***Verein Klimaseniorinnen Schweiz and Others v Switzerland,* Application no. 53600/20**

Third Party Intervention submitted by ClientEarth

I. Introduction

1. This case raises important questions of how to interpret the European Convention on Human Rights ("the Convention") in light of States' environmental obligations. Along with *Duarte Agostinho and Others v Portugal and 32 other States* (application no. 39371/20) and *Carême v France* (application no. 7189/21), this will be the first case where the European Court of Human Rights ("the Court") has the opportunity to make findings on the link between the rights guaranteed by the Convention and the impacts of climate change on human health and well-being.

2. ClientEarth's submission addresses important aspects of climate science relevant to the legal issues in this case, including those raised in the Grand Chamber's Questions 4 and 5. In particular, ClientEarth's submission covers the following:

    a) Certain key conclusions of the international scientific consensus on climate change: (i) the **urgency of action to reduce emissions**; (ii) the likely **irreversibility of temperature increases**; (iii) the **real risk of tipping points being exceeded** and of dramatically worse impacts than predicted under high-confidence projections; and (iv) the **significant 'lag'** in the geophysical effects of greenhouse gas emissions and in actions to transform human systems and reduce emissions (Section II below).

    b) The **present and future effects of global temperature increases on human health** (Section III below).

    c) The **duties of States under international climate change law** (Section IV below).

    d) The **implications for climate policy and legislation and the due diligence standard under the Convention** (Section V below).

3. At the outset, however, it is important to outline what we mean by climate change and the international scientific consensus on climate change.

4. The term climate change refers to changes in the Earth's natural climatic systems since pre-industrial times caused by the accumulation of greenhouse gases[1] in the atmosphere due to human activity, including from the burning of fossil fuels and land use changes such as deforestation.[2]

5. The accumulation of greenhouse gases in the atmosphere traps heat from the sun causing an increase in global mean surface temperature, a phenomenon called global warming. To date, anthropogenic greenhouse gas emissions have caused the Earth's global mean surface

[1] The six greenhouse gases that primarily cause global warming and climate change and that are regulated by the Kyoto Protocol include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6) (see Kyoto Protocol to the United Nations Framework Convention on Climate Change, 10 December 1997, Annex A).

[2] Climate change is defined in Article 1(2) of the UN Framework Convention on Climate Change 1992 to mean: "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*."

temperature to rise by approximately 1.1°C above pre-industrial levels.[3] This has caused significant changes to the Earth's climate and weather patterns, increasing extreme weather, causing sea-level rise and affecting all natural systems.[4] In addition to causing the ocean to warm, increased carbon dioxide (CO2) in the Earth's atmosphere is absorbed by the ocean, increasing ocean acidification with negative impacts on many forms of marine life.[5]

6. Measures to reduce greenhouse gas emissions are typically referred to as "***mitigation***" measures, whereas measures to adapt to climate change and reduce its impacts are typically referred to as "***adaptation***" measures. This submission focuses on mitigation; however, it is important to stress both (i) that adaptation forms a vital part of States' climate change duties, and (ii) that adaptation measures cannot substitute for taking adequate mitigation measures. **Only with the required emissions reductions is the scale of required adaptation likely to be manageable (and even then, there are impacts that it may not be possible to adapt to)**.

7. The findings and conclusions of the Intergovernmental Panel on Climate Change ("IPCC") represent the international scientific consensus on climate change.[6] These findings and conclusions are accordingly the focus of the following sections that discuss (i) key features of the science of climate change, and (ii) the present and future effects of global temperature increases on human health.

8. As we explain in more detail below, the science of climate change shows that **failing to act with sufficient urgency and scale poses grave threats to the health and wellbeing of current and future generations, with over nine million climate-related deaths per year projected by the end of the century**.[7] Indeed, the risk of even greater loss of life and widespread societal breakdown is a real one that cannot be ruled out.

9. In terms of Europe specifically, the World Health Organization (WHO) Regional Director for Europe recently explained that "*climate change is already killing us*", pointing to the estimate that **at least 15,000 people died due to extreme heat in Europe in 2022** (with that estimate expected to increase as more countries report data).[8] As Dr Kluge goes on to explain, "*[o]ver the following decades, growing exposure and vulnerability to heatwaves and other extreme weather events will lead to more diseases and deaths unless countries take **truly drastic adaptation and mitigation measures to tackle climate change***" (emphasis added).

