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Climate change and oil and gas production regulation: an impossible reconciliation?

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ABSTRACT

Fossil fuel combustion is undeniably the largest source of greenhouse gas emissions worldwide. In order to meet the Paris Agreement target of keeping global warming below 2°C, globally, a third of oil and half of gas reserves should remain unused from 2010 to 2050. In 2021, the International Energy Agency estimated that in the net-zero emissions scenario there is no need for fossil fuel exploration, new oil and natural gas fields beyond those already been approved for development, or new coal mines or mine extensions. While greenhouse gas emissions from the actual exploration and production activities (upstream emissions) are increasingly regulated, the emissions from the final combustion of the produces oil and gas are not taken into account when new projects are approved. This paper argues that there is a significant lack of integration between climate and energy regulation which, if not corrected, may result in challenges to achieve the global climate targets. It analyses the mechanisms for better inclusion of climate considerations at the oil and gas development approval stage. It starts with a review of international initiatives examining the lack of engagement with the climate regime and fossil fuel production. It further analyses the oil and gas development approval regime in the UK with a view to highlighting the lack of integration of climate concerns in the licensing and environmental assessment processes.

INTRODUCTION

Fossil fuel combustion is undeniably the largest source of greenhouse gas emissions worldwide.[1] Fossil fuel-related CO_2 emissions for energy purposes increased consistently over the last 40 years reaching '69% of global greenhouse gas emissions in 2010'.[2] In order to meet the Paris Agreement target of keeping global warming below 2°C, globally, a third of oil and half of gas reserves should remain unused from 2010 to 2050.[3] In 2021, the International Energy Agency

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[1] IPCC, 'Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change' (2014) chapter 5; Marquita K Hill, *Understanding Environmental Pollution* (4th edn, CUP 2020) 138, 139.

[2] IPCC (n 1) 396.

[3] Christophe McGlade and Paul Ekins, 'The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2 °C' (2015) 517 Nature 187.

estimated that in the net-zero emissions scenario there is no need for fossil fuel exploration, new oil and natural gas fields beyond those already been approved for development, or new coal mines or mine extensions.[4] The 2021 Production Gap report estimated that to follow the 1.5°C-consistent pathway, 'global coal, oil, and gas production would have to decrease by around 11%, 4%, and 3%, respectively, each year between 2020 and 2030'.[5]

The international climate change regime was late to address the issue of fossil fuels production. The Glasgow Climate Pact, decided at COP26 (Conference of the Parties to the United Nations Framework Convention on Cliamte Change) in 2021, was the first COP decision of the UN climate treaties to directly call for the 'phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies'.[6] The decision stops short of calling for a phase-out of the other fossil fuels, oil and gas, both significant contributors to global warming. This is reflective of a wider trend of the lack of integration between energy and climate regulation which results in the regulation of the energy sector lagging our climate ambitions.[7] While greenhouse gas emissions from the actual exploration and production activities (upstream emissions) are increasingly regulated, the emissions from the final combustion of the produced oil and gas (downstream emission) are not generally taken into account when new projects are approved. This article argues that there is a significant lack of integration between climate and energy regulation which, if not corrected, may result in challenges to achieve the global climate targets.

This lack of integration is also apparent in the literature, with oil and gas law scholars only recently beginning to engage with climate regulation of production[8] and climate law textbooks focusing on the relevant treaties and generally avoiding detailed discussion of sectoral emission reductions.[9] Energy law scholarship generally includes climate regulation by discussing treaties, in the context of promoting renewables, and cutting fossil fuels consumption, rather than production.[10] Decarbonization in the energy sector as a whole is becoming more widely discussed with the focus primarily on the regulation of emerging technologies,[11] adapting energy systems to a low-carbon future,[12] and investment protection.[13] Against

[4] IEA, 'Net Zero by 2050: A Roadmap for the Global Energy Sector' (2021) 51 <https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroby2050-ARoadmapfortheGlobalEnergySector.pdf> accessed 27 September 2023.

[5] SEI, IISD, ODI, E3G, and UNEP, 'The Production Gap Report' (2021) <http://productiongap.org/2021report> accessed 27 September 2023.

[6] Decision 1/CMA.3, Glasgow Climate Pact (13 November 2021) para 20 <https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf accessed 27 September 2023.

[7] Kaisa Huhta and Seita Romppanen, 'Why is Energy Law Resistant to Changes Required by Climate Policies?' (2023) 4 Energy and Climate Change 100096.

[8] See eg oil and gas law textbooks with no chapters on climate change, Greg Gordon, John Paterson and Emre Üşenmez (eds), *Oil and Gas Law: Current Practice and Emerging Trends* (3rd edn, Edinburgh University Press 2018); Moe Alramahi, *Oil and Gas Law in the UK* (Bloomsbury Publishing 2015). See some engagement in John P Chandler, *Petroleum Resource Management: How Governments Manage Their Offshore Petroleum Resources* (Edward Elgar 2018).

[9] Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law* (OUP 2017); Benoit Mayer, *The International Law on Climate Change* (CUP 2018); Geert Van Calster and Leonie Reins (eds), *The Paris Agreement on Climate Change: A Commentary* (Edward Elgar 2021); Daniel Klein and others (eds), *The Paris Agreement on Climate Change: Analysis and Commentary* (OUP 2017).

[10] See eg Jorge E Viñuales, *The International Law of Energy* (CUP 2022) at 163–68; Kim Talus (ed), *Research Handbook on International Energy Law* (Edward Elgar 2014) chapters 15, 16, 17; Catherine Redgwell, 'International Regulation of Energy Activities' in Martha Roggenkamp and others (eds), *Energy Law in Europe: National, EU and International Regulation* (3d edn, OUP 2016) at 118–23. See this issue highlighted in Seita Romppanen and Kaisa Huhta, 'The Interface between EU Climate and Energy Law' (2023) 30(1) Maastricht Journal of European and Comparative Law 45.

[11] See eg Tade Oyewunmi, 'Decarbonising Gas and Electricity Systems: An Outlook on Power-to-Gas and Other Technology-Based Solutions' in Tade Oyewunmi and others (eds), *Decarbonisation and the Energy Industry* (Hart Publishing 2020); Roy Andrew Partain and Constantinos Yiallourides, 'Hydrate Occurrence in Europe: Risks, Rewards, and Legal Frameworks' (2020) 121 Marine Policy 104122.

