



Governing fossil fuel production in the age of climate disruption: Towards an international law of ‘leaving it in the ground’

Harro van Asselt^{a,b,c,*}

^a Professor of Climate Law and Policy, University of Eastern Finland Law School, Yliopistokatu 2, FI-80100, Joensuu, Finland

^b Visiting Researcher, Copernicus Institute of Sustainable Development, Utrecht University, The Netherlands

^c Affiliated Researcher, Stockholm Environment Institute, Oxford, UK

ARTICLE INFO

Keywords:

Climate change
Climate policy
Fossil fuels
International law

ABSTRACT

To achieve the long-term temperature goals set by the 2015 Paris Agreement and avert climate disruption, fossil fuel production cannot continue to proceed unabated. This dawning realisation has led to calls to ‘leave fossil fuels in the ground’. While a growing body of scholarship on ‘supply-side climate policies’ shows how policies curbing fossil fuel production can contribute to climate objective, there has been scarce attention to the role of law in regulating fossil fuel production. With a view to filling this gap, this article investigates the changing role of international law in addressing fossil fuel production to achieve climate change goals. The limitations of the siloed thinking in international law are illustrated with reference to international climate change law, human rights law, and investment law. The normative guidance emerging from these bodies of law for governments and fossil fuel companies regarding the transition away from fossil fuel production is unclear, and at times conflicting. The article thus calls for a rethinking of international law in supporting the shift away from fossil fuel production to achieve climate goals.

1. Introduction

The state of the climate is now ‘unprecedented over many centuries to many thousands of years’, with the impacts of human-made climate change increasingly affecting all parts of the world (Masson-Delmotte et al., 2021). Yet notwithstanding a brief dip in global carbon dioxide (CO₂) emissions due to a global pandemic, there is still a long way to go to avoid climate disruption (Le Queré et al., 2020; UNEP, 2020). To have a decent chance of averting a global average temperature increase of more than 2 °C above pre-industrial levels, CO₂ emissions must fall by about 25% by 2030 and reach net zero by about 2070, whereas achieving the Paris Agreement’s aspirational goal of avoiding 1.5 °C warming would require even more drastic emission cuts (IPCC, 2018).

Fossil fuels – coal, oil, and gas – are the single largest contributor to greenhouse gas emissions, responsible for more than three-fourths of emissions (SEI et al., 2020). Further fossil fuel production may therefore jeopardise the achievement of the Paris Agreement’s long-term temperature goals. Indeed, to achieve the 2 °C goal, one-third of oil reserves, half of gas reserves, and more than 80% of coal reserves need to remain untouched (McGlade and Ekins, 2015), whereas achieving the 1.5 °C goal would make 58% of oil, 59% of gas, and 89% of coal reserves

‘unextractable’ (Welsby et al., 2021).

The reality of governments’ and fossil fuel industries’ plans and projections presents a different picture, however, with both planning to increase production (Oil Change International, 2020; SEI et al., 2020). Fossil fuels are the world’s primary source of energy, and the production and use of fossil fuels are central to energy planning in many countries. Investment in fossil fuel supply holds the largest share of world energy investment by some distance (IEA, 2021b). Governments around the world support the production and consumption of fossil fuels through licensing and permitting, as well as tax breaks, and other subsidies – estimated by the OECD and IEA at US\$ 468 billion in 2019 (OECD, n.d.).

Climate policy – both globally and domestically – has focused on the demand side (i.e. consumption) of fossil fuels, aiming at reducing greenhouse gas emissions that occur with fossil fuel combustion. This has resulted in policies and measures to roll out low-carbon technologies and practices (e.g. carbon pricing, renewable energy support, energy efficiency measures). By contrast, the supply-side – i.e. fossil fuel production – has been largely overlooked in the policy discourse and in research (Lazarus and van Asselt, 2018).

This fundamental disconnect between fossil fuel production and climate goals is at the heart of this article. Specifically, the article

* Professor of Climate Law and Policy, University of Eastern Finland Law School, Yliopistokatu 2, FI-80100, Joensuu, Finland.

E-mail address: harro.vanasselt@uef.fi.

<https://doi.org/10.1016/j.esg.2021.100118>

Received 20 July 2021; Received in revised form 30 September 2021; Accepted 4 October 2021

Available online 7 October 2021

2589-8116/© 2021 The Author.

Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

investigates the evolving role of international law in addressing fossil fuel production as one of the root causes of climate change. By doing so, the article heeds the call by Viñuales (2018, p. 2) to not only pay attention to the way in which law can regulate and mitigate the negative environmental and social externalities caused by economic activities, but to also ‘unveil the role of law in prompting, sustaining and potentially managing the processes that have led to the Anthropocene’. Broadening the inquiry in this way to account for what (Affolder, 2021, p. 260) calls the ‘negative spaces’ of climate law meshes with the holistic analytical approach of earth system law, which acknowledges the complexities and inter-relationships between different areas of law and views contemporary global environmental problems through the lens of earth system science (Kotzé, 2020). Earth system law can further act as an ‘innovative juridical imaginary’ (Kim and Kotzé, 2021, p. 13) that can help to craft ‘legal boundaries [that] translate the physical reality of a finite world into law and thereby delimit acceptable levels of human activity’ (Chapron et al., 2017, p. 1). Taking these analytical and normative dimensions of earth system law as its point of departure, this article both analyses the current international regulation of fossil fuel production in the light of global climate goals, and offers suggestions for how international law could evolve to foster the alignment of fossil fuel production with climate objectives.

The remainder of this article is structured as follows. Section 2 first reviews the emerging literature on ‘supply-side climate policy’ – i.e. policy aimed at restricting fossil fuel production to achieve climate goals. Section 3 then carries out a legal-doctrinal analysis of three disparate bodies of international law – climate change law, human rights law, and investment law – with a view to identifying normative guidance emanating from these bodies with regard to pursuing supply-side climate policy. The three regimes discussed here have been chosen as they address fossil fuel production from different angles (environmental, social, and economic, respectively), and as such offer a good snapshot of the different sets of normative guidance emerging from international law. Finding that the normative guidance from these different areas of international law is both unclear and at times inconsistent, the article calls for a reconsideration of how international law can support the shift away from fossil fuel production. To this end, Section 4 discusses the possible contours of an international law of ‘leaving it in the ground’. Section 5 concludes.

2. The rise of supply-side climate policy

Across the globe, various developments are taking place that point to leaving fossil fuels in the ground. Fossil fuel production is challenged by institutional and other investors divesting their holdings in fossil fuel-producing companies, by protest movements attempting to physically interrupt the building of new oil and gas pipelines or coal mining infrastructure, and in litigation before courts across the world (Burger and Wentz, 2018; Cheon and Urpelainen, 2018; Piggot, 2018; Gaulin and Le Billon, 2020). These developments have planted the seeds for what Green (2018a) terms an emerging ‘anti-fossil fuel norm’.