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[3] The term 'pre-industrial' is defined by the Intergovernmental Panel on Climate Change (IPCC) as "*[t]he multi-century period prior to the onset of large-scale industrial activity around 1750*", with "*[t]he reference period 1850–1900…used to approximate pre-industrial GMST*". See IPCC, 'Global warming of 1.5°C', October 2018, 'Summary for Policymakers', box SPM.1, p. 24.

[4] IPCC Sixth Assessment Report (AR6) Working Group I (WGI), 9 August 2021, 'Summary for Policymakers'.

[5] IPCC 1.5°C Report, October 2018, Chapter 3, p. 178 ("*The ocean has absorbed about 30% of the anthropogenic carbon dioxide, resulting in ocean acidification and changes to carbonate chemistry that are unprecedented for at least the last 65 million years (high confidence).*").

[6] The IPCC is an intergovernmental organisation established by the World Meteorological Organisation and the United Nations Environment Programme ("UNEP") in 1988 in order to assess the science related to climate change. The IPCC synthesises thousands of scientific papers to provide a summary of the causes, impacts and risks of climate change and how adaptation and mitigation can reduce those risks. After multiple stages of scientific expert and State review, formal acceptance of IPCC reports indicates that States accept that they represent a comprehensive, objective and balanced view of the subject matter. See IPCC, 'Factsheet: How does the IPCC approve reports?', July 2021; IPCC, 'Factsheet: How does the IPCC review process work?', July 2021; and IPCC, '*About*' webpage.

[7] IPCC AR6 WGII, 'Technical Summary', p. 63, TS.C.6 ("*Over nine million climate-related deaths per year are projected by the end of the century, under a high emissions scenario and accounting for population growth, economic development and adaptation. Health risks will be differentiated by gender, age, income, social status and region (high confidence).*")

[8] https://www.who.int/europe/news/item/07-11-2022-statement---climate-change-is-already-killing-us--but-strong-action-now-can-prevent-more-deaths.

10. We suggest that the gravity and scale of these risks – as well as the nature of States' duties in international climate change law – should inform the Court's approach to assessing whether States have acted with due diligence for the purposes of the Convention.

II. Key conclusions of the international scientific consensus on climate change

11. The following aspects of the science of climate change are key to understanding the scale and urgency of the climate crisis, including in the context of assessing the adequacy of action by states.

The urgency of emissions reductions to limit warming to 1.5°C

12. The warming effect of greenhouse gas emissions is cumulative, as emissions accumulate and persist in the atmosphere for periods of up to thousands of years. Warming is driven by the global cumulative 'stock' of greenhouse gas emissions that have built up over time, and not by the annual volume of global emissions. Increases in average global temperatures can only be prevented by reaching a balance of emissions and removals of greenhouse gases – often referred to as 'net zero' emissions.

13. The IPCC's Special Report of 2018 showed how limiting warming to 1.5°C – by reaching global net zero carbon dioxide emissions by 2050 – would limit or avert the worst impacts of climate change. The Report stated that: "***Without increased and urgent mitigation ambition in the coming years, leading to a sharp decline in greenhouse gas emissions by 2030, global warming will surpass 1.5°C in the following decades, leading to irreversible loss of the most fragile ecosystems, and crisis after crisis for the most vulnerable people and societies.***"[9]

14. Present and near-term actions to reduce emissions (or failures to do so) will determine the extent of climate change impacts in the future. In October 2018, the IPCC's Special Report on 1.5°C found that deep and rapid reductions of emissions must commence immediately from that date.[10] This was reiterated in the IPCC's Sixth Assessment Report (AR6) of 2021/2022.[11]

15. The urgency of deep emissions reductions to occur this decade is particularly evident in calculations of the amount of additional greenhouse gas emissions that would result in a 50% chance of meeting the 1.5°C goal. Limiting climate global temperature rise to any level means a finite 'global carbon budget' of permissible additional emissions given their cumulative effect. According to the IPCC, **the carbon budget for 1.5°C is small and dwindling rapidly**.