[12] See eg Tade Oyewunmi and others (eds), *Decarbonisation and the Energy Industry* (Hart Publishing 2020). See also Geoffrey Wood and Keith Baker (eds), *The Palgrave Handbook of Managing Fossil Fuels and Energy Transitions* (Palgrave Macmillan 2020).

[13] Anatole Boute, 'Environmental Force Majeure: Relief from Fossil Energy Contracts in the Decarbonisation Era' (2021) 33 Journal of Environmental Law 339; Kyla Tienhaara, 'Regulatory Chill in a Warming World: The Threat to Climate Policy Posed

this background, there is an emerging field of literature critically examining the lack of climate considerations in the authorization of fossil fuel production,[14] and the possibility of tackling fossil fuel subsidies under the climate change regime.[15] Discussion of international initiatives to phase-out oil and gas[16] as well as the integration of climate concerns in the national fossil fuels development regulation[17] have been gaining more attention in the recent years.

This article builds on this literature by drawing connections between international climate governance and domestic fossil fuel production regulation, exposing the lack of integration, using UK as a case study. It traces the climate governance of fossil fuel production from climate treaties and informal organizations to national legislation on licensing and environmental impact assessment. Through doctrinal and contextual analysis of the relevant international obligations and their interpretation in a national jurisdiction, this article demonstrates that even where there are ambitious climate targets present in international and domestic law, without specific production limitation obligations internationally, climate-driven fossil fuel governance requires either a substantive reform of domestic licensing and environmental impact assessment processes or a shift in the judicial interpretation.

To this end, the article starts with a review of the background and review of international law and governance of climate change and fossil fuel production. It further analyses the oil and gas development approval regime in the UK with a view to highlighting the lack of integration of the international and national climate change obligations in the licensing and environmental assessment processes. The UK has a mature oil and gas industry, having been producing oil and gas for more than 50 years. At the same time, it has ambitious legally binding climate change targets and has recently adopted a climate compatibility checkpoint for new oil and gas licenses. The climate considerations in awarding new oil and gas licenses have been the cause of litigation and fierce political debate for the past few years, making the UK a relevant case study. The article concludes with a reflection on challenges to reconcile climate change and fossil fuel production regulation.

FOSSIL FUEL PRODUCTION AND CLIMATE CHANGE

Fossil fuels have been powering our development since the industrial revolution and continue to be the main source of energy today, despite the rapid growth of low-carbon technologies. This section reviews the impact on fossil fuel production activities on climate change (subsection 'How does oil and gas production impact global climate?') and

by Investor-State Dispute Settlement' (2018) 7 Transnational Environmental Law 229; Diane Desierto and Frédéric G Sourgens, 'Investment Law and Decarbonisation' in Tade Oyewunmi and others (eds), *Decarbonisation and the Energy Industry* (Hart Publishing 2020).

[14] Michael Lazarus and Harro van Asselt, 'Fossil Fuel Supply and Climate Policy: Exploring the Road Less Taken' (2018) 150 Climatic Change 1; Cleo Verkuijl and others, 'Aligning Fossil Fuel Production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue' (*Stockholm Environment Institute,* 2018) <https://unfccc.int/sites/default/files/resource/11_12_13__SEI_Talanoa_Fossil_Fuels.pdf> accessed 27 September 2023; Georgia Piggot and others, 'Swimming Upstream: Addressing Fossil Fuel Supply Under the UNFCCC' (2018) 18 Climate Policy 1189.

[15] Harro Van Asselt and Kati Kulovesi, 'Seizing the Opportunity: Tackling Fossil Fuel Subsidies Under the UNFCCC' (2017) 17 International Environmental Agreements: Politics, Law and Economics 357; Harro Van Asselt, Laura Merrill and Kati Kulovesi, 'Fossil Fuel Subsidies and the Global Climate Regime' in Harro Van Asselt and Jakob Skovgaard (eds), *The Politics of Fossil Fuel Subsidies and Their Reform* (CUP 2018).

[16] Geir B Asheim and others, 'The Case for a Supply-Side Climate Treaty' (2019) 365 Science 325; Harro van Asselt and Peter Newell, 'Pathways to an International Agreement to Leave Fossil Fuels in the Ground' (2022) 22 Global Environmental Politics 28.

[17] See eg Guy Dwyer, "'Market Substitution" in the Context of Climate Litigation' (2022) 12 Climate Law 1; Justine Bell-James and Brianna Collins, "'If We Don't Mine Coal, Someone Else Will": Debunking the "Market Substitution Assumption" in Queensland Climate Change Litigation' (2020) 37 Environmental and Planning Law Journal 167; Michael Burger and Jessica Wentz, 'Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review' (2017) 41 Harvard Environmental Law Review 109.

identifies the main oil and gas reserves holders (subsection 'Who holds the oil and gas reserves?').

How does oil and gas production impact global climate?

In 2019, the share of fossil fuels in the global primary energy demand constituted 80 per cent.[18] Coal is the fossil fuel with the greatest carbon content, producing about 30 per cent more carbon per unit of energy than refined oil, and almost 80 per cent more than natural gas. Coal accounts for about 27 per cent share in the global energy demand,[19] but in climate goals-compliant pathways, its use needs to be drastically reduced and in the long-term only allowed with carbon capture technologies. Oil accounts for about 34 per cent of global CO_2 emissions from fossil fuels[20]; reducing its production and consumption is necessary for the achievement of climate goals, and will require substantial reforms in the transport sector. Natural gas is often referred to as 'transition fuel' due to its smallest carbon content compared to coal and oil.[21] However, the energy crisis and concerns about the future cost and availability of natural gas have 'put a major dent'[22] in that idea. Furthermore, although gas can assist in supporting the transition to renewables in the medium term, investment into new gas production could jeopardize longer-term switch to low-carbon energy alternatives.[23]

The fossil fuel chain contributes to greenhouse gas emissions at every stage, from exploration to the final use of resources, and can generally be divided into upstream and downstream emissions. The term 'upstream' or 'fugitive' emissions usually refer to the intentional or unintentional releases of greenhouse gases that 'occur during the exploration, processing and delivery of fossil fuels to the point of final use'.[24] Such emissions include fuel combustion processes in mining and oil and gas installations such as venting and flaring of natural gas that often occurs during oil production. Decarbonizing the exploration and production processes through, eg the reduction of flaring or electrifying platforms is essential for climate action.[25] However, most of the emissions occur not during the production, but at the point of consumption of the final product, so-called 'downstream' or 'scope 3' emissions.[26] For example, for oil, such downstream emissions account for 67–95 per cent depending on the processes used.[27] It is, therefore, imperative to consider downstream emissions when making initial decisions of fossil fuels projects investment and authorization.

