Received: 21 July 2022 | Revised: 13 April 2023 | Accepted: 18 April 2023

DOI: 10.1111/1758-5899.13219

SPECIAL ISSUE ARTICLE

Intergenerational Preparedness: Climate Change, Community Interest Obligations and the Environmental Rule of Law

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Abstract

This article argues that the protection of 'community interests' in international law includes intertemporal obligations of States, in cases where it is scientifically foreseeable that preserving the 'status quo' of a protected community interest is increasingly unlikely. The argument is developed for climate change as a 'common concern of humankind' and based on the premise that even *if* a temperature limitation of 1.5°C would be achieved towards the end of this century, future generations will nevertheless live in a world that has fundamentally changed due to current policy and law choices. The article introduces the new concept of 'intergenerational preparedness' to operationalise and expand the normative scope of the principle of intergenerational equity. While some argumentative structures will be examined where intergenerational preparedness can be given effect through legal interpretation, the expectation that States must adopt preparatory measures to account for their community interest obligations deserves a more explicit recognition. It is a matter of the (environmental) rule of law to protect community interests on a time continuum, and this encompasses measures to prevent the deterioration of protected interests and to prepare communities for foreseeable detrimental changes.

1 | INTERGENERATIONAL PREPAREDNESS: AN INQUIRY INTO INTERTEMPORAL DUTIES OF STATES IN MANAGING COMMUNITY INTERESTS

This article experiments with perceptions of intertemporal obligations of States in managing community interests to move the discourse on global crises, be it climate change, biodiversity loss or the increase in health risks, beyond the characterisation as 'super wicked problem' or 'perfect moral storm' (Rittel & Webber, 1973, p. 155; Gardiner, 2011, p. 76). The argument is developed with a focus on climate change. It has been noted that while literature exists on the social justice (Diezel, 2019, p. 25; Caney, 2018, p. 476) and the ecological justice (Bosselmann, 2006, p. 150; Bosselmann, 2010, p. 2441) dimensions of protecting future generations, there has traditionally been a paucity of writing by international law scholars on the subject (Lawrence, 2012, p. 23) with only few exceptions (notably, Brown Weiss, 1984). This may be indicative of a narrowed discourse on intragenerational fairness that has displaced the conceptual thinking about future generations (Lawrence, 2012, pp. 23–25).

The article develops intergenerational preparedness as an original legal concept that is currently missing in international law. In so doing, the analysis uses and connects two main approaches. It first integrates 'community interests' with the principle of intergenerational equity, and second, validates the findings from the perspective of the environmental rule of law. The perception of community interests entails that obligations exist vis-à-vis the international community, either composed only of States, or including non-State actors (Benvenisti

& Nolte, 2018, pp. 4–7; Paulus, 2013; Kritsiotis, 2002, p. 990; Feichtner, 2007, para. 4), and extended towards the 'international community as a whole' (International Law Commission (ILC), Articles on State Responsibility, 2001, Article 48(1)(b); Vaurs-Chaumette, 2010). The academic discourse on community interests and corresponding obligations is situated within the wider discussion on how the international system is best described.

The article is based on the premise that even though humanity may well be organised in 'conflict groups' (Carlarne & Helal, 2018, p. 234) rather than communities, there remains a basic yet melding architecture that allows to explain international social realities as a continuous self-constituting process, where a focus on commonalities in spite of existing deficiencies and dysfunctionalities, remains possible. If nothing else, such a community can be characterised through the commonality of global challenges, and the potential to at least couple territoriality and functionality in the international legal system (for the role of the law in moving towards functionality of community see Luhman, 1997, pp. 142-145; see further Simma, 1994, p. 233, and Mosler, 1980, p. 330).

In the legal discourse, community interests have been defined as (i) interests that (ii) are common and (iii) belong to a community (Besson, in Benvenisti & Nolte, 2018, p. 38; Allott, 1999, p. 50; Simma, 1994, p. 340). It has also been cautioned that assigning certain norms or institutions the function to protect 'community interests' could overstate their practical effects (von Bernstorff, in Benvenisti & Nolte, 2018, p. 296) or come at the expense of certain States (Wolfrum, in Benvenisti & Nolte, 2018, p. 20). These issues concern how relevant interests are legitimately identified, governed and protected. Some protected interests, of which the climate is one, belong to common spaces beyond national jurisdictions and have been included as such in relevant treaty regimes (Paris Agreement, 2015, preamble; Wolfrum, in Benvenisti & Nolte, 2018, p. 31). For the climate, the qualification as community interest goes back to 1988, when the UN General Assembly for the first time acknowledged that climate change was a 'common concern of [human]kind' (UNGA 43/53, 1988).

It is well recognised in international law that finding ways to legitimately administrate global public goods and protect interests in common spaces is a constant process of balancing priorities within the respective and *current* community (Allott, 1999, p. 36; Gaja, 2014, p. 20; Besson, in Benvenisti & Nolte, 2018, p. 38). Less clarity exists in respect of the ensuing practical and normative consequences, if it becomes foreseeable that States fail in safeguarding future communities' interests in common spaces. The balancing of current priorities is foundational for the normative structure of international law and it influences the general fairness discourse (Franck, 1995, pp. 4–13; explaining international law as an autopoietic system: D'Amato, 2005, in Wolfrum & Röben, 2005, p. 351; Kennedy, 2006, pp. 124–128; Bodansky, 2012, p. 654). However, Hardin's 'tragedy of the commons' (Hardin, 1968, p. 1245) incubates a problem for international law that is even more tragic and resistant to solution if we expand the time horizon.

Therefore, this article seeks to extend the thinking about the normative structure of international law beyond the 'now' through integrating a distinct and permanent intertemporal perspective into today's governance of community interests. The argument is not concerned with *erga omnes* obligations and State responsibility arising

Policy Implications

- Scientific evidence can enable States to anticipate the future deterioration of a protected community interest. In the case of climate change, States can and must prepare future generations for life in fundamentally changed conditions.
- As a concept at the international level, intergenerational preparedness articulates that community obligations exist on a time continuum. The expectation that States must adopt preparatory measures to fully account for their community interest obligations deserves a more explicit recognition.
- As an analytical concept for policy and law framing, intergenerational preparedness operationalises the principle of intergenerational equity and it expands the normative content of intergenerational equity. It should define the perspective and the priorities of policy makers.
- States and State institutions (nationally and internationally) are the primary duty bearers for intertemporal obligations that protect community interests, and this is underpinned by the (environmental) rule of law.
- Intergenerational preparedness can already be implemented to some extent, through all branches of government. Avenues for implementation through interpretation comprise the recognition of a dynamic legislative duty (legislature) that takes into account the current trajectory for the preservation of a community interest, cooperative and transboundary duties of States (executive branches), and the systemic interpretation of existing laws (judiciary).
- Preparatory measures must include but also go beyond immediate adaptation planning for specific risks and drive investment in all planning areas, in the light of expected future climate related impacts and extreme events.

from a violation of community interest obligations (see, e.g., Tams, 2005, p. 252), nor does it use the intrinsic link with human rights obligations of States (see for a comprehensive analysis Lewis, 2018, pp. 78–82). Instead, I seek to unearth an analytical concept that is inherent in the full protection of community interests on a time continuum.

At its core, the article articulates that the expectation for States to take into account the interests of future generations in being prepared for detrimental changes, deserves a more explicit recognition as a community interest obligation. This is a normative claim for the development of international law, *de lege ferenda*. The article discusses examples of argumentative structures where, to some extent, those interests can be incorporated through legal interpretation, *de lege lata*. However, without accepting that intergenerational preparedness forms an essential part of governing community interests, neither intergenerational equity nor the prospects of the reign of the environmental rule of law will materialise.

For that reason, the argument evolves from the premise that community interests as such are conceptually recognised. Nevertheless, the evaluation of existing and potential legal content that defines interests in common spaces above the nation-State is bound to proceed in the awareness of deficiencies, cautious not to assign underserved dignity to normative structures of an international order that remains fragile.

The analysis proceeds in three main parts. The following Part 2 discusses how the capacity to prepare emerges from the scientific possibility to model emissions pathways and climate scenarios, commensurate with current policies and pledges. This part defines the constitutive elements of intergenerational preparedness in line with already accepted terminology, derived from international instruments that mainly address risk and disaster management. Part 3 provides the reasoning for turning the capacity to prepare into a normative postulate for an autonomous concept that flows from the wider principle of intergenerational equity. This part demonstrates that intergenerational preparedness operationalises intergenerational equity and it explores existing interpretative avenues for doing so. Part 4 situates intergenerational preparedness within the scope of the environmental rule of law and identifies the primary and secondary duty bearers for intergenerational preparedness as a self-standing community interest obligation.

2 | DEFINING A NEW CONCEPT OF INTERGENERATIONAL PREPAREDNESS: SCIENCE-RATIONALE IN THE INTERTEMPORAL PROTECTION OF COMMUNITY INTERESTS

The proposition that intergenerational preparedness for climate change is a community obligation is built on a science-rationale. Why and to which extent should the present generation be concerned with preparedness of future generations as a class? The rationality of a normative argument in the legal discourse cannot, on its own, guarantee absolute certainty regarding a 'correct' outcome of the analysis (Alexy, 1991, pp. 221–225; Franck, 1995, pp. 26–27). Different premises and argumentative formations are possible. The analytical outcome of the discourse depends on secondary rules, which must be ascertained first. The argument that intergenerational preparedness is inherent in the protection of the climate as community interest is normative and, as will be discussed, elementary for the general fairness discourse in international law. Yet the rationality of the normative dimension of this argument can be demonstrated through determinations that are law-external (Allott, 1999, p. 37; Alexy, 1991, pp. 283–285; Broome, 2021, p. 149) and additional to the moral value. These law-external determinations are provided through the physical science basis of climate change.