16. In the second part of the IPCC's AR6, released in February 2022, the IPCC gave the following stark assessment: "*The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health.* ***Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all. (very high confidence)****…*" (emphasis added).[12]

17. The third part of AR6, released in April 2022, went on to conclude that the remaining carbon budget to limit warming to 1.5°C is roughly equal to global CO2 emissions from 2010 to 2019.[13]

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[9] IPCC 1.5°C Report, Foreword.
[10] IPCC 1.5°C Report, 'Technical Summary', pp 32-33.
[11] IPCC AR6 WGIII, 'Summary for policymakers', pp 27-28, C.2.2, C.3 and C.3.1; IPCC AR6 WGII, 'Technical Summary', p. 85, TS.E.4.5.
[12] IPCC AR6 WGII, 'Summary for policymakers', p. 35, SPM.D.5.3.
[13] IPCC AR6 WGIII, 'Technical summary', p. 16, fig. TS.3, and p. TS-26 ("*Cumulative net CO2 emissions over the last decade (2010-2019) are about the same size as the remaining carbon budget likely to limit warming to 1.5°C (medium confidence)….*").

18. However, the **overall trend of global GHG emissions has not yet gone in the right direction, let alone reducing at the necessary rate** – IPCC analysis shows that global annual emissions continued to increase until 2019,[14] with some recent analysis suggesting they may have begun only to flatten in the past decade.[15] Indeed, the Hague District Court's 2021 judgment in a claim against the oil and gas company Shell, observed how quickly the global carbon budget is being used up at current emission levels: "*A carbon budget of 580 Gt CO2 was available from 2017 – a best estimate – for a 50% chance of a warming of 1.5ºC. Now, three years later, 120 Gt CO2 of the carbon budget has been used, which means that 460 Gt CO2 remains*."[16]

19. Without rapid action to get global emissions to net zero, global temperatures will continue to increase with no realistic chance of temperatures being brought down again, as we explain in the following section.

The likely irreversibility of temperature increases

20. Global warming involves the risk of **long-lasting and irreversible impacts**, such as the loss of entire ecosystems, or the submergence of low-lying islands and coastal areas from sea-level rise.[17]

21. However, apart from these specific irreversible impacts, the IPCC has also assessed that it is highly uncertain that reducing the world's average temperature once global warming has increased would be possible. In particular, scientific understanding is limited about the effectiveness of net negative emissions to reduce temperatures after they have peaked. Moreover, the carbon dioxide removal (CDR) technologies cited as possible methods to achieve net negative emissions (such as bioenergy with carbon capture and storage (BECCS) or direct air carbon capture and storage (DACCS)) are **currently unproven at scale, let alone the scale required to achieve global net negative emissions**. An alternative approach would be to reforest significant parts of the Earth's surface; however, this would have **significant impacts on global food supply**. [18] The German Constitutional Court has described the effect of additional greenhouse gas emissions as follows: "*Insofar as this causes the remaining CO2 budget to be used up, **the effect is irreversible because no method is currently known for removing CO2 emissions from the Earth's atmosphere on a large scale***" (emphasis added).[19]

22. Ceasing CO2 emissions does not reduce the impacts of existing climate change – it may only prevent or slow **further** temperature rise, and extreme weather and other impacts will continue to occur as a result of the high atmospheric concentration of CO2 and the already changed climatic conditions.

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[14] IPCC AR6 WGIII, 'Summary for policymakers', p. 10, B.1.

[15] https://www.carbonbrief.org/global-co2-emissions-have-been-flat-for-a-decade-new-data-reveals/.

[16] *Milieudefensie et al. v. Royal Dutch Shell plc* (ECLI:NL:RBDHA:2021:5337), Hague District Court Judgment of 26 May 2021, para 2.3.4.

[17] IPCC AR6 WGI, 'Summary for Policymakers', section B.5, p. 21 ("*Many changes due to past and future greenhouse gas emissions are irreversible for centuries to millennia, especially changes in the ocean, ice sheets and global sea level*").

[18] IPCC 1.5°C Report, 'Summary for Policymakers', section C.3.3-4, p. 17 ("*Pathways that overshoot 1.5°C of global warming rely on CDR exceeding residual CO2 emissions later in the century to return to below 1.5°C by 2100, with larger overshoots requiring greater amounts of CDR … (high confidence). Limitations on the speed, scale, and societal acceptability of CDR deployment hence determine the ability to return global warming to below 1.5°C following an overshoot. Carbon cycle and climate system understanding is still limited about the effectiveness of net negative emissions to reduce temperatures after they peak (high confidence). … C.3.4 Most current and potential CDR measures could have significant impacts on land, energy, water or nutrients if deployed at large scale (high confidence). Afforestation and bioenergy may compete with other land uses and may have significant impacts on agricultural and food systems, biodiversity, and other ecosystem functions and services (high confidence).*").

