the subchapter 3.3.2.

## 3.1 First Dimension of Causation Corresponding to Scientific (Un)Certainty[181]

During the Grand Chamber hearing of *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, the Government argued that the precautionary principle creates a right to act in the light of scientific uncertainty, but it does not create an obligation. Further, they stated that, in this case, the precautionary principle is not applicable because scientific certainty exists regarding the link between GHG emissions and climate change.[182] As can be seen, the interpretation of the Government is that uncertainty is on a general level and does not consider the complex chain of effects. Accordingly, by categorising scientific uncertainty as *conditio sine qua non* element, they seem to imply if there is no uncertainty, no precautionary measure is required. Similar to Bodansky's argument (see subchapter 2.2.3), the Government expressed that they have never relied on scientific uncertainty to delay the application of precautionary measures.[183]

The Court did not address this argumentation explicitly. However, its assessment regarding causation is of guidance. The Court acknowledged the general level link between GHG emissions and aggregating levels of CO2, which give rise to global warming and climate change.[184] Subsequently, the

[175] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) paras 425, first sentence.
[176] ibid 425, second sentence.
[177] *ibid 529.*
[178] ibid 531.
[179] ibid 425, third and fourth sentences.
[180] ibid 535.
[181] See also, Vladislava Stoyanova, 'KlimaSeniorinnen and the Question(s) of Causation' (n 173) Stoyanova explains that According to the Court's reasoning, the first dimension pertains to 'scientific knowledge and assessment'. Yet she points out to the distinction between legal and natural causation.
[182] *Grand Chamber Hearing of Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 169) 2:14:34.
[183] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 364; Daniel Bodansky (n 30) 384.
[184] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 417.

ECtHR pointed out that harm originates from various sources, as climate change is a polycentric phenomenon. This leads to further risks of harmful consequences through a chain of effects that are "*complex and unpredictable in terms of time and place*".[185] This complexity, in my opinion, can be interpreted as "scientific uncertainty". The scientific uncertainty element is not only regarding the very existence of global warming or climate change; it is also applicable to situations where science is unable to prove certain cause-effect relations. Thus, the Court hinted at the existing systemic indeterminacy by stating that climate change cases need to be assessed differently than the existing case law in environmental matters. It is especially so, considering that the causal link can be established between the harm and its identifiable source for the latter.[186] Hence, unlike the previous environmental cases where the causation link between harm and its source is more apparent, climate change cases require a different approach. Therefore, the Court implied that such cases should be evaluated with a broader perspective that accounts for the intricate causal dimensions and uncertainties inherent in climate change impacts.

Given the abovementioned, I think that the Government's argumentation bypassed the presence of different incidents of scientific uncertainty that exist simultaneously. Consequently, their understanding of what scientific uncertainty relates to seems to be narrow. However, in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland,* the question of uncertainty is not whether GHG emissions contribute to global warming because its adverse effects are recognised by governments worldwide.[187] It is about the complex and dynamic cause-effect relations that science falls short of identifying due to the systemic indeterminacy in a polycentric setting and an even more multifaceted ecosystem. In other words, while the Government contended that the dispute is not a matter of the precautionary principle as they claim a lack of scientific uncertainty, the Court's assessment underscored the complexity and unpredictability inherent in the cause-effect relations surrounding climate change, suggesting a broader interpretation of scientific uncertainty.[188] Yet, it should be reiterated that the Court did not explicitly address the Government's argumentation.

[185] ibid 416, 417.
[186] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 39; *Özel and Others v. Turkey* [2016] ECtHR nos. 14350/ 05, 15245/ 05, 16051 [171].
[187] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 413.
[188] ibid 417.

## 3.2 Second and Third Dimensions of Causation Corresponding to the Concept of Risk and Threat of Harm

### 3.2.1 General Remarks on Risk and Threat of Harm

As stated in the previous chapter, whether or how "threat" is distinguished from the concept of risk is not clear because the threat of harm is intertwined with the concept of risk. Although these were examined within separate subchapters to present the different approaches within environmental law, I will use threat and risk interchangeably, considering that the ECtHR does not seem to separate these.[189]

In *Tătar v. Romania*, the Court stipulated that the precautionary principle recommends that States should not delay the adoption of effective and proportionate measures to prevent a risk of serious and irreversible damage to the environment in the absence of scientific or technical certainty.[190] It is unclear to me whether the Court has deliberately refrained from the gradual structure that can be found in Article 3 of the UNFCCC or Principle 15 of the Rio Declaration, where the application of the precautionary principle is presented in a general manner prior to the threat of serious or irreversible harm condition. If so, it is a narrow interpretation of the principle because the emphasis on its implementation seems to lie in case of a risk of serious or irreversible damage. Nevertheless, this does not seem to be the case because the Court adopted a broad approach by recalling the precautionary principle as stipulated within the Rio Declaration and underlined that the principle is intended to apply to ensure a high level of protection of health '*and*' the environment in "all community activities".[191] Moreover, it is set forth that a decision-making process must involve a risk assessment in advance of activities that may harm the environment '*and*' the rights of individuals.[192] Accordingly, it also stipulated that when a state deals with "complex environmental and economic policy issues", special attention must be given to regulations tailored to the specificities of the activity in question, especially in terms of the risk.[193]

I find the phrasing of the Court in *Tătar v. Romania* interesting due to the following implications: (i) The precautionary principle applies to all community activities;[194] (ii) the Court acknowledged that the precautionary principle applies not only to environmental protection but also to the

[189] *Tătar v. Roumanie* (n 29) para 109: While referring to the precautionary principle the Court uses "*risque de dommages graves et irréversibles*".
[190] ibid (Translated via DeepL).
[191] ibid 120.
[192] ibid 88.
[193] ibid.
[194] ibid 120.

protection of health;[195] (iii) throughout the decision, the protection of the environment is presented as a separate objective.[196] In other words, rather than a formulation that links the protection of the environment to the reasoning of the enjoyment of the right to health; the Court chose not to phrase it within a causal relationship; (iv) lastly, complex environmental and economic policy issues require regulations for different dynamics or circumstances that include risk to the equation of the framework.[197]

Moreover, referring to its former judgment in *Öneryıldız v. Turkey*, the Court noted the inherent risks involved. Due to this inherent risk, there is a continuing obligation of control that starts with the authorisation process and continues throughout the operation. This also includes identifying possible shortcomings and adopting practical measures to ensure effective protection.[198] I think it is similar to the approach of the International Law Commission, where risk is presented as a framework that induces a continuing operation and effect.[199] In *Öneryıldız v. Turkey*, it is also underlined that the state has a primary duty to enforce legislative and administrative framework against the threat to the right to life in accordance with the level of the potential risk.[200] As can be seen, risk within the scope of ECHR also acts as a trigger for further obligations.