Following these developments, scholars have begun to draw attention to how *governments* can support a just transition away from fossil fuel production through policy measures (e.g. Harstad, 2012; Collier and Venables, 2014; Fæhn et al., 2017; Green, 2018b; Green and Denniss, 2018; Muttitt and Kartha, 2020; Piggot et al., 2020). Such policies targeting the ‘supply-side’ of fossil fuels include moratoria or other restrictions on new fossil fuel development (Erickson et al., 2018), coal export taxes (Richter et al., 2018), restricting the leasing of land for fossil fuel extraction (Burger, 2017; Biber and Diamond, 2021), and the removal of subsidies to fossil fuel production (Erickson et al., 2020).

Supply-side climate policies are a novel addition to the climate policymaker’s toolkit that can reinforce and lower the cost of demand-oriented mitigation action (Fæhn et al., 2017; Green and Denniss, 2018). Policies to restrict fossil fuel production can help avoid locking in existing infrastructure, institutions, and individual behaviours into fossil

fuels and, conversely, reduce the risk of ‘stranded assets’ for investors and governments due to the premature retirement of fossil fuel reserves and supply infrastructures (Erickson et al., 2015; Seto et al., 2016; Mercure et al., 2018). Supply-side climate policies can further support countries in planning for an orderly and fair transition away from fossil fuels, ensuring that the interests of fossil fuel-dependent workers and communities are duly considered (Piggot et al., 2019). Lastly, policies to limit fossil fuel production could lead to important benefits for biodiversity protection (Harfoot et al., 2018) and public health (Epstein, 2017).

Acknowledging these potential benefits, several countries have begun to implement policies restricting fossil fuel supply. For instance, the governments of Belize, Costa Rica, Denmark, France, New Zealand, and Spain have enacted partial or total bans or moratoria on oil and gas exploration and extraction (Carter and McKenzie, 2020; Tudela, 2020). While the laws and policies adopted by these ‘first-mover’ countries may underscore the potential feasibility of supply-side climate policies, they are also limited in several ways: These countries are relatively small fossil fuel producers, their policies are not solely driven by climate concerns (but also economic interests in for instance renewable energy industries), some policies are restricted in their substantive or temporal scope (e.g. France’s ban only starts in 2040, and contains exceptions for some fossil fuel projects; Muttitt, 2017), and the policies do not constrain the activities of fossil fuel companies headquartered in these countries (e.g. Total). Moreover, similar policies are largely absent in major fossil fuel-producing nations such as Australia, China, Russia, Saudi Arabia, and the United States. Indeed, in many countries the production of fossil fuel is still actively supported, including through public finance, tax breaks, support to state-owned enterprises, or plans for increased production (SEI et al., 2020). Fossil fuel-producing countries face various barriers in moving away from fossil fuel production, with some countries being heavily reliant on the revenues generated by fossil fuel exports and having limited opportunities for diversifying their economies (Muttitt and Kartha, 2020).

This raises the question: what normative guidance does international law offer to states and other actors, such as state-owned or private fossil fuel companies, to adopt certain behaviour with regard to supporting or restricting fossil fuel production? Although space constraints do not allow for an exhaustive discussion of all relevant bodies of international law, the following discussion of three illustrative areas of international law serves to demonstrate that international law, as it stands, does not provide clear or consistent normative guidance on winding down fossil fuel production in the light of climate goals.

3. Normative guidance from international law on fossil fuel production and climate change

Before discussing the role of specific bodies of international law, it is useful to recall two closely inter-related concepts underpinning international law on the use of natural resources, including fossil fuels: that of permanent sovereignty over natural resources, and that of the prohibition of causing transboundary environmental harm, both to other states and in areas beyond national jurisdiction. Both concepts sit side-by-side in Principle 21 of the 1972 Stockholm Declaration, as well as in Principle 2 of the 1992 Rio Declaration (Perrez, 2000). The former concept had its origin in the struggle by people under colonial rule and developing countries to gain acknowledgment of their rights to reap the benefits of resource exploitation (Schrijver, 1997). The ‘no-harm rule’, by contrast, is about limiting state sovereignty with a view to preventing environmental harm (Duvic-Paoli, 2018). The tensions inherent in these two core concepts – between developed and developing countries; between economic development and environmental protection; and between restrictive and expansive conceptions of sovereignty – are to some extent reflected in the specific international legal regimes governing fossil fuel production discussed next.

3.1. International climate change law

Historically, international climate change law has primarily focused on the demand side of climate policy, with climate change treaties and related decisions by treaty bodies remarkably silent about fossil fuels (Aykut and Castro, 2017). The demand-side focus is clear not only from the types of policies and measures listed in the 1992 United Nations Framework Convention on Climate Change (UNFCCC) (e.g. enhancing energy efficiency; reducing emissions from agriculture), but also from its territorial accounting system, which is focused on greenhouse gas emissions by sources and removals by sinks, rather than emissions enabled by fossil fuels extracted and exported (Steininger et al., 2016).

The preamble of the UNFCCC echoes Principle 2 of the Rio Declaration and its balance between sovereign rights and duties. Beyond this, the treaty offers little concrete guidance on the role of fossil fuels in climate change mitigation. Indeed, the only mentions of fossil fuels are in the context of the possible impact of climate change ‘response measures’ (i.e. measures to reduce emissions) on ‘[c]ountries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products’ (UNFCCC, 1992, Article 8(h)). This provision, which was included at the insistence of members of the Organization of the Petroleum Exporting Countries (Barnett and Dessai, 2002), has led to a long-standing (and contentious) debate on the extent to which fossil fuel-dependent countries should be shielded against – or even compensated for – the adverse consequences of mitigation policies (Chan, 2016; Anger-Kraavi and Chan, 2021).

Subsequent treaties, including the 2015 Paris Agreement, do not even mention fossil fuels. Moreover, the effects of fossil fuel production on global greenhouse gas emissions are not considered in the ‘nationally determined contributions’ (NDCs) put forward by the world’s leading fossil fuel producers (Jones et al., 2021). In other words, the Paris Agreement contains no explicit commitment that binds its Parties to restrict fossil fuel production.

Nevertheless, the Paris Agreement offers some normative guidance on fossil fuel production, primarily through its long-term goals (Rayner, 2021), combined with the requirement that each Party’s NDC ‘will represent a progression beyond the Party’s then current [NDC] and reflect its highest possible ambition’ (UNFCCC, 2015, Article 4(3)). Specifically, the temperature goals of the Paris Agreement (well below 2 °C/1.5 °C) facilitate an assessment of the alignment of fossil fuel production with climate goals. For example, the Production Gap Report offers an indication of the extent to which countries’ fossil fuel production plans, in aggregate, are Paris-aligned (SEI et al., 2020), and the goals also guide the International Energy Agency’s Net Zero Emissions by 2050 Scenario, which suggests that a 1.5 °C pathway means that no new fossil fuel development is necessary (IEA, 2021a). Moreover, building on such assessments, the temperature goals can inform climate change litigation, for instance by demonstrating the climate risks of fossil fuel projects (Preston, 2021, p. 21).