The following explains the physical science rationale and demonstrates how certain types of climate-related events form a distinctive causal field (extreme weather events such as heatwaves, slow-onset events such as sea level rise), with a predictable trajectory of future events of a similar nature. This knowledge makes preparedness a *factual possibility*, *if not a necessity* because it allows overcoming the 'tyranny of the actual' (Allott, 1999, p. 49) and effectively protects community interests. The definition for intergenerational preparedness is then carved out in juxtaposition with adaptation and in the light of accepted terminology that States have used in existing policy and law instruments at the international level.

2.1 | The science rationale: modelled pathways and preparedness

At the time of the release of the UNFCCC Synthesis Report, published in October 2022, 166 nationally determined contributions (NDCs) had been submitted, representing 193 Parties to the Paris Agreement, including 142 new or updated NDCs at the end of 2022 (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 1). The total greenhouse gas (GHG) emissions levels in 2030, if all current NDCs were implemented, would be around 10.6 per cent above the 2010 level and 0.3 per cent below the 2019 level (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 9(b)). While this signals improvement in ambition (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 13), the Intergovernmental Panel on Climate Change (IPCC) in Assessment Report 6 (AR6), Working Group III (WG III), concluded that in scenarios of limiting warming to 1.5°C, GHG emissions must be reduced by 43 per cent by 2030 relative to the 2019 level (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 14).

A scientific study found in September 2021 that a total of 131 countries are discussing, have announced, or have adopted, net zero targets, covering 72 per cent of global emissions (Hoehne et al., 2021, p. 820). The study nevertheless suggests that temperatures can only be limited to an increase of just below 2°C, if these net zero GHG emissions targets are implemented in ways that maximise reductions of countries' own emissions instead of pursuing extraterritorial removals or offsets (Hoehne et al., 2021, p. 821). Notably, the IPCC Synthesis Report of AR6 states that 'modelled pathways consistent with the continuation of policies implemented by the end of 2020 lead to global warming of 3.2 [2.2-3.5]°C (5–95% range) by 2100' (IPCC AR6 SYR, 2023, p. 33).

While the discrepancy between projected GHG emissions based on current NDCs and reductions required for a 1.5°C scenario, is thus around 42–43 per cent, there is no indication that preparedness for circumstances that will be defined by significantly exceeding the 'safe' temperature threshold is considered, or even perceived by the international community as currently missing. Future climate-related extreme events and slow-onset events (such as sea level rise, ocean acidification and ice sheet loss) consistent with modelled pathways can be quantified, with specified probabilities for events and regions (IPCC AR6 SYR, 2023, pp. 33–42). Detection and event attribution studies stimulate further the legal and political discussion on the causes and effects of climate change and future trends of adverse climate impacts (Hannart et al., 2016, p. 99; Marjanac & Patton, 2018, p. 12; Minnerop & Otto, 2020, pp. 53–54, 67–71). The scientific study of climate-related events is carried out for defined types of events, regions and timelines and compared with the counterfactual – a world where no climate change exists (IPCC AR 6 WG 1, 2021, SPM p. 8, A.3; TS, 108). Types of events are characterised through regional and event-specific elements. In the legal analysis, these types or classes of events form a *distinctive causal field*, based on their elements of similarity (Minnerop & Otto, 2020, pp. 77–78).

Relevant studies scrutinise the relationship between (historic) GHG emissions as a 'cause' for specific climate-related extreme weather events that occur more frequently, last longer and are more severe (Otto & Skeie, 2017, p. 758; for a different methodology (Bayesian Approach), Mann et al., 2017, p. 131). These studies enhance the evidence that e.g., 'even in situations where at local scale detection of extreme precipitation trends is hindered by variability, significant trends can be attributed to human-induced climate change' (van Oldenburgh, 2017; World Weather Attribution, Precipitation, 2021, p. 1). Therefore, if considered over a larger region, e.g., Northern Europe, it can be demonstrated that extreme precipitation events become more frequent and intense. Results are generally reported as increased likelihoods and return periods, such as '[t]he July 2019 heatwave was so extreme over continental Western Europe that the observed magnitudes would have been extremely unlikely without climate change' and 'a heatwave like that in France in 2019 is occurring at least 10 times more frequently than a century ago' (World Weather Attribution, 2019, p. 1). Similarly, 'the Pacific Northwest 2021 heatwave is still rare or extremely rare in today's climate yet would be virtually impossible without human-caused climate change. As warming continues, it will become a lot less rare' (World Weather Attribution, Heat, 2021, p. 2).

The outcome-determining role of attribution science in climate litigation has yet to be proven in court; however, the prerequisites for influencing the results of the 'but for' analysis in establishing a causal link between a specific climate-related impact and the emissions of an individual emitter are constantly developing (Stuart-Smith et al., 2021, pp. 651, 652; Marjanac & Patton, 2018, p. 11; Minnerop & Otto, 2020, p. 62). The crucial point for the argument in this article is that the scientific understanding of climate causality goes beyond litigation and adjudication. It establishes the capacity to model scenarios of future climate realities.

The law as a discipline, i.e., beyond the category of 'climate law', is capable to account for the distinctive causal field through standard setting, law-making and interpretation of existing laws, as will be discussed below (Part 3.2–3.4). If there is high confidence that certain extreme events will occur, and with an increased frequency and intensity, then this high confidence creates an opportunity and a corresponding legislative responsibility – if not duty – to *prepare* for these projections of types of events. For example, if there is sufficient commonality to identify heatwaves in Europe as a distinctive causal field, the assumption must be that a particular instance of a heatwave will follow the trend of this distinctive causal field. It will be alike in terms of intensity and its impacts on human systems and ecosystems.

Lack of preparedness is not unique to climate change. The UN General Assembly noted with concern that the COVID-19 pandemic has revealed serious shortcomings at the country, regional and global levels in preparedness for health emergencies (UN A/RES/76/301, 2022, p. 2). It elevated the issue of *pandemic preparedness* to the level of highest political leadership in 2022. A similar systematic approach should follow for climate change.

The next section explains how adaptation and preparedness are two overlapping yet distinct concepts and why preparedness goes beyond adaptation.

2.2 | Intergenerational preparedness beyond adaptation

Adaptation is one of the main action pillars of the Paris Agreement. The Agreement in Article 7 sets forth the global goal on adaptation but does not define adaptation,

it rather focuses on enhanced planning and reporting. The goal on adaptation has the objective to enhance adaptive capacity and resilience and to reduce vulnerability, with a view to contributing to sustainable development; and to ensure an adequate adaptation response in the context of the goal of holding average global warming to well below 2°C and pursuing efforts to hold it below 1.5°C (Paris Agreement, 2015, Article 7).

All Parties are expected to engage in adaptation planning and to submit reports within the newly established enhanced transparency framework (Paris Agreement, 2015, Article 13). Most Parties (80 per cent) included an adaptation component in their NDCs, including vulnerabilities and adaptation measures, contained in National Adaptation Plans (NAPs) (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 154). While there is an increased level of detail in adaptation reporting, the focus remains on the relationship between mitigation and adaptation (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 156). Almost all Parties (91 per cent) describe climatic changes and how impacts affect areas where vulnerabilities already exist (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 158).

Domestic adaptation priorities globally are food production and nutrition security, freshwater resources, terrestrial and wetland ecosystems, human health and key economic sectors, as well as disaster risk management and early warning (UNFCCC, Synthesis Report, 2022, para. 26). The Climate Change Committee (CCC) of the United Kingdom revealed in its report to Parliament in 2023 that adaptation and planning across all policy sectors was largely insufficient, and lack of progress in monitoring and data was established as the key barrier (CCC, 2023, p. 12). This is consistent with the finding of the 27th Conference of Parties under the UNFCCC (COP27), where Parties noted with serious concern the gap between current levels of adaptation and levels needed to respond to the adverse effects of climate change (UNFCCC Sharm-El-Sheikh Implementation Plan, 2022, para. 20). COP27 urged Parties to adopt a transformational approach to enhancing adaptive capacity (UNFCCC Sharm-El-Sheikh Implementation Plan, 2022, para. 21).

While the Paris Agreement lacks a definition for adaptation, the IPCC distinguishes between human and natural systems for the definition of adaptation:

> Adaptation is defined, in human systems, as the process of adjustment to actual or expected climate and its effects in order to moderate harm or take advantage of beneficial opportunities. In natural systems, adaptation is the process of adjustment to actual climate and its effects; human intervention may facilitate this (IPCC AR6 WG II, 2022a, SPM p. 5, note 10).

The main focus of adaptation thus lies in the response to the *actual state* of the climate.

Crucially, the IPCC in AR6 found that initiatives on adaptation at the national level tend to prioritise immediate and near-term climate risk reductions (IPCC AR6 WG II, 2022a, SPM C.1.2). Adaptation regularly responds to current climate change at the local level and aims to reduce risks and vulnerabilities through adjustments of existing systems. While this perspective is important, predominantly focusing on current and incremental changes risks reducing the opportunity for long-term planning (IPCC AR6 WG II, 2022, SPM C.1.2) and transformational changes. In addition, it is well understood that adaptive capacities vary among regions and within populations, depending on socio-economic context, ecosystem zones, species and institutional support. Adaptive capacities are determined through so-called 'soft' and 'hard' limits and implementing effective measures depends on national governance and decision-making processes. While soft limits leave room for further adaptation measures if means are available, hard limits signal that further adaptation measures are no longer possible (IPCC AR6 SYR, 2023, p. 44). At this point, loss and damages might occur.