### 3.2.2 Risk or Threat within the General, Human Being and Individual Level Assessments

The mere threat of harm to the environment, without any link to the individual, does not fall under the protection of the Convention. A link is sought because of the polycentric nature of climate change where the cause-effect relation is uncertain; the threat of harm does not originate from a singular or defined source.[201] In order to examine this link, the Court chose to evaluate the concept of risk under the umbrella of causation. As I interpret it, according to the Court, there are three dimensions of causation that look into general, human being and individual levels that relate to risk.[202] The general level looks into how the adverse effects of climate change may cause risks that affect the enjoyment of rights under the ECHR now and in the future without tying it to any individual.[203] Essentially, this concerns the legal interpretation of the extent to which human rights are protected in light of the

[195] ibid 88, 120.
[196] ibid 88, 120; Compare to; *Fadeyeva v. Russia* [2005] ECtHR 55723/00 [68] "*(...) no right to nature preservation is as such included among the rights and freedoms guaranteed by the Convention.*"
[197] *Tătar v. Roumanie* (n 29) para 88.
[198] *Tătar v. Roumanie* (n 29) para 88; *Öneryıldız v. Turkey [GC]* [2004] ECtHR 48939/99 [90]; *Di Sarno and Others v. Italy* [2012] ECtHR 30765/08 [106].
[199] See; 2.2.1, *supra* note 86. International Law Commission (n 48) para 151.
[200] *Öneryıldız v. Turkey [GC]* (n 198) paras 89, 90.
[201] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) paras 415–419.
[202] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4).
[203] ibid 425.

effects of existing degradation or the potential risk of degradation in people's living conditions in a general, systematic manner.

The ECtHR also answered the question of whether climate change by itself could be categorised as a risk or threat of harm on a general level. In this regard, it is emphasised that there are reliable indications confirming the existence of anthropogenic climate change, which presents a serious and ongoing threat to the enjoyment of human rights protected by the Convention. The Court noted that the risks associated with climate change can be reduced if the global temperature rise is limited to 1.5 degrees above pre-industrial levels and if urgent action is taken. However, current global efforts to mitigate climate change are insufficient to meet this target. As a result of the insufficient efforts of mitigation, the phenomena of climate change aggravated to a serious and irreversible threat of harm to the enjoyment of rights guaranteed under the ECHR that poses a risk currently and in the future.[204] I think this reasoning of the ECtHR is a general level assessment of risk where climate change and global warming were presented as a grave risk of inevitable and irreversible nature without delving into the specific circumstances of the case.[205] The Court acknowledged the urgency of addressing climate change, as its effects pose a threat of harm to individuals' lives, health, and well-being in general.[206] It reiterated its living instrument doctrine by pointing out that the developments call for a high standard in protecting human rights, given the climate change-induced risks of adverse, irreversible, and inevitable nature against the enjoyment of human rights.[207] Accordingly the protection of the Convention extended to risks.[208]

The *human being* and *individual* level assessments question how harm or threat of harm that climate change causes occur at the individual level and how or whether these relate to acts or omissions of a state.[209] The latter one considers how the concrete circumstances of the case affects the 'applicant'.[210] This consideration is clear in the question of Judge Seibert-Fohr, where she asked whether the claim of violation of positive obligation is based on the failure to take action in the past or for the future.[211] 'Failure to take action for the future' implies two concepts: (i) Threat of harm and (ii) omission of a state.

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[204] ibid 420, 436.
[205] ibid 434.
[206] ibid 433.
[207] ibid 434; *Demir and Baykara v. Turkey [GC]* [2008] ECtHR 34503/97 [68, 146].
[208] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 435; Compare to the approach in *Neubauer, et al. v. Germany* (n 97) Responsibility cannot be dismissed by claiming that a risk of future harm does not constitute present harm.
[209] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) 425.
[210] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 184.
[211] *Grand Chamber Hearing of Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 169) Questions put by Judges, 1:40:00.

(i) 'Failure to take action for the future' shall not contain the implication that it is claimed for the Court to examine a complaint of general harm to the environment that might affect the individual in the future. Therefore, the assessment of the threat of harm on the individual level relates to both the victim status of an applicant and the applicability of substantive Convention rights. In principle, the Court does not assess a violation other than *a posteriori*.[212] Consequently, for a risk of harm arising from climate change to be considered it ought to meet a certain threshold so that the individual is directly affected.[213] This risk threshold assessment is intertwined with Article 34 and Article 8 or Article 2 of the Convention. For instance, in the *Fadeyeva v. Russia* case, the Court clarified that the Convention does not explicitly include a right to preserve nature. Therefore, for a matter to be raised under Article 8, any interference must directly affect the applicant. Thus, the threshold of risk appears as a matter of admissibility when the Court looks for a "certain minimum level of severity" that exceeds the usual environmental hazards inherent in urban life.[214] Furthermore, in *Hardy and Maile v. the United Kingdom*, the Court questioned the threshold of the threat of harm by looking into whether the level of pollution could affect the enjoyment of Convention rights (*general level*). It continued by assessing whether the intensity of such pollution could directly affect the individual (*human being level*) causing to pose a risk to the enjoyment of Article 8 (*individual level*).[215] Accordingly, in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* while looking into causation, the Court emphasised that it sought a particular level and severity of the risk of adverse consequences of climate change affecting applicants directly.[216] This evaluation required the Court to assess whether the particular risk is real and whether the level and severity of the risk indicated a pressing need for individual protection for the applicants.[217]

I find it really interesting how the Court engaged with Article 34 to interpret a right under the Convention, in this case, Article 8. Because Article 34 sets forth admissibility criteria, in principle, it is considered before the Court looks into the merits. Nevertheless, it has been the case where the Court has decided that the question of victim status is intertwined with the merits.[218] In that vein, the Court chose to deal with admissibility, i.e. the victim's status, along with the merits in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*.[219] Furthermore, after its admissibility assessment, the Court reiterated the 'directly affected' condition in its evaluation of the relevant Convention

[212] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 470.
[213] Petersmann (n 165) 69,70; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) 437.
[214] *Fadeyeva v. Russia* (n 196) paras 68-70; Petersmann (n 165) 69.
[215] *Hardy and Maile v. the United Kingdom* [2012] ECtHR 31965/07 [187, 188].
[216] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 437.
[217] ibid 486, 487.
[218] *Hirsi Jamaa and Others v. Italy [GC]* ECtHR [111]; *Siliadin v. France* [2005] ECtHR 73316/01 [63].
[219] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) paras 478-488.

provisions. The Court held that Article 8 required an "*actual interference*", which meant the "*existence of a 'direct and immediate link' between the alleged environmental harm and applicant's private or family life or home*".[220] This consideration was implied in the question of President Judge O'Leary when she stated that the interpretation of Article 34 would affect further environmental, more specifically, climate change cases before the Court.[221] Subsequently, she also reiterated *Gorraiz Lizarraga and Others v. Spain*, which stipulates "*the term "victim" in Article 34 must also be interpreted in an evolutive manner in the light of conditions in contemporary society.*"[222] By virtue of the living instrument doctrine, the Court scrutinised the victim status and utilised it to assess the threat of harm on an individual level to question the causation link to the alleged omission of the state.