[18] A total of 31 per cent oil, 23 per cent gas, and 26 per cent coal. IEA 'Global Energy Review 2019' (2020) 5 <https://iea.blob.core.windows.net/assets/dc48c054-9c96-4783-9ef7-462368d24397/Global_Energy_Review_2019.pdf> accessed 27 September 2023.

[19] It also makes up 38 per cent of electricity generation. IEA 'Coal 2018' (2018) <https://www.iea.org/reports/coal-2018> accessed 27 September 2023.

[20] IEA, 'Global Primary Energy, Electricity Generation, Final Consumption and CO_2 Emissions by Fuel' (2018) <https://www.iea.org/reports/the-oil-and-gas-industry-in-energy-transitions> accessed 27 September 2023.

[21] See eg Vaclav Smil, *Natural Gas: Fuel for the Twenty-First Century* (John Wiley & Sons 2015).

[22] IEA 'World Energy Outlook 2022' (2022) <https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf> accessed 8 September 2023.

[23] Cem Gürsan and Vincent de Gooyert, 'The Systemic Impact of a Transition Fuel: Does Natural Gas Help or Hinder the Energy Transition?' (2021) 138 Renewable and Sustainable Energy Reviews 110552.

[24] IPCC Glossary page G8, Definition of 'Fugitive Emissions' <https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/0_Overview/19R_V0_02_Glossary.pdf> accessed 27 September 2023.

[25] IEA (n 4) 160–61. See also World Bank, 'Global Gas Flaring Tracker Report 2020' (2021) <https://thedocs.worldbank.org/en/doc/1f7221545bf1b7c89b850dd85cb409b0-0400072021/original/WB-GGFR-Report-Design-05a.pdf> accessed 27 September 2023.

[26] GEA, *Global Energy Assessment: Toward a Sustainable Future* (CUP 2012) 448. The term 'Scope 3' emissions refers to emissions that occur 'from sources owned or controlled by other entities in the value chain (e.g. materials suppliers, third-party logistics providers, waste management suppliers, travel suppliers, lessees and lessors, franchisees, retailers, employees, and customers).' It was introduced by the World Resources Institute and the World Business Council for Sustainable Development.

[27] 'Upstream Emissions as a Percentage of Overall Lifecycle Emissions' (*World Resources Institute*, 14 December 2016) <https://www.wri.org/resources/data-visualizations/upstream-emissions-percentage-overall-lifecycle-emissions> accessed 27 September 2023.

Acknowledging that some fossil fuels will still be required and permitted under climate-compliant scenarios, eg with carbon capture and storage, requires the consideration of which or indeed whose reserves would stay in the ground. Fossil fuels are not evenly distributed among regions and the phase-out of their production will have far-reaching consequences not only for resource-users but also for their owners too. Authoritative large-scale assessments of resources and reserves have been published over the years, such as BP assessments and the Global Energy Assessment.[28]

Who holds the oil and gas reserves?

The line between resources and reserves for oil is rather blurred with different degrees of probability required by different assessments, with a general trend of estimated reserves amount increasing over time.[29] Most assessments still distinguish oil into conventional and unconventional reserves, with latter referring to oil 'not recoverable using standard technologies',[30] such as heavy oil, oil sands, and shale oil. BP estimated that, as of the end of 2019, global proved oil reserves were 1734 billion barrels, with OPEC holding 70.1 per cent of these.[31] Regionally, the Middle East, former Soviet Union, and Latin America collectively hold over 80 per cent of oil reserves.[32] The global reserves to production ratio accounted for 50 years of current production, with significant variance across regions. Although the rate of new large-scale discoveries is falling,[33] they still occur, some in countries which have not been previously engaged in petroleum extraction (eg Guyana[34]), and some in remote environments with significant costs and environmental risks attached to large-scale production (eg Arctic region[35]).

The geographic distribution of the reserves does not always correspond to their financial ownership and interest. The decarbonization policies and phase-out of fossil fuel production will create significant stranded assets—'assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities'.[36] Research on such stranded assets shows that 'equity investors from mostly OECD countries are currently exposed to much more of global fossil-fuel stranded assets risk than the geographical view implies'.[37] The financial sectors in the USA and the UK, in particular, 'display much larger losses than other countries'.[38]

[28] BP, 'Statistical Review of World Energy 2020' <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-full-report.pdf> accessed 21 May 2023; GEA (n 26) 425–512. The GEA report (which includes data from *inter alia* BP, IEA, OPEC, USGS, and WEC) is relied on by the IPCC in the AR5, s 7.4. On various approaches to estimation and categorization of resources and reserves, see Holger Rogner, 'An Assessment of World Hydrocarbon Resources' (1997) 22 Annual Review of Energy and the Environment 217.

[29] Eg GEA reports that 'while reserves reporting in the United States require a 90% probability of recovery under existing economic, technological, and political conditions, other reporting bodies typically declare reserves at a median, 50%, probability'. GEA (n 26) at 439.

[30] Deep offshore oil and Arctic oil are also often considered 'unconventional' due to the relative novelty of their production. ibid 438.

[31] BP, 'Statistical Review of World Energy, Oil' (2020) <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/oil.html> accessed 21 June 2023. While BP tends to be on the higher scale of estimations, the variance in estimation of reserves against the lowest estimate appears to be no bigger than 15 per cent. ibid 441.

[32] According to BP and BGR estimates in GEA 2012. ibid 440.