[19] *Neubauer et al v Federal Republic of Germany* (Case Nos. 1 BvR 2656/18, 1 BvR 288/20, 1 BvR 96/20, 1 BvR 78/20), Federal Constitutional Court of Germany Order of 24 March 2021, §130.

The real risk of 'tipping points' being exceeded and of dramatically worse impacts than under high-confidence projections

23. Current and predicted future climate change involves the risk of triggering so-called **'tipping points**', natural events that can result in **major shifts in the scale and pace of climate change and related impacts**.[20] The IPCC defines a tipping point as "*a critical threshold beyond which a system reorganizes, **often abruptly and/or irreversibly***" (emphasis added).[21]

24. The IPCC identifies several critical 'tipping points' of this kind: ice sheet loss that could cause sea-level rise of several metres, changes in ocean currents, 'El Niño' weather patterns and the carbon absorption capacity of the ocean.[22]

25. Tipping points are increasingly likely in the future and may lead to climate systems changing in a non-linear and unpredictable manner, opening up the potential for **drastic outcomes that do not fit historical patterns** and "*cannot be predicted based on current understanding*."[23] They also include "*social tipping points*" where the erosion of livelihoods can interact with humanitarian crises and armed conflict.[24]

26. The IPCC has assessed that a number of climatic tipping points could already occur at current levels of warming up to 2°C, and that they will have a significantly increased probability of occurring if temperatures rise above 2°C.[25] It assesses – with high confidence – that: "*Low-likelihood, high-impact outcomes could occur at global and regional scales even for global warming within the very likely range for a given GHG emissions scenario. The probability of low-likelihood, high-impact outcomes increases with higher global warming level. **Abrupt responses and tipping points of the climate system, such as strongly increased Antarctic ice-sheet melt and forest dieback, cannot be ruled out***." (emphasis added).[26]

27. The need to reduce the risk of catastrophic potential impacts from tipping points being triggered only reinforces the urgency of emissions reductions and the existential risks posed by delayed action.

The significant 'lag' in the geophysical effects of greenhouse gas emissions and in actions to transform human systems and reduce emissions

28. There are significant 'lag' effects in relation to greenhouse gas emissions and the impacts of climate change, which are the result of **inertia in both geophysical and socio-economic systems**.

29. Geophysical system inertia in relation to climate impacts arises from (for example) delays in the thawing of permafrost and ocean thermal and carbon cycle effects, with permafrost changes

[20] IPCC AR6 WGI, 'Technical Summary', p. 71 ("*The paleoclimate record indicates that tipping elements exist in the climate system where processes undergo sudden shifts toward a different sensitivity to forcing, such as during a major deglaciation, where one degree of temperature change might correspond to a large or small ice sheet mass loss during different stages. … At the regional scale, abrupt responses, tipping points and even reversals in the direction of change cannot be excluded (high confidence). Some regional abrupt changes and tipping points could have severe local impacts, such as unprecedented weather, extreme temperatures and increased frequency of droughts and forest fires. ...*")

[21] IPCC AR6 WGI, 'Summary for Policymakers', p. 21, fn 34.

[22] IPCC 1.5°C Report, pp 257-258, section 3.5.2.5; IPCC AR6 WGI, 'Technical Summary', pp 106-107.

[23] IPCC AR6 WGII, 'Full Report', 28 February 2022, section 1.3.1.2, pp 1-33.

[24] IPCC AR6 WGII, 'Technical Summary', TS.C.8.1 ("*Even with current, moderate climate change, vulnerable people will experience a further erosion of livelihood security that can interact with humanitarian crises, such as displacement and involuntary migration (high confidence) and violence and armed conflict, and lead to social tipping points (medium confidence).*")

[25] IPCC 1.5°C Report, Chapter 3, pp 262-264.