(ii) As for the second one, above, it was mentioned that the *individual* level link looked into the individual harm or threat of harm that climate change causes and how or whether these relate to acts or omissions of a state.[223] Consequently, one of the considerations was whether the applicants' claim of violation of positive obligation was based on the failure to take action for the future.[224] Accordingly, it was mentioned that 'failure to take action for the future' also implied the concept of omission of a state.

Considerations of how or whether the threat of harm (to individuals) induced by climate change relates to acts or omissions of a state are also examined under a causation dimension. This dimension necessitates a legally significant relationship between the state's actions or omissions (either causing or neglecting to address climate change) and the threat of harm experienced by individuals.[225] Establishing causation in case of alleged omissions,[226] requires a speculative analysis based on hypothetical scenarios.[227] Thus, understanding this speculative causation is crucial for comprehending positive obligations and addressing concerns about the ambiguity of their extent.[228] The standard of this cause-effect relation between the individual and the threat of harm is important to establish a possible corresponding positive obligation.

The Court's stance in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* is clear regarding the existence of a corresponding obligation that

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[220] ibid 515.
[221] *Grand Chamber Hearing of Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 169) 1:50:10.
[222] *Gorraiz Lizarraga and Others v. Spain* [2004] ECtHR 62543/00 [38].
[223] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) 425.
[224] *Grand Chamber Hearing of Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 169) Questions put by Judges, 1:40:00.
[225] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 478.
[226] *Carême v. France* (n 5) para 3; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 3.
[227] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 47.
[228] ibid 45.

arises at the 'general level'. It set forth that addressing the climate crisis necessitates an extensive and intricate array of transformative policies, encompassing legislative, regulatory, fiscal, financial, and administrative measures, alongside investments from both public and private sectors.[229] Hence, the Court held that such challenges stem from failures to act or insufficient action, essentially arising from such omissions.[230]

However, the Court did not find this omission at the 'individual level'. This is because the Court's assessment of the individual applicants' rights under Article 8 was more or less confined to the limits of Article 34 in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*. The Court set forth; "*while (…) the applicants belong to a group which is particularly susceptible to the effects of climate change, that would not, in itself, be sufficient to grant them victim status.*"[231] Subsequently, the Court held that while the heatwaves affected the applicants' quality of life, a violation of Article 8 would depend on the 'concrete' circumstances of the case, which includes an assessment of 'individual' specificities and vulnerabilities.[232] Thus, these 'concrete' circumstances at the individual level are characterised as "*exceptional circumstances*"[233] by the Court that lead to two key criteria: "*high intensity of exposure of the applicant to the adverse effects of climate change*" and "*pressing need to ensure applicant's individual protection*". However, this individual level assessment remained within the scope of Article 34. Hence, although the Court recognised the vulnerability of older women within the 'human being level' under Article 8, the individual level of the causation dimension was not satisfied for the individual applicants because of the directly affected victim status criteria of Article 34.[234]

## 3.3 Fourth Dimension of Causation Corresponding to the Burden of Proof and Attribution

The Court has acknowledged that until *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, its environmental case law typically revolved around instances where identifiable sources contribute to environmental harm instead of the polycentric issues of climate change.[235] Thus, the fourth dimension of causation points to the contribution of multiple actors in aggregating amounts and effects of GHG emissions[236]. The multitude of sources contributing to the

[229] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 479.
[230] *ibid.*
[231] ibid 531.
[232] ibid 488; The general and individual levels referred to in this study are elaborated under abstract and concrete review in Stoyanova's assessment. For a comprehensive examination of these assessments, see; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 181–196.
[233] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 533.
[234] ibid 528, 529.
[235] ibid 415-420.
[236] ibid 425.

harm or threat of harm raises questions regarding attribution and state responsibility. Given that no single state is solely responsible for causing global warming, it becomes uncertain which specific acts or omissions have contributed to the threat of harm at the individual level. I therefore categorised this question under scientific uncertainty as a standard of burden of proof. In other words, as explained above, scientific uncertainty extends beyond merely questioning the existence of global warming or climate change; it also encompasses situations where science cannot establish certain cause-effect relations.

Diverging from its "beyond reasonable standard", the Court developed a more flexible approach to complex scientific evidence. This can be seen in *Öneryıldız v. Turkey* when the Court held that individuals, compared to states, can be in a weaker position to obtain "*sufficient relevant knowledge to identify and establish the complex phenomena*".[237] As Stoyanova points out, in such cases, the Court deems it to be more practical to require the state to demonstrate its lack of negligence rather than expecting the victim to prove negligence in the state's handling of the situation.[238] Accordingly, in *Fadeyeva v. Russia*, the Court held that evidentiary difficulties shall be taken into consideration, bearing in mind the substantive right at stake. Therefore, a strict application of the principle *affirmanti, non neganti, incumbit probatio* is not always required.[239]

While engaging with the precautionary principle, the Court set forth that it is possible for it to engage in 'probabilistic reasoning' due to a 'plurality of causes' in case of absence of evidence.[240] Subsequently, the Court looks into (i) whether the applicant was affected by the environmental damage or risk in question;[241] (ii) the duration and minimum level of severity of the threat and the existence of a sufficient link with the applicant; in some cases, the geographical proximity between the applicant and the (threat of) environmental harm;[242] (iii) sufficient and convincing statistical evidence by looking into studies and reports of relevant international bodies concerning the environmental impact of the individual;[243] (iv) whether the state failed to

[237] *Öneryıldız v. Turkey [GC]* (n 198) para 93; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) para 33.
[238] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 33.
[239] *Fadeyeva v. Russia* (n 196) para 79; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 427.
[240] *Tătar v. Roumanie* (n 29) para 105.
[241] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 472; *Duarte Agostinho and Others v. Portugal and 32 Other States [GC]* (n 5) para 229.
[242] *Tătar v. Roumanie* (n 29) para 95; "*The Court observes that at least for a 'certain period of time' after the ecological accident of January 2000, various pollutants (cyanides, lead, zinc, cadmium) 'exceeding accepted internal and international standards' were present in the environment, especially 'near the applicants' residence.*" (emphasis added); *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 472.
[243] *Tătar v. Roumanie* (n 29) paras 104-106; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 429.

comply with domestic law and/ or environmental or technical standard;[244] (v) findings of domestic courts and competent authorities in assessing factual circumstances of the case;[245] (vi) whether the national authorities have established a fair balance between the individual threat of harm and competing interests.[246]

Another matter that falls under the scope of burden of proof within the causation dimension is attribution. In *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, the Government contended that the applicants had not proven a causal connection between Switzerland's alleged omissions, given that multiple actors contribute to GHG emissions worldwide and, so, global warming. Thus, there is scientific uncertainty regarding the cause-effect relations of how Switzerland's alleged omissions contribute to the suffering claimed by the applicant. This cannot be conclusively proven. The Government argued that since GHG intensity in Switzerland was currently low, the causation link is not established, considering that "*omissions imputed to Switzerland were not of such a nature as to cause, on their own, the suffering claimed by the applicants.*"[247]