[33] ibid 435.

[34] 'ExxonMobil Announces Significant Oil Discovery Offshore Guyana' (*ExxonMobil*, 20 May 2015) <https://news.exxonmobil.com/press-release/exxonmobil-announces-significant-oil-discovery-offshore-guyana> accessed 15 July 2023.

[35] Arctic Monitoring and Assessment Programme, 'Assessment 2007: Oil and Gas Activities in the Arctic - Effects and Potential Effects (Vols 1 and 2)' (2010).

[36] Ben Caldecott, 'Introduction to Special Issue: Stranded Assets and the Environment' (2017) 7 Journal of Sustainable Finance & Investment 1.

[37] Gregor Semieniuk and others, 'Stranded Fossil-Fuel Assets Translate to Major Losses for Investors in Advanced Economies' (2022) 12 Nature Climate Change 532, at 537.

[38] ibid 536.

Researchers warn that this may incentivize the financial sector of these countries to 'accept inertia or even slow the low-carbon transition and earn dividends from the continued operation of fossil-fuel production'.[39]

Some studies on the available data on reserves and resources calculated the regional shares of fossil fuels 'unburnable' between 2010 and 2050 under the 2°C and the 1.5°C scenarios.[40] Scholars argued that certain fossil fuel development projects are incompatible with global climate goals, including Canada's oil sands[41] and new coal developments,[42] and Arctic oil and gas.[43] Attempts have been made to integrate considerations of equity into the geographical allocation of the 'right to extract',[44] although there remains the challenge of ultimate ownership of potentially stranded fossil fuel assets.[45]

A number of solutions have been put forward to resolve this dilemma, including an economic approach and a justice approach. Economists suggest leaving the highest-cost reserves in the ground.[46] Such reserves are usually associated with higher extraction emissions than average operations, and it would be more cost-efficient not to exploit them due to their smaller profit margin.[47] However, the determination of whose reserves would need to stay in the grounds is not an easy one. One cannot assume that players in the international energy market will be motivated by climate considerations to an equal degree, and the notion of national sovereignty over natural resources would hurdle any attempt to prohibit resource extraction by means of international law.

Against this background, the international climate change legal regime is focused on where the emissions occur rather than where fossil fuels are located. The following section examines how international formal (subsection 'International climate change legal regime and fossil fuel production') and informal (subsection 'Informal intergovernmental cooperation on fossil fuel phase-out') climate governance addresses fossil fuel production.

FOSSIL FUELS AND THE INTERNATIONAL CLIMATE CHANGE REGIME

International climate change legal regime and fossil fuel production

With the consolidation of climate science in the 1980s and 1990s,[48] energy and resource economics turned to consider the issues of carbon leakage and the effects of climate policies on the energy market.[49] At that time, the United Nations Framework Convention on Climate Change

[39] ibid 537.

[40] Dan Welsby and others, 'Unextractable Fossil Fuels in a 1.5 °C World' (2021) 597 Nature 230; McGlade and Ekins (n 3).

[41] Mark Jaccard, James Hoffele and Torsten Jaccard, 'Global Carbon Budgets and the Viability of New Fossil Fuel Projects' (2018) 150 Climatic Change 15.

[42] Ryan Rafaty, Sugandha Srivastav and Björn Hoops, 'Revoking Coal Mining Permits: An Economic and Legal Analysis' (2020) 20 Climate Policy 980; Roman Mendelevitch, 'Testing Supply-Side Climate Policies for the Global Steam Coal Market—Can They Curb Coal Consumption?' (2018) 150 Climatic Change 57.

[43] Daria Shapovalova, 'Arctic Petroleum and the 2°C Goal: A Case for Accountability for Fossil-Fuel Supply' (2020) 10 Climate Law 282; Justin Leroux and Daniel Spiro, 'Leading the Unwilling: Unilateral Strategies to Prevent Arctic Oil Exploration' (2018) 54 Resource and Energy Economics 125; Beate Sjåfjell and Anita Margrethe Halvorssen, 'The Legal Status of Oil and Gas Exploitation in the Arctic: The Case of Norway' (2016) 14(2) OGEL 1.

[44] Sivan Kartha and others, 'Whose Carbon is Burnable? Equity Considerations in the Allocation of a "Right to Extract"' (2018) 150 Climatic Change 117.

[45] Semieniuk and others (n 37).

[46] Michael Hoel, 'Supply Side Climate Policy and the Green Paradox' (CREE Working Paper 2/2013 2013) at 15 <https://www.cree.uio.no/publications/CREE_working_papers/pdf_2013/supplysideclimate_14jan_v9_withfigv3_cree_wp2_2013.pdf> accessed 27 September 2023; Asheim and others (n 16) at 326. The only instance in which the climate still 'may be adversely affected', according to Hoel, is if the backstop emissions are higher than those from the high-cost reserves.

[47] Hoel, ibid; Bård Harstad, 'Buy Coal! A Case for Supply-Side Environmental Policy' (2012) 120 Journal of Political Economy 77.

[48] Although in the early 1970s already, see Spencer R Weart, *The Discovery of Global Warming: Revised and Expanded Edition* (Harvard University Press 2008) 86–113.

[49] See eg Michael Hoel and Snorre Kverndokk, 'Depletion of Fossil Fuels and the Impacts of Global Warming' (1996) 18 Resource and Energy Economics 115; Michael Hoel, 'Efficient Climate Policy in the Presence of Free Riders' (1994) 27 Journal of

(UNFCCC) was just adopted. It did not set any binding greenhouse gas reduction targets for individual States, but required them to publish emission inventories and programmes to mitigate climate change.[50] The Kyoto Protocol was later adopted, fleshing out the system of binding emission limits for States with an overall emission cap reduction with every new commitment period.[51] The system established in the Protocol, assigning emission limits only to some States, prompted concerns over the economic effectiveness of the global climate regime.

