ASMAA KHADIM

Constitutional Environmental Rights: A 'Snowball Effect' to Counter Climate Change

Abstract: Constitutional environmental rights provisions may be utilised to mitigate climate impacts either directly through climate litigation or indirectly through other types of environmental rights claims. Much focus in recent literature has been on climate litigation. Thus, this article focuses on the climate mitigation prospects of the latter (i.e. non-climate cases). Examples of socioenvironmental conflicts over resource extraction, a major contributor to climate change, demonstrate how this occurs through a discrete, case-by-case or project-by-project approach to addressing environmental harm from specific activities that contribute to climate change. The extent to which resource-producing nations have constitutionally entrenched environmental rights protection reveals new avenues for addressing climate change that may expand current understandings of the legal strategies available to public interest litigants. As this human rights-based approach gains momentum around the world, it has the potential to have a 'snowball effect' on a global scale that may complement other climate mitigation strategies.

Keywords: climate mitigation; comparative constitutional law; environmental rights; public interest litigation; resource conflicts

Introduction

Climate change concerns due to resource extraction[1] are widespread and well-documented, though there continues to be disagreement about the precise causal mechanisms and scale of impact amongst the scientific community. There are some estimates that the extraction and processing of natural resources (biomass, fossil fuels, metals, and non-metallic minerals) contributes to half of the world's greenhouse gas (GHG) emissions, and to more than 90 percent of biodiversity loss and water stress impacts (MERE, 2021). The extraction and processing of just metals and other minerals is responsible for an estimated 26 percent of

1 Resource extraction entails the withdrawal of materials from the environment for human use, including fossil fuels (like oil, gas, and coal), rocks and minerals, biomass, and water (University of California, 2020).

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global carbon emissions (ibid.). Mining activity contributes to climate change in a number of ways. For example, the expansion of mining into forested areas leads to the release of GHGs due to forest clearance and loss (Odell et al., 2018). Coal mining brings geologically stored carbon to the surface to be released into the atmosphere, and more generally, mining operations and the mineral value chain emit GHGs (ibid.). Mining also exacerbates climate impacts, particularly in water scarce regions, through the use of already limited water resources, rendering some areas more vulnerable to drought conditions (ibid.). Moreover, the increasing frequency of severe storms can threaten the integrity of tailing dams and other infrastructure, with potentially serious consequences for water contamination (ibid.). Given that the use of natural resources has more than tripled since 1970, and demand continues to grow, understanding the climate impacts of the resource sector has become even more critical. This is particularly so with the mineral intensive nature of the clean energy transition, which will require vast amounts of copper, lithium and other metals in coming years (Hund et al., 2020).

Though resource projects are significant contributors to climate change, delineating project- or sector-specific contributions and apportioning responsibility is problematic. This makes it difficult to account for and address the climate impacts of projects as or before they occur. When considering that such projects may account for a quarter of global carbon emissions, this represents a significant gap in climate mitigation that perhaps has not received the attention that it deserves. In addition, while much of the focus of public interest litigation (PIL) has targeted the reduction of GHG emissions specifically,[2] the predominant focus of climate litigation on CO2 emission reduction policies in a broader sense may only tangentially capture all of the above-mentioned contributors to climate change. To address this gap and propose new lines of research, this article focuses on the climate mitigation prospects of cases that are not directly related to GHG emissions. In other words, it explores the climate mitigation potential of cases where other impacts of mining (e.g. rapid melting of glaciers, water scarcity) are not properly managed. These 'non-climate'[3] cases may present a concrete way of addressing the harm caused by specific activities that, collectively, are linked to climate change.

2 For a detailed discussion of climate litigation pursued through rights-based claims, see: Peel and Lin, 2020; Alogna et al., 2021; Auz 2022.

3 Climate cases tend to be based upon assertions that the policy or activity in question either contributes to climate impacts or does not do enough to mitigate such impacts. For the sake of clarity, the reference to 'non-climate' cases is meant to capture claims that are not based on such assertions regarding climate harm specifically.

In recent decades, resource conflicts have become more frequent and intractable (Kemp et al., 2011), and matters tend to end up before the courts after the socioenvironmental impacts of mining projects have become contentious with local communities. In many jurisdictions, PIL on such issues proceeds by way of an appeal to environmental rights protections embedded within a national constitution. The global surge in initiatives to promote environmental justice has led to international recognition of the human right to a clean, healthy and sustainable environment (UNGA, 2022; UNHRC, 2021) and constitutional reform in many countries to protect the right at national levels. Environmental rights[4] cases provide fertile ground for addressing the potential climate impacts of resource projects, aligning with growing efforts to reform governance structures in a manner that supports a symbiotic and holistic relationship between humans and nature. Constitutional entrenchment of the right to a healthy environment provides a human rights-based approach to mitigating climate impacts, both directly through climate litigation, and indirectly through environmental rights litigation relating to other types of harms (apart from GHG emissions). Constitutional environmental rights have been linked to improved environmental performance, stronger environmental protection laws, and better court decisions on environmental matters (Boyd, 2012). They may also increase access to justice, transparency, and the accountability of government actors for their decisions (Khadim, 2021). While economics will often drive project development forward, constitutional approaches can safeguard other important societal values and foster more balanced decision-making. Thus, constitutional environmental rights may play an essential role in addressing the cumulative impacts of resource development, including climate impacts.

This article explores the argument that, as this human rights-based approach gains momentum around the world, it has the potential to have a 'snowball effect' with regards to climate mitigation. In much the same way that climate change was caused by disparate, smaller-scale activities separated spatially and temporally, potential solutions may also lie in a discrete, case-by-case or project-by-project approach to addressing the environmental harm of activities

4 The term 'environmental rights' used herein does not include the Rights of Nature or developments in the field of Earth jurisprudence. While these may be relevant to a reconceptualisation of rights, an examination of the notion that nature has intrinsic rights that ought to be recognised at law is beyond the scope of this article. Though environmental rights jurisprudence may on occasion refer to the need to take an ecocentric approach, the non-climate litigation that is the subject of this article is based upon environmental rights claims that are largely anthropocentric in their scope (i.e. human rights). Claims to a violation of the human right to a healthy environment are often intertwined with other human rights violations, such as rights to life, health, equality, dignity, and/or Indigenous rights. These are claims that would fall under 'non-climate' cases for the purposes of this discussion as they do not contain a specific assertion with regards to a violation of the right to a stable climate.

that contribute to climate change. In conjunction with other climate mitigation strategies, the implementation of constitutional environmental rights regimes at local, regional and national levels around the world may have a profound impact over a relatively short period of time, by helping communities to address (and potentially even limit) the direct and immediate harms of mining projects as they arise or are contemplated. This can also lead to implementation of more effective climate mitigation measures that capture broader contributors to climate change, not just focused on the direct reduction of GHG emissions. Moreover, leveraging non-climate litigation strategically can assist in overcoming some of the barriers that currently exist to successful climate litigation, including issues around proving whether an injury is imminent or certain, judicial determinations of non-justiciability of climate policies, and the problem of apportioning responsibility for GHG emissions.