This argumentation evokes two concepts in my mind that I would like to discuss. The first one is the 'intervening cause' claim, which is more commonly utilised in tort law. By highlighting Switzerland's low GHG intensity compared to the high-level contributions of multiple actors globally, the Government appears to have attempted to characterise these contributions as intervening causes. In other words, the Swiss Government seems to evade attribution by severing the causal link. The second concept is the "but for" test. The Court reiterated that the test does not mandate demonstrating that the harm would not have occurred "but for" the failure or omission of the authorities. Accordingly, the Court rejected the "drop in the ocean" argument of the Swiss Government that contested individual States' capacity to influence global climate change. It was set forth that it is important and sufficient to engage the responsibility of the state by taking reasonable measures that should have "*a real prospect of altering the outcome or mitigating the harm.*"[248] Moreover, the ECtHR stipulated that in the context of climate change, states' positive obligations shall be interpreted in the light of the precautionary principle regulated under Article 3 (3) of UNFCCC.[249]

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[244] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 428; Simply alleging that the State has not adhered to specific domestic regulations or environmental and technical standards is insufficient on its own to substantiate the claim that the applicant's rights have been violated under the Convention. However, the Court considers it significant that the situation in question indeed contravened relevant domestic legislation.
[245] ibid 430.
[246] ibid.
[247] ibid 346.
[248] ibid 444.
[249] ibid.

While explaining the standard of causation in case of a state omission, Stoyanova elaborates on the required causation standard by stating it does not seek a positive answer to the question of whether a 'violation would have been avoided'.[250] She states that the "but for" test hinges on the presumption that the State's omission is the cause of the harm and that this omission directly leads to the harm. However, especially in climate change cases, this would pose an extreme and unattainable standard of proof for attribution. Such an unattainable standard of proof might create a vacuum in the Convention, considering that it is established within the case law of the ECtHR that "*the Convention must be interpreted and applied such as to guarantee rights that are practical and effective, not theoretical or illusory*".[251] Thus, it can be seen that the standard of causation that the Court has developed is whether there was a "real prospect" of avoiding or mitigating the harm or risk of harm.[252] Furthermore, the Court has held that the real prospect standard was seen as sufficient to engage the responsibility of a state.[253]

Additionally, I believe that applying the "but for" test would indicate that there the positive obligation qualified as an obligation of result. The but for test would determine whether the harm would not have occurred but for the omission of the authorities. If this is implied, it would mean that the corresponding content of the obligation should, in theory, ensure the result that no harm occurs, i.e. obligation of result. Applying this way of thinking to the precautionary principle, it would not be possible to reconcile it with the ECHR. Because the but for test requires that no harm would have occurred but for the state's failure to apply precautionary measures. In other words, the but for test would look into whether (a) certain precautionary measure/s could actually prevent harm. This way of thinking would mean attributing the characteristic of an obligation of result to a precautionary measure. Yet, as explained in the previous chapter, the aim of the precautionary principle is not to 'guarantee' any harm from occurring.[254] Reiterating that the Court held that states' positive obligations should be interpreted in the light of the precautionary principle regulated by Article 3(3) of UNFCCC,[255] the

[250] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 47.
[251] *HF and Others v. France [GC]* [2022] ECtHR 24384/19, 44234/20 [208]; *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 545.
[252] "The relevant test does not require it to be shown that "but for" the failing or omission of the authorities, the harm would not have occurred. Rather, what is important, and sufficient to engage the responsibility of the State, is that reasonable measures which the domestic authorities failed to take could have had a real prospect of altering the outcome or mitigating the harm." *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 444; *O'Keeffe v. Ireland [GC]* [2014] ECtHR 35810/09 [149, 166]; *Premininy v. Russia* [2021] ECtHR 44973/04 [84]; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 47.
[253] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 444.
[254] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 66.
[255] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 444.

application of precautionary measures seems to fall under the category of obligation of conduct[256] which will be examined within the next subchapter.

## 3.4 Is There a Positive Obligation to Take Precautionary Measures?

Before addressing this question, it is important to clarify that this subchapter does not intend to delve into specific instances concerning, for example, how the right to life or the right to private life might apply in individual cases. Instead, it aims to present an analytical framework for understanding how and to what extent the precautionary principle could affect the determination of positive obligations within the context of climate change. To do so, I will first draw upon Stoyanova's analytical breakdown of positive obligations which includes the trigger, content and scope of the obligation, for it is of guidance to understand how the Court deals with risk, causation and knowledge.

I will engage with the four dimensions of causation introduced by the ECtHR,[257] and compare it to the method of *Osman* test.[258] This comparison will examine how both methods hint at or contribute to a gradual assessment of the existence of positive obligations, particularly precautionary measures. Before moving on to this comparison, it should be noted that within this study, the *Osman* test is utilised in its general relevance to all positive obligations. Instead of focusing on the real and immediate risk threshold and the protective operational measures, *Osman* test is mentioned due to its gradual assessment method. That is because, I think that the Court's reasoning and assessment method in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* appear to converge with the method of the *Osman* test, bearing in mind the differences of specific circumstances within both cases. For the sake of clarity, it should be underlined that in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* the Court did not rule upon a protective operational measure and *Osman* test is not relevant within that context.

Thus, this examination begins by exploring the triggers, such as risk and state knowledge. It then delves into the content of such obligations via the standard of reasonableness and concludes by discussing the scope of these obligations.[259] I will also benefit from Stoyanova's categorisation of substantive positive obligations. This categorisation will allow me to question what can qualify as a precautionary measure and what type of substantive

[256] Compare to; *Kurt v. Austria [GC]* [2021] ECtHR 62903/15 [159] "*The Court notes that the duty to take preventive operational measures under Article 2 is an obligation of means, not of result.*"
[257] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 425.
[258] *Osman v. The United Kingdom [GC]* [1998] ECtHR 23452/94 [116].
[259] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72); Vladislava Stoyanova, 'Fault, Knowledge and Risk within the Framework of Positive Obligations under the European Convention on Human Rights' (2020) 33 Leiden Journal of International Law 601, 605.

positive obligation the precautionary measures would correspond to. This approach will help me explore the possibility of integrating or reconciling the precautionary principle into the ECHR.

Any obligations that might correspond to the Convention rights are not explicitly stated in the text of the Convention.[260] As positive obligations centre omissions at their core and are of a disjunctive nature, it becomes more difficult to assess whether there is an obligation upon the state to do something in the first place (*primary obligation*).[261] Nevertheless, Article 1 of the Convention has been invoked as a basis for such primary obligations. Positive obligations are therefore inherent to each substantive right since Article 1 of the Convention stipulates that states are under the obligation of *securing* rights and freedoms (*primary obligation*) defined within ECHR.[262] Accordingly, the core of each specific, substantive Convention right embodies the distinctive component of the primary obligation. In short, I believe that the primary obligation 'to do something in the first place' consists of two components that are 'securing (Article 1) + core (of the substantive right)'. Whereas the core and so the primary obligation is more apparent in some substantive rights such as right to life; it is less clear in others. That is the case with Article 8 because of the indeterminacy of the notion of private life. Accordingly, claims made under Article 8 might necessitate a justification that they pertain to the core of the right, which is the sphere of private life.[263]

Stoyanova deconstructs positive obligations and introduces a three-step embodiment of a positive obligation in a theoretical manner. Accordingly, each obligation has a trigger, content and scope. The first component is the triggers, which are some initial indicators for the state to act, in addition to the primary obligation. Thus, Stoyanova states that concepts such as risk or state knowledge are these indicators, i.e. triggers of positive obligations. To better understand why there is an omission, i.e. an inadequate action or failure

[260] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 9.