Already existing adaptive limits will be exacerbated through neglecting the intertemporal perspective and the trajectories of extreme events. For example, health services have already been disrupted by extreme events such as floods (IPCC AR6 WG II, 2022a, p. 13), and these events will occur more frequently and with increasing intensity. While adaptation to these concrete occurrences of extreme events is important, as well as taking immediate action such as warning, advice and short-term protection, preparedness addresses the scientific evidence for concrete future climate realities. How can the health service be prepared to cope with existing and climate-related additional demands? Preparedness accounts for the possibility of a systematic approach to *increase capacity* across coupled human systems and ecosystems in a future with severe impacts of climate change and regularly occurring weather extremes. The health sector will have to deal with the risk of disruption *and* with the expected heightened demand that is triggered by the events themselves, their increased frequency, intensity and duration (Ebi et al., 2020), with further challenges posed by climate migration. Addressing these issues requires long-term infrastructure planning beyond adaptation, not least because extreme events will perpetuate underlying vulnerabilities in human systems (IPCC AR6 WG II, 2022a, p. 14).

2.3 | Constitutive elements of intergenerational preparedness

The following explores constitutive elements of intergenerational preparedness that can be derived from existing political and legal instruments with a focus on

the preparatory nature of norms. The rationale of this approach is to connect the novel concept of intergenerational preparedness with State practice; thereby using accepted terminology to gently expand the normative structures of intertemporal community interest protection, in the hope that this new analytical lens could find broader international consensus.

A general legal framework that defines the term or aspires to govern preparedness holistically is missing at the international level. The relationship between general international law and the specific field of risk and disaster management has historically been weak (Fidler, 2005, p. 459). However, some regional agreements include provisions on preparedness, and these texts have often been developed as localised responses in disaster-prone regions. For example, the 2005 ASEAN Agreement on Disaster Management and Emergency Response has the objective to provide effective mechanisms to achieve a substantial reduction of disaster losses, through regional and international cooperation, and in the context of sustainable development (ASEAN Disaster Management Agreement, 2005, Article 2). The Agreement includes a specific provision on disaster preparedness (Article 8). Therein, preparedness is understood as a strategic and operational response to disaster, rather than as an overarching concept with a preparatory or planning focus. This ties in with the historic development of other legal instruments where preparedness is not perceived as an analytical concept but rather placed among various operational measures, mainly to enhance the response to concrete events.

The Rio Conference in 1992 marked the beginning of a new trend towards embracing the need for building resilience, thus going beyond the responsive nature of preparedness. Shortly after, in 1994, the influential 'Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation' was adopted. The Strategy articulates three main pillars: prevention, mitigation and preparedness. It situates these three pillars in the context of sustainable development for managing disaster risk (Yokohama Strategy, 1994, preamble, para. 2).

A slightly different approach was taken in the 1998 Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention, 1998). The Tampere Convention defines preparedness as a sub-element within the concept of disaster mitigation, the latter consisting of 'measures designed to prevent, predict, prepare for, respond to, monitor and/or mitigate the impact of disasters' (Tampere Convention, 1998, Article 1). It has been noted in the academic literature that this approach is markedly different from the terminology used by the UN Office for Disaster Risk Reduction (now UNDRR, formerly UNISDR) where prevention and preparedness are separate from mitigation (Aronsson-Storrier, 2022, p. 61).

After the millennium turning point, the UN General Assembly convened in 2015 the Third World Conference on Disaster Risk Reduction. This eventually ushered in a stronger emphasis on preparedness as a strategic measure for creating resilience, including for future generations. The Conference adopted the Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework, 2015, Resolution GA 69/283); the implementation of the Framework is overseen by the UNDRR. The Sendai Framework aims at making 'the world safer from the risk of disasters for the benefit of present and future generations' (Sendai Framework, 2015, Resolution GA 69/283, Annex I, para. 3).

Representing a new milestone, the Sendai Framework built upon the experiences gained from its predecessor, the Hyogo Framework for Action 2005–2015, in an attempt to address the fact that during that decade, over 700,000 people had lost their lives as a result of natural disasters (Sendai Framework, 2015, Resolution GA 69/283, Annex II, para. 4; Hyogo Framework, 2005). In addition, over 1.4 million people had been injured, approximately 23 million had been made homeless and more than 1.5 billion people had been affected by natural disasters in various other ways (Sendai Framework, 2015, Resolution GA 69/283, Annex II, para. 4).

The Hyogo Framework for Action included for the first time a definition of vulnerability:

> The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards. (Hyogo Framework, 2005, p. 1 (fn 1)).

Based on the experiences and the limited success story of the Hyogo Framework during the preceding decade, States acknowledged in the Sendai Framework that in all countries, risk exposures had increased at a rate much faster than vulnerabilities had decreased, and they recognised climate change as one of the main drivers of disaster risks (Sendai Framework, 2015, Resolution GA 69/283, Annex II, para. 13).

The Sendai Framework stressed the anticipatory nature of risk prevention and planning and emphasised the role of preparedness in achieving resilience. It includes the following goal:

> Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, *increase preparedness for response and recovery*, and *thus* strengthen

> resilience (Resolution GA 69/283, Annex II, para. 17 (emphasis added by the author)).

This goal articulates the connection between risk prevention and a number of cross-cutting and integrated measures that reduce vulnerabilities and exposure. It operates on the assumption that increasing preparedness (*for response and recovery*) results in improved resilience (*defining preparedness as one of the tools to strengthen resilience*). This is again different from the approach of the 2021 SDG Report that places preparedness and resilience on the same level, in stipulating that 'strengthening preparedness, coordinated responses and resilience to critical risks are key to supporting the Decade of Action for the SDGs launched by the UN Secretary-General in 2019' (United Nations Department of Economic and Social Affairs, 2021, p. viii). Meanwhile, the 2022 SDG Report remains silent in respect of the conceptual framing of preparedness but acknowledges the need to prepare for unknown challenges (United Nations Department of Economic and Social Affairs, 2022, p. 3).

From a conceptual point of view, the approach in the Sendai Framework risks reducing preparedness to improving response and recovery measures, placing it on the operational level. However, it acknowledges the key function of preparedness for building resilience. Similarly, while the 2021 SDG Report fails to add conceptual clarity, it also recognises the requirement of strengthening preparedness and resilience.

Three main points can be taken away from these approaches. Firstly, intergenerational preparedness as an analytical concept could not only contribute to clarifying the hierarchy of terms and priority of approaches in the area of disaster risk management but could find State consent under general international law, given the already existing commitments. Secondly, it could fill an analytical gap, if understood as an overarching, autonomous concept that operates on a time continuum and encompasses response as well as resilience-building measures. Thirdly, articulating the expectation that States must increase their efforts for preparedness would provide a new perspective for the scrutiny of current measures that govern community interests.

Conceptualising intergenerational preparedness accounts for the importance assigned to the nexus between pre-existing vulnerabilities, impacts and perpetuation of vulnerabilities in the discussed legal texts. It also coheres with the conclusion drawn by the IPCC in the latest report that concepts of vulnerability, risk and resilience provide overlapping, yet alternative entry points for addressing the societal challenges caused and exacerbated by climate change (IPCC AR6 WG II, 2022a, p. 21 and IPCC AR6 WG III, 2022b, p. 46). In fact, since AR5, the IPCC has stressed that the degradation and destruction of ecosystems through human activity increase the vulnerabilities of human society for the impacts of climate change. In other words, addressing these underlying factors that contribute to higher vulnerability, such as poverty, violent conflict and climate-sensitive livelihoods (IPCC AR6 WG II, 2022a, p. 14), could break the cycle of a continuous process through which *underlying vulnerabilities* in human systems are perpetuated by subsequent and often foreseeable events (IPCC AR6 WG II, 2022a, p. 14). Preparedness at the conceptual level would require that measures are taken to *continuously manage* identified risks based on modelled scenarios and pathways, and in recognition that underlying vulnerabilities will exacerbate impacts. In the context of climate change, preparedness must be based on scientific assessments of future climate scenarios that are commensurate with current GHG emissions trends and modelled shared socio-economic pathways (IPCC AR6 WG I, SPM, 2021, p. 12, see note 22).

This preparedness necessarily assumes a transboundary scope, given the global nature of the protected interest. Of course, not all risks and interests can or should be effectively managed by the international community. However, as already noted, the climate is a global public good and its protection constitutes a community interest (already acknowledged in UNGA 43/53, 1988, last preamble para.; Paris Agreement, 2015, preamble; Wolfrum, 2005, p. 31).

Based on the analysis of commitments that States have already agreed to, intergenerational preparedness as a concept comprises at least the following three constitutive elements:

1. A duty to protect community interests on a time continuum.
2. A duty to adopt legal frameworks and policies that dynamically consider changing conditions of life in the light of a foreseeable deterioration of a community interest.
3. A duty to prioritise measures that reduce vulnerabilities and create resilience across all policy areas, including through interim targets.

The following explores how the intertemporal dimension of this concept is connected with the principle of intergenerational equity and is, thus, situated within the wider fairness discourse in international law.

3 | OPERATIONALISING INTERGENERATIONAL EQUITY THROUGH INTERGENERATIONAL PREPAREDNESS

This part argues that intergenerational preparedness is in two ways connected with intergenerational equity. Firstly, as an analytical concept of its own, it

operationalises intergenerational equity across legal orders, if and in so far as the three constitutive elements are implemented. Secondly, it adds concrete duties to the legal content of the international law principle of intergenerational equity. As a concept, intergenerational preparedness defines a new perspective that interrupts today's planning horizons. As a set of duties, it expands the normative substance of a recognised principle (see for the role of principles in international environmental law, Morrison, 2000, p. 813). Intergenerational preparedness is thus destined to advance the wider and more complex fairness discourse in international law that was embossed by Franck (Franck, 1995, p. 381). It galvanises this fairness discourse in the context of community interests (Benvenisti & Nolte, 2018, p. 151; Gaja, 2014, chapter 2; Peters, 2006, p. 589).