The article begins by discussing the extent to which the constitutionalisation of environmental rights has become a global phenomenon. It then demonstrates how constitutional environmental rights may address the potential climate impacts of resource projects in non-climate cases, by focusing on glacier protection strategies undertaken in relation to gold mining in the Valle del Cura, San Juan, Argentina. The glacier case study provides a detailed, contextual picture of how such claims proceed in reality and the types of climate-related environmental harms that may be addressed. The article then briefly considers environmental rights cases litigated in other jurisdictions, noting the increasing prevalence of such cases. The extent to which resource-producing nations have constitutionally entrenched environmental rights protection reveals new avenues for addressing climate change that may expand current understandings of the legal strategies that are available to public interest litigants. However, while a contextual focus on the glacier case study demonstrates the potential, this remains an area that is ripe for further empirical research. This article concludes by proposing new lines of research into the extent of impact that environmental rights-based approaches may have and how they can be leveraged to maximum benefit in PIL relating to climate change. In doing so, non-climate litigation based on environmental rights may not only bridge the accountability and enforcement gaps associated with climate law and policy, as argued by Vilchez Moragues and Savaresi (2021: 17), but may also bridge the gap between human rights and PIL through interpretations of environmental rights as collective rights.

Global expansion of constitutional environmental rights

Setting norms and standards through constitutionalisation

Environmental rights are a fairly recent concept within human rights discourse. Early human rights instruments did not mention environmental rights, and it was only over the past fifty years that the idea of discrete environmental rights endowed with moral and legal status evolved (Hayward, 2004). However, there is now a considerable body of literature on the concept of environmental rights, including whether environmental rights constitute human rights, the scope and content of such rights, problems of implementation and interpretation, and difficulties surrounding methodology in the study of these rights (Bosselmann, 2001; Hayward, 2004; Boyd, 2012; Kotze, 2016). The United Nations (UN) has also commissioned comprehensive reviews of the connections between human rights and the environment, recognising that states should ensure a safe, clean, healthy and sustainable environment in order to respect and protect human rights (Ksentini, 1994; Knox, 2018). Moreover, in 2021, the UN Human Rights Council adopted resolution 48/13 recognising the right to a clean, healthy and sustainable environment as a human right that is important for the enjoyment of other human rights, and in 2022, the UN General Assembly adopted a historic resolution declaring it to be a universal human right (UNGA, 2022). Current conceptions of environmental rights are often framed as including both substantive and procedural aspects, and may incorporate principles of individual responsibility as well as government duty (Knox, 2018; Ksentini, 1994).

Because of the status of constitutions as the highest form of law within a nation, entrenchment of fundamental rights is seen as 'the most stringent form of normative commitment' to human rights (Hayward, 2004: 66–67). This, in turn, is premised on the normative claim that a commitment to human rights principles entails a commitment to enforce them (ibid.). In other words, enshrining them amongst the highest imperatives of the state (i.e. the constitution) provides the only sufficiently stringent guarantee of a commitment to enforcement (ibid.). On this basis, numerous scholars have postulated that any state that is constitutionally committed to protecting human rights ought to constitutionalise the right to an adequate environment (Boyd, 2012; Brandl and Bungert, 1999; Bruch et al., 2000; Gellers, 2017; Hayward, 2004; Kotze, 2016; Kury, 2021; May and Daly, 2014; Turner et al., 2019).

Constitutionalisation enables environmental protection to achieve the highest rank amongst legal norms, 'a level at which a given value trumps every statute, administrative rule or court decision' (Brandl and Bungert, 1999). Moreover, by indicating that environmental protection is to be accorded the same degree of

respect as other fundamental rights and freedoms, societal conflicts that pit environmental concerns against completing values and interests may be resolved more effectively (ibid.). Additional benefits of constitutional entrenchment include improved implementation and enforcement of environmental rights, greater citizen participation in environmental decision-making, increased accountability, a reduction in environmental injustice, a level playing field with social and economic rights, and better environmental performance (Boyd, 2013). In fact, there is some encouraging evidence indicating that incorporation of the right to a healthy environment into national constitutions leads to two important legal outcomes, namely stronger environmental laws and court decisions defending the right against violations (Boyd, 2012). Environmental rights may also offer a safety net by filling gaps in environmental legislation and preventing the rollback of environmental laws and regulations under future governments (ibid.: 28). Constitutional environmental provisions are more durable than non-entrenched rights due to the difficulty in achieving the consensus required for amendment (Boyd, 2012; May and Daly, 2014). In addition, environmental rights may protect vulnerable populations, including future generations, from the environmentally destructive acts of the majority (ibid.).

These perspectives have not been immune to criticism, however. Critics argue that constitutionalisation undermines democracy by allowing unelected judges to sit in judgment of decisions made by elected representatives, thereby diminishing accountability and distorting public debate (as discussed in Boyd, 2013: 36; Kramarz, 2018). In addition, some see constitutional environmental rights as anthropocentric, unenforceable, counter to environmental goals, and likely to be ineffective (or even redundant) because of existing human rights and environmental laws (as discussed in Boyle, 2007; Eckersley, 1995: 194; Hayward, 2004). Constitutional rights formulated in vague and abstract moral language are seen as providing little to no direction for deciding individual cases (Yowell, 2018: 5). Some have also argued that environmental rights are a form of cultural imperialism (Boyle, 2007; Mushkat, 2009), are absolutist or excessively individualistic, or risk creating false expectations (as discussed in Boyd, 2012: 33, 40–43). Constitutional environmental rights may also raise the question of capacity on the part of judges to engage in ambitious, open-ended moral reasoning or to assess social science and statistical data (Yowell 2018: 1-2).

Nevertheless, in many places around the world, those who seek stronger environmental protection or climate mitigation measures are turning to the judiciary to litigate environmental rights claims, with some success. For example, in considering the implications of constitutional environmental rights in relation to the impacts of a proposed petrol filling station, the Constitutional Court of

South Africa confirmed in F*uel Retailers Association* that environmental protection is an important constitutional question against which socioeconomic development must be balanced (2007). The court concluded that, where decision-makers are guided by the concept of sustainable development, they ought to ensure development that is ecologically rooted (ibid.; Kotze and du Plessis, 2010: 173).

In ordering the government to take measures to remedy environmental damage and prevent future harm to the heavily polluted Matanza-Riachuelo River, the Supreme Court of Argentina endorsed the view that extraordinary measures may be required on the part of judges where environmental issues and collective interests are at stake (Carballo, 2009; Matanza Riachuelo, 2006; Matanza Riachuelo, 2008; Matanza Riachuelo, 2016). That court recognised a government duty of environmental stewardship through prevention, restoration, and compensation for collective harm under the Constitution (Matanza Riachuelo, 2008). The Supreme Court of India in *MC Mehta v Union of India and others* also appears to have adopted the 'extraordinary measures' approach in a controversial decision over pollution of the Ganges River (1988). In ordering the government to take measures to prevent water pollution, the court took note of the grave consequences of environmental pollution and cited constitutional provisions that impose a duty upon every citizen to protect and improve the natural environment and to have compassion for living creatures.