[26] IPCC AR6 WGI, 'Summary for Policymakers', C.3.2.

lagging emissions reductions **by decades** and changes in oceans lagging emissions reductions **by several centuries**.[27]

30. The impact of some of these effects can be uncertain, especially given possible feedback dynamics, and can have the potential to reduce further the available global carbon budget cited above (by as much as 100 GtCO2).[28]

31. There is a further 'lag' in transitioning entrenched socio-economic systems – building infrastructure, re-training workforces and re-designing regulation – to decarbonise them at the pace required. These lag effects, which the IPCC refer to as "*techno-economic inertia*"[29] – mean that **steps to reduce emissions are required now to prevent future climate impacts**.

32. The IPCC has found that "*limiting warming to 1.5°C would require a rapid escalation in the scale and pace of transition, particularly in the next 10–20 years*".[30] Equally, the IPCC explains that: "***delaying GHG emissions reductions over the coming years also leads to economic and institutional lock-in into carbon-intensive infrastructure**, that is, the continued investment in and use of carbon-intensive technologies that are difficult or costly to phase-out once deployed.*"[31] This phenomenon is often referred to as **'carbon lock-in**', and it can also be understood as resulting in low-carbon alternatives being 'locked out'.[32]

33. In the following section we discuss how climate change is already having severe effects on human health, which – without sufficiently urgent action on emissions – will continue to increase in severity and scale in future.

III. The present and future effects of global temperature increases on human health

34. Climate change is not only a future problem – it is **already** causing widespread and severe impacts on human health and wellbeing.[33] In October 2021, the WHO described climate change as "***the biggest health threat facing humanity***".[34]

35. In the context of risks to human health, the IPCC has described in its most recent reports the impact of current and expected climate change as follows: "*Climate change has adversely affected physical health of people globally (very high confidence) and mental health of people in the assessed regions (very high confidence). … **In all regions extreme heat events have resulted in human mortality and morbidity (very high confidence) … Climate change and related extreme events will significantly increase ill health and premature deaths from the near- to long-term (high confidence)**. … Mental health challenges, including anxiety and stress, are expected to increase under further global warming in all assessed regions, particularly for*

[27] IPCC AR6 WGI, 'FAQ', p. 5-121 ("*…the reversal of global surface warming lags the decrease in the atmospheric CO2 concentration by a few years, the reversal of permafrost area decline lags the decrease in atmospheric CO2 by decades, and ocean thermal expansion continues for several centuries*.").
[28] IPCC 1.5°C Report, Chapter 2, p. 107; see also IPCC AR6 WGI, 'Summary for Policymakers', D.1.2.
[29] IPCC 1.5°C Report, Chapter 1, p. 66; see also IPCC AR6 WGIII, 'Full Report', Chapter 2, pp 68-69.
[30] IPCC 1.5°C Report, Chapter 4, p. 392. 4. In this context, the IPCC explains that the most significant challenges facing emissions reductions relate to "*institutional and economic feasibility*", rather than being technological and geophysical in nature, noting that "*[t]he rapid pace of technological development and deployment in mitigation pathways is not incompatible with historical records.*" IPCC AR6 WGIII, 'Full Report', Chapter 3, p. 9.
[31] IPCC 1.5°C Report, section 2.3.5, p. 126; see also IPCC AR6 WGIII, 'Full Report', Chapter 3, p. 69.
[32] UNEP, 'The Production Gap Report: Special Report', December 2020, p. v ("*The tendency for certain carbon-intensive technological systems to persist over time, "locking out" lower-carbon alternatives, owing to a combination of linked technical, economic, and institutional factors*"); see also G. Unruh, 'Understanding carbon lock-in', October 2000, Energy Policy 28 (12), pp 817-830.
[33] IPCC AR6 WGII, 'Technical Summary', p. 50, TS.B.5 ("*Climate change has already harmed human physical and mental health (very high confidence). In all regions, health impacts often undermine efforts for inclusive development. Women, children, the elderly, Indigenous People, low-income households and socially marginalised groups within cities, settlements, regions and countries are the most vulnerable (high confidence).*").
[34] https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health.

children, adolescents, elderly, and those with underlying health conditions (very high confidence)" (emphasis added).[35]