The next section offers reflections on how the principle of intergenerational equity operates in the theory and practice of international law, followed by a section that identifies three argumentative structures through which intergenerational preparedness can be effectuated.

3.1 | The scholarly debate on intergenerational equity and the ensuing of States duties

Conceiving the rights and interests of future generations as drivers for the protection of community interests has roots in the academic literature as well as in international law and State practice. Edith Brown Weiss introduced intergenerational equity into the academic discourse in the late 19th century (Brown Weiss, 1984). She viewed it as a normative principle that transcends temporal and geographical boundaries, captures the obligations owed by one generation to the next and conceives future generations as a class (Brown Weiss, 2008, p. 624). Following this, and only gradually, equity has begun to influence law-making and jurisprudence.

Brown Weiss alerted the international community in 1984 to the importance of considering the needs of future generations in accessing environmental resources (Brown Weiss, 1984). Three years later, she developed a theory of intergenerational equity with a strong focus on environmental conservation which began to shape the scholarly fairness discourse (Brown Weiss, 1987; D'Amato, 1990, p. 190) and nowadays contributes to the theoretical underpinning of climate litigation (Slobodian, 2020, pp. 573–597; Preston, 2018, pp. 265-267). For Brown Weiss, the starting observation was that intergenerational equity postulates that all countries have an obligation to future generations as a class, regardless of nationality.

Understood in this way, intergenerational equity is not only transgenerational but transboundary; in other words, intergenerational equity encompasses intragenerational equity or equity between nations. Brown Weiss identified three core principles that apply regardless of geographical boundaries: the principles of conservation of options, preservation of quality of environmental resources and access to environmental resources (Brown Weiss, 2021, para. 11). From a slightly different perspective, Shelton has pointed out that intergenerational equity is distinct from intragenerational equity; she stresses the close relation with distributive justice in the allocation of limited resources (Shelton, 2006, p. 649). Adding to that is Redgwell who notes the strong links between the principle of intergenerational equity and the public trust doctrine (Redgwell, 2016, p. 190). Irrespective of conceptual nuances, these authors hold the concurring view that each generation must limit its impacts on ecosystems, to ensure that the next generation has at least the same level of benefits. This is, for example, also reflected in Principle 8 of the World Declaration on the Environmental Rule of Law of the International Union for the Conservation of Nature (IUCN, 2017, Principle 8). Based on the premise that five classes of 'duties of use' flow from intergenerational equity (Brown Weiss, 1987, p. 131), I argue that to these five classes of duties, a sixth class must be added. This sixth class of duties comprises the three constitutive elements (elaborated in the previous part) of intergenerational preparedness. The sixth class of duties reflects our advanced knowledge of the relation between current GHG emissions trends, future temperature scenarios and the frequency and severity of climate impacts, as discussed above. The improved understanding of climate causality creates the opportunity to prepare for adverse effects of harm. At a more abstract level, the sixth class of duties comes into play where the original five classes of duties would be insufficient for the protection of community interests in common spaces. These duties thus encompass the following:

1. Take positive steps to conserve the natural and cultural resource base.
2. Ensure non-discriminatory access to the use and benefits of these resources.
3. Avoid or mitigate adverse impacts on these resources or the quality of the environment.
4. Notify and provide assistance during emergencies.
5. Bear the costs of damage to our natural and cultural resources.
6. *Prepare future generations for adverse impacts on resources and the natural foundations of life in light of latest scientific knowledge on deteriorating community interests.*

These duties together shape the capacity to use natural resources at any point in time (Brown Weiss, 1984, p. 616) and the duties evolve over time. Conservation and non-discriminatory access underlie the duty to preserve and to notify of emergencies. Emergencies can result in the duty to bear the cost of damage to natural

resources. These five duties, therefore, suggest a *regime* of intersecting duties depending on the ability to manage a potential sequence of events that affect the environment. The sixth class of duties to prepare for adverse impacts belongs to this regime: it is the logical consequence of natural resource use that has irreversible impacts on the quality of the environment and/or the future access to resources, because it leads to fundamental changes in natural systems.

Importantly, these duties are not just aspirational goals. As analytical elements, they serve to evaluate the 'state' of intergenerational equity, i.e., the extent to which community interests for future generations have been preserved in spaces beyond national jurisdictions (Wolfrum, in Benvenisti & Nolte, 2018, p. 23).

As part of the law, these duties condition social futures (Allott, 1999, p. 32). While they may have been at first only included in 'soft law' instruments, they have subsequently been codified in international treaties. For example, Principle 1 of the 1972 Stockholm Declaration embraces the 'solemn responsibility to protect and improve the environment for present and future generations' (Stockholm Declaration, 1972, Principle 1). On that basis, Article 3, paragraph 1, of the 1992 UNFCCC states that 'Parties should protect the climate system for the benefit of present and future generations of humankind' (UNFCCC, 1992). The 2015 Paris Agreement acknowledges in its preamble, and in line with wording that has been used by the UN General Assembly since 1988 (UNGA 43/53, 1988), that climate change is a common concern of humankind. It continues to elaborate that Parties should, when taking action to address climate change, respect, promote and consider, among other things, their respective obligations on human rights, as well as 'intergenerational equity' (Paris Agreement, 2015, preamble). Notably, the Paris Agreement differentiates between 'intergenerational equity' and 'equity'. The former is only mentioned in the preamble, while the latter is included in the operational part (Paris Agreement, Articles 2(2); 4(1); 14(1)). Both forms of equity, in the transboundary and in the transgenerational dimension, are coupled with the principle of common but differentiated responsibilities (Carlarne & Colavecchio, 2019, pp. 124–127).

The 1992 Convention on Biological Diversity refers to future generations in the preamble and in its Article 2, where 'sustainable use' is defined as the 'use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations' (CBD, 1992, Article 2). The 1992 UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes refers to the management of watercourses so that the 'needs of the present generation are met without compromising the ability of future generations to meet their own needs' (UN ECE Convention, 1992, Article 2(5)(c)). Initially negotiated as a regional framework by the Economic Commission for Europe, the Convention is open to all UN Member States since 2016 (UN ECE Convention, 1992).

Furthermore, interests of future generations have been recognised in international adjudication since the 19th century. The Bering Sea Fur Seal Arbitration (1893) was the first case in which the concept of future generations was introduced before an international tribunal (Bering Sea Fur Seal Arbitration, 1893; Redgwell, 2016, p. 187). A century later, the International Court of Justice (ICJ) famously referred to the 'generations unborn' and the 'generations to come' in its Advisory Opinion in the *Nuclear Weapons* case (ICJ, 1996, *Nuclear Weapons*, p. 241, para. 29; p. 244, para. 36) and indirectly in the judgment concerning the *Gabčíkovo-Nagymaros Project* (ICJ, 1997, *Gabčíkovo-Nagymaros*, p. 78, para. 140). Further elaborations can be found in Separate Opinions, for example in *Whaling in the Antarctic* (Judge Trinidade, ICJ, 2014, p. 362, para. 41, p. 363, para. 42).

Apart from the discussion in the literature and the judicial pronouncements, the ILC draft guidelines on the protection of the atmosphere explicitly recognise that '… the interests of future generations of humankind in the long-term conservation of the quality of the atmosphere should be fully taken into account' to ensure that 'the planet remains habitable for future generations' (ILC, Protection of the Atmosphere, 2021, preamble). Therefore, constraints are placed on the present generation. Guideline six concerns the equitable utilisation of the atmosphere and provides that '[t]he atmosphere should be used in an equitable and reasonable manner, taking fully into account the interests of present and future generations' (ILC, Protection of the Atmosphere, 2021, guideline 6). These guidelines are important for the development and codification of international law. The ILC was established by the UN General Assembly in 1947, to undertake the mandate of the Assembly, under Article 13(1)(a) of the Charter of the United Nations to 'initiate studies and make recommendations for the purpose of … encouraging the progressive development of international law and its codification' (United Nations Charter, 1945, Article 13(1)(a); for further information https://legal.un.org/ilc/).

Acknowledging the sixth class of duties as a result of the scientific possibility to project adverse climate impacts consistent with modelled pathways, depending on emissions trajectories, not only harnesses the ability to anticipate risks, but it also entails the recognition that the first five duties have not been (fully) complied with. This non-compliance is a consequence of the choice of the present generation in the light of alternative options and in spite of the knowledge about quantifiable consequences of present-day choices.

Three main points can be summarised for the development of the argument at this point. Firstly, initiated by and resonating from the scholarly discussion, intergenerational equity has subsequently been included in a variety of legal instruments and in international jurisprudence, thereby gaining international acceptance as a legal principle. Secondly, it articulates a concern for future generations and to that end, implies a *limitation* for the choices of the present generation. Thirdly, insufficient conservation of present-day conditions of community interests, as a consequence of choices made today, invokes intergenerational preparedness as a further class of duties. Without this sixth class of duties, intergenerational equity as a principle would be incomplete and its function deflated.

The significance of the sixth class of duties and its connection with the traditional five classes of duties will be further examined and illustrated in the following, based on three argumentative structures through which intergenerational preparedness can be implemented in a national, transboundary and international dimension.

3.2 | The dynamic legislative duty to protect the natural foundations of life

The right to a healthy environment serves as the main focal point for the protection of the natural foundations of life for present and future generations. Domestic courts, in applying national and international law, play a crucial part in developing argumentative structures for intergenerational preparedness, either through using the right to a healthy environment or through the interpretation of relevant State objectives and existing legal concepts, as will be explained below.