Constitutional rights often broaden standing and other legal mechanisms for redress of environmental harm. Constitutional environmental rights litigation may resolve procedural matters, such as whether the public received sufficient information about a project or had the opportunity to be heard before a decision was made, as well as more fundamental, substantive questions. For example, the question of whether a particular resource project interferes with an individual's right to a healthy environment, to what extent, and whether this is justifiable, becomes a justiciable issue, in itself. In determining whether a particular activity results in the infringement of environmental rights, the courts are called upon to interpret the nature and scope of the right, which also involves some assessment of underlying issues, like consideration of the minimum standards that are required to maintain a healthy environment or reduce climate impacts. Such decisions can, in turn, provide guidance to government actors and developers as to the acceptable standards to be applied if a project is to proceed. In this sense, constitutionalisation plays an essential role in setting environmental norms and standards. While interpretations of what is 'healthy' or 'sustainable' may vary from place to place, and can be vulnerable to changing interpretations that dilute such standards, the durability of entrenched rights

still offers protection of the core values meant to be captured within environmental rights provisions. Moreover, judicial interpretations can also go the other way to require more stringent environmental protection standards.

Constitutional entrenchment a global reality

The ideas explored in this article, around the climate mitigation potential of non-climate cases, rest on the fact that the constitutionalisation of environmental rights has become a global phenomenon. A large number of countries have amended their constitutions in environmentally protective ways, and domestic courts have overcome conceptual and political challenges to find ways to enforce these new provisions (May and Daly, 2014). By 2010, environmental rights had been incorporated into the constitutional laws of more than 70 percent of the world's nations (UNHRC, 2011). In his review of the national constitutions of 193 nations, Boyd observed that, at the time of the *Stockholm Declaration* in 1972, there were no constitutions that incorporated environmental rights and very few that imposed 'modest environmental responsibilities' (2012: 47). These responsibilities were often framed as an obligation to protect the natural beauty of a nation, or to ensure the protection and proper use of natural resources in a rudimentary manner (ibid.).[5] The first meaningful inclusions of environmental protection provisions within national constitutions began to appear in the early 1970s, with Switzerland (1971), Panama (1972), Greece (1975), Papua New Guinea (1975), India (1976) and Portugal (1976) leading the way (ibid.).

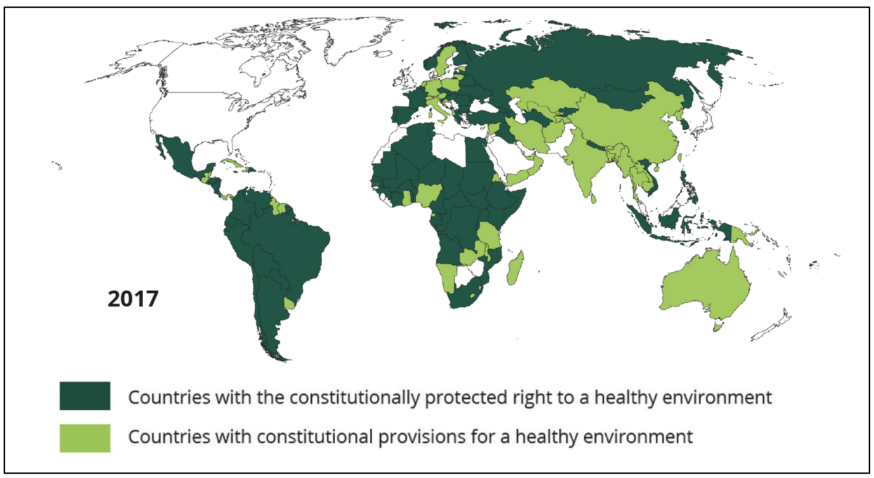
By the time of Boyd's analysis four decades later, the number of national constitutions that contained direct references to environmental rights or responsibilities had ballooned to 147 of 193 constitutions, accounting for three quarters of the world (ibid.) (see *Figure 1*). May and Daly counted 75 countries that had substantive constitutional environmental rights (2014). Jeffords found that 142 out of 198 constitutions included at least one reference to the environment as of 2010, with 125 containing provisions that explicitly related to environmental rights, ranging from substantive and procedural environmental rights to individual and state duties and responsibilities towards sustainable development and concern for future generations (Jeffords, 2011; Jeffords and Gellers, 2017). Approximately 46 UN-member nations have not constitutionalised environmental protection, including 24 small island states.[6] Nations whose constitutional docu-

5 See, eg, constitutions of Italy (1947), Malta (1964), Guatemala (1965) and San Marino (1974).

6 These are Antigua and Barbuda, Australia, Bahamas, Barbados, Bosnia and Herzegovina, Botswana, Brunei, Canada, Cyprus, Denmark, Djibouti, Dominica, Fiji, Grenada, Guinea-Bissau, Iceland, Ireland, Israel, Japan, Jordan, Kiribati, Lebanon, Liberia, Libya, Liechtenstein, Malaysia, Marshall Islands, Mauritius, Monaco, Nauru, New Zealand, Pakistan, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sierra Leone, Singapore, Solomon Islands, Tonga, Trinidad and Tobago, Tunisia, Tuvalu, United Kingdom, United States, and Zimbabwe (Boyd, 2012: 49).

ments are silent on the matter include the United Kingdom and 29 former British colonies, including Canada, the United States, Australia and New Zealand (Boyd, 2012). Almost all of the English-speaking nations of the Americas are without constitutional protection for the environment, while all 22 non-English speaking nations of the Americas have incorporated it (ibid.). Very few common law countries have environmental provisions within their constitutions, while most civil law countries do have them (ibid.: 51). Thus, a discernible pattern along political, geographic and legal lines is evident (ibid.: 49). Gellers suggests that constitutional environmental rights are more likely to be found in jurisdictions that have a greater number of international civil society organisations, higher levels of democratic governance and a poor human rights record (2017).

Figure 1: Constitutional environmental rights protection (by country)



Source: UNEP Environmental Rule of Law Report (2019)

In enacting such rights, national governments around the world have articulated the right in a variety of ways, using descriptors such as 'clean', 'healthy', 'decent', 'viable', 'satisfactory' and 'sustainable' (Ksentini, 1994; Bosselmann, 2001),[7] with the most common formulation being a right to a 'clean' or 'healthy' environment (Anton, 1998). The formulations used by nations, such as 'sustainable' or 'healthy' have, however, led to concern about how environmental rights are defined, and existing formulations have been criticised for utilising excessively vague adjectives (Birnie and Boyle, 2002). These conceptions of environmental rights include elements that may be the subject of interpretation and, therefore, it has been suggested that emphasis on certain elements over

7 See, eg, constitutions of Finland, Rwanda, Cuba, Nepal, Columbia, Croatia and Ecuador.

others may best be determined at the implementation stage (Hayward, 2004). How the right is construed will depend on interpretations of what 'health' and 'well-being' mean, but regardless of how broadly one may construe the scope of environmental rights, the fact that contamination of air, water and food present the most immediate threats to health and well-being means that the environmental rights paradigm may apply most clearly to pollution, waste disposal and other toxic contamination (ibid.). Notwithstanding the issues around definition and interpretation, the widespread movement toward domestic constitutional recognition of environmental rights may have notable implications for climate mitigation.