Aside from its temperature goals, the Paris Agreement also specifies the goal of ‘[m]aking finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development’ (UNFCCC, 2015, Article 2(1)(c)). While again this goal does not refer to fossil fuels specifically, it has enabled non-state actors as well as UNFCCC bodies such as the Standing Committee on Finance to begin discussing the alignment of financial support for fossil fuel production with the Paris Agreement (Whitley et al., 2018). Moreover, this goal, read in conjunction with the preambular provision to ‘promote universal access to sustainable energy in developing countries, in particular in Africa, through the enhanced deployment of renewable energy’ (UNFCCC, 2015, preamble), as well as specific mitigation and finance-related obligations for Parties, arguably leads to a legal obligation for Parties to assess and mitigate the risks of financial support for fossil fuel production. As Cook and Viñuales (2021, para. 105) posit: ‘it is difficult to see how a State could meet its due diligence requirements if it

ignores or overlooks the fact that investments in fossil fuels need to be phased out as a matter of urgency’.

In addition to the long-term goals, the Paris Agreement also breaks important ground by including a reference to the ‘imperatives of a just transition of the workforce and the creation of decent work and quality jobs’ (UNFCCC, 2015, preamble). The issue of ensuring a just transition also became part of the ongoing work programme on response measures, and the subject of the ‘Silesia Declaration’ (UNFCCC, 2018), which highlights the importance of a fair and inclusive transition away from fossil fuels. The concept of a just transition was further explored in a Technical Paper prepared by the UNFCCC Secretariat ‘to assist Parties in the process of just transition of their national workforces, and the creation of decent work and quality jobs’ (UNFCCC, 2016, p. 3). The Technical Paper highlights the risks for the fossil fuel sector in particular, warning that ‘[t]he result will be further job losses in the fossil fuel sector – in coal mining, in exploration and production of oil and gas, and at fossil fuel-powered power plants’ (UNFCCC, 2016, p. 31). The Technical Paper also lists ‘guiding principles’ for a just transition, which incorporate the International Labour Organization’s ‘Guidelines for a Just Transition Towards Environmentally Sustainable Economies and Societies for All’ (ILO, 2015). However, while the document thus offers some guidance to Parties intending to plan for a just transition away from fossil fuel production, the Technical Paper has no legal status.

In short, the international climate change regime established by the UNFCCC does not provide concrete guidance to states to limit fossil fuel production (Barton, 2021). Nevertheless, some guidance can be derived from the Paris Agreement’s long-term temperature and finance goals, which imply the need for alignment of fossil fuel production and associated financial support. Beyond that, the regime offers broad direction in that any shift away from fossil fuel production should be aligned with the principles of a just transition.

3.2. International human rights law

International human rights law assumes relevance at the intersection of fossil fuel production and climate change in at least three ways. First, at a general level, the sovereign right to exploit natural resources, such as fossil fuels, is limited by the need to respect human rights, including the rights of indigenous peoples and local communities (Francioni, 2016). Second, fossil fuel production exacerbates the impacts of climate change, which may in turn impinge on several human rights, including the rights to life, health, water and sanitation, food, housing, and development (HRC, 2009; Knox, 2016). Third, there is a long-standing history of human rights abuses by some fossil fuel-producing companies against local communities and indigenous peoples, and some of these companies have also engaged in misinformation and lobbying efforts to stymie climate action (Savaresi and McVey, 2020).

International human rights law offers normative guidance on the duties of states to respect, protect, and fulfil human rights (UNEP, 2015; Knox, 2016; Boyd, 2019). The duty to *respect* human rights entails the negative obligation for a state to refrain from interfering with human rights by directly contributing climate change. The duty to *protect* is a positive duty for a state to prevent other non-state actors to interfere with human rights. This could be interpreted as a duty for the state to regulate private actors (Knox, 2009). The duty to *fulfil* human rights means that a state must take positive action to allow everyone to enjoy their human rights. This has been interpreted as constituting obligations to provide international assistance, and to prevent private actors from interfering with the enjoyment of human rights in other countries (HRC, 2009, para. 86).

Although it is not entirely clear to what extent states’ general obligations to respect, protect, and fulfil human rights can be translated into specific obligations with regard to fossil fuel production, some normative guidance can be derived from the work of several UN-mandated independent human rights experts (i.e. ‘Special Procedures’) tasked with examining the relationship between human rights and climate

change, as well as human rights treaty bodies that have raised climate change considerations in their communications to states.

In a 2016 report, the first Special Rapporteur on Human Rights of the Environment, John Knox, posited that the duty to protect should include the obligation to assess the impacts of fossil fuel projects (Knox, 2016, para. 54). In a 2019 report, his successor, David Boyd, suggested that to comply with their international human rights obligations, states should, among others, ‘address[] society’s addiction to fossil fuels’ (Boyd, 2019, para. 75). Actions to achieve this would include for all states to end all fossil fuel subsidies and limit fossil fuel lobbying efforts, for developed countries to prohibit ‘further exploration for additional fossil fuels’, reject ‘any other expansion of fossil fuel infrastructure’, and prohibit ‘the expansion of the most polluting and environmentally destructive types of fossil fuel extraction, including oil and gas produced from hydraulic fracturing (fracking), oil sands, the Arctic or ultra-deepwater’, and for international financial institutions and banks to end fossil fuel financing (Boyd, 2019, paras. 77–78).

These calls were echoed in a 2020 report by the Independent Expert on Human Rights and International Solidarity, Obiora Chinedu Okafor, which recommended that ‘States, corporations and financial institutions, particularly the highest emitting States, in historical and contemporary terms, should consider ceasing to pursue the exploration of and new investments in fossil fuels as a matter of human rights-based international solidarity, since the shared carbon budget will be exceeded if already existing and proposed fossil fuel developments proceed’ (Okafor, 2020, para. 54(b)). In addition, Okafor highlighted the human rights risks of a disorderly transition away from fossil fuels, suggesting that states and other actors should cooperate with a view to ensuring ‘that any transformation of the fossil fuel economy (which is imperative) does not perpetuate asymmetries between richer and poorer States and peoples’. Specifically, this would mean that ‘wealthier countries should provide poorer countries that are less adaptable to the transition with support based on the right to development of the poorer States, and the social and economic rights of their people that are tied to energy systems’ (Okafor, 2020, para. 54(c)). The importance of a just transition was also underscored in a report by the Special Rapporteur on Extreme Poverty and Human Rights, which stressed that while measures such as reskilling programmes for fossil fuel workers and societal dialogue on a transition ‘are important in all regions, they are especially crucial for the Middle East and Africa, which rely most heavily on fossil fuels and where the industries that will grow in the ecological transition are currently less developed’ (De Schutter, 2020, para. 10).

Human rights treaty bodies have also offered views on the role of fossil fuel production. In a ‘Joint Statement on Human Rights and Climate Change’, five treaty bodies suggest among others that to reduce emissions, states ‘should effectively contribute to phasing out fossil fuels’ (OHCHR, 2019, para. 3). Some of these treaty bodies have also taken these issues up with respect to individual countries. For instance, the Committee on Economic, Social and Cultural Rights recommended Argentina to ‘reconsider the large-scale exploitation of unconventional fossil fuels through hydraulic fracturing in the Vaca Muerta region’, citing the Paris Agreement (UN CESCR, 2018; para. 14). The same committee also recommended Norway to ‘reconsider its decision to increase oil and natural gas exploitation and take its human rights obligations as a primary consideration in its natural resource exploitation and export policies’ (UN CESCR, 2020; para. 11).