Increased recognition of the right to a healthy environment in international and domestic laws will support courts in directly referencing the reasoning of other courts within the scope of a similarly construed right. Early attempts at the international level to advance the global protection of a right to a healthy environment for the present and for future generations long remained unsuccessful. A decade ago, the UN Conference on Sustainable Development undertook to define measures that would promise 'The Future we Want' (UNGA, A/RES/66/288, 2012, Annex). In October 2021, these attempts eventually culminated in the adoption of a resolution of the UN Human Rights Council (A/HRC/RES/48/13, 2021). The resolution includes four substantial strands. First, it recognises that the right to a clean, healthy and sustainable environment is a human right. Second, this right is related to and important for the enjoyment of other human rights. Third, this right relates to other existing international law, and it, thus, requires the full implementation of multilateral environmental agreements under the principles of international environmental law. Fourth, the resolution encourages States to cooperate in the implementation of the right to a clean, healthy and sustainable environment (A/HRC/RES/48/13, 2021, p. 3, paras. 1-4). On the same day in October 2021, the new position of a Special Rapporteur on the promotion and protection of human rights in the context of climate change was created (A/HRC/RES/48/14, 2021). The UN General Assembly followed suit and adopted a resolution, based on the HRC text, that recognises a human right to a clean, healthy and sustainable environment (UNGA 76/300, 2022, p. 3, paras. 1-4). In April 2023, the HRC adopted a further resolution dedicated to concretise measures that serve to implement the right to a clean, healthy and sustainable environment (A/HRC/RES/52/23, 2023, pp. 4-5, paras 4, 5).

At the national level, over 150 constitutions now include a provision that protects either an explicit right to a healthy environment or recognises the importance of the environmental conditions and natural foundations for life in other ways, e.g., as State objective (UN ERL, 2019, pp. 2, 100, 147; Daly & May, 2018, p. 42). According to the Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, nine States include responsibilities relating to climate change in their constitutions (A/HRC/43/53, 2020, para. 50). Constitutions also define States' general obligations and objectives to preserve the natural foundations of life in the interest of future generations (e.g., German Basic Law, Article 20a; Constitution of Norway, Article 112 (includes both a right and a State objective)).

Meanwhile, argumentative structures for intergenerational preparedness exist beyond the explicit application of a right to a healthy environment. An example is the decision in *Neubauer v Germany* where the Court devised the concept of an 'Advance interference-like effect' of current GHG emissions reduction targets (BVerfG, *Neubauer*, 2021). In a landmark ruling, the Federal Constitutional Court declared the 2019 Climate Protection Act as partially unconstitutional (BVerfG, *Neubauer*, 2021, para. 96). The Court explained that fundamental constraints are placed on the legislator when defining current GHG emissions reduction targets because these targets not only de facto but *de jure* predetermine the emissions reductions that will become necessary after 2030 (BVerfG, *Neubauer*, 2021, para. 187). The Court held that the constitutionally grounded objective of the State, to protect the natural foundations of life, including for future generations, demanded the distribution of environmental burdens evenly across generations and to avoid an off-loading of these burdens into the future (BVerfG, *Neubauer*, 2021, paras. 193, 194). A delay in reducing emissions would inevitably lead to higher reduction burdens at a later point because the State was constitutionally bound to protect

the climate. These reductions would result in restrictions placed on fundamental freedoms of future generations (Möllers & Weinberg, 2021). While this approach does portray the carbon budget as a 'freedom budget' (Minnerop, 2022, p. 155), it is important to note that the Court derived from the Basic Law a *dynamic legislative duty* that ensures continuous environmental and rights protection *in line with latest scientific evidence*. This duty is an example of how intergenerational preparedness can be implemented at the national level. It entails that the legislator *continuously reviews and adjusts* legal measures and that the Constitutional Court will continue to review the adequacy of targets against the yardsticks of constitutional law. Intergenerational preparedness in the context of climate change requires this continuity in action because the nature and extent of preparatory measures are influenced by national and global emissions trajectories, potential temperature overshoots and constantly emerging scientific evidence on increasing risks as discussed in Part 2.

It is not implied here that the Constitutional Court's order can or should be directly replicated in other jurisdictions. However, the perspective that the Court assumed in its inquiry into the lawfulness of today's climate targets, and what they mean for the future, can be applied in other legal contexts. Thereby, courts can contribute to practices that inform and strengthen the reasoning of other courts (Benvenisti & Nolte, 2018, p. 70). This inter-judicial influence carries the potential of clarifying and re-enforcing standards for targets from a transboundary perspective.

At the same time, the transferable argument is that today's climate targets can constitute an interference with the rights of future generations (BVerfG, 2021, paras. 248, 257). With that argument, the Court re-conceptualised the meaning of *interference* with fundamental rights under constitutional law doctrine, to include the effects of current legislation in respect of the freedom rights of future generations (BVerfG, 2021, paras. 184; Minnerop, 2022, p. 146). The Court thus acknowledged that consumption must be guided by conservation and preservation of resources for the next generation as a matter of constitutional law (BVerfG, 2021, paras. 122, 126, 248–251). This is in line with the duties that flow from intergenerational equity. According to the Court, this approach includes that change occurs timely and that a planning horizon exists to incentivise and enable transformational change, and that the inevitable burden to make emissions reductions is distributed evenly.

However, the State cannot guarantee that a certain global temperature limitation can be reached. Therefore, the dynamic legislative duty that the Court identified must include legal measures of a preparatory nature in line with the sixth class of duties that defines intergenerational equity as discussed earlier, to account for the current global emissions trends and the State's duty to protect the natural foundations for life for future generations. The Constitutional Court's order undoubtedly involves complex and specific constitutional law concepts; however, it nevertheless has the potential to resonate widely if understood as an argumentative structure through which preparedness can be achieved. It could play an influential role similar to other landmark cases (*Gloucester Resources Limited v Minister for Planning* (2019), *The State of the Netherlands v Urgenda Foundation* (2019), *Milieudefensie v Royal Dutch Shell plc* (2019); see further Danting et al., 2022).

3.3 | The transboundary nature of duties

As a concretisation of intergenerational equity, intergenerational preparedness comprises future generations as a class, beyond national jurisdictions. This intergenerational preparedness can be operationalised through advancing existing transboundary duties of States. A key example is the duty to cooperate, including the duty to seek assistance from other States (for a discussion on the legal nature of the obligation to cooperate, see Wolfrum, 2005, paras. 13, 28). Cooperative duties condition community interests for present and future generations and are often enshrined in international treaty regimes (Paris Agreement, 2015, Articles 7(6), 7(7), 14(3)). These cooperative duties require specific measures. For example, Article 5 of the 2016 Draft Articles on the Protection of Persons in the Event of Disasters (ILC Draft Articles, Protection of Persons, 2016) establishes the protection of human rights as the fundamental entitlement of people affected by disasters. While the primary responsibility for the protection of its people and their rights rests with the affected State, concrete cooperative duties exist when a disaster manifestly exceeds the national response capacity. In that situation, 'the affected State has the duty to seek assistance from other nations, the United Nations and potential assisting actors' (ILC Draft Articles, Protection of Persons, 2016, Article 11).

Further transboundary duties exist where activities may cause environmental harm to other States. The ICJ recognised the duty of due diligence in *Pulp Mills on the River Uruguay* (ICJ, 2010, pp. 55, 179, paras. 101, 197) and reiterated *In Certain Activities Carried Out by Nicaragua in the Border area and Construction of a Road in Costa Rica along the San Juan River* (ICJ, 2015, pp. 706, 707, paras. 104, 105) that a State's 'obligation to exercise due diligence in preventing significant transboundary harm requires that State to ascertain whether there is a risk of significant transboundary harm prior to undertaking an activity having the potential adversely to affect the environment of another State' (ICJ, 2015, p. 720, para. 153).

Moreover, a State may even be responsible for the injuries caused by its GHG emissions to individuals

outside its jurisdiction. The Committee on the Rights of the Child that monitors the implementation of the Convention on the Rights of the Child (1989; CRC/C/88/D/104–108/2019) decided in 2021 on the admissibility of an application that was brought against a number of State parties by several young people (Convention on the Rights of the Child, Committee on the Rights of the Child, 2021; CRC/C/88/D/104–108/2019). While the Committee found that the case was inadmissible due to the lack of exhaustion of national remedies, it confirmed that the respondent State parties could be responsible for the harm suffered by children *beyond* domestic jurisdictions.

All claimants were under the age of eighteen at the time of the filing of the complaint. They claimed that States had violated their rights under the Convention:

> by failing to prevent and mitigate the consequences of climate change, the State party has violated their rights under Articles 6, 24 and 30, read in conjunction with Article 3 of the Convention (CRC/C/88/D/104/2019, para. 1.1).

They argued that increased temperatures had already had a negative impact and as they continued to rise, they would lead to impacts such as wildfires, heat stress and the spread of infectious diseases (CRC/C/88/D/107/2019, para. 2.2). Furthermore, Parties to the Convention had known about the harmful effects of their internal and cross-border contributions to climate change for decades (CRC/C/88/D/107/2019, para. 2.3).

The Committee pointed out that a State party was responsible for the harm suffered by children outside its jurisdiction, (1) if the emissions originated from the territory of that State and (2) the State had effective control over the sources of emissions, provided that (3) there was a causal link between the acts or omissions of the State and the negative impact on the rights of the children and (4) at the time of its acts or omissions the harm was reasonably foreseeable to the State party (CRC/C/88/D/104/2019, paras. 10.7–10.12). All four criteria were met according to the Committee. This strengthens the argument that States have transboundary duties to protect the climate as a community interest, on a time continuum and beyond national jurisdictions.