36. In terms of health impacts in Europe specifically, the IPCC has assessed that "*[o]ur current 1.1°C warmer world is already affecting natural and human systems in Europe (very high confidence)*", while it describes the following health impacts as Europe's "***Key Risk 1***" from climate change: "***The number of deaths and people at risk of heat stress will increase two- to threefold at 3ºC compared with 1.5ºC [global warming levels] (high confidence). Above 3°C [global warming levels], there are limits to the adaptation potential of people and existing health systems (high confidence)****. Warming will decrease suitable habitat space for current terrestrial and marine ecosystems and irreversibly change their composition, increasing in severity above 2°C [global warming levels] (very high confidence)*" (emphasis added).[36]

37. The IPCC also explains how the interaction of multiple, different climate risks can have **a compounding effect on overall levels of risk**, including when it comes to human health impacts: "*Climate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions … (high confidence).*"[37]

38. In September 2021, over 200 leading health journals published a joint editorial calling for emergency action to limit global temperature increases to limit impacts on health. They explain that: "*The science is unequivocal; a global increase of 1.5°C above the pre-industrial average and the continued loss of biodiversity risk catastrophic harm to health that will be impossible to reverse.* … ***The risks to health of increases above 1.5°C are now well established. Indeed, no temperature rise is "safe." In the past 20 years, heat related mortality among people aged over 65 has increased by more than 50%*** … *Global heating is also contributing to the decline in global yield potential for major crops, falling by 1.8-5.6% since 1981; this, together with the effects of extreme weather and soil depletion, is hampering efforts to reduce undernutrition*" (emphasis added).[38]

39. As the authors emphasise, severe climate impacts on people's health are already occurring, with dramatic increases in mortality rates for the most vulnerable sections of society, and these impacts can be expected to increase in severity and scope with every increase in warming.

IV. The duties of States under international climate change law

40. In December 2015, 196 States adopted the Paris Agreement on Climate Change ("Paris Agreement") under the overarching UN Framework Convention on Climate Change of 1992 ("UNFCCC").[39]

41. Under Article 2.1, the Paris Agreement sets out a global temperature goal of "*Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change*". It also sets out separate goals

[35] IPCC AR6 WGII, 'Summary for Policymakers', p. 11, paras B.1.4 and B.4.4.
[36] IPCC AR6 WGII, 'Fact Sheet – Europe'.
[37] IPCC AR6 WGII SPM p. 18, para B.5 and B.5.1.
[38] The British Medical Journal, '*Call for emergency action to limit global temperature increases, restore biodiversity and protect health*', 6 September 2021, 374.
[39] The UNFCCC provided under Article 3 that "*The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof … The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. …*".

on resilience and adaptation to climate change and making finance flows consistent with these objectives.

42. Under Article 4, States parties to the Paris Agreement are required to produce their own successive nationally determined contributions towards achieving the Paris temperature goal (known as NDCs). The Paris Agreement provides that States' NDCs must "*represent a progression beyond the Party's then current [NDC] and reflect its* ***highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in light of different national circumstances***" (emphasis added). This obligation has been described as representing a **'best efforts' obligation**, where each Party "***commits to taking all appropriate measures at its disposal***", setting the *"**highest possible mitigation target that is not economically disproportionately burdensome or impossible to achieve***", and which is also "***comprehensive and based on a thorough assessment of mitigation options in all relevant sectors***". Moreover, Parties need to "***deploy all political, legal, socio-economic, financial and institutional capacities and possibilities in defining such target***."[40]

43. The average global temperature provisions in the Paris Agreement of "*well below*" 2°C and "*pursuing efforts*" to limit to 1.5°C lead to the same level of global carbon budget. For example, the IPCC AR6 Working Group III report notes that scenarios with a 50% chance of limiting warming to 1.5°C "*have a simultaneous likelihood to limit peak global warming to 2°C throughout the 21st century of close to and more than 90%.*"[41]

44. The UNFCCC Parties' focus on limiting global temperature increase to 1.5°C is also reflected in the Glasgow Pact that was agreed at the COP26 climate conference in 2021. At paragraphs 16 and 17, the Glasgow Pact recognises: "*that* ***the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C****, and resolves to pursue efforts to limit the temperature increase to 1.5°C; [and] that limiting global warming to 1.5°C requires* ***rapid, deep and sustained reductions in global greenhouse gas emissions****, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century, as well as deep reductions in other greenhouse gases*" (emphasis added).