In 2012, Sinn published the *Green Paradox,* a formative text on supply-side measures, arguing that fossil fuel producers, facing stringent emission-reduction policies in the long term, are incentivized to increase production in the short and medium terms.[52] As demand for fossil fuels decreases inconsistently, Sinn argues, the produced fossil fuels will flood those markets in which emission standards are not as ambitious. *Green Paradox* posits that an economically rational climate policy 'must involve the resource owners, and it must develop strategies that nudge them toward a more conservative extraction behaviour'.[53]

Since 2012, the international climate change legal regime has become more universal and more countries adopted domestic measures on greenhouse gas mitigation. Nevertheless, Sinn's arguments remain relevant today since the Paris Agreement allows States to determine their own climate pledges through Nationally Determined Contributions (NDCs),[54] which are expected to 'reflect the highest possible ambition'.[55] There is no obligation to achieve the targets outlined in the NDCs, rather to review and progress them periodically and to 'pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions'.[56] The Agreement also establishes the mechanisms of Global Stocktake and Enhanced Transparency Framework to assess the collective progress towards achieving its purpose and long-term goals and provide for reporting and review system.[57] These mechanisms supplement the bottom-up approach of the Agreement and are expected to 'allow for holding parties accountable and carefully managing compliance'.[58]

Integral to all climate treaties is the principle of common but differentiated responsibilities and respective capabilities (CBDRRC). Established in the UNFCCC, it was operationalized in the Kyoto Protocol through applying differentiated obligations to industrialized OECD members and economies in transition in the UNFCCC annexes. The Paris Agreement adopts a more 'subtle'[59] approach to differentiation based not on external but on self-identification. This is not, however, a *carte blanche* on deciding a level of ambition for States. The Paris Agreement requires NDCs to reflect States' 'highest possible ambition' and represent a progression,[60] placing higher expectations on States with higher capacity for action.[61]

Environmental Economics and Management 259; Felder Stefan and Thomas Rutherford, 'Unilateral CO2 Reductions and Carbon Leakage: The Consequences of International Trade in Oil and Basic Materials' (1993) 25 Journal of Environmental Economics and Management 162.

[50] United Nations Framework Convention on Climate Change (signed 9 Mary 1992, entered into force 21 March 1994) 1771 UNTS 107, art 4.

[51] Kyoto Protocol to the UNFCCC (signed 11 December 1997, in force 16 February 2005) 2303 UNTS 162.

[52] Hans-Werner Sinn, *The Green Paradox: A Supply-Side Approach to Global Warming* (MIT Press 2012). See also Geir B Asheim, 'A Distributional Argument for Supply-Side Climate Policies' (2013) 56 Environmental and Resource Economics 239.

[53] Sinn, ibid 129.

[54] Nico Bauer and others, 'Divestment Prevails over the Green Paradox When Anticipating Strong Future Climate Policies' (2018) 8 Nature Climate Change 130; Nicolas Gaulin and Philippe Le Billon, 'Climate Change and Fossil Fuel Production Cuts: Assessing Global Supply-Side Constraints and Policy Implications' (2020) 20 Climate Policy 888.

[55] Paris Agreement art 4.

[56] ibid.

[57] ibid, arts 13 and 14.

[58] Anik Kohli, 'Making Sense of Transparency and Review in the Paris Agreement' (2015) 26 Yearbook of International Environmental Law 46, at 67.

[59] Pieter Pauw, Kennedy Mbeva and Harro van Asselt, 'Subtle Differentiation of Countries' Responsibilities Under the Paris Agreement' (2019) 5 Palgrave Communications 1.

[60] Paris Agreement art 4(3).

[61] See Daria Shapovalova, 'In Defence of the Principle of Common but Differentiated Responsibilities and Respective Capabilities' in Benoit Mayer and Alexander Zahar (eds), *Debating Climate Law* (CUP 2021).

None of the climate treaties places specific obligations directly regulating fossil fuel production. Under the Paris Agreement reporting very few States report on fossil fuel subsidies, but there are no direct requirements to report on fossil fuel production or subsidies in NDCs or transparency reporting.[62] The fact that the greenhouse gas reduction obligations are not universal prompts the problem of carbon leakage, whereby the extracted oil and gas would 'find their way to a country where they can be converted into CO_2 without any constraint imposed by international and domestic law'.[63] The focus on consumption in the absence of universal reduction obligations thus limits the effectiveness of international climate change treaties by disregarding the production of fossil fuels.

The concept of an international coalition controlling the level of petroleum production is not new—the OPEC has been controlling the oil output levels of its Member States for about 60 years, albeit not motivated by climate concerns. The idea of a supply-side climate treaty has been discussed in the context of achieving climate goals through the creation of an international coalition of States willing to cooperate in restricting fossil fuel production and/or fossil fuel exports with a view to keeping the fossil fuel prices high and preventing carbon leakage.[64] Its proponents agree that success of this venture would depend on an effective combination of supply and demand-side measures as regulating only supply without addressing demand effectively would result in the increase of production outside of the coalition.[65] A supply-side climate treaty would thus not duplicate the global effort in climate change mitigation but rather act as 'insurance against failed demand-side policies'.[66]

Informal intergovernmental cooperation on fossil fuel phase-out

In recent years, there has been a movement for more informal intergovernmental cooperation,[67] including on fossil fuel production and use mitigation. Such arrangements allow states to 'cooperate without giving up sovereignty in sensitive areas'.[68] During COP26 in November 2021, Costa Rica and Denmark established the Beyond Oil and Gas Alliance (BOGA). The Alliance brings together governments (including sub-national) and stakeholders 'to facilitate the managed phase-out of oil and gas production'.[69] It is an informal arrangement, rather than a formal international organization, and pledges made are political rather than legal obligations. All parties involved must sign the BOGA Declaration,[70] and depending on their status and level of commitment are placed in one of three membership categories.