The law in action: Glacier protection and mining in Argentina

To understand how constitutional environmental rights can play a climate mitigation role through non-climate cases, an example is drawn from gold mining in Argentina. This case study provides a detailed, contextual picture of how such claims proceed in reality and the types of climate-related environmental harms that may be addressed. Valle del Cura in San Juan is one of the most important gold and silver districts in the world (Undersecretariat of Mining, 2012: 3). Two mega deposits found there, Veladero and Pascua Lama, were (until recently) operated solely by Barrick Gold, a Canadian company (ibid.; Brockton, 2013). Other significant projects are in close proximity,[8] both in Argentina and across the border in Chile, raising concerns about the potential for significant cumulative impacts upon the environment and the public. Despite their economic potential, these projects have been mired in socioenvironmental conflict since their inception. Much of this conflict stems from the fact that mineral deposits are located within glacier-rich areas, surrounded by hundreds, if not thousands, of glaciers.[9] Glaciers are large water reserves that contain 75 percent of the world's fresh water (Picolotti, 2017). The rock glaciers of the Andes Mountains, in the southern portion of the Atacama Desert, are massive ice bodies covered by a thin layer of rock debris, which can make identifying them a challenge. These ice bodies are said to be a significant source of Argentina's water supply and therefore critical to ecosystem survival. The periglacial environment is considered essential in the redistribution of humidity in high mountain environments and the regulation of water flow to the basins below, particularly during the hot, dry summer months when precipitation is scarce (Picolotti, 2017). The melting

8 These include include El Pachón (Glencore), Los Azules (McEwen Mining), El Altar (Sibanye-Stillwater, Aldebaran), Cerro Amarillo (Meryllion Gold) and Josemaria (NGEx Resources) (Aldebaran Resources Inc, 2022; McEwen Mining,

9 Over 100 mining projects were projected for San Juan province alone in 2012 (Jamasmie, 2012).

of these glaciers is also of particular interest to climate scientists, as they contribute to rising sea levels (Hansen, 2018). This, in turn, exacerbates climate change by causing more warming through the ice-albedo feedback, and by altering ocean currents through changes in ocean salinity and temperature (UCAR, 2024).

Glaciers and their surrounding environments are viewed as especially vulnerable to mining because it accelerates their climate-related deterioration (Daniel, 2013: 8).[10] In addition to concerns over pollution, mining in periglacial zones can entail explosions that cause the release and dispersal of substances that warm the glaciers more rapidly (Valente, 2008). The movement of earth, including from pre-stripping blasts, and vehicular transit in the area generate atmospheric emissions that cause local contamination. The soiling of the surface of the glacier changes its reflectivity, which can affect the glacier's melting point and precipitate its deterioration (Daniel, 2013: 8 – 9). Drilling and removal of large quantities of ice also harm glaciers, particularly when lubricants are used, and acid drainage is problematic for both glaciers and downstream waterways (ibid.). In addition, the perforation and removal of ice and the placement of weight on glaciers can disturb their structural balance and lead to a total collapse (ibid.: 69 – 70). Needless to say, the disappearance of glaciers has serious local and global implications (Garcia, 2015). Any attempt to protect glaciers from harm through implementation of constitutional environmental rights provisions would, if successful, also have the effect of climate mitigation.

Concern over the socioenvironmental harm of gold mining in this area led local community members, scientists, politicians, activists and organisations across the country to take up the issue of glacier protection on a number of levels. Constitutional environmental rights provisions were critical to these efforts, and were operationalised in a number of ways, including through: i) legislated minimum standards, ii) rulings on the constitutionality of these measures, iii) environmental rights claims before the courts, and iv) criminal sanctions for a failure to comply with constitutionally-mandated environmental protection requirements. Each of these is discussed in further detail below.

Legislated minimum standards for glacier protection

The 1994 *Constitución de la Nación Argentina* ('Constitution') recognises both substantive and procedural aspects of environmental rights, places a duty of preservation upon individuals, and imposes an obligation on the government to

10 The mining of gold also contributes to GHG emissions in other ways, e.g. through energy consumption (Wood Mackenzie, 2020).

provide for the protection of environmental rights, the preservation of natural and cultural heritage and biological diversity, and the rational use of natural resources (Constitution, 1994). Article 41 incorporates a basic substantive right to a 'healthful, balanced environment fit for human development,' which can be enforced as a collective right. Article 43 grants broad standing to affected parties, the Defender of the People (i.e. the Ombudsman), and non-governmental environmental defense associations. The national government is mandated with the responsibility for enacting laws containing minimum environmental protection standards that apply across the country, while the provinces are responsible for implementing those standards (Sabsay, 2003: 169). Thus, the constitutional provisions imposed an obligation on the government to develop legislated minimum standards for glacier protection.

Pursuant to this obligation, in 2010, the national government enacted a law, the *Régimen de Presupuestos Mínimos para la Preservación de los Glaciares y del Ambiente Periglacial* [Minimum Standards for the Preservation of Glaciers and the Periglacial Environment Act (MSPGA)]. The MSPGA designated glaciers to be a 'public good' and set out minimum standards for the preservation of glacial environments (MSPGA, 2010: art 1). It prohibited all activities that could interfere with the natural condition of glaciers, included mining and hydrocarbon exploration/exploitation, release of contaminants, construction of works or infrastructure, and industrial activity (ibid.: art 6). It also required environmental impact assessments (EIAs) for all activities that were not prohibited, and guaranteed public participation prior to authorisation of such activity (ibid.: art 7). Sanctions for non-compliance were introduced, as well (ibid.: arts 11 and 12). To facilitate its objectives, the MSPGA mandated creation of a glacier inventory to identify areas requiring protection for monitoring and enforcement purposes.

Supreme Court ruling upholding constitutional validity

When the constitutional validity of the MSPGA was challenged by mining companies and certain provincial governments, the Supreme Court embraced an ecocentric approach and upheld the law as valid, noting the constitutional aim of a 'healthy, balanced environment.' Mining at Veladero had commenced after the new Constitution came into effect but before the glacier protection legislation was enacted. In response to the new law, Barrick Gold obtained an injunction in 2011, effectively suspending its application to the Pascua Lama–Veladero operations on the basis that the law created a state of 'uncertainty' and 'lack of tranquility' for companies operating in glacial zones (*Barrick Exploraciones*, 2012; *Minera Argentina*, 2012; Taillant 2012). Similar injunctions

were obtained by other mining companies and industry associations, pending the outcome of a constitutional challenge to the validity of the MSPGA (*Xstrata Pachón*, 2012; AOMA, 2012). However, the injunctions did not survive the scrutiny of the Supreme Court and were reversed the following year (*Barrick Exploraciones,* 2012; *Minera Argentina*, 2012; *Xstrata Pachón*, 2012; AOMA, 2012).