45. At paragraphs 3 and 4, the Glasgow Pact also "*[e]xpresses alarm and utmost concern that human activities have caused around 1.1 °C of global warming to date and that* ***impacts are already being felt in every region*****"**, and "*[s]tresses the urgency of enhancing ambition and action*", referring to the 2020s as a "***critical decade*** *to address gaps between current efforts and pathways in pursuit of the ultimate objective of the Convention and its long-term global goal*" (emphasis added).These statements were reiterated by the parties to the Paris Agreement in the cover decision of the recent COP27 climate conference in November 2022.[42]

V. The implications for climate policy and legislation and the due diligence standard under the Convention

46. The international legal framework described above – coupled with the key scientific features set out above – have important implications for climate policy and legislation as well as for the application of the due diligence standard under the Convention[43] Indeed, as referenced below, some of these implications also follow from established principles in the Court's jurisprudence.

[40] C Voigt, 'The Paris Agreement: What Is the Standard of Conduct for Parties?' (2016) 26 Questions of International Law, Zoom-in 17, pp 21-22.
[41] IPCC AR6 WGIII, 'Summary for Policymakers'.
[42] UN Doc Ref. FCCC/PA/CMA/2022/L.21.
[43] *Pavlov and Others v Russia*, 2022, §90 ("*... it is within [the Court's] jurisdiction to assess whether the State approached the problem with due diligence and gave consideration to all the competing interests.*").

47. In particular, the 'highest possible ambition' principle and the urgency of reducing global emissions in the next "*critical decade*" emphasise the need for States to set **ambitious near-term and long-term targets** that are backed by **credible and effective action**. This should include:[44]

    a) **early action**[45] on reducing emissions (and avoiding loopholes that could allow for delay), to put the economy onto a credible long-term trajectory and to avoid requiring a disproportionate or impossibly steep fall in emissions in the future;

    b) **credible and effective action**,[46] based on **binding near-term and long-term targets** that are aligned with a State's **highest possible ambition** (applying the Paris Agreement framework discussed above);

    c) a **'whole-systems' approach** that recognises the need for action at all levels of government and in all sectors of the economy, and that many actions are interdependent, requiring a holistic and coordinated approach;

    d) **independent expert advisory bodies**[47] to allow for effective scrutiny of the adequacy of targets and progress; and

    e) **transparency** regarding government plans and progress to allow for civil society scrutiny,[48] with **a clear allocation of responsibilities within government** to allow for **accountability** (including legal accountability through recourse to the courts).

48. These principles have been upheld by courts in many European jurisdictions when assessing a State's climate action, including in the Netherlands[49], Ireland[50], France[51], the Czech Republic[52], Germany[53] and the UK[54].

49. In the specific context of international human rights law, the UN Report of 2019 on human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment explained that "*to comply with their human rights obligations, developed States and other large*

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[44] These principles are explained in more detail in ClientEarth's 2021 report 'Navigating Net-Zero: Global Lessons in Climate Law-making' (https://www.clientearth.org/latest/documents/navigating-net-zero-global-lessons-in-climate-law-making/).

[45] In this context, the Court has established standards regarding the "*positive duty to take reasonable and appropriate measures*" to secure the rights under Article 8 of the Convention (see *Kolyadenko and Others v Russia*, 2012, §212), including the need for "*timely and effective action*", and measures that are "*in fact effective*" in reducing the risks to these rights (*Pavlov and Others v Russia*, 2022, §§75, 77 and 85). The Court has also upheld the importance of the precautionary principle in the context of environmental harm (*Tătar v Romania*, 2009, §§75, 109 and 120).

[46] Ibid.

[47] In this context, the Court has ruled that where a State has to determine complex issues of environmental and economic policy, the decision-making process "*must in the first place involve appropriate investigations and studies so that the effects of activities that may damage the environment and infringe individuals' rights may be predicted and evaluated in advance and a fair balance may accordingly be struck between the various conflicting interests at stake*" (*Hardy and Maile v the UK,* 2012, §220).

[48] In this context, the Court has upheld procedural safeguards under Article 8 of the Convention, including public access to information and access to judicial remedies for individuals who consider that that their interests have not been given sufficient weight in decision-making processes (*Tătar v Romania*, 2009, §118; *Hardy and Maile v the UK*, 2012, §221).

[49] *The State of The Netherlands v Urgenda*, Case No. 19/00135, Dutch Supreme Court Judgment of 20 December 2019.