While the findings and recommendations emerging from the Special Procedures as well as those of the various treaty bodies have a soft law status, they may nevertheless exert some influence at the national level, depending on domestic circumstances (Piccone, 2011; Krommendijk, 2015). This latter point indicates an important limitation in searching for normative guidance from international human rights law: much will depend on which human rights treaties a country has ratified (Savaresi, 2018). While participation in the climate treaties is nearly universal, this is not the case for many human rights treaties, even though all states have ratified at least one human rights treaty. To give but one example:

one of the world’s largest fossil fuel producers (and major greenhouse gas emitter), the United States, has yet to ratify the Convention on the Rights of the Child and the International Covenant on Economic, Social and Cultural Rights (even though several of these treaties can be considered customary international law).

The human rights obligations of states related to fossil fuel production may crystallise through ongoing rights-based climate change litigation. For instance, in a case before the European Court of Human Rights, applicants argue that states are under an obligation to take measures to regulate fossil fuel exports in line with keeping global warming below 1.5 °C, and to limit the extent to which entities within their jurisdiction contribute to emissions overseas (e.g. by financing fossil fuel extraction) (ECtHR, 2020). Claimants in other cases have also invoked human rights obligations with regard to the climate impacts of decisions to support fossil fuel production (e.g. in the ‘People vs. Arctic Oil’ case in Norway; see Shapovalova, 2020), though so far without success.

Lastly, international human rights law also offers some guidance on the duties of corporate actors, including fossil fuel companies. Specifically, Boyd (2019, para. 72) suggests that private actors are required to: (i) reduce their own emissions; (ii) reduce emissions from their products and services; (iii) minimise emissions from their suppliers; (iv) publicly disclose their emissions, climate vulnerability, and stranded asset risks; and (v) ensure access to remedies for people whose human rights have been violated by businesses. While a binding treaty on business and human rights remains under negotiation, soft law instruments such as the UN Guiding Principles on Business and Human Rights arguably provide a foundation for a duty of ‘climate due diligence’, which – depending on the size, nature, and activities of a corporation – may require specific actions to assess and mitigate climate-related risks (Macchi, 2021). Indeed, the UN Guiding Principles were successfully invoked in the *Milieudefensie et al. v. Royal Dutch Shell* case in the Netherlands, in which the District Court in the Hague found that Shell as a business enterprise should respect human rights. As a result, the company was held responsible for reducing its greenhouse gas emissions by 45% by 2030 (from 2019 levels) along its value chain (The Hague District Court, 2021). The normative guidance from such soft law instruments may therefore ‘harden’ through their application in court.

3.3. International investment law

International investment law – including more than 2000 bilateral investment treaties and several hundred other treaties with investment provisions (UNCTAD, 2021) – offers legal protection to foreign investors, including investors in fossil fuel projects, against certain types of government measures or conduct. One of these treaties, the 1994 Energy Charter Treaty (ECT), focuses exclusively on investments in the energy sector. Although the specific obligations for states under international investment agreements vary, most investment treaties prohibit ‘expropriation’ by the host state, and require them to ensure foreign investors are subject to ‘fair and equitable treatment’. The prohibition of expropriation in many cases includes ‘indirect’ expropriation, which covers regulatory measures – including climate policies – that may not affect an investor’s physical property but nevertheless reduce the economic value of an investment (Tienhaara, 2009, pp. 74–80). In case of a dispute, investment treaties allow investors to bring a claim against host states before international arbitration (known as investor-state dispute settlement, or ISDS) in pursuit of monetary compensation.

There is a real risk of such investment disputes materialising as countries begin to adopt supply-side climate policies, including moratoria on fossil fuel production or the revoking of permits (Lobel and Fermiglia, 2018). To date, many investment disputes have concerned investments in the energy sector (Scherer, 2018), and some of these disputes have concerned measures taken to limit fossil fuel production – even if not all such measures were adopted with a climate change rationale. For instance, the company TransCanada launched a US\$15

billion investment claim under the North American Free Trade Agreement (NAFTA) following the cancellation of the Keystone XL pipeline by US President Obama. Although the claim was revoked when his successor, US President Trump, allowed the project to proceed, the permits were again cancelled by US President Biden on his first day in office, which led to another investment claim under NAFTA (Tienhaara and Cotula, 2020; Reuters, 2021). In another (pending) case under NAFTA, *Lone Pine Resources v. Canada*, a US-based company challenged the Quebec government a ban on shale gas exploration, claiming US\$119 million in compensation (Reins et al., 2019). Another pending case, launched under the ECT, involved the UK-based company Rockhopper challenging an Italian regulation restricting oil and gas production within 12 miles of the coast, and demanding €225 million in compensation (Schmidt, 2021). Although these various disputes have involved developed countries, countries in the global South may be at particular risk, especially those countries that have recently discovered fossil fuel resources (Bos and Gupta, 2018).

International investment law may thus require host states restricting fossil fuel production to pay compensation to investors. Such compensation may be significant. Indeed, as (Tienhaara and Cotula, 2020, p. 2) explain, existing practices by ISDS tribunals have ‘resulted in investors being awarded compensation in circumstances where damages would not be available under national law, or in large amounts that bear no relationship to the (often much smaller) amounts they invested in the business. This can affect the compensation that states – and ultimately taxpayers – pay to fossil fuel businesses for energy transition measures.’

Additionally, and in part due to the potentially large amount of compensation to be paid, investment law may exert influence over government decisions about fossil fuel production even in the absence of a formal investment claim. The mere threat of a costly investment dispute may delay or altogether deter a government’s plans to phase out fossil fuels. This ‘regulatory chill’ can take several forms. ‘Internalisation chill’ means that a host state takes possible disputes into account in the earliest stages of policymaking. ‘Threat chill’ is when a government amends or retracts a policy following a public or private threat of arbitration from a specific investor or group of investors. ‘Cross-border chill’ denotes the situation when an investor challenges a policy in one country that is under consideration in many other countries, with the hope that the claim will deter other governments from following suit (Tienhaara, 2018). Although the existence of regulatory chilling effect in international investment law is difficult to establish empirically, there is some evidence that supply-side climate policies may be targeted. For instance, when France released a draft law banning fossil fuel extraction by 2040 and ending the renewal of oil exploitation permits, the Canadian company Vermilion threatened to launch an investment claim. A later draft allowed for the renewal of permits until 2040, and the dispute never went to arbitration (Sachs et al., 2020). In another instance, the UK company Ascent Resources is threatening to launch an arbitration under the ECT against Slovenia – claiming more than €100 million in compensation – following the demand from the country’s environment agency that the company carries out an environmental impact assessment before it can be issued with a permit for fracking gas (STA, 2021).

Although the normative guidance from international investment law can vary depending on the details of a given dispute – as well as the arbitrators involved – it can be questioned ‘whether legal techniques that were developed to balance competing commercial and public interests in a world without such a hard carbon constraint are still appropriate in the changed context’ (Cotula, 2020, p. 367). In particular, international investment agreements such as the ECT fail to distinguish between fossil fuels and clean energy alternatives. As Bernasconi-Osterwalder and Brauch (2019, p. 4) argue: ‘Rather than discouraging fossil fuel-based investments (both new and existing) with a view to ultimately eliminating them, the ECT, by offering them treaty protections and a right of action, entrenches carbon-intensive investments and discourages bold transitions to renewables.’ On balance, therefore, the normative guidance from international investment law

seems to hinder a transition away from fossil fuel production to achieve climate goals.