The Supreme Court ruled on the constitutionality of the MSPGA in 2019, rejecting all of the claims brought by the mining companies and the province of San Juan in a unanimous decision (*Barrick Exploraciones*, 2019; *Minera Argentina*, 2019; *Pachón*, 2019). The court considered whether a legitimate interest was affected in a sufficiently direct manner and found that there was an absence of a discernible grievance resulting in a justiciable case, as the projects had continued to operate and the companies had not proven that implementation of the law affected them (*Barrick Exploraciones*, 2019: 46 – 49). Moreover, the province had failed to demonstrate in concrete terms how implementation of the law would affect the exercise of its own constitutional powers (ibid.: 51 – 52). The court noted that the province's invocation in the abstract of a constitutional rule establishing its original domain over resources (Constitution, 1994: art 124) in order to 'distort' another rule of the same hierarchy that established the national government's mandate to dictate minimum environmental standards generated a superfluous and unnecessary tension between two constitutional clauses. Such tensions, in the court's view, ought to be resolved in a manner that adapts the management of natural resources to the directives of the environmental clause, without emptying the content of the federal model or the environmental project of the Constitution. Such an approach aligned with the concept of concerted federalism envisioned within the environmental clause of the Constitution (*Barrick Exploraciones*, 2019: 19 – 20).

The court noted that the power delegated to the national government to establish minimum environmental standards was not merely theoretical, but was intended to empower the government to implement the means needed to achieve the constitutional aim of 'a healthy, balanced environment, suitable for human development.' The court expressed concern about intervening prematurely in the 'dense and complex political task' undertaken to effectively coordinate national and provincial interests in pursuit of the environmental mandate of the Constitution. The risks posed by judicial intervention in environmental policy issues that are better resolved through federal dialogue meant that there was a need for a genuine controversy upon which the courts might adjudicate. Simply pointing to the possibility of a conflict between federal and provincial laws was not sufficient. Moreover, under the measures established by the glacier protection law, it was clear that implementation would require technical expertise,

and any ruling by the court 'would be premature and the result of mere theoretical speculation' (ibid.: 21 – 23).

Perhaps most importantly, the court noted the significance of the rights at stake. Where collective rights pertaining to environmental protection and access to strategic resources like water were implicated, the focus of the problem was not only upon the claims of the parties. Given that the court in the past had characterised the environment as 'a collective good of common and indivisible use, belonging to the community' (*La Pampa*, 2017), a consideration of interests beyond those of the parties was required, taking into account the numerous rights affected. Moreover, to promote a solution focused on future sustainability, decisions that foresee their consequences were required. The Constitution did not envision the environment as destined for the exclusive service of humankind (*Barrick Exploraciones*, 2019: 23).

The court embraced an ecocentric approach with regards to access to water, noting that the existing legal paradigm that regulated water use was ecocentric or systemic and accounted for private and state interests as well as those of the system itself (ibid.: 23 – 24). The court took note of the scientific evidence regarding impacts to glaciers and the novel environmental problem that the legislation sought to address, observing that the glacier protection law addressed the effects of certain extractive processes (and specifically large-scale mining in certain regions of the country) on the conservation of glaciers as 'strategic reserves' that provide water for the planet. Given the seriousness of the collective environmental rights at stake, new areas of political deliberation and legal responsibility had emerged which benefitted from constructive dialogue between the national government and the provinces (ibid.: 25 – 26).

Such an interpretation was supported by an emerging global consensus under the 2015 Paris Agreement on climate change and the UN 2030 Agenda on Sustainable Development. The court viewed the Paris Agreement's concept of climate justice as a way to integrate diverse actors and approach the protection of ecosystems and biodiversity in a more systemic way. Thus, when faced with a glacier protection law that sought to protect collective rights, particularly those of a novel nature, the constitutionally protected property rights of the individual had to be balanced against such collective interests, to ensure that the exercise of lawful industry was sustainable (ibid.: 257 – 28). For these reasons, the claims were dismissed, and the MSPGA was upheld as constitutionally valid and applicable to the operations of the mining companies that brought the challenge.

Environmental rights litigation

The constitutional environmental rights provisions also created avenues for the public to raise concerns about the impacts of development upon glacial environments (Constitution, 1994: art 43; *GEA*, 2002: art 30). This meant anyone could request the interim cessation of activities that generate collective environmental damage through an amparo action, without the requirement of having to show personal harm or meeting stringent standing requirements. Moreover, the judiciary was granted broad powers through environmental legislation to take the necessary measures to effectively protect the general interest, including orders for precautionary measures undertaken on an urgent basis and the imposition of criminal sanctions against public officials for their failure to comply with constitutionally-mandated environmental protection requirements (*GEA*, 2002: art 32).

A number of individuals and environmental organisations utilised these provisions to file cases seeking either a cessation of mining at Veladero and Pascua Lama, or if it was to be continued, a determination by the court of the conditions of resource exploitation so as not to cause damage to the environment or to the health and life of the population inhabiting the area. They had varying degrees of success in obtaining critical information about project impacts and enforcing compliance with environmental laws. *The Fundación Ciudadanos Independientes* (Independent Citizens Foundation or 'FCI'), supported by glacier expert Juan Pablo Milana, was one of the first to bring glacier concerns to the courts (Daniel, 2013: 19). In 2005, the FCI commenced legal proceedings against the provincial and national governments as well as a number of mining companies, due to concern over impacts to hydrological resources and the cryosphere at Veladero and Pascua Lama (*FCI*, 2016a; *FCI*, 2016b). That same year, Ricardo Vargas, a mountain tour guide, filed a case alleging violations of the Mining Code, failure to conduct proper public consultations and obtain environmental insurance, and that mining projects posed a risk to the UNESCO San Guillermo Biosphere Reserve (*Vargas*, 2012; *Vargas*, 2013; *Vargas*, 2015).

A number of court decisions were issued in subsequent years as a result of concerns raised by FCI and Vargas. The Supreme Court interpreted legislative requirements in light of Article 41 of the Constitution and ordered the provincial government to disclose the environmental impact reports relating to Pascua Lama (*Vargas*, 2012; *Vargas*, 2013). The national government was required to advise whether EIAs had been carried out and whether the relevant information had been exchanged with Chile (ibid.). In addition, the court considered a judgment from the Chilean Supreme Court suspending operations across the border

based on concern over environmental impacts and the constitutional guarantees existing in that jurisdiction, to order the mining company and the provincial government to report specifically on: i) whether sedimentation basins were built and if monthly maintenance was performed; ii) the monitoring of glaciers, including the existence of particulate material and its impact on the temperature and volume of water resources; iii) if any water monitoring anomalies had been reported; iv) whether established parameters had been followed for surface water management channels and system groundwater collection; and v) the monitoring of tailings dams (*Vargas*, 2015). Thus, the court in some ways stepped into the role of the regulator and intervened to protect the environment in project areas, requiring mining companies to report on their monitoring of glaciers and carry out revisions to EIAs.