[261] 'The choice of means is in principle a matter that falls within the State's margin of appreciation; even if the State has failed to apply one particular measure provided for by domestic law, it may still fulfil its positive duty by other means.' *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 538 (d); Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 22; Vladislava Stoyanova, 'Fault, Knowledge and Risk within the Framework of Positive Obligations under the European Convention on Human Rights' (n 238) 603; Johan Vorland Wibye, 'Beyond Acts and Omissions – Distinguishing Positive and Negative Duties at the European Court of Human Rights' (2022) 23 Human Rights Review 479, 479-481, 488-489.

[262] *Beizaraz and Levickas v. Lithuania* [2020] ECtHR 41288/15 [108, 110] Reflection of Article 1 can be found when "*the Court has also noted the States' positive obligation to secure the effective enjoyment of the rights and freedoms under the Convention.*" and accordingly in para. 110 *'Positive obligations on the State are inherent in the right to effective respect for private life under Article 8'*. Nevertheless, this does not have to mean that every claim made under Article 8 automatically corresponds to the core of the right and so to a positive obligation.; See also Vladislava Stoyanova, Positive Obligations under ECHR (n 72) 19; My views slightly diverge from who interprets this framing of the Court as a deviation.

[263] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 19.

to act, it is necessary to briefly explain the *Osman* test. Because as mentioned above, I think that the method of the *Osman* test is of general relevance to all positive obligations. In *Osman v. the United Kingdom*, it was stipulated that the Court must be satisfied that "*the authorities knew or ought to have known at the time of the existence of a real and immediate risk to the life of an identified individual*"[264] and that "*they failed to take measures within the scope of their powers which, judged reasonably, might have been expected to avoid that risk.*".[265] In other words, positive obligations are contingent upon states' actual (knew) or putative knowledge (ought to have known) of the risk or threat of harm and the precision of such knowledge.[266] Accordingly, Stoyanova points out that risk or threat of harm revolves around the concept of state knowledge, which is a fundamental question that underlies all positive obligations, regardless of the particular subject area.[267]

### 3.4.1 Risk Assessment as a Precautionary Measure

In *Kurt v. Austria*, the Court introduced risk assessment in addition to the *Osman* test. The Court held that "*in order to be in a position to know whether there is a real and immediate risk (...) the authorities are under a duty to carry out a lethality risk assessment which is autonomous, proactive and comprehensive.*"[268] It presented the risk assessment duty as an integral part of the duty to take preventive operational measures. I find this approach similar to Trouwborst's idea, where he describes risk as a framework for understanding the precautionary principle.[269] It seems to me when the Court stipulated that "*the assessment of the nature and level of risk constitutes an integral part of the duty to take preventive operational measures*"[270], it implied risk as a framework has a continuing operation and effect.[271] I therefore wonder whether the risk assessment duty could be a reflection of the "ought to have known" standard considering the Court's formulation of "*in order to be in a position to know*".[272] Yet it is not elaborated on how the state would know the nature, level or threshold of risk. I, therefore, agree with Stoyanova's query where she asks how the level of risk can be assessed if there is no positive obligation triggered yet. This consideration arises because

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[264] *Osman v. The United Kingdom [GC]* (n 258) para 116.
[265] ibid.
[266] *Öneryıldız v. Turkey [GC]* (n 186) para 101; *Centre for Legal Resources on Behalf of Valentin Câmpeanu v. Romania [GC]* [2014] ECtHR 47848/08 [130]; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 21.
[267] Vladislava Stoyanova, 'Fault, Knowledge and Risk within the Framework of Positive Obligations under the European Convention on Human Rights' (n 259) 601, 602.
[268] *Kurt v. Austria [GC]* (n 256) para 168.
[269] Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 29.
[270] *Kurt v. Austria [GC]* (n 256) para 159.
[271] See, 2.2.1.
[272] *Kurt v. Austria [GC]* (n 236) para 168; See also; Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 212 "Framing risk assessment as 'part of the duty' might be illogical. How could 'part' of the duty be risk assessment, when the duty itself is triggered upon knowledge about risk? How could the State already have a duty (whose content is arguably the assessment of the risk), when it is not yet clear whether the State was under the obligation to take protective operational measures?".

risk assessment is presented as an integral part of the duty to take preventive operational measures by the Court.[273]

A similar question arises in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* regarding the positive obligation of developing an effective framework. The Court set forth, "*In any event, for a State's positive obligations to be engaged, there has to be evidence of a risk meeting a certain threshold.*"[274] The phrase 'positive obligations to be engaged' refers to the trigger of positive obligations. However, it is rather unclear how the level of risk can be assessed if there is no positive obligation triggered yet.

To address this complexity to some extent, it might be suggestive to recap the approach from the previous chapter briefly. It was discussed how the precautionary principle could act as a trigger for precautionary measures. It was mentioned that the risk assessment phase ought to be separated from the risk management phase. This separation was deemed necessary to decide upon the required response, which in this case would be positive (precautionary) measures.[275] However, Stoyanova points out that the Court closed the door on such separation in *Kurt v. Austria*.[276] ECtHR's approach in *Kurt v. Austria* also seems appear in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*:

> "In particular, a governmental decision-making process concerning complex issues such as those in respect of environmental and economic policy *must* necessarily involve appropriate *investigations and studies* in order to allow the authorities to strike a fair balance between the various conflicting interests at stake (…) What is important is that the effects of activities that might harm the environment and thus infringe the rights of individuals under the Convention may be *predicted and evaluated in advance*."[277]

Regardless of being a separate positive obligation, this procedural safeguard hints at a standard of knowledge in assessing whether the state ought to have known. Furthermore, such procedural safeguards show the integration of precautionary reasoning. Thus, the content of the stipulated obligation concerns developing effective procedures by including risk assessment with a rationale of preventing harm. Brems explains that in cases examined under Article 8 that involve planning decisions of significant environmental impact,

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[273] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 212.
[274] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 438.
[275] Joakim Zander (n 139) 32.
[276] "Any separate obligation to undertake a risk assessment was watered down by making the result a relevant consideration.", Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 213; *Kurt v. Austria [GC]* (n 256) para 205.
[277] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) 539 (c) (emphasis added).