3.4 | The requirement of systemic interpretation

A further argumentative structure through which intergenerational preparedness can be operationalised *de lege lata* is the systemic interpretation of national and international laws that serve the protection of community interests. The ICJ already recognised in 1971 that an international instrument 'has to be interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation' (ICJ, 1971, *Legal Consequences for States of the Continued Presence of South Africa in Namibia*, *Advisory Opinion*, p. 31, para. 53). This view also resonates from the ILC's Draft guidelines on the protection of the atmosphere:

> The rules of international law relating to the protection of the atmosphere and other relevant rules of international law, including, inter alia, the rules of international trade and investment law, of the law of the sea and of international human rights law, should, to the extent possible, be identified, interpreted and applied in order to give rise to a single set of compatible obligations, in line with the principles of harmonization and systemic integration, and with a view to avoiding conflicts (ILC, Protection of the Atmosphere, 2021, guideline 9, para. 1, sentence 1).

This systemic interpretation concerns not only different international instruments but also the international law/domestic law nexus. For example, States have concrete duties at the domestic level, e.g., for performing a comprehensive environmental impact assessment, enshrined in administrative law and recognised – and shaped – by international law. The Draft guidelines on the protection of the atmosphere stipulate:

> States have the obligation to ensure that an environmental impact assessment is undertaken of proposed activities under their jurisdiction or control which are likely to cause significant adverse impact on the atmosphere in terms of atmospheric pollution or atmospheric degradation (ILC, Protection of the Atmosphere, 2021, guideline 4).

Importantly, the term 'atmospheric degradation' comprises climate change (ILC, Protection of the Atmosphere, 2021, guideline 1, commentary, para. 12). Consequently, the environmental impact assessment at the domestic level must consider how the proposed activity will impact climate change. National administrative law must either spell out this requirement or be interpreted to include climate change considerations, in the relevant environmental impact assessments.

The Vienna Convention on the Law of Treaties (VCLT), including Articles 30 and 31, and the ILC Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, give further guidance for the systemic interpretation of international rules (VCLT, 1969; ILC, Interpretation of Treaties, 2018, p. 2). The ICJ's practice demonstrates that it regularly

applies various legal instruments in parallel and in a mutually supportive manner, based on the consideration that these often deal with different legally relevant facts and, therefore, are not producing conflicting results (ICJ, 2004, *Wall Advisory Opinion*, p. 178, para. 106). This is also the approach of other international courts and tribunals, for example, the Arbitral Tribunal under the Convention on the Law of the Sea (South China Sea Arbitration, 2016, pp. 60, 61 para. 159).

Some domestic courts, as noted earlier, have already advanced climate protection through interpretation and re-conceptualisation of the law. The systemic development of the international law under different instruments can be achieved through evolutive treaty interpretation, taking into account the subsequent State practice of Parties to a treaty (ILC, Interpretation of Treaties, 2018; ICJ, 2004, *Wall Advisory Opinion*, p. 149, para. 27). Through their authority to interpret and apply international law, international courts and tribunals are powerful agents at the international plane, including for promoting intergenerational preparedness. International adjudication serves not only to state what the law is, but it can fulfil a crucial role in overcoming collective action failures of States and non-State actors. Similarly, domestic courts can influence the reasoning of other courts in an inter-jurisdictional judicial discourse that identifies 'fair shares' and thereby defines national standards (Minnerop & Røstgaard, 2021, p. 855). Courts can mirror the concept of shared resources in their insistence on States' duties towards others and towards the community as a whole (Benvenisti, in Benvenisti & Nolte, 2018, p. 80). In so doing, they curb the power of States, not only between them but also in respect of their temporal position.

Acknowledging that courts have a crucial role in reviewing or even defining standards for community interests through systemic interpretation, immediately raises the concern of whether or not it is appropriate for them to do so. Should courts indeed extend and develop the law so that it encompasses a novel concept such as intergenerational preparedness? In climate adjudication, courts can endorse scientific evidence and create new legal certainties in applying legal concepts to a global challenge. Does this suffice to conclude that they should be relevant law-developing agents for a novel concept such as intergenerational preparedness? This ties in with the more fundamental question on the judicialization of the political – a question that cannot be fully addressed within the scope of this article. However, the specific role of the judiciary in protecting community interests for the future can be determined.

Hirschl has warned against the judicialization of 'mega-politics', not so much because courts themselves are the major culprits in expanding their powers, but because strategically motivated political stakeholders have an interest in them doing so (Hirschl, 2008, p. 117; see further Waldron, 2021, p. 94). Others have pointed out how international adjudication addresses the tension between State sovereignty and norms of international law (Ruiz Fabri & Stoppioni, 2021, p. 153). If the existing treaty-based law-making avenues and courts were to no avail to protect future generations, what could be the way forward? The proposition here is that global challenges frame mega-politics in a way that exacerbates existing difficulties in finding a generally applicable rule that satisfactorily delineates powers. At the same time, the dichotomy between the 'political' and the 'judicial' becomes less pronounced if the focus rests on the distinct and necessary contribution of both to a particular legal concept.

There are already various legal expressions on intergenerational equity and commitments to protect future generations, in national law and at the international level, indicating that it is accepted that the protection of community interests includes obligations towards future generations. Therefore, giving effect to and observing intergenerational preparedness is the logical consequence of community obligations for all branches of government and the judiciary. Courts can interpret and apply the law in the light of the constitutive elements of intergenerational preparedness, in accordance with the respective legal frameworks. To that end, they ascertain the intertemporal dimension of existing commitments, in applying the rule of law. Climate change is a community interest where interests of future generations have already been and continue to be recognised through mega-political processes. Judicial review in that respect amounts to scrutiny of adherence to legal commitments, both internationally and nationally, even if that means using a novel analytical lens such as intergenerational preparedness. This does not, however, qualify as judicialization-from-above or law-making.

The final part explains the proposition that intergenerational preparedness is indeed embedded in the environmental rule of law which also confirms the role of States as primary duty bearers.

4 | INTERGENERATIONAL PREPAREDNESS AS COMMUNITY INTEREST AND THE ENVIRONMENTAL RULE OF LAW

The environmental rule of law draws its meaning from the general rule of law and comprises three main strands: applying the law consistently with fundamental rights, equal application of the law and ensuring accountability (Report of the World Summit on Sustainable Development, A/CONF.199/20, 2002, paras. 4, 67(b), 138, 139(e); Fulton & Benjamin, 2018, p. 10208; Kreilhuber & Kariuki, 2020, pp. 592–595).

Similarly, the UN defines the (general) rule of law as having three main components: law should be consistent with fundamental rights, it should be developed inclusively, and it should provide a basis for accountability (the UN Security Council used the concept of the rule of law for the first time in 1996, https://www.un.org/ruleoflaw/security-council/; UN ERL, 2019, p. 8; Ristroph, 2012, p. 10867). The *environmental* rule of law transposes these components into a specific environmental context (see also IUCN, 2017, part II). It faces specific challenges due to the complexity of environmental issues, the lack of incentives for compliance, and the often-reduced capacity for the implementation of environmental laws (UN ERL, 2019, p. 8; Tarlock, 2002, p. 615).

The existence of the concept of the environmental rule of law was first recognised in an internationally negotiated document in 2013 (UNEP Decision 27/9, 2013, Advancing Justice, Governance and Law for Environmental Sustainability, UNEP/GC.27/17, p. 34). Therein, States recognised 'that the violation of environmental law has the potential to undermine sustainable development and the implementation of agreed environmental goals and objectives at all levels' (UNEP Decision, 27/9, 2013, p. 35, para. 5) and requested support for national governments to develop and implement the environmental rule of law (para. 6(a)). A year later, the first session of the General Environment Assembly of UNEP (UNEP/EA.1/10, 2014) stressed the importance of efforts, and the support needed by governments, to develop and implement the environmental rule of law (UNEP/EA.1/13, 2014, p. 45, para. 4).

It was in fact the legal profession that had contributed to paving the way for this development, when in 2002 the Global Judges Symposium agreed on the 'Johannesburg Principles on the Role of Law and Sustainable Development', thereby strengthening the focus on legal and institutional frameworks for sustainable development (UNEP/GC.22/INF/24, 2002, p. 4, Annex I). This work is still reflected in the first UN Environmental Rule of Law Report (UN ERL, 2019), which emphasises the intersection of environmental law and human rights doctrine, and of environmental protection through institutions; both strands are enshrined in Sustainable Development Goal (SDG) 16 (UNGA, A/RES/70/1, 2015, p. 25, Goal 16), peace, justice and strong institutions (UN ERL, 2019, p. 28). The Sustainable Development Agenda 2030 and the 17 SDGs stress the intersectionality of the rule of law, good governance and sustainable development (UNGA, A/RES/70/1, 2015, paras. 8, 9, 35).

Difficulties to define and measure adherence to the environmental rule of law remain but certain key elements can be ascertained. These include (1) a legal system that regulates human actions that have significant impacts on the environment; (2) these laws are consistently applied; and (3) accountability rules exist that ensure effective and fair enforcement action (Kennedy, 2006, p. 170-173; Ristroph, 2012, p. 10867; Wright, 2020, p. 20).

Based on these core elements, there are various ways to reflect within a certain area of international law on the specific role of the rule of law (Stoll, 2018, p. 290). This article uses two approaches. Firstly, it briefly assesses the environmental rule of law as an empirical indicator for the state of community interest protection in the area of climate change. This illustrates the gap between the scientific evidence that creates the capacity of States to develop rules-based environmental protection and the current legal systems that address climate change but largely neglect the continuous processes of planning and law-making that intergenerational preparedness demands. Secondly, it uses the environmental rule of law as a conceptual underpinning that confirms States as the primary duty bearers for intergenerational preparedness.