4. Contours of an international law of ‘leaving it in the ground’

4.1. Limitations of the existing international legal framework

The preceding discussion of relevant international law is non-exhaustive, for instance not touching on the role of international trade law, biodiversity law, and the law of the sea. Nevertheless, even this selective overview serves to demonstrate that the normative guidance emanating from international law for a transition away from fossil fuel production is neither unequivocal nor coherent. Although international climate change law offers a broad signal that countries should move away from fossil fuel production to achieve climate goals, it offers states and non-state actors enough leeway to continue fossil fuel production whilst focusing on reducing greenhouse gas emissions downstream. Human rights law may offer some more concrete suggestions regarding the behaviour that states and non-state actors should adopt, but the legal effect of these suggestions will vary, depending among others on whether states have ratified certain treaties or whether such guidance can be enforced before domestic or regional courts. International investment law, by contrast, seems to point states to the risks of moving away from fossil fuel production: if they choose to do so, they may well be required to pay compensation to investors in case of a dispute. The upshot is that there is no clear direction for states – or non-state actors – to wind down fossil fuel production in light of climate goals, nor is there clear guidance on how the transition away from fossil fuel production should take place.

These findings reflect some of the criticisms that earth system law scholars have raised in the context of international environmental law. First, the existing international legal frameworks lack a systemic approach (Kotzé, 2019). For instance, rather than viewing the coal, oil, and gas deposits in the lithosphere as an integral part of the global carbon cycle (Raupach and Canadell, 2010), international climate change law only comes into play when these fossil fuels are burned and release CO₂. Related to this, the international legal regimes discussed here operate on human timescales, whereas the carbon extracted from the lithosphere will take thousands of years before it can be taken up again by the ocean (Archer et al., 2009). International law on fossil fuel production is thus lacking a ‘deep-time’ perspective, which – like other problems characterised by longevity, such as nuclear waste (Ialenti, 2020) – would allow for a consideration of the long-term consequences of fossil fuel extraction. Second, the findings underscore that a reductionist, ‘environmental’ framing of problems fails to capture that ‘interconnected social, technical and natural factors shape planetary processes’ (Mai and Boulot, 2021, p. 3). If we focus our gaze only at traditional ‘environmental’ legal regimes – such as the international climate regime – we may miss the important role played by other international legal regimes – including the human rights and investment regimes – both in driving planetary change and overcoming the associated challenges (Vinales, 2018). Third, notwithstanding the activities by various non-state actors – from civil society organizations to investors – to leave fossil fuels in the ground, the main international legal regimes remain state-centric (Kotzé and Kim, 2019). The exception is the investment regime, which creates specific rights for companies, which are only to a limited extent counterbalanced by emerging duties for those actors under international human rights law.

Acknowledging the limitations of the existing international legal framework emerging from the *lex lata* analysis in the previous section, this section moves to a *lex ferenda* perspective on international law of leaving fossil fuels in the ground. More specifically it asks: what should be the shape of international law to achieve a just transition away from fossil fuel production with a view to achieving climate goals? In responding to this question, this section aims to contribute to the goals of earth system law of: (i) helping to keep humanity from crossing

(climate change-related) planetary boundaries; (ii) ensuring inclusiveness and representation of actors beyond the state; (iii) pursuing 'equal justice for all present and future humans in the global South and global North'; and (iv) offering an adaptive, holistic, and forward-looking response to planetary challenges (Kim and Kotzé, 2021, p. 13–14). These goals of earth system law thus inform and inspire how an international law of 'leaving it in the ground' could look like. At the same time, it will be important to ground any response to the problem of fossil fuel production in extant legal principles and approaches. To that end, the remainder of this section first explains how existing legal principles that are widely accepted by states could be adapted to provide the foundation for further legal developments on fossil fuel production. This is followed by a brief indication of the different ways in which states and other actors could put these principles into practice.

4.2. Principles for an international law of 'leaving it in the ground'

Inspiration for principles underpinning an international law of 'leaving it in the ground' can be drawn among others from general principles of international law (e.g. UNGA, 1970), principles of international environmental law (e.g. those contained in the Stockholm and Rio Declarations), the International Law Association's Legal Principles Relating to Climate Change (ILA, 2014), the International Law Commission's draft Guidelines for Protection of the Atmosphere (ILC, 2021), or proposed principles of energy law (Heffron et al., 2018).

The first foundational principle is the customary rule of prevention of environmental harm (Duvic-Paoli, 2018). This principle – along with the goals of avoiding crossing climate-related planetary boundaries and adopting a forward-looking response – suggests that states should phase out fossil fuel production and their support for it in line with the Paris Agreement's long-term temperature goals, thereby helping to prevent future environmental harm (i.e. dangerous climate disruption) from happening. The principle of prevention requires states to exercise due diligence (i.e. take reasonable care) to avoid harm. This obligation can be interpreted so as to require states from refraining from actions that would likely lead to climate harm, for instance licensing new coal, oil, and gas production, or supporting fossil fuels through public finance (Cook and Viñuales 2021). Moreover, the prevention principle is supported by several procedural obligations, including the duty to carry out an environmental impact assessment (Dupuy and Viñuales, 2018). In this regard, Mayer (2019) suggests that to ensure that long-term climate goals are met, states should carry out assessments of the climate impacts of fossil fuel production, for instance, whenever a new coal mine or oil pipeline is being proposed.

Second, existing international legal principles can also help identify how the burden of moving away from fossil fuels should be shared, thereby aiding the pursuit of equal justice for all humans. Specifically, building on the general principle of (intra-generational) equity and the more specific principle of common but differentiated responsibilities and respective capabilities, it is possible to identify which states should take the lead in winding down fossil fuel production, and which states should receive support in a transition. Muttitt and Kartha (2020) apply equity principles to the problem of transitioning away from fossil fuel production, suggesting that states with a greater ability to pay should provide support to developing countries to help them meet the costs of the transition away from fossil fuels. The pursuit of equal justice for all also requires a reconsideration of the role of investment law. Specifically, given that many new fossil fuel reserves are found in developing countries, it will be important to provide adequate protection for these countries against frivolous investment claims (Tienhaara and Cotula, 2020).

Third, with some human rights – for instance, those contained in the Universal Declaration on Human Rights – arguably having attained customary international law status (Hannum, 1995), it is possible to point to corresponding duties for states to respect, protect, and fulfil those human rights. As a starting point, taking into account the impacts

of fossil fuel extraction on local and indigenous communities, states should intervene to halt extraction where it already leads to human rights violations (Muttitt and Kartha, 2020). More generally, winding down fossil fuel production can help avoid dangerous climate thresholds and thereby help to protect and fulfil human rights (Dehm 2020). In addition, states have a duty to start planning for a just transition away from fossil fuel production for both workers and communities (De Schutter, 2020). Aside from substantive human rights, states should also provide for the effective exercise of procedural rights. This would mean, for instance, that states must allow for public participation in fossil fuel-related decision-making and share relevant information – including on their climate and socio-environmental impacts – about fossil fuel projects and policies with the public. In addition, for indigenous peoples, states should move towards requiring their free, prior, and informed consent before approving fossil fuel development (Mengden IV, 2017).