the Court divides its reasoning into substantive and procedural aspects.[278] Hence, she elaborates that the Court has consistently emphasised that decisions or actions by public authorities affecting fundamental rights must be approached with gravity, requiring all pertinent information to be readily available and duly considered.[279] Supporting my argument that this procedural safeguard indicates a standard of knowledge, Brems states that under substantive provisions such as Article 8, procedural protection is instrumental for the protection of substantive human rights.[280] However, Stoyanova and Brems note that the absence of such *ex ante* procedural guarantees does not automatically result in a definitive finding of a violation.[281] This was the case in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* as the Court did not classify the procedural guarantee of risk assessment as an independent and standalone obligation, but rather as a contributory circumstance to the absence of an effective framework which was the base of the violation found.[282]

### 3.4.2 Precautionary Measures: General or Individualised Protection

#### *(i) Content of the positive obligation*

Until here, it has been repeatedly elaborated upon how risk or threat of harm acts as a trigger for precautionary measures. In a similar vein, risk enables one to answer whether there is a trigger for the state to act in order to secure the substantive right. As examined above, after establishing the first causation dimension by finding the link between GHG emissions and climate change, the Court moved on to establish the second causation dimension. It utilised risk to determine whether there is a *prima facie* threat of harm or "*a risk of degradation*" from the enjoyment of Convention rights. Hence, risk served as a framework within the four-dimension causation assessment, similar to the precautionary principle,[283] by initiating the question of whether there is a positive obligation to begin with.

Subsequently, ECtHR implicitly looked into the knowledge standard whilst assessing whether the state 'knew'. Just as the Court examined the knowledge standard in the Osman test for protective operational measures, it also considered the standard of knowledge (actual or putative) about the risk in the assessment method in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*. This was done to evaluate the positive obligation of developing

[278] Eva Brems, 'Procedural Protection, An Examination of Procedural Safeguards Read into Substantive Convention Rights' in Eva Brems and Janneke Gerards (eds), *Shaping rights in the ECHR: The role of the European Court of Human Rights in determining the scope of human rights* (Cambridge University Press 2013) 153.
[279] ibid 152, 153.
[280] ibid 158.
[281] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 72) 197, 198; Eva Brems (n 278) 158.
[282] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 562.
[283] See, 2.2.1; 2.2.2; 3.2.

an effective framework. While establishing the causation links, the Court noted that there were sufficiently reliable indications of anthropogenic climate change and the ensuing threats arising therefrom for the enjoyment of human rights.[284] Thus, it reiterated that these threats were already recognised by governments.[285] Moreover, the Swiss Government did not reject ('knew') the climate change induced risks on the individuals[286] nor deny the domestic assessments, which found that the GHG reduction target for 2020 had been missed.[287] Accordingly, the Court reviewed studies and reports by relevant international bodies regarding the environmental impact on individuals. It determined that there were sufficiently reliable indications of anthropogenic climate change that hint at a standard of knowledge assessment.[288]

Stoyanova explains that according to the *Osman* test, once the obligation is triggered via risk, the determination of a possible violation hinges also on the reasonableness standard.[289] This reasonableness standard can be utilised within the triggering of a positive obligation – whilst assessing the knowledge standard – whether it can be deemed reasonable for the state to know or to ought to have known. Furthermore, reasonableness and knowledge standards were also involved in the discussions of precautionary principle. Thus, while the scientific uncertainty element implies a standard of knowledge, it also includes a reasonableness standard. Reasonableness is utilised in evaluating whether scientific reasoning is entailed rather than mere hypothetical conjecture.[290]

Reasonableness can also be engaged with whilst assessing the content of a positive obligation to question what 'type of measures' can reasonably be expected from a state; either to afford protection to the individual(s) in question or to provide general protection to the society at large.[291] While both options point to the content of positive obligations, the former indicates taking protective operational measures, whereas the latter refers to developing effective frameworks. It should be mentioned that the Court granted a broad margin of appreciation to states, in selecting the type of operational or policy measures.[292] Nevertheless, the margin of appreciation is held narrow in ensuring the overarching goal of effective climate protection through overall GHG reduction targets due to the seriousness and nature of the threat of

[284] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 436.
[285] ibid 420.
[286] ibid 348.
[287] ibid 559.
[288] ibid 436.
[289] Vladislava Stoyanova, 'Fault, Knowledge and Risk within the Framework of Positive Obligations under the European Convention on Human Rights' (n 259) 605.
[290] See; 2.2.3; and also Arie Trouwborst, *Precautionary Rights and Duties of States* (n 69) 109, 110, 227.
[291] Vladislava Stoyanova, 'Fault, Knowledge and Risk within the Framework of Positive Obligations under the European Convention on Human Rights' (n 259) 605.
[292] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 543.

harm.[293] This formulation evokes the understanding of the precautionary principle, where there is a threat of serious or irreversible damage, states are expected to take (*narrow margin of appreciation*) "cost-effective" (*precautionary*) measures (*wide margin of appreciation*). It is especially true because the ECtHR quotes the UNFCCC Article 3(3) – which regulates the precautionary principle – *by stipulating that* "*States should take (precautionary) measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects.*"[294]

Owing to its assessment concerning the victim status of individuals (Article 34) merged with the applicability of Article 8, the Court focused on the development of an effective framework while elaborating on the substantive right.[295] To understand this decision behind why the Court chose to focus on the development of the effective framework rather than protective operational measures, I will benefit from Stoyanova's approach, where she utilises the common law tort of negligence to interpret positive obligations while explaining the individual level assessment.[296] This might also be of guidance to comprehend the 'directly affected' and 'actual interference' conditions that the Court referred to during its assessment of the applicability of Articles 2 and 8. Stoyanova points to the proximity concept, which seeks the 'defendant' (*the state*) and the 'claimant' (*individual*) to be in a relationship where the victim is rather identifiable.[297] However, she also states that the proximity can be expanded, and the *Osman* test is applied even though there was not an identifiable victim.[298]

Nevertheless, the Court did not expand the proximity for individual applicants in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*. It was elaborated that the assessment includes "*the actuality/ remoteness*" of the adverse effects of climate change, including the specific impact on the applicant's life, health, or well-being.[299] Nevertheless, the Court held that it

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ibid 487 (b), "*there must be a pressing need to ensure the applicant's individual protection, owing to the absence or inadequacy of any reasonable measures to reduce harm*."

[293] ibid 543.

[294] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 444, Despite its explicit reference to Article 3(3) of the UNFCCC, the Court did not include the word "precautionary".

[295] ibid 437.

[296] Vladislava Stoyanova, 'Common Law Tort of Negligence as a Tool for Deconstructing Positive Obligations under the European Convention on Human Rights' (2020) 24 The International Journal of Human Rights 632, 645, 646.

[297] Vladislava Stoyanova, 'Common Law Tort of Negligence as a Tool for Deconstructing Positive Obligations under the European Convention on Human Rights' (2020) 24 The International Journal of Human Rights 632, 645, 646.

[298] *Banel v. Lithuania* [2013] ECtHR 14326/11 [65-69]; *Chowdury and Others v. Greece* [2017] ECtHR 21884/15 [103, 113-115], In paragraph 103, the Court reiterates that in certain circumstances, states are obliged to take operational measures to protect actual or potential victims. Later in paragraph 113 it is found that the operational measures were insufficient and that the state failed to provide a general solution to the problems encountered by migrant workers in Manolada.