When a number of cyanide and heavy metal spills were reported at Veladero, the court used its power as custodian of constitutional guarantees to require the provincial government to inform whether it had requested information from the mining companies about the existence and extent of the spills, and whether they had been made known to potentially affected inhabitants (*FCI*, 2016a: *FCI*, 2016b). The court also required the government to report on the content of the information provided to the public, including consequence for health and life, and what measures the community should adopt to reduce risk of harm (ibid.). The province complied with the request, but stated that there was no harm found to the environment or public health due to the spill. However, a series of judicial measures were imposed, including visual inspection of the site, sequestration of the compromised material, and suspension of works at the mine that involved the use of cyanide (*FCI*, 2021). The court saw preventing the violation of environmental rights as a fundamental objective guiding the administration of justice and, therefore, did not consider it to be an undue interference on the part of the judiciary to protect such rights (*FCI*, 2016a; *FCI*, 2016b). In this manner, the court engaged in successive interventions of an investigative nature and oversaw the enforcement of and compliance with environmental laws on a precautionary basis.

Yet, the courts have also been cautious about the exercise of judicial power and 'the delicate mission of judges to stay within their orbit of jurisdiction' (*Fundación Medio Ambiente*, 2014), taking care not to unduly interfere with the federal balance of power established by the Constitution. For example, when another non-profit organisation, the *Asociación de Superficiarios de la Patagonia* (Association of Superficiaries of Patagonia or 'ASSUPA'), filed a claim alleging environmental harm to the San Guillermo Biosphere Reserve and to interprovincial waterways as a result of activities at Veladero, the Supreme Court

concluded that it was unable to exercise original jurisdiction over local and provincial matters, as such matters had to proceed through the lower courts first (*ASSUPA*, 2007). ASSUPA sought an order from the court requiring the provincial government to take measures to eliminate existing pollution, restore the environment and establish an environmental restoration fund. Although ASSUPA's claim was framed in terms of constitutional environmental rights and the Supreme Court recognised the protection of the environment as an important constitutional right, it was unable to grant the relief sought as it was bound by jurisdictional requirements and only able to consider the inter-jurisdictional aspects of the claim (ibid.; Constitution, 1994; art 117).

Similarly, in a 2021 decision, the Supreme Court reaffirmed that its jurisdictional competency was limited to matters based directly and exclusively on constitutional provisions of a national nature, federal laws, and international treaties (*FCI*, 2021). The FCI had questioned the legality of the mining authorisations given their proximity to glaciers, amongst other things, and sought a cessation of mining and restoration of the environment, or an imposition of conditions at minimum. It also challenged the manner in which the national glacier inventory had been undertaken. The process was criticised for its methodology (Arbeleche and Vedoya, 2018; Taillant, 2011; Taillant, 2018), and environmental groups believed that some provinces exercised their power over the administration of environmental regulation to conduct the glacier inventory in a selective manner, excluding areas where mining projects were operating (Taillant, 2019). The completion of the inventory clarified the scope of FCI's claims, and the court no longer viewed its intervention on a precautionary basis as justified. The court determined that the case involved issues of a local nature (i.e. environmental protection in the affected province) and the bi-national nature of Pascua Lama did not alter the rules of jurisdiction. Therefore, the court could not assume original jurisdiction over the matter and the claims had to proceed through the provincial courts first, with separate proceedings against the national government for alleged omissions in the compilation of the inventory (*FCI*, 2021).

The existence of criminal sanctions for a failure to comply with constitutionally-mandated environmental protection requirements is also an important means of enforcement. As a result of the cyanide spills, a number of criminal prosecutions took place before the provincial and federal courts. At the provincial level, eight Veladero employees were prosecuted for their involvement in the incident (Decision of Judge Oritja, 2015; Méndez, 2017). The court determined that the employees were responsible for 'contamination by negligence and inexperience' contrary to Article 56 of Law 24,051 on hazardous waste (1991), a charge that carries a penalty of one month to two years imprisonment. Charges

against the general manager, Antonio Adames Reyes, were dismissed for 'lack of merit' (ibid.). However, the provincial court's approach was criticised as failing to hold company directors and provincial officials responsible, instead only prosecuting lower-level employees (Aranda, 2018).

On the other hand, prosecutions before the federal courts did target higher public officials. In 2017, the federal government proceeded with prosecutions against federal public officials of the Kirchner government, for their failure to comply with their duty to monitor the project and intervene when irregularities took place, and thus their inability to prevent the cyanide spill (Leotaud, 2018; MDZ, 2018). The legal action was initiated by the Asamblea Jáchal No se Toca (Do Not Touch Jáchal Assembly or 'AJNST') and led to an indictment of public officials on charges of negligence and 'abuse of authority' for failing to correctly inventory the country's glaciers. These breaches were alleged to have violated at least two fundamental human rights, the right to a healthy environment and the right to water, resulting in harm to the entire community (*IANIGLA*, 2017). Pending trial, the court authorised the interim seizure of assets and barred the officials from leaving the country, a number of whom were ultimately convicted in 2018 and had to pay fines ranging from one to two million pesos (USD38,200 to USD76,400) (ibid.; *Lorusso*, 2018). That company employees and public officials are not immune in their responsibility for proper enforcement of environmental laws can send an important message regarding the significance of these constitutional guarantees.

Environmental and community organisations across the country have continued to advocate for the closure of Veladero (Greenpeace Argentina, 2019), and after the Supreme Court's ruling, there was speculation that many mining projects might become permanently stalled by the abundant presence of glaciers (Jamasmie, 2012). It is important to note, however, that not all stakeholders were necessarily against development, but rather sought transparency, a full assessment of the risks and impacts, and proper implementation of the glacier protection law to mining projects (Taillant, 2013: 11), in order to ensure an informed and balanced approach to resource development and the protection of fragile ecosystems (see eg, *FCI,* 2016a: *FCI*, 2016b; *Vargas*, 2012; *Vargas*, 2013; Vargas, 2015). In response, the courts have demonstrated serious regard for their duty to uphold constitutional guarantees and have been willing to oversee enforcement and compliance, where appropriate. The extensive litigation over glacier impacts has resulted in increased public awareness of and debate about the risks to glaciers and water resources; strong collaborations between communities, NGOs, scientists and policymakers; considered debate on the proper methodology for inventorying glaciers; and efforts to enforce en-

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vironmental standards and address impacts in areas that otherwise perhaps would have been too remote to merit national attention.