Core members of the Alliance[71] are governments or authorities with decision-making power committing to end 'new concessions, licensing, or licensing rounds for oil and gas production and exploration' and to setting a Paris-aligned date for 'ending oil and gas production and exploration' in their jurisdiction.[72] Associate members[73] sign the non-binding Declaration and take one or more of the steps outlined, which include oil and gas subsidy reform, end to financial support to oil and gas production abroad, or other significant measures contributing to

[62] See Shapovalova (n 43).
[63] Roman Sidortsov, 'Creating Arctic Carbon Lock-In: Case Study of New Oil Development in the South Kara Sea' (2012) 6(1) CCLR 3, at 5.
[64] Asheim and others (n 16).
[65] ibid.
[66] ibid, at 326.
[67] Felicity Vabulas and Duncan Snidal, 'Cooperation under Autonomy: Building and Analyzing the Informal Intergovernmental Organizations 2.0 Dataset' (2021) 58 Journal of Peace Research 859.
[68] ibid.
[69] <https://beyondoilandgasalliance.org/> accessed 27 September 2023.
[70] The Beyond Oil and Gas Alliance Declaration <https://drive.google.com/file/d/176fTn0z5aNr-vhUecAsLOD8Jg110dQMF/view> accessed 27 September 2023.
[71] As of April 2023—Denmark, Costa Rica, France, Greenland, Ireland, Portugal, Quebec, Sweden, Tuvalu, Wales, and Washington State.
[72] ibid.
[73] California and New Zealand.

the reduction of supply. The final membership category, Friend of BOGA, is open not only to governments but also to other actors such as 'indigenous peoples, international organisations, financial institutions, companies, civil society'. As of April 2023, BOGA recruited 12 core members (states, nations, and regions), albeit none of them are large oil and gas reserve holders.

An alliance to phase-out coal was launched earlier during COP23, by Canada and Denmark, but does not emphasize production, calling instead for a phase-out of 'existing unabated coal power generation'.[74] The Powering Past Coal Alliance (PPCA) has a similar membership structure to BOGA and attracted the support of 50 national governments, 49 sub-national governments, and 70 organizations.[75]

These informal international arrangements have a great potential to facilitate political commitments which could turn into legal obligations domestically. However, it is still not clear whether it would make a difference without buy-in from large fossil fuel reserve-holders. Creating an OPEC-like legally binding organization imposing limitations on production is not politically likely given that even the mitigation commitments are not externally imposed on States anymore. Even within the OPEC legally binding framework, compliance has consistently been an issue with members exceeding the assigned production quotas.[76]

Even if the political will to assign binding production quotas were present, a number of issues would inevitably arise, such as the future fate of the resources or the burden sharing in potential production quota distribution. The resources could be sealed off temporarily or completely.[77] If the latter is adopted, such commitments would not likely survive political changes in States, especially as the resource prices would be hiking up due to scarcity.

The work is underway to develop a Fossil Fuel Non-Proliferation Treaty, spearheaded by Tuvalu and Vanuatu.[78] Proponents of this proposal adopt the nuclear non-proliferation treaty approach, calling for fossil fuel production and infrastructure phase-outs, reporting regime, and acceleration of energy transition through directing subsidies to renewables and sharing low-carbon technologies.[79] The initiative so far has attracted endorsement of further four Pacific nations: Fiji, Solomon Islands, Niue, and Tonga; as well as the European Parliament, World Health Organization, and some high-level officials and individuals.[80]

With the absence of clear legal obligations on climate constraints of fossil fuel production, it is important to look to domestic legal systems to identify the trends or best practices. Climate-related advocacy and legal challenges for new fossil fuel production have been on the rise in Australia,[81] Europe,[82] and the USA.[83] The UK is an interesting case study as it has both mature oil and gas industry and ambitious legally binding climate change targets.[84] At the same time,

[74] Powering Past Coal Alliance Declaration <https://www.poweringpastcoal.org/about/declaration> accessed 26 September 2023.

[75] Powering Past Coal Alliance Members <https://www.poweringpastcoal.org/members> accessed 27 September 2023.

[76] See eg Hamed Ghoddusi, Masoud Nili and Mahdi Rastad, 'On Quota Violations of OPEC Members' (2017) 68 Energy Economics 410; Jeff D Colgan, 'The Emperor Has No Clothes: The Limits of OPEC in the Global Oil Market' (2014) 68 International Organization 599.

[77] See discussion in Sinn (n 52) 173–74, 176–78.

[78] See <https://fossilfueltreaty.org/> accessed 27 September 2023.

[79] Peter Newell and Andrew Simms, 'Towards a Fossil Fuel Non-Proliferation Treaty' (2020) 20 Climate Policy 1043, 1054.

[80] See <https://fossilfueltreaty.org/> accessed 27 September 2023.

[81] See *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7 regarding a coal mine approval.

[82] See Norway, *Nature and Youth Norway et al v Ministry of Petroleum and Energy [2020] Supreme Court of Norway* HR-2020-2472-P, (case no 20–051052SIV-HRET) on petroleum licenses and the constitutional right to healthy environment.

[83] Burger and Wentz (n 17) at 142–75; Michael Burger and Jessica Wentz, 'Evaluating the Effects of Fossil Fuel Supply Projects on Greenhouse Gas Emissions and Climate Change Under NEPA' (2020) 44 William & Mary Environmental Law and Policy Review 423.

[84] See the UK's Nationally Determined Contribution communication to the UNFCCC (September 2022) <https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc> accessed 27 September 2023; UK Climate Change Act 2008.

as discussed in Section 'Fossil fuel production and climate change', the UK's financial sector has a significant stake in the fossil fuel assets globally. Attempts to reconcile climate change commitments under both the Paris Agreement and domestic climate change legislation led to the adoption of climate-related policies in the field of oil and gas production approval. However, there is much debate and ongoing legal actions concerning the sufficiency of these new developments in meeting climate targets.

The next section, thus, zooms in on the UK to review whether the national legal framework for oil and gas development can effectively integrate climate consideration in the licensing of new developments.

UK REGULATION OF LICENSING OF NEW OIL AND GAS DEVELOPMENTS IN LIGHT OF CLIMATE CHANGE

International climate change law and policy is only effective if implemented appropriately. This sections examines the interpretation and application of climate impacts regulation of oil and gas production in the policy and overall legal framework (subsection 'Policy direction, context, and wider legal framework'), licensing regime (subsection 'UK Oil and Gas License Climate Compatibility Checkpoint'), and judicial practice (subsection 'Challenging the new oil and gas developments on climate grounds in the UK?') in the UK.