[299] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 488.

could only ascertain a violation of Article 2 arising from climate change provided that there is close proximity, given that the ECHR precludes the acceptance of applications *in abstracto*.[300] I find it important that the Court engaged with risk at this stage to evaluate proximity within the individual level assessment as well. Despite finding that older women are at the highest risk of temperature-related morbidity and mortality, it was stipulated that there has to be a "real and imminent" risk to the life of the individual(s).[301] The Court set forth that 'real risk' corresponds to the condition of the existence of "*a serious, genuine and sufficiently ascertainable threat to life*"; 'imminence' relates to the physical proximity of the threat.[302] The Court had a similar approach to Article 8, where it sought high intensity of exposure to the adverse effects of climate change on the individual and a pressing need to ensure individual protection.[303] Hence, together with the proximity, the standards of knowledge and reasonableness were also engaged in establishing victim status owing to the past, present and future adverse effects of climate change induced heatwaves on the individuals.[304]

Thus, the Court held that the applicants should present reasonable and convincing evidence of the likelihood that a violation affecting him or her personally will occur in the future; mere suspicion or conjecture is insufficient.[305] Furthermore, admitting that the criteria to fulfil this threshold is high, the ECtHR held that localised and focused scientific evidence (that show "*summers in recent years have been among the warmest summers ever recorded in Switzerland and that heatwaves are associated with increased mortality and morbidity, particularly in older women*") is not sufficient enough to fulfil the proximity criteria, to grant them the victim status.[306] Consequently, although the Court did not reject the idea of the precautionary principle and relate to precautionary reasoning, the proximity standard complicated broader applications of the precautionary principle for individualised protections and protective operational measures.

However, the proximity standard was merely engaged while assessing the obligation to adopt effective regulation. While the Court expressed several times that the association and individual applicants consisted of a particularly vulnerable group of the society, i.e. older women,[307] the aim derived from

[300] ibid 511-513.
[301] ibid 511.
[302] ibid 512; See also, Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 25; *Mastromatteo v. Italy [GC]* [2002] ECtHR 37703/97 [68], The Court indicated that risk by itself is not enough to trigger operational measures to prevent that risk from materialising. Subsequently it held that a positive obligation may arise in case state authorities knew or ought to have known a real and immediate risk to the life of an identified individual or individuals.
[303] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 527.
[304] ibid 470.
[305] ibid.
[306] ibid 527–531.
[307] ibid 529 '*(...) heatwaves are associated with increased mortality and morbidity, particularly in older women*.'

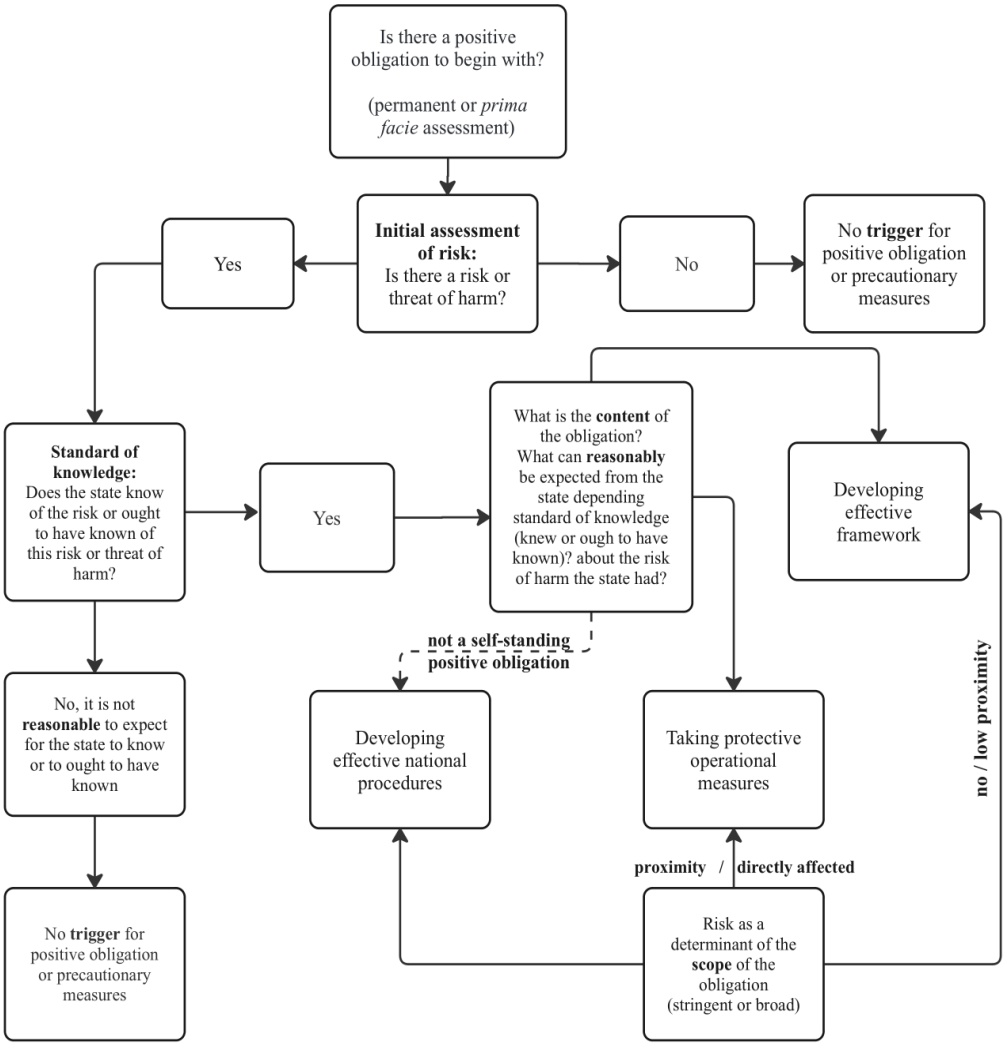
providing general protection to society.[308] The Court reiterated that Article 8 provides a right for individuals to enjoy effective protection against serious adverse effects on their life, health, well-being and quality of life arising from the harmful effects and risks caused by climate change (*human being level assessment*). Consequently, it was set forth that the state has a primary obligation under Article 8, which entails taking action to ensure such protection, particularly via adopting effective regulation.