Although mining operations continue in this region, the constitutional environmental rights provisions and resulting legislative framework have led to the development of ongoing monitoring and inventory of glaciers for protective purposes, increased accessibility to the courts, and some degree of redress and accountability regarding how these mining operations are conducted, highlighting the need to prioritise glacier protection and undertake more extensive EIAs. Given the vulnerability of glaciers to rapid melting due to human activity on or near them, and the role that rapid melting plays in accelerating climate change, any efforts to protect them that lead to better environmental standards and a stronger regulatory framework is a step in the right direction. Open cross-border discussion, debate and collaboration on glacier protection issues, and an invigoration of public ethos that values the protection of water and glacial resources is also critical in ensuring that the public continues to pursue the effective implementation of constitutional environmental rights provisions.

The Supreme Court has recognised these conflicts as polycentric disputes due to the presence of numerous affected rights beyond the parties themselves, noting that since glaciers constitute 'public goods,' these conflicts must be resolved in accordance with principles of sustainability (*FCI*, 2021). However, as the cases above demonstrate, the sociolegal processes at play are extremely dynamic and everchanging, and the environmental mandate that all branches of government have been tasked to uphold is not a simple one to fulfil. Nevertheless, the extent to which constitutional environmental rights provisions can improve environmental standards and increase the accountability of both public officials and corporate entities in environmental decision-making points to environmental rights as playing an essential, but perhaps underutilised, part in climate mitigation.

Concluding remarks: The potential 'snowball effect' of environmental rights litigation

The possibilities offered by environmental rights in climate litigation have already been recognised by scholars (see eg, Preston, 2018; de Vilchez Moragues and Savaresi, 2021), and a number of cases around the world have begun to test them out.[11] However, as some of these cases demonstrate, the law is still in the early stages of development. For example, in *People v Arctic Oil*, the Supreme Court of Norway determined that, although there was constitutional protection

11 For an updated list of cases, see Climate Change Litigation Databases (CCL Databases, 2022).

from environmental and climate harms, future emissions from exported oil were too uncertain to bar the granting of petroleum export licenses in relation to deep-sea extraction in the Barents Sea (2020). The question of whether an injury is 'imminent or certain' is one that seems to plague climate litigants (see eg, *Clean Air Council*, 2019), as does concern that determinations about the adequacy of climate policies comprise non-justiciable political questions (see e.g. *Sagoonik*, 2002). May and Daly have observed that, in addition to difficulties in implementing international law mechanisms, climate justice has not fared well in law at the domestic level, and subnational efforts to reduce GHG emissions have largely failed (May and Daly, 2019: 95 – 96). Very few national constitutions address climate change specifically, so standalone rights in relation to it are limited (ibid.). Nevertheless, de Vilchez Moragues and Savaresi see environmental rights as providing 'precious ammunition to bridge the accountability and enforcement gaps associated with climate law and policy' (2021: 17).

As demonstrated above, one way in which this can occur is by addressing the impacts of particular activities that may collectively contribute to climate change in the long run. In conjunction with other climate mitigation strategies, implementation and enforcement of constitutional environmental rights on a discrete, case-by-case or project-by-project basis could potentially have a significant impact over a relatively short period of time. Communities in close proximity to epicentres of environmental harm are better placed to address it as they may have deeper knowledge of the local environment and, depending on the degree to which they are affected, may be more motivated to pursue legal action to mitigate harm. Though climate impacts are addressed only tangentially and indirectly, the use of a human-rights based approach allows for judicial intervention in cases where the direct and immediate harms of development are more concrete and easier to identify and measure, thus allowing them to be addressed as they arise or are contemplated (as opposed to projections of future GHG emissions). Doing so can allow for the prevention of environmentally harmful consequences without necessitating incontrovertible scientific evidence about the links between that particular activity and climate change. Thus, it is worthwhile to consider the climate mitigation possibilities inherent in non-climate cases.

This article focuses on environmental rights cases relating to resource extraction because of the links between the extractives sector and climate change. The issue of glacier protection in Argentina demonstrates how constitutional environmental rights provisions can be operationalised to mitigate environmental and climate harm. However, this is by no means the only example. In a

recent decision, the Federal Court of Appeal of Mar del Plata heard four cases that were filed by civil society seeking an injunction to halt offshore oil exploration by Equinor, a Norwegian company (*Godoy*, 2022). The constitutional collective actions (*amparo colectivo ambiental*) raised concerns about climate impacts, impacts to marine mammals and the marine environment, access to information, and participatory rights. The Court ordered a new EIA that considers the possible cumulative impacts of the planned activities as well as the results of public consultative hearings at the local and national levels, before seismic exploration could proceed off the coast of Argentina. Though the decision did not specifically address climate concerns, it did highlight that an analysis of whether precautionary measures should be granted needed to consider the model of sustainable development mandated by the Constitution, and though this does not entail the paralysis of economic or industrial development, the activity in question must be undertaken in a manner that does not produce certain types of negative environmental consequences. The court quoted Daniel Sabsay's work, which discusses a new model of human development that integrates the notion of environmental public order (Sabsay, 2010: 214), and noted that the jurisprudence of the Supreme Court to date has highlighted a need to address environmental cases from the perspective of the special interests at stake.

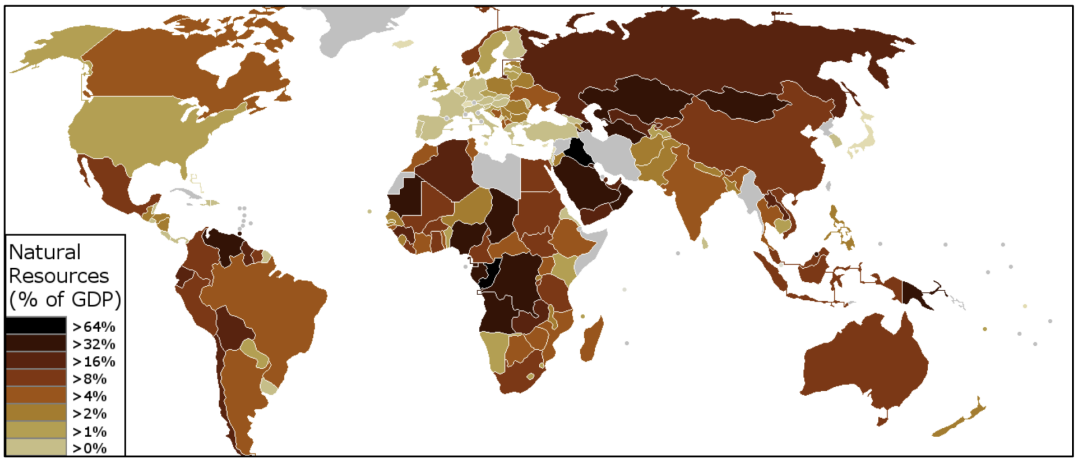
Constitutional environmental rights cases in relation to resource extraction have been litigated in other jurisdictions, as well. Across the border, the Chilean Supreme Court recognised the indivisibility of life, health and the preservation of nature in a line of cases that ultimately resulted in the permanent closure of operations at Pascua Lama in 2022, as the project damaged native flora and fauna, did not fully monitor melting rates of nearby glaciers, dumped acidic waters into a local river, and affected Indigenous rights (*Pascua Lama*, 2022). A gold mining exploitation concession granted to a Costa Rican subsidiary of a Canadian company was also cancelled by the Constitutional Chamber of the Costa Rican Supreme Court on the basis that it violated the preventative principle and the constitutional right to enjoy a healthy and balanced environment (*Murillo*, 2004). Part of that project was in a buffer zone defined by the Central American Agreement on Biodiversity and Protection of Priority Areas, and would have involved the clearing of forested areas, and there were concerns surrounding open pit extraction, the cyanide leaching process, contamination of watercourses, and the emission of toxic gases (ibid.).