Policy direction, context, and wider legal framework

The UK was the first country to adopt a legally binding climate change target through the Climate Change Act 2008.[85] The Act established the legally binding 2050 net zero target and places obligations on the Government to develop carbon budgets as well as the proposals and policies to meet these budgets.[86] It further establishes the Committee on Climate Change, an independent, non-departmental public body, to advise the UK and devolved Governments and Parliaments.[87] The UK's Paris Agreement NDC restates the commitment to achieve net zero by 2050.[88] It further commits the UK Government to end 'direct support for the fossil fuel energy sector overseas',[89] although does not mirror this commitment domestically. As discussed above, according the CBDRRC principle, as a State with high historic emissions and a high capacity for action, the UK is expected to have higher contributions to the climate change regime.[90] Indeed, the UK's own Climate Change Committee stated that considerations of equity suggest that 'the UK should aim to reach net zero emissions before the world as a whole'.[91]

The UK has been developing oil and gas since oil was first discovered in the North Sea in 1969. Since then, over 46.4 billion barrels of oil equivalent (boe) of oil and gas has come from the UK continental shelf.[92] The production of oil and gas from the UK continental shelf peaked in 1999 but proven and probable reserves are estimated at 4.0 billion boe.[93] The maturity of the UK Continental Shelf makes for a more challenging operating environment, which prompted

[85] For a comprehensive review of the Climate Change Act, see Thomas L Muinzer, *Climate and Energy Governance for the UK Low Carbon Transition: The Climate Change Act 2008* (Springer 2019).
[86] See ss 1, 4–10, and 12–15.
[87] See ss 32–42.
[88] The UK's Nationally Determined Contribution communication to the UNFCCC (n 84).
[89] ibid.
[90] Committee on Climate Change, 'Net Zero: The UK's Contribution to Stopping Global Warming' (2019) 50 <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf> accessed 20 September 2023.
[91] ibid.
[92] NSTA, UK Oil and Gas: Reserves and Resources (2022). Boe is barrel of oil equivalent—the amount of energy that is equivalent to the amount of energy found in a barrel of crude oil.
[93] ibid.

the Government to adopt a strategy to 'maximise the economic recovery' from the North Sea, making it a legally binding objective for the regulator.[94]

The North Sea Transition Authority or NSTA (formerly—Oil and Gas Authority) is a government regulatory authority responsible for issuing licenses for offshore oil, gas, and carbon capture and storage activities. In their activities, they are responsible for the implementation of the Oil and Gas Authority Strategy[95] and the North Sea Transition Deal.[96] The Strategy is based on the 'maximising economic recovery' objective but was updated in 2021 to incorporate the legally mandated net zero target albeit without a clear mechanism for climate assessment or procedural steps to follow in an event of a conflict between economic and climate interests.

The North Sea Transition Deal, announced in March 2021, details industry and government commitments to the decarbonization of the North Sea production, development of new industrial sectors (eg hydrogen), and support for the workforce. Under this framework, only upstream emissions are considered, while scope 3 emissions are left unaccounted for.

The public and media discourse around the climate impacts of new oil and gas developments in the UK came to a head in 2021, while the decision on the new Cambo oil field was being awaited. Discovered in 2002, the field lies 25 km north-west of the Shetland Islands. It contains over 800 million barrels of oil and is majority-owned by Ithaca Energy. When the exploration licence was first awarded, the UK had no climate change legislation and had not yet ratified the Kyoto Protocol. When the time came for the operators to apply for a production licence, just months before the UK hosted COP26, this was met with resistance from environmental groups like Greenpeace and Friends of the Earth Scotland. The licensing application attracted significant public interest before, during, and after COP26.[97] Shell has pulled its 30 per cent stake and the original owner, Siccar Point Energy, sold the field to the current owner after the NSTA awarded a two-year extension on the current license.[98] A similar narrative is developing around other new fields, eg Rosebank and Jackdaw.[99] Rosebank, the largest untapped field in the UK, was approved for development by the regulator in September 2023, prompting campaigners to threaten legal action.[100]

The Government and the industry associations put forward arguments around the need to satisfy domestic demand with new oil and gas projects. The UK Government appears to 'remain absolutely committed to maximising the vital production of UK oil and gas as the North Sea

[94] s 41 Infrastructure Act 2015, amending s 9A of the Petroleum Act 1998. See further Greg Gordon, John Paterson and Uisdean Vass, 'The Wood Review and Maximising Economic Recovery upon the UKCS' in Greg Gordon, John Paterson and Emre Üşenmez (eds), *UK Oil and Gas Law: Current Practice and Emerging Trends: Volume I: Resource Management and Regulatory Law* (3rd edn, Edinburgh University Press 2018).

[95] NSTA, 'The OGA Strategy' (2021) <https://www.nstauthority.co.uk/media/7105/the-oga-strategy.pdf> accessed 27 September 2023.

[96] BEIS and OGUK, 'North Sea Transition Deal' (2021) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/972520/north-sea-transition-deal_A_FINAL.pdf> accessed 27 September 2023.

[97] Greenpeace, 'Cambo Chaos: The Oil Field Embarrassing the Government' (August 2021) <https://www.greenpeace.org.uk/news/cambo-chaos-oil-embarrassing-government-ahead-cop-climate-talks/>; Friends of the Earth Scotland, Taking the Stop Cambo campaign to Downing Street, <https://foe.scot/taking-the-stop-cambo-campaign-to-downing-street/>. See also the 'Stop Cambo' campaign at <https://www.stopcambo.org.uk/> all accessed 27 September 2023.

[98] 'Cambo Oil Field off Shetland Granted Two-year Licence Extension' (*BBC*, 30 March 2022) <https://www.bbc.co.uk/news/uk-scotland-scotland-business-60917159> accessed 27 September 2023.

[99] Abbi Garton-Crosbie, 'Activists Vow to Fight Permit Bid for Rosebank Oil Field off the Coast of Shetland' (*The National*, 5 August 2022) <https://www.thenational.scot/news/20604311.activists-vow-fight-permit-bid-rosebank-oil-field-off-coast-shetland/>; 'Greenpeace Taking UK Government to Court over Jackdaw Gasfield Works' (*The Guardian*, 26 July 2022) <https://www.theguardian.com/environment/2022/jul/26/greenpeace-taking-uk-government-to-court-jackdaw-gasfield> both accessed 27 September 2023.