4.1 | The environmental rule of law as an empirical indicator

An empirical measurement of adherence to the environmental rule of law is provided in the UN Environmental Rule of Law Report. The report scrutinised the legal measures adopted globally with the objective to effectuate international environmental agreements (UN ELR, 2019, p. 26). In 2022, 525 different legal frameworks pertaining to the environment and climate change across 134 countries existed and 136 legal acts included the term 'climate target' (Ecolex, 2022). Requirements of intergenerational preparedness in the context of climate change depend on current emissions trajectories and these trajectories can be derived from the nationally determined contributions (NDCs) that States submit under the Paris Agreement (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4), as discussed in Part 2.1. Four major shortcomings concerning the current policy- and law-making approaches can be identified from an environmental rule of law perspective.

The first legal gap pertains to the *pathway choice* which is defined by current and future emissions and the projected changes in the climate that are commensurate with the corresponding temperature increase. For all five Shared Socio-economic Pathways (SSP1-SSP5), outlined in the latest IPCC AR6 (IPCC AR6, WG I, 2021, SPM, p. 13, full report, p. 230; IPCC AR6, Synthesis Report, 2023, p. 30), even under the most ambitious one, future generations will live in a world that has been and continues to be altered by climate change. Current GHG emissions trends are not aligned with the lower emissions scenarios and the global mean temperatures will most likely increase between 2.5-2.9°C by the end of 2100 (UNFCCC, Synthesis Report, 2022, FCCC/PA/CMA/2022/4, para. 151). The IPCC pointed

out in its latest report that policy coverage is 'uneven across sectors' and that policies implemented by the end of 2020 would exceed global GHG emissions that would be expected under current NDCs (IPCC AR6, Synthesis Report, 2023, SPM, A.4.4). Current policies will lead to global warming of 3.2°C [2.2°C–3.5°C] (5– 95% range) by 2100' (IPCC AR6, SYR, 2023, p. 33).

Another study indicated that the realisation of Paris Agreement pledges could limit warming to just below 2°C if the newest pledges materialise through additional, corresponding policies (Meinshausen et al., 2022). This emissions trajectory that is considerably above the 'safer' 1.5°C threshold, defines the climate reality for future generations. It also defines the emissions reductions that must be achieved in the future, in so far and to the extent that agreed temperature goals are still being pursued. Current pathways deviate from these goals.

The second legal gap relates to the *interconnectedness of ecosystems and human systems*, which is not adequately reflected in current legal frameworks. The climate system, ecosystems and human systems *per se* are complex and fragile, and so is the interaction between them. Climate change deeply interferes with these fragilities, and it is already a key driver for biodiversity loss, likely to become the largest driver in the second half of the century (Newbold, 2018, p. 2). The 2019 Global Assessment Report on Biodiversity and Ecosystem Services in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services identified climate change as the third most important current driver of biodiversity erosion with an increasing trend (IPBES, 2019, p. XVII, B.2; see also Global Biodiversity Outlook, 2020 p. 25). In all regions, extreme heat events have resulted in human mortality and morbidity, and the occurrences of climate-related food-borne and water-borne diseases have increased significantly (IPCC AR6, WG I, SPM, 2021, pp. 10, 12, 22–24). This interconnectedness requires legal systems that provide for integrated cross-sector planning with a clear priority of addressing the foreseeable future disruptions to human systems and ecosystems.

Closely related to this is the third legal gap, the *planning paradox*. It has been pointed out in the literature that it is not always clear what types of legal norms and policies should evolve to address the causes and effects of climate change (Fisher et al., 2017, p. 181). Some guidance exists but much remains at an abstract level, and this often leads to the need for further modelling, testing, and delayed action. Meanwhile, AR6 revealed the benefits of an improved and diversified understanding of analytical frameworks for the analysis of drivers and barriers in pursuing multi-level governance that uses the linkages between mitigation, adaptation and sustainable development (IPCC AR6 WG III, 2022b, SPM; WG II, 2022a, p. 7). Despite the opportunity to generate synergetic and transferable knowledge through better analytical frameworks, policy planning is shaped through thinking along segregated mitigation/adaptation/loss and damage categories. This reaffirms approaches that are predominantly concentrated on current risks and short-term climate impacts. Hazards and impacts are explained for *today's* world and adaptation policies are designed for short-term responses. This is exacerbated by the human tendency to mis-characterise risks and 'pay insufficient attention to the potential for surprises' in relation to climate change (Aven & Renn, 2015, p. 710; Weitzman, 2011, p. 275). Future legal planning must include the long-term intertemporal perspective in light of modelled scenarios and pathways.

The fourth gap pertains to the *irreversibility challenge*. According to the findings of the IPCC since AR5, not all effects of climate change and the directly or indirectly resulting environmental degradation can be reversed (IPCC AR5, TS, 2014, p. 89, and the section on coral reefs, see p. 97). Furthermore, projections of past reports, including on implementation challenges for all mitigation strategies and on adaptation limits, have materialised and been exceeded (IPCC AR 6, Synthesis Report, 2023, pp. 27, 28). Re-thinking if and how we prepare the future generation for life in a fundamentally changed climate is, therefore, of critical importance. From a moral perspective, it has been pointed out that preparation should be the very least in a situation where one generation takes advantage of the future (Gardiner, 2011, p. 402). Thinking beyond the present is a responsibility that characterises the 'human condition' (Arendt, 1958). From the perspective of the environmental rule of law, the inherent element of accountability has no temporal limitations, instead it directly requires consideration for future generations, especially – but not only – in respect of irreversible adverse impacts.

The scope of the environmental rule of law certainly goes beyond identifying these gaps and thresholds, and not all of these can be assessed here. In addition, it can establish responsible actors. While courts are crucial for upholding the environmental rule of law, other institutions are also important for its protection. As mentioned earlier, SDG 16 acknowledges the nexus between the protection of human rights and the requirement of strong institutions that promote and protect these rights (UN ERL, 2019, p. 40) in an environmental context.

At the international level, many international environmental agreements set forth their own autonomous institutional arrangements to manage a specific environmental issue or a resource (Churchill & Ulfstein, 2000, p. 625). Most countries have established environmental ministries, and many have dedicated climate departments and agencies, as well as energy sections in their government structure (UN ELR, 2019, pp. 6, 19–21). Yet despite this promising trend of an

increasing number of environmental measures and responsible institutions, the Environmental Rule of Law Report found that there is a tangible and growing implementation gap globally in environmental law (UN ERL, 2019, pp. 20, 39, 40).

As a result of the observed implementation and accountability challenges, the role of State-centred institutions in advancing the environmental rule of law has been challenged in the academic discourse on environmental governance since the late 20th century (Ostrom, 1990, p. 182). This area of research is led by social scientists and develops mostly separately from the scholarly discussion in law. It is based on methodological approaches that emphasise the notion of governance as collective decision-making. One particular area of research has emerged that is concerned with managing complex environmental challenges *outside* the traditional institutional framework that SDG 16 conceives (Cosens et al., 2021). This body or research fundamentally questions the governance of community interests – such as climate change – through State-centred institutions (alone). This field of research will be briefly addressed in the following with a view to test the argument that States are (still) the main duty bearers for intergenerational preparedness, not only from the perspective of community interests but also as a stipulation of the environmental rule of law.

4.2 | Emergent governance systems and community interest obligations

In international law, the primary duty bearers for community interest obligations are States. However, an alternative claim has been based on research concerning emergent governance systems, where multiple stakeholders take on the role of duty-bearers beyond State institutions.

The uncertainty of global environmental changes in interconnected societies has led to new forms of governance systems, so-called coevolving social–ecological–technological systems (SETs) (Cosens et al., 2021, pp. 1–3). These SETs are seen as new forms for adaptive capacity in public and private sector-based systems, and as a promise of governance beyond *government* (McPhearson et al., 2022, pp. 508, 512).

At its core, the research on SETs is concerned with the integration of science, governance and law, following the observation that SETs as polycentric systems appear to be particularly effective in managing complexity (Ostrom, 2010; Wernli et al., 2023, p. 3). Complexity theory has spilled over from the field of mathematics and natural sciences into the social sciences (Cosens et al., 2020, p. 1691). This theoretical approach has followed on from general systems theory where environmental problems were addressed from the perspective of the interaction between key components of any given system (Abraham, 2011, p. 380). Complex systems are characterised by three core elements: high levels of interacting variables, nonlinearity and deep uncertainty (Cosens et al., 2020, p. 1691; McPhearson et al., 2022, pp. 506, 510).

The argument that SETs offer additional adaptive capacity and new governance options is based on the observation that global environmental change coincides with unprecedented changes in, and a growing number of, interdependent SETs, coupled with real and perceived failures of traditional government in adequately addressing the 'tragedy of the commons' (Dietz et al., 2003, p. 1908; see further Hardin, 1968, p. 1245). This school of thought argues that existing government *structures* are insufficient to manage uncertainties and nonlinearity of changing systems, such as the climate system (Chaffin et al., 2016, p. 399). By contrast, self-organisation 'bottom-up' approaches are viewed as the key elements of adaptive governance within SETs. This allows the consideration of localised values and options and might provide an avenue for a more tailored response (Ostrom, 1990, p. 143). Therefore, governance in this context is a wide concept, it refers to various formats of collective action that manage common affairs and ecosystems (de Groot et al., 2002, p. 394; McPhearson, 2022, p. 512) and includes interactions among governments, private actors and groups, as well as other collaborative processes (Cosens et al., 2020, p. 1705). Complexity theory is employed to understand change within these adaptive systems and SETs, based on the premise that it can inform governance agents in steering these systems (Cosens et al., 2021, p. 4). The aim of applying this theory is not to predict patterns of social behaviours but to inform and adjust legal systems so that they are better prepared in their responses to system change.