To be certain, the preceding discussion is primarily intended to sketch the possible contours of an international law of 'leaving it in the ground'. It brings together disparate principles under one umbrella, inspired by the holistic, forward-looking, and inclusive vision of earth system law (Kotzé and Kim, 2020). The discussion also serves as an invitation for further debate, acknowledging that scholars and practitioners may hold diverging views on the relevant foundational principles and specific obligations for states and non-state actors.

4.3. Avenues for legal reform

A separate question is how states and non-state actors should go about crafting an international legal framework for leaving fossil fuels in the ground. Acknowledging that changing existing legal instruments – e.g., through an amendment or the negotiation of a new treaty superseding existing ones – faces major political hurdles and will take time – something that is in short supply if we are to stave off climate disruption – a first step would be for states to pursue an informal 'coalition of the willing' that would establish non-binding commitments to wind down fossil fuel production in line with climate goals while providing for a just transition (Barnes, 2020). Such an informal coalition would allow for a small group of 'first-mover' countries (Carter and McKenzie, 2020) to coordinate their supply-side climate policies, while at the same time strengthening social norms to move away from fossil fuels (Green, 2018a). Already, Denmark and Costa Rica are launching such a coalition focused on limiting oil and gas production (Meredith, 2021). Such a coalition could also engage climate vulnerable countries that are at particular risk if other countries continue to produce fossil fuels. In this regard, it is interesting to note that the Pacific Islands Development Forum's Leaders' Summit in 2015 called for 'a new global dialogue on the implementation of an international moratorium on the development and expansion of fossil fuel extracting industries, particularly the construction of new coal mines, as an urgent step towards decarbonising the global economy' (Pacific Islands Development Forum, 2015, para. 19 (g)). Although climate-vulnerable countries hardly produce fossil fuels of their own, they can have moral influence (de Águeda Corneloup and Mol, 2014) and, in the case of the Pacific islands, exert pressure at the regional level (Morgan 2017). A possible model for such an informal coalition could be the 'Powering Past Coal Alliance' aimed at phasing down coal-fired power – though not coal mining (Blondeel et al., 2020; Jewell et al., 2019). Following this model, and with a view to including a wider range of stakeholders, an informal coalition would not only involve states, but also provide for participation and commitments by non-governmental actors – including indigenous communities, businesses, and civil society organisations – and subnational authorities.

A second step, which could be pursued in parallel to the first one, would be for states to align the rules and practices of existing international agreements with the need for an orderly and just transition away from fossil fuel production. For international climate change law, this could mean that Parties to the Paris Agreement begin including commitments and information related to fossil fuel production in their NDCs,

their long-term strategies, as well as their national reports submitted under the UNFCCC and Paris Agreement (Piggot et al., 2018). For international human rights law, the incompatibility of fossil fuel production and climate goals could be more consistently addressed by human rights bodies assessing the compliance of states either producing or financially supporting fossil fuels with their human rights obligations. In international investment law, alignment could include renegotiating or, where necessary, withdrawing from or terminating investment treaties. For instance, states could decide to exclude fossil fuel investments from the protections granted to them by the ECT, which is currently undergoing a ‘modernisation’ process (Bernasconi-Osterwalder and Brauch, 2019; Tienhaara and Cotula, 2020). Pursuing these reforms simultaneously could further lead to greater coherence, and facilitate implementation of the holistic vision of earth system law.

Building on the first two steps, states could ultimately move to negotiate a specific treaty to provide for a just transition away from fossil fuel production. There have been calls for a ‘fossil fuel non-proliferation treaty’ modelled on the international regime for nuclear weapons (Newell and Simms, 2020), as well as a ‘coal elimination treaty’ (Burke and Fishel, 2020). The former would seek to end the expansion of all fossil fuel production, phase out existing production, and invest in rapidly increased access to clean energy alternatives, whereas the latter would require the phasing out of mining and use of coal. Ultimately, the effectiveness and credibility of such a treaty hinges upon its ability to attract participation from ‘reluctant’ countries (Hovi et al., 2019), particularly major fossil fuel producers. While some suggest that there may be economic incentives for such countries to join an international agreement (Asheim et al., 2019), barriers to participation remain high (Newell and Simms, 2020). Nevertheless, through the first two initial steps, as well as ongoing activities targeting fossil fuel production – including litigation, divestment, direct protests, etc. – the necessary momentum could be obtained.

5. Conclusion

A future in which fossil fuel production is phased down may still sound utopian to some. Yet to avert climate disruption it is also a necessity. Given its role in both driving and potentially constraining fossil fuel production, this article has aimed to show what normative guidance emanates from international law for the behaviour of states and non-state actors. Specifically, drawing on the analytical dimensions of earth system law scholarship, the article has examined the existing international legal framework governing fossil fuel production in the light of climate goals, focusing on international climate change law, human rights law, and investment law. The article’s finding that the normative guidance emanating from these bodies of international law is neither clear nor coherent should perhaps not be surprising. Yet from the perspective of earth system law, it is disconcerting that these frameworks lack a systemic, forward-looking, and inclusive vision that is guided by planetary boundaries and that takes into account how fossil fuel extraction by humans is altering the global carbon cycle in the long term.

The article has therefore also sought to start a debate – driven by some of the normative goals of earth system law – on how an international law of ‘leaving it in the ground’ should look like. Striking a balance between a more radical vision of international law with an approach grounded in existing international (environmental) law, the article suggests that the adaptation of existing legal principles – including prevention, equity, and human rights – offers a way forward for developing specific obligations for states and non-state actors to achieve a fair and orderly transition away from fossil fuel production. The article further suggests that states and non-state actors that aim to pursue legal reforms can do so by (i) establishing informal coalitions with commitments to phase down fossil fuel production, (ii) aligning the rules and practices of existing international agreements with this goal, and (iii) developing a specific treaty on winding down fossil fuel production in a

fair and orderly manner. By doing so, this article has sought set the stage for further debate on what constitutes an appropriate international legal foundation for leaving fossil fuels in the ground, as well as on the practical steps to be taken to realise this vision.

Declaration of competing interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

I am grateful to Catherine Blanchard, Rakhyun Kim, Louis Kotzé, Annalisa Savaresi, Kyla Tienhaara, and the two anonymous reviewers for helpful comments on earlier versions.