*(ii) Scope of the positive obligation*

The Court referred to risk as a framework while assessing the scope of the positive obligation. It determined that the obligation to regulate encompasses not only the actual harm stemming from particular activities but also encompasses the inherent risks associated with them.[309] The scope is determined through the specific circumstances of the case. Hence the Court held that; "*The scope of the positive obligations imputable to the State in the particular circumstances will depend on the origin of the threat and the extent to which one or the other risk is susceptible to mitigation.*"[310] Besides using risk and threat of harm as a framework, the Court established the scope of the application by examining whether the national authorities have struck a fair balance between the individual threat of harm and competing interests.[311]

Before concluding this subchapter, I would like to present a flowchart which enabled me to understand the complex nature of positive obligations. I have created this flowchart to provide a broad overview of the interpretation of the ECtHR's assessment methodology, inspired by Stoyanova's approach to deconstructing positive obligations. Nevertheless, it should be noted that the ECtHR has refrained from explicitly formulating a comprehensive theory regarding positive obligations.[312]

[308] See; Vladislava Stoyanova, 'Common Law Tort of Negligence as a Tool for Deconstructing Positive Obligations under the European Convention on Human Rights' (n 297) 646.
[309] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 435.
[310] ibid 538 (g).
[311] ibid 430, 538 (g).
[312] Vladislava Stoyanova, *Positive Obligations under ECHR* (n 71) 17; Johan Vorland Wibye (n 240) 481; See also; *Platform* '*Ärzte für das Leben*' *v. Austria* [1988] ECtHR 10126/82 [31].




Lastly, the Court set forth that given the urgency of addressing the adverse impacts of climate change and the severity of its consequences, including the serious risk of irreversible harm, states should take adequate action, particularly through 'effective' general measures.[313] This was deemed necessary to safeguard not only the Convention rights of individuals currently impacted by climate change but also those who "*may be severely and irreversibly affected in the future in the absence of timely action*".[314] Accordingly, the Court stipulated that this primary obligation requires enacting and 'effectively' implementing regulations and measures capable of

[313] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 499.
[314] ibid; For a reference to 'timely action' from the environmental law aspect, see *supra* note 142, Arie Trouwborst, 'Prevention, Precaution, Logic and Law - The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions', (n 61) 110.

mitigating both current and potentially irreversible future effects of climate change.[315] Hence, it established that this obligation arises from the causation link between climate change and the enjoyment of rights under Article 8. Additionally, it emphasized that the Convention, as a tool for safeguarding human rights, must be interpreted and applied in a manner that guarantees practical and effective rights rather than ones that are merely theoretical or illusory.[316]

In conclusion, while the precautionary principle and the adoption of cost-effective precautionary measures are not explicitly mentioned, the ECtHR integrated precautionary reasoning into its assessment. This integration can be observed particularly regarding the positive obligation to develop an effective framework and effective national procedures. Subsequently, the Court stated that states ought to safeguard individuals who 'may be' affected in the future if action (measures) is not taken in a timely (precautionary) manner. Therefore, while the precautionary principle is not explicitly articulated, it can be traced throughout the reasoning of the Court, emphasising the need for timely measures to address the challenges posed by climate change and ensure the protection of Convention rights.

Yet, I think there remains room for improvement. The precautionary principle can be reconciled with the ECHR, particularly in interpreting Article 34 and its merged interpretation with the substantive rights. The Court's cautious approach, while rooted in its judicial role, may inadvertently limit its ability to address the pressing issues posed by climate change effectively.[317] The Court may need to consider balancing its reactive nature with the proactive measures necessary to safeguard human rights in the face of imminent threats like climate change, especially in terms of protective operational measures. This could involve a more robust interpretation of the precautionary principle and the adoption of more stringent measures to address the current harms and risk of harm to individuals' rights arising out of climate change. Therefore, considering the urgent and irreversible nature of climate change, the Court might be too cautious in enforcing more stringent precautionary measures or interpretations.

[315] *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (n 4) para 545.
[316] ibid.
[317] ibid 481, "*The question for the Court in the present case is how and to what extent allegations of harm linked to State actions and/ or omissions in the context of climate change, affecting individuals' Convention rights (such as the right to life under Article 2 and/or the right to respect for private and family life under Article 8), can be examined (...) without ignoring the nature of the Court's judicial function, which is by definition reactive rather than proactive.*"

# 4 Conclusion

Even though the ECHR does not enshrine any right to (a healthy) environment as such, the ECtHR continues to evolve its jurisprudence in environmental matters, extending its case law to include climate change disputes. This development is propelled by numerous applications to the Court, asserting that the exercise of specific Convention rights may be compromised by environmental harm and exposure to environmental risks arising from climate change. Therefore, as climate change impacts continue to intensify, the ECtHR is uniquely positioned to contribute significantly to regional climate action through a human rights perspective. Nevertheless, integrating environmental law's duty-based logic into the rights-based reasoning of the ECHR presents challenges, particularly when addressing the complex and polycentric nature of climate change. Drawing inspiration from the cases before the Court, this thesis approached the pressing issue of climate change from the perspective of the precautionary principle, a concept originating from environmental law.

This thesis has examined the precautionary principle under international environmental law and ECHR, particularly in the context of climate change. To assess the reconciliation of the principle it has been deconstructed into four main elements. Accordingly, these elements have been utilised as convergence points of both disciplines.

First, it is elaborated upon how the risk holds a framework position within both disciplines. This means that risk is initially used to determine whether an obligation has been triggered. Once triggered, risk also influences the content and scope of that obligation. In other words, it also plays a foundational role in deciding whether the precautionary measure will occur through a protective (operational) measure, a national procedure or a regulatory framework and how stringent or broad these measures will be. The ECtHR does not distinguish the elements of risk and threat of harm, whereas the doctrinal discussions revolving around environmental law tend to examine these separately.

Subsequently, although the standard of causation extends throughout each step of the consideration of the principle and application of the precautionary measures; it has been examined under the scientific uncertainty element within the environmental law scope. On the other hand, the ECtHR chose to tackle causation in a multidimensional manner, allowing for a gradual analysis of the multifaceted and complex problem of climate change and global warming and their impact on the enjoyment of Convention rights.

The Court recognised the need to devise a more suitable and customised approach to address the various issues that arise in the context of climate change, which were not covered by the Court's existing environmental case

law. However, difficulties arose, especially because of how the Court embarked on its reactive judicial function. These challenges were exacerbated by the Court's tendency to find the complaints inadmissible on the grounds that the individual applicants were not sufficiently affected or the consequences were too remote. Given the victim status required by Article 34 of the ECHR, which mandates that the victim shall be directly affected by an act or omission, the Court does not assess claims *in abstracto*. Consequently, the interpretation of fundamental elements discussed within this thesis is constrained by these limits, resulting in a restricted integration of the principle. The analysis culminates in a discussion of the Court's cautious and merely evolving stance on the precautionary principle, emphasising the need for timely and effective legal responses to the multifaceted challenges posed by climate change.

In conclusion, while the ECtHR has been traditionally cautious in its adaptation of environmental principles directly into its human rights jurisprudence, this thesis finds that there is a growing recognition of the necessity to do so. The proactive application of the precautionary principle, with its emphasis on prevention and risk management, could significantly enhance the Court's capacity to address the emergent challenges posed by climate change. As the impacts of climate change continue to unfold, the ECtHR will likely need to refine further and expand its jurisprudential approach to protect human rights in an environmentally precarious future effectively. In doing so, it will not only uphold the rights enshrined in the Convention but will also contribute to the global or regional effort to combat climate change through a human rights lens. This evolving approach marks a vital step towards ensuring that the rights protected by the ECHR are not merely theoretical or illusory but are practical and effective in the face of global environmental changes.

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