In addition, the Constitutional Court of Colombia relied upon constitutionally entrenched fundamental rights to life, health, water, food security, environment, culture, and the rights of ethnic communities to recognise the rights of the Atrato River and order a plan for decontamination (*Atrato River*, 2016).

Indigenous and afro-descendent communities living near the river alleged that the government had failed to prevent river pollution from mining and logging activities, thus infringing their rights. In its judgement, the court noted the advantages of the precautionary principle in addressing the harmful effects of climate change, and that the government needed to consider climate change when developing mining and energy policies, in order to protect human rights. These types of cases supplement the wave of climate-specific cases that have been litigated around the world in recent years using a human-rights based approach.[12]

Apart from the benefits discussed above, there is another significant reason why constitutional environmental rights cases over resource extraction matter. The World Bank estimates that the extractive industries play a strong economic role in at least 63 countries (World Bank, 2021), but from the map in Figure 2, it is evident that actually many nations around the world engage in commercial resource extraction to some degree. While a resource industry comprising one to four percent of a nation's GDP may not appear considerable, for the purposes of this discussion, one percent of the GDP of a country like the United States, which has a GDP of nearly USD 21 trillion is still a sizeable industry (i.e. USD 210 billion). With so many nations engaged in resource extraction, we can see the extent to which the industry's contributions to climate change are distributed across the globe.

Figure 2: Global resource extraction (by percentage of GDP)

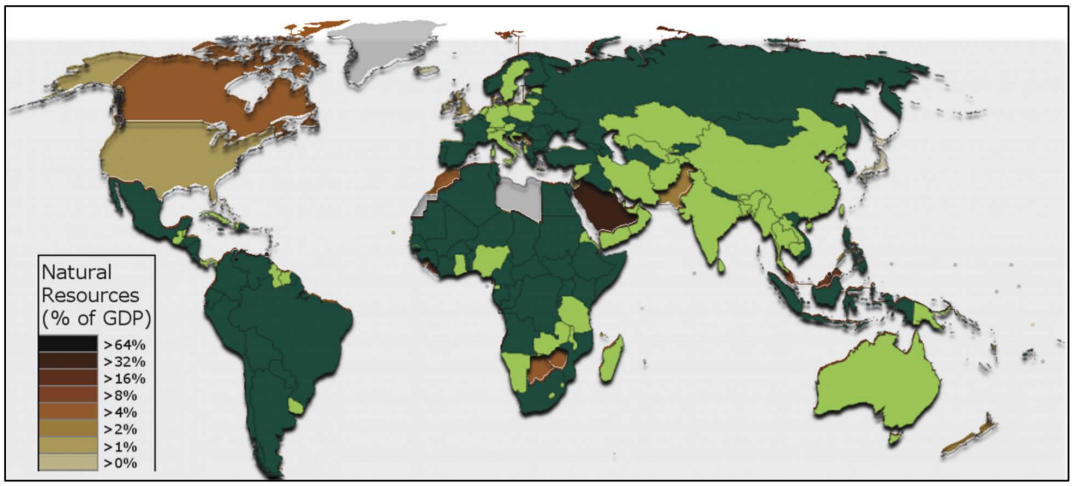


Source: Nonmetuammori, using World Bank data (Yglesias, 2014)

12 See e.g., *Neubauer et al v Germany*, 2021, in which the Federal Constitutional Court ruled that the German Constitution required climate protection.

When taken together with the number of countries that have constitutional environmental rights protection, this becomes meaningful. Figure 3 contains the map of constitutional environmental rights (by country) superimposed upon the map depicting global resource extraction.

Figure 3: Constitutional environmental rights (by country) and global resource extraction (by percentage of GDP)



When one considers the potential benefits of constitutional environmental rights litigation over resource extraction in light of the number of nations that engage in commercial resource extraction that have also enacted constitutional protections, a plethora of possibilities become evident. In other words, these are all potential spheres of influence for addressing and mitigating the impacts of climate change. By strengthening the effectiveness of existing domestic constitutional environmental rights mechanisms, and by increasing the number of countries that recognise such rights to include countries that are missing, like Canada and the United States, it may be possible to systematically and incrementally address the harm caused by activities that contribute to over one quarter of global carbon emissions. This has the potential of creating a 'snowball effect' that may fill the gaps in existing climate mitigation strategies.

While it may be difficult to form broad generalisations about how states implement and enforce their constitutional environmental commitments in practice (Hayward, 2004: 163), constitutional environmental rights do provide concrete benefits if operationalised effectively. However, before any firm conclusions can be drawn about the climate mitigation benefits of constitutional environmental rights litigation in non-climate cases, further research would be required. Though an examination of particular case studies may reveal the inherent and

perhaps untapped potential, questions remain about how many cases would be needed to make a significant impact and when the tipping point would be reached wherein a 'snowball effect' would have profound impact. With the right emphasis on bolstering environmental rights globally, could this be achieved over a relatively short period of time? Further research on tipping points would be of great value, as it would generate the necessary data on how many cases are needed to make a significant impact.

In addition, while leveraging constitutional environmental rights to address climate impacts in non-climate cases seems promising, questions remain about the overall impact from a climate mitigation perspective and whether such an approach would be effective or sufficient. Answering these questions requires further qualitative and quantitative research that examines environmental rights decisions across many jurisdictions and then cross references them against key environmental indicators on climate change, to see what the true impact is (if any).[13] These are potentially exciting new avenues for empirical research and, if emerging findings support the hypothesis of this article with regards to climate mitigation, will provide further impetus to strengthen the implementation of constitutional environmental rights mechanisms.

Finally, the 'snowball effect' need not be limited to empirical claims concerning the likelihood and scope of change that environmental rights-based non-climate litigation may have on climate mitigation policies. Litigation involving environmental rights can potentially bridge the gap between human rights-based litigation and PIL through interpretations of environmental rights as collective rights, the theoretical implications of which are worth exploring further within the context of climate mitigation. Broader judicial interpretations of collective environmental rights that incorporate the right to a stable climate may expand the legal strategies that are available to public interest litigants and offer new avenues for addressing climate change.

13 Such analyses have been undertaken in relation to the benefits of constitutionalising environmental rights in a broader sense (see eg, Boyd, 2012; Gellers, 2012 and 2015; Jeffords, 2016; Jeffords and Minkler, 2015).

Asmaa Khadim
Postdoctoral researcher in Institutions for Conflict Resolution
Leiden University
Email: a.n.khadim@law.leidenuniv.nl

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