References

- Affolder, N., 2021. Transnational climate law. In: Zumbansen, P. (Ed.), *The Oxford Handbook of Transnational Law*. Oxford University Press, Oxford, UK, pp. 247–267.
- Anger-Kraavi, A., Chan, N., 2021. Pocket Guide to Response Measures under the UNFCCC. European Capacity Building Initiative, Oxford, UK. https://ecbi.org/sites/default/files/Pocket%20Guide%20to%20Response%20Measures_1.pdf.
- Archer, D., Eby, M., Brovkin, V., Ridgwell, A., Cao, L., Mikolajewicz, U., Caldeira, K., Matsumoto, K., Munhoven, G., Montenegro, A., Tokos, K., 2009. Atmospheric lifetime of fossil fuel carbon dioxide. *Annu. Rev. Earth Planet Sci.* 37, 117–134. <https://doi.org/10.1146/annurev.earth.031208.100206>.
- Asheim, G.B., Fæhn, T., Nyborg, K., Greaker, M., Hagem, C., Harstad, B., Hoel, M.O., Lund, D., Rosendahl, K.E., 2019. The case for a supply-side climate treaty. *Science* 26, 325–327. <https://doi.org/10.1126/science.aax5011>.
- Aykut, S.C., Castro, M., 2017. The end of fossil fuels? Understanding the partial climatization of global energy debates. In: Aykut, S.C., Foyer, J., Morena, E. (Eds.), *Globalising the Climate: COP21 and the Climatization of Global Debates*. Routledge, London.
- Barnes, A., 2020. Kamala Harris’ Plan for International Climate Cooperation Could Smooth the Transition from Fossil Fuels. Columbia Climate School. <https://news.climate.columbia.edu/2020/08/20/kamala-harris-coalition-just-transition/>.
- Barnett, J., Dessai, S., 2002. Articles 4.8 and 4.9 of the UNFCCC: adverse effects and the impacts of response measures. *Clim. Pol.* 2 (2–3), 231–239. <https://doi.org/10.3763/cpol.2002.0222>.
- Barton, Barry, 2021. Fossil fuel mineral wealth and climate change law: expectations of coal mine development in a time of decarbonisation. *J. Energy Nat. Resour. Law*. <https://doi.org/10.1080/02646811.2020.1866275>.
- Bernasconi-Osterwalder, N., Brauch, M.D., 2019. Redesigning the Energy Charter Treaty to advance the low-carbon transition. *Transnatl. Dispute Manag. (TDM)* 1. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3446723.
- Biber, E., Diamond, J., 2021. Keeping it all in the ground? *Ariz. Law Rev.* 63 (2), 279–340.
- Blondeel, M., Van de Graaf, T., Haesebrouck, T., 2020. Moving beyond coal: exploring and explaining the Powering Past Coal Alliance. *Energy Research & Social Science* 59, 101304. <https://doi.org/10.1016/j.erss.2019.101304>.
- Bos, K., Gupta, J., 2018. Climate change: the risks of stranded fossil fuel assets and resources to the developing world. *Third World Q.* 39 (3), 436–453. <https://doi.org/10.1080/01436597.2017.1387477>.
- Boyd, D.R., 2019. Safe Climate: A Report of the Special Rapporteur on Human Rights and the Environment. A/74/161. <https://undocs.org/en/A/74/161>.
- Burger, M., 2017. A carbon fee as mitigation for fossil fuel extraction on federal lands. *Columbia J. Environ. Law* 42 (S), 295–351.
- Burger, M., Wentz, J., 2018. Holding fossil fuel companies accountable for their contribution to climate change: where does the law stand? *Bull. At. Sci.* 74 (6), 397–403. <https://doi.org/10.1080/00963402.2018.1533217>.
- Burke, A., Fishel, S., 2020. A Coal Elimination Treaty 2030: fast tracking climate change mitigation, global health and security. *Earth System Governance* 3, 100046. <https://doi.org/10.1016/j.esg.2020.100046>.
- Carter, A.V., McKenzie, J., 2020. Amplifying “keep it in the ground” first-movers: toward a comparative framework. *Soc. Nat. Resour.* 33 (11), 1339–1358. <https://doi.org/10.1080/08941920.2020.1772924>.
- Chan, N., 2016. The ‘new’ impacts of the implementation of climate change response measures. *Review of European, Comparative and International Environmental Law* 25 (2), 228–237. <https://doi.org/10.1111/reel.12161>.
- Chapron, G., Epstein, Y., Trouwborst, A., López-Bao, J.V., 2017. Bolster legal boundaries to stay within planetary boundaries. *Nature Ecology & Evolution* 1, 0086. <https://doi.org/10.1038/s41559-017-0086>.
- Cheon, A., Urpelainen, J., 2018. *Activism and the Fossil Fuel Industry*. Routledge, London, UK.
- Collier, P., Venables, A.J., 2014. Closing coal: economic and moral incentives. *Oxf. Rev. Econ. Pol.* 30 (3), 492–512. <https://doi.org/10.1093/oxrep/gru024>.
- Cook, K., Viñuales, J., 2021. Legal Opinion: International Obligations Governing the Activities of Export Credit Agencies in Connection with the Continued Financing of