Another school of thought emphasises that precisely these human attributes (that determine social behaviours) are insufficiently understood in their ability to influence and even change the patterns in complex social systems (Audouin et al., 2013, p. 3; Eppel, 2017, p. 850). Adjustment processes and outcomes that are the aim of adaptive governance systems seem, therefore, hard to predict. This insight is not easily reconcilable with the continuous planning that is required for intergenerational preparedness. Interestingly, the role of environmental quality standards for the protection of social systems is widely accepted in SETs research (Cosens et al., 2021, pp. 5, 6), albeit with the caveat that these standards can become static and thus fail in adapting to new circumstances (Ebbesson, 2010, p. 419).

However, the dynamic legislative duty that was discussed earlier (Part 3.2) *has* the capacity to incorporate new scientific evidence and capture changing circumstances, including environmental standards. Moreover, the specific legitimatising function of environmental

standards raises the question to what extent emergent forms of governance systems can replace existing government structures in democratically organised States, or rather, whether they – at least for the time being – mainly serve to point towards the importance of co-evolutionary dynamics of interdependent systems. They could (still) identify where change within the system and adaptation of standards are required. Furthermore, accepting the role of environmental standards implies the recognition of the validity of the standard-setting (e.g. the law-making) process as such.

It is also recognised within the scholarship on SETs, that democratic governments offer structures and balance power within the State system (Camacho & Glicksman, 2019; Cosens et al., 2021, p. 5). In democratically organised States, authority is allocated and procedural avenues exist for public participation in the decision-making processes, thereby creating accountability. Elected governments can set not only the targets but also the incentives to influence the conduct of private actors and public sub-systems. Therefore, at first glance, it seems preferable not to abandon existing structures but to improve them. There are three further substantial reasons that speak for this approach.

The first reason is that the field of research that applies complexity theory as a bridging theory in a transdisciplinary manner is still being shaped and forged, especially in its application to social systems and in a legal context. It remains unclear how the complex processes that are attributed to SETs can serve to meet the aims of overarching, intertemporal planning processes that are required to implement intergenerational preparedness.

Secondly, changes within systems, including in ecosystems and the climate system, can only be influenced at large scale through clear targets, coupled with the possibility to adjust targets in line with new scientific evidence. The institutional order within democratic States offers a good starting point for this. Shortcomings can be understood as a challenge for change within the system rather than entailing unavoidable system change. On the contrary, this might again lead to a simplified view on governance structures, set to trigger similar or other deficiencies. This could risk further delays in setting and pursuing targets as well as measuring progress.

The third and perhaps the most compelling reason lies in the very nature of the protected interests. The core issue for intergenerational preparedness as a community obligation is to identify who holds the legitimacy to define the protected community interest, including how to protect it and how to distribute the burden for protecting it (see the discussion in Part 1). The need for legitimate and transformational legal frameworks calls for an integrated approach of *government* and *governance* in fulfilling community interest obligations, instead of an exclusive understanding where these two are opposing rather than overlapping concepts. Legal standards and targets can shape wider societal action at scale, within and across nations, and this appears to be a premise that SETs research shares. These standards and targets concretise parameters for successful outcomes within existing structures of accountability and can be used by courts to review the lawfulness of governmental action (*Neubauer v Germany* (2021), *The State of the Netherlands v Urgenda Foundation* (2019), *Thomson v the Minister for Climate Change Issues* (2017)). This is supported by the IPCC's finding that governance for climate-resilient development depends on the support of formal and informal institutions and practices, their alignment across sectors, policy domains and, most importantly, time frames (IPCC AR6 WG II, 2022a, SPM, p. 11). There is some indication that improving State institutions that are well-resourced and, therefore, more resistant to corruption results in higher per capita incomes overall, particularly in countries that rely on natural resource extraction (UN ERL, 2019, pp. 42, 43). SETs as governance structures for environmental challenges have the critical capacity to close gaps in regulatory action and enhance decision-making processes. They can complement existing government structures, especially where clear legal targets exist.

5 | CONCLUSIONS

This article has expanded the international law discourse on community interests through the concept of intergenerational preparedness as a concretisation of the principle of intergenerational equity, using climate change as a case in point. The central conclusion is that intergenerational preparedness forms an integral element of community obligations in international law, where an at least partly irreversible deterioration of protected interests due to today's policy and law choices has become a scientific fact. The expectation that States have intertemporal duties to prepare future generations for a life with climate change should be more clearly articulated, *de lege ferenda*. However, the article has uncovered argumentative structures through which future generations can already be prepared, to some extent, *de lege lata.*

The physical science of climate change provides the rationale for the normative argument that intergenerational preparedness must form part of protecting the climate as a community interest. Even a future defined by a temperature increase of 1.5°C with no or limited overshoot, if ambitions would rise and all pledges were implemented in a timely manner, would *still* demand that the present generation prepares future generations for significant climate change, with increasingly more frequent and severe adverse impacts. Even more drastic changes in human systems and ecosystems are inevitable if temperatures rise higher, as implied by

current emissions trajectories, and *every* increment of temperature increase matters.

Three main points resonate from the analysis. The first point concerns the interlinkage between intergenerational preparedness and intergenerational equity. Intergenerational preparedness as an autonomous concept operationalises intergenerational equity. The definition of intergenerational preparedness has been developed in light of accepted terminology and duties used in existing policy and law instruments at the international level. This approach has been employed to increase the likelihood that a new concept could be accepted at the international level in the future. It is proposed that intergenerational preparedness as a concept comprises at least the following constitutive elements:

- A duty to protect community interests on a time continuum.
- A duty to adopt legal frameworks and policies that dynamically consider changing conditions of life in the light of a foreseeable deterioration of a community interest.
- A duty to prioritise measures that reduce vulnerabilities and create resilience across all policy areas, including through interim targets.

Three areas have been identified where argumentative structures already exist to give effect to intergenerational preparedness to some extent; however, without a clear and explicit recognition at the international level, limitations will remain. Argumentative structures include the dynamic legislative duty through which climate targets are defined at the domestic level, the transboundary nature of States' duties to protect community interests and the requirement of systemic interpretation of laws.

In addition to its value as a self-standing concept, intergenerational preparedness strengthens the intertemporal dimension of intergenerational equity. In that respect, intergenerational preparedness is woven into the fabric of intergenerational equity as an established principle and complements the existing classification of States' duties based on advanced scientific evidence.

The second main point that has been explained in this article concerns the science/law intersection. Where scientific evidence creates the capacity to make projections for climate change, based on today's emissions trajectories, then this practically enables and normatively obligates governments to prepare future generations for their conditions of life. It is important to stress that nothing in this article should be understood as a justification for failure to protect the climate or other community interests, through preventive and mitigating action. Intergenerational preparedness does not take away any existing obligations, conversely, it adds to them.

The third point relates to the role of the environmental rule of law. This has been used to underpin the intertemporal community interest obligations for States. To that end, the article has shown that, because current laws are largely insufficient to adequately 'govern' climate change as a community interest, intergenerational preparedness for life *with* climate change emerges as a logical and remedial community interest obligation of States under the environmental rule of law. This implies that community interest obligations of States can only be adequately fulfilled on a time continuum. The qualification of the climate as a community interest and the perspective of the environmental rule of law furnish congruent arguments for the conclusion that States are the main duty bearers for intergenerational preparedness.

The two-fold nature of intergenerational preparedness, as an analytical concept of its own that concretises and operationalises intergenerational equity across legal orders, and as an integral component of the legal content of the principle of intergenerational equity, advances the discourse on fairness in international law from an analytical and a systematic perspective. As a concept, intergenerational preparedness closes an analytical gap and defines a new perspective that interrupts today's planning horizons. It can be used – and its constitutive elements can be implemented – along the identified argumentative structures in domestic, transboundary and international legal contexts to advance preparatory measures. As a sixth class of duties, it partakes in the normative nature of a legal principle and expands the system of duties thereunder.

Protecting community interests for future generations calls for a fundamental and permanent change of perspective. This might not be a convenient insight for the present generation, not least because it means acknowledging insufficient mitigation of climate change. In light of the moral dimensions that underlie climate change, in addition to the complexities of physical science and the tensions that define 'sustainable development', Gardiner has argued that each generation is exploiting its temporal position and takes advantage of the future without admitting it to itself or the next generation (Gardiner, 2001, pp. 402-406; Gardiner, 2011, pp. 148-150). The appeal of moral cosmopolitanism (Sunstein, 2022, p. 1034) will thus depend on how we define 'cosmos' in relation to time. Intergenerational preparedness assigns legal duties to each generation in its respective temporal position. As a permanent change of perspective, intergenerational preparedness sheds light on current legal approaches, identifies priorities amidst complexities, and scrutinises the ethical foundations of the continuous constitutive process that defines the international community.

ACKNOWLEDGEMENTS

An early draft of this article was presented at the international conference on 'Challenges to a Sustainable Recovery: International Law, Climate Change and Public Health' in Durham, September 2021. I thank all

participants for the inspiring discussion and Justice Brian Preston for his comments on an early draft of this article. I am also very grateful for the constructive suggestions of the anonymous reviewers. Many thanks to the editorial team for their support. All errors are mine.

DATA AVAILABILITY STATEMENT

All data is fully referenced and included in the list of references at the end of the article.

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How to cite this article: Minnerop, P. (2023) Intergenerational Preparedness: Climate Change, Community Interest Obligations and the Environmental Rule of Law. *Global Policy*, 00, 1–22. Available from: https://doi.org/10.1111/1758-5899.13219