[50] *Friends of the Irish Environment v The Government of Ireland*, Appeal No: 205/19, Supreme Court Judgment of 31 July 2020.

[51] *Notre Affaire à Tous and Others v Republic of France*, Case Nos 1904967-1904968-1904972-1904976, Administrative Court of Paris Judgment of 14 October 2021.

[52] *Klimatická žaloba ČR v Czech Republic*, Judgment No. 14A 101/2021 of the Prague Municipal Court dated 15 June 2022.

[53] *Neubauer et al v Federal Republic of Germany* (Case Nos. 1 BvR 2656/18, 1 BvR 288/20, 1 BvR 96/20, 1 BvR 78/20), Federal Constitutional Court of Germany Order of 24 March 2021.

[54] *Friends of the Earth, ClientEarth, Good Law Project v Secretary of State for Business, Energy and Industrial Strategy* [2022] EWHC 1841 (Admin), High Court of England and Wales Judgment of 18 July 2022.

emitters must reduce their emissions at a rate consistent with their international commitments".[55] The UN Report emphatically concluded that "***a failure to fulfil international climate change commitments is a prima facie violation of the State's obligations to protect the human rights of its citizens****….*".[56]

50. Indeed, these international commitments have already been used by national courts in climate cases to determine States' positive obligations to reduce emissions. In doing so, courts have applied **well-established human rights principles of due diligence and minimum core obligations**.[57] For example, the Dutch court did so in the *Urgenda* case cited above in determining the State's "***minimum fair share***", as did the Czech court in the *Klimatická žaloba* case cited above in finding that the State was required to achieve a higher (55%) reduction in emissions by 2030 and have a "***sufficiently specific and realistic plan of concrete mitigation measures***" in place for doing so.

51. As both the Czech and Dutch decisions also make clear – and as stressed throughout the above – States' **mitigation and adaptation obligations are separate and stand-alone obligations, with no scope for adaptation steps to remove the need for adequate action on reducing emissions**. As the Dutch court explained: "... *although it is correct that the consequences of climate change can be mitigated by taking adaptation measures,* ***it has not been demonstrated or made plausible that the potentially disastrous consequences of excessive global warming can be adequately prevented by such [adaptation] measures****. This finding also implies that* ***even if account is taken of the fact that the State is taking adaptation measures, mitigation measures that reduce emissions ... are urgently needed*** *…*" (emphasis added).

52. In conclusion, the international scientific consensus on increased climate-related health impacts, including from more severe and frequent heatwaves in Europe,[58] means that these threats are plainly foreseeable, with European States having been aware of them for decades. The **foreseeability** of the threats climate change poses to Convention rights, together with their **urgency, irreversibility and other scientific features outlined above** – and coupled with **States' duties under international climate change law** – should inform the Court's approach to applying the due diligence standard under the Convention.

[55] Report of the UN Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, A/74/161 (2019), para 75. The Report also defined the four main categories of actions that must be taken by states to comply with their human rights obligations: "*addressing society's addiction to fossil fuels; accelerating other mitigation actions; protecting vulnerable people from climate impacts; and providing unprecedented levels of financial support to least developed countries and small island developing States.*"

[56] Ibid, para 74.

[57] See S Marjanac & S Hunter Jones, 'Staying within Atmospheric and Judicial Limits: Core Principles for Assessing Whether State Action on Climate Change Complies with Human Rights' in C. Rodríguez-Garavito (Ed.), *Litigating the Climate Emergency: How Human Rights, Courts, and Legal Mobilization Can Bolster Climate Action* (2022), pp 157-176.

[58] This is confirmed in the IPCC's AR6, which states that there has been a "*very likely increase in the intensity and frequency of hot extremes*" across Europe, and that "*human influence very likely contributed to the observed increase in the intensity and frequency of hot extremes*" (IPCC AR6 WGI, 2021, Chapter 11, pp 1555 and 1680). With reference to the devastating 2003 heatwave in Europe, the IPCC's Fourth Assessment Report (AR4) stated that "*wide ranging impacts of changes in current climate have been documented in Europe (very high confidence). […] [An] example is the European heatwave in 2003 which had major impacts on biophysical systems and society. The observed changes are consistent with projections of impacts due to climate change*." (IPCC AR4: Impacts, Adaptation, and Vulnerability, 2007, Chapter 12, p. 543).