- Oil Change International, 2020. Big Oil Reality Check: Assessing Oil and Gas Climate Plans. Oil Change International, Washington, DC. <http://priceofoil.org/2020/09/23/big-oil-reality-check/>.
- Okafor, O.C., 2020. International solidarity and climate change. Report of the Independent Expert on human rights and international solidarity. A/HRC/44/44. <https://undocs.org/A/HRC/44/44>.
- Pacific Islands Development Forum, 2015. Pacific Islands Development Forum Summit of Leaders, Suva Declaration on Climate Change. <http://greenbusiness.solutions/wp-content/uploads/2017/08/Suva-declaration-on-climate-change.pdf>.
- Perrez, F.X., 2000. Cooperative Sovereignty: from Independence to Interdependence in the Structure of International Environmental Law. Kluwer Law International, Dordrecht, The Netherlands.
- Piccone, T., 2011. The contribution of the UN's special procedures to national level implementation of human rights norms. *Int. J. Hum. Right.* 15 (2), 206–231. <https://doi.org/10.1080/13642987.2011.537467>.
- Piggot, G., 2018. The influence of social movements on policies that constrain fossil fuel supply. *Clim. Pol.* 18 (7), 942–954. <https://doi.org/10.1080/14693062.2017.1394255>.
- Piggot, G., Boyland, M., Down, A., Torre, A.R., 2019. Realizing a Just and Equitable Transition Away from Fossil Fuels. Stockholm Environment Institute, Stockholm, Sweden.
- Piggot, G., Erickson, P., van Asselt, H., Lazarus, M., 2018. Swimming upstream: addressing fossil fuel supply under the UNFCCC. *Clim. Pol.* 18 (9), 1189–1202. <https://doi.org/10.1080/14693062.2018.1494535>.
- Piggot, G., Verkuil, C., van Asselt, H., Lazarus, M., 2020. Curbing fossil fuel supply to achieve climate goals. *Clim. Pol.* 20 (8), 881–887. <https://doi.org/10.1080/14693062.2020.1804315>.
- Preston, B.J., 2021. The influence of the Paris Agreement on climate litigation: legal obligations and norms (part I). *J. Environ. Law* 33 (1), 1–32. <https://doi.org/10.1093/jel/eqaa020>.
- Raupach, M.R., Canadell, J.G., 2010. Carbon and the anthropocene. *Current Opinion in Environmental Sustainability* 2 (4), 210–218. <https://doi.org/10.1016/j.cosust.2010.04.003>.
- Rayner, T., 2021. Keeping it in the ground? Assessing global governance for fossil-fuel supply reduction. *Earth System Governance* 8, 100061. <https://doi.org/10.1016/j.esg.2020.100061>.
- Reins, L., Geraets, D., Schomerus, T., 2019. Fracking, sovereignty over natural resources and international investment law. In: Bungenberg, M., Krajewski, M., Tams, C.J., Terhechte, J.P., Ziegler, A.R. (Eds.), *European Yearbook of International Economic Law*. Springer Nature, Cham, Switzerland, pp. 175–202.
- Reuters, 2021. TC Energy Seeks More than \$15 Bln in Damages from U.S. Over Keystone XL. <https://www.reuters.com/business/energy/tc-energy-seeks-more-than-15-bln-damages-us-over-keystone-xl-revocation-2021-07-02/>.
- Richter, P.M., Mendelevitch, R., Jotzo, F., 2018. Coal taxes as supply-side climate policy: a rationale for major exporters? *Climatic Change* 150 (1–2), 43–56. <https://doi.org/10.1007/s10584-018-2163-9>.
- Sachs, L.E., Johnson, L., Merrill, E., 2020. Environmental injustice: how treaties undermine human rights related to the environment. *La Revue des Juristes de sciences Po* 18, 90–100.
- Savarese, A., 2018. Climate change and human rights: fragmentation, interplay and institutional linkages. In: Duyck, S., Jodoin, S., Johl, A. (Eds.), *Routledge Handbook of Human Rights and Climate Governance*. Routledge, London, UK, pp. 31–42.
- Savarese, A., McVey, M.C., 2020. Human Rights Abuses by Fossil Fuel Companies. <https://350.org/climate-defenders/>.
- Scherer, M. (Ed.), 2018. *International Arbitration in the Energy Sector*. Oxford University Press, Oxford, UK.
- Schmidt, N., 2021. Explainer: ECT Lawsuits against Climate Measures. Investigate Europe. <https://www.investigate-europe.eu/en/2021/how-companies-sue-against-climate-measures/>.
- Schrijver, N.J., 1997. *Sovereignty over Natural Resources: Balancing Rights and Duties*. Cambridge University Press, Cambridge, UK.
- SEI, IISD, ODI, E3G, UNEP, 2020. The Production Gap Report: 2020 Special Report. SEI, Stockholm, Sweden. <http://productiongap.org/2020report>.
- Seto, K.C., Davis, S.J., Mitchell, R.B., Stokes, E.C., Unruh, G., Ürge-Vorsatz, D., 2016. Carbon lock-in: types, causes, and policy implications. *Annu. Rev. Environ. Resour.* 41, 425–452. <https://doi.org/10.1146/annurev-environ-110615-085934>.
- Shapovalova, D., 2020. Arctic petroleum and the 2°C goal: a case for accountability for fossil-fuel supply. *Clim. Law* 10, 282–307. <https://doi.org/10.1163/18786561-10030003>.
- STA, 2021. Ascent Resources Starts Arbitration Process against Slovenia, Claims over €100mn Damages. Total Slovenia News. In: <https://www.total-slovenia-news.com/business/7982-ascent-resources-starts-arbitration-process-against-slovenia-claims-over-100mn-damages>.
- Steininger, K.W., Lininger, C., Meyer, L.H., Muñoz, P., Schinko, T., 2016. Multiple carbon accounting to support just and effective climate policies. *Nat. Clim. Change* 6, 35–41. <https://doi.org/10.1038/nclimate2867>.
- The Hague District Court, 2021. Judgment of 26 May 2021 in Milieudefensie et al. v. Royal Dutch Shell, p. 5337. NL:RBDHA:2021. <http://deeplink.rechtspraak.nl/uitspraak?id=ECLI>.
- Tienhaara, K., 2009. *The Expropriation of Environmental Governance: Protecting Foreign Investors at the Expense of Public Policy*. Cambridge University Press, Cambridge, UK.
- Tienhaara, K., 2018. Regulatory chill in a warming world: the threat to climate policy posed by investor-state dispute settlement. *Transnational Environmental Law* 7 (2), 229–250. <https://doi.org/10.1017/S2047102517000309>.
- Tienhaara, K., Cotula, L., 2020. Raising the Cost of Climate Action? Investor-State Dispute Settlement and Compensation for Stranded Fossil Fuel Assets. International Institute for Environment and Development, London. <https://pubs.iied.org/17660iied>.
- Tudela, F., 2020. Obstacles and opportunities for moratoria on oil and gas exploration or extraction in Latin America and the Caribbean. *Clim. Pol.* 20 (8), 922–930. <https://doi.org/10.1080/14693062.2020.1760772>.
- UN, CESCR, 2018. Committee on Economic, Social and Cultural Rights, Concluding Observations on the Fourth Periodic Report of Argentina. E/C.12/ARG/CO/4. https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=E/C.12/ARG/CO/4&Lang=En.
- UN, CESCR, 2020. Committee on Economic, Social and Cultural Rights, Concluding Observations on the Sixth Periodic Report of Norway. E/C.12/NOR/CO/6. https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=E/C.12/NOR/CO/6&Lang=En.
- UNCTAD, 2021. International Investment Agreements Navigator. <https://investmentpolicy.unctad.org/international-investment-agreements>.
- UNEP, 2015. Climate Change and Human Rights. UNEP, Nairobi, Kenya. <https://www.unep.org/resources/report/climate-change-and-human-rights>.
- UNEP, 2020. Emissions Gap Report 2020. UNEP, Nairobi, Kenya. <https://www.unep.org/emissions-gap-report-2020>.
- UNFCCC, 1992. United Nations Framework Convention on Climate Change. UNFCCC, Bonn, Germany. <https://unfccc.int/resource/docs/convkp/conveng.pdf>.
- UNFCCC, 2015. Paris Agreement. UNFCCC, Bonn, Germany. In: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.
- UNFCCC, 2016. Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs: Technical Paper. UNFCCC, Bonn, Germany. <https://unfccc.int/sites/default/files/resource/Just%20Transition.pdf>.
- UNFCCC, 2018. Solidarity and Just Transition: Silesia Declaration. UNFCCC, Bonn, Germany. https://cop24.gov.pl/fileadmin/user_upload/Solidarity_and_Just_Transition_on_Silesia_Declaration_2_.pdf.
- UNGA, 1970. Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States. United Nations General Assembly Resolution 2625 (XXV). <https://www.un.org/ruleoflaw/files/3dda1f104.pdf>.
- Viñuales, J.E., 2018. The organisation of the Anthropocene: in our hands? *International Legal Theory and Practice* 1 (1), 1–81. https://doi.org/10.1163/9789004381360_002.
- Welsby, D., Price, J., Pye, S., Ekins, P., 2021. Unextractable fossil fuels in a 1.5 °C world. *Nature* 597, 230–234. <https://doi.org/10.1038/s41586-021-03821-8>.
- Whitley, S., Thwaites, J., Wright, H., Ott, C., 2018. Making Finance Consistent with Climate Goals: Insights for Operationalising Article 2.1c of the UNFCCC Paris Agreement. Overseas Development Institute, London, UK. <https://cdn.odi.org/media/documents/12557.pdf>.