[100] Mathew Perry, 'Campaigners Vow Legal Action over Rosebank Approval – How Likely is it to Succeed?' (*Energy Voice*, 27 September 2023) <https://www.energyvoice.com/oilandgas/north-sea/537038/campaigners-vow-legal-action-over-rosebank-approval-how-likely-is-it-to-succeed/> accessed 27 September 2023.

basin declines'.[101] It plans to use the domestic reserves to minimize the reliance on overseas imports, particularly the liquified natural gas which is reported to be more carbon intensive.[102] The Government is planning to develop a mechanism to accelerate new oil and gas projects to 'cut the approval times for consents to potentially bring forward production dates, subject to environmental considerations'.[103]

The industry, on the other hand, notes the increasing difficulty of operating on the UK Continental Shelf.[104] It advocates for a 'long term approach to policy-making'[105] citing the challenges of 'windfall taxes, uncertain political support, slow regulatory decision-making, high inflation and supply chain and workforce capacity pressures'.[106]

Indeed, the UK has been a net importer of oil and gas since 2004. In the times of the natural gas shortage and the resulting energy crisis, these arguments are especially effective. While for the UK, the share of Russian oil and gas imports was not high, it was significantly affected by the knock-on effects of the fallout in the global gas market.

Even in net zero-compliant scenarios, the UK will still require some oil and gas, but estimates vary. The Climate Change Committee's Balanced Net Zero Pathway sees demand falling significantly to 2050 for oil (−85 per cent) and natural gas (−70 per cent).[107] More ambitious scenarios, assuming 'considerable success on both innovation and societal/behavioural change', provide for an even more dramatic drop in demand.[108] What is less clear is how the rates of domestic production will be managed with the falling demand. In 2022, the UK produced enough oil and gas to meet 67 per cent and 44 per cent of the domestic demand, respectively.[109] It is also important to note that the UK does not have a nationalized oil industry and participated in the global oil and gas market. Thus, UK-produced crude does not always make its way through UK-based refineries to UK customers. In 2021, 30.3 million tonnes of crude oil and 18.2 million tonnes of petroleum products were exported to countries like the Netherlands, China, Korea, Belgium, and Ireland.[110] In the same period, the UK imported 36.3 million tonnes of crude oil and 26.6 million tonnes of petroleum products.[111]

The Committee on Climate Change expressed support for a 'tighter limit on production, with stringent tests and a presumption against exploration'.[112] However, so far, it has not been able to 'establish the net impact on global emissions of new UK oil and gas extraction'.[113] They note the relatively low-carbon footprint of the domestic oil and gas production and the UK's import dependency, 'implying there may be emissions advantages to UK production replacing imports'.[114] The Committee notes that an end to UK exploration 'would send a clear signal to

[101] UK Government, 'Powering Up Britain: Energy Security Plan' 2 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1148252/powering-up-britain-energy-security-plan.pdf> accessed 27 September 2023.
[102] ibid 13.
[103] ibid 15.
[104] See eg Offshore Energies UK, 'Business Outlook 2023' 21 <https://oeuk.org.uk/wp-content/uploads/2023/03/Business-Outlook-2023-Offshore-Energies-UK-OEUK.pdf> accessed 27 September 2023.
[105] ibid.
[106] ibid.
[107] Committee on Climate Change, 'Sixth Carbon Budget' (2020) <https://www.theccc.org.uk/publication/sixth-carbon-budget/> accessed 27 September 2023.
[108] ibid.
[109] Offshore Energies UK (n 104) 22.
[110] 'Digest of UK Energy Statistics (DUKES): Petroleum' Table 3.8 <https://www.gov.uk/government/statistics/petroleum-chapter-3-digest-of-united-kingdom-energy-statistics-dukes> accessed 27 September 2023.
[111] ibid Table 3.7.
[112] Letter from Lord Deben, 'Chairman of the Climate Change Committee, to the Rt Hon Kwasi Kwarteng MP in Connection with the Ongoing Consultation on the Proposed Climate Compatibility Checkpoint for Oil and Gas Licensing in the North Sea' (24 February 2022) <https://www.theccc.org.uk/publication/letter-climate-compatibility-of-new-oil-and-gas-fields/> accessed 27 September 2023.
[113] ibid.
[114] ibid.

investors and consumers' about the UK's climate commitment and help the UK in its diplomatic efforts to strengthen climate ambition internationally. However, it also recognizes that the considerations of energy security 'extend beyond the statutory remit'[115] of the Committee.

The fragmentation of climate and energy regimes is clear in the ongoing debates around new oil and gas production in the UK. To reconcile the objectives of 'maximising economic recovery' and pursuing net zero, the Government has developed a Climate Compatibility Checkpoint for the new oil and gas licenses, which has been put in place in time for the 33d offshore licensing round which closed on January 2023.[116]

UK oil and gas license climate compatibility checkpoint

The work on the Checkpoint started in 2022 when the Government presented an ambitious six-point test for consultation.[117] The final Checkpoint contains three tests without an apparent threshold of what would be considered passing the test, or indeed any requirement to pass all three.[118] The Checkpoint, as presented, is a procedural rather than substantive requirement.

The first test is the reduction of operational emissions in the sector as outlined in the North Sea Transition Deal, which sets out the joint government and sector's commitment in achieving a 50 per cent reduction in emissions by 2030 (against the 2018 baseline), as well as interim targets of 10 per cent by 2025 and 25 per cent by 2027.[119] The test will consider the historical and the projected performance of the sector. The test thus essentially duplicates an already existing requirement under the Deal rather than increasing the ambition or creating a mechanism for accountability. The Committee on Climate Change considers the 50 per cent target insufficient, stating it falls 'well short of the 68%' they assessed as being feasible.[120]

The second test is operational emissions intensity, benchmarked internationally, separately for oil and gas. This is an important test as the UK industry placed at the end of the second quartile in global oil and gas production CO_2 intensity.[121] The Checkpoint test, however, does not require any specific improvement of the situation for the test to be passed.

The third test considers the status of the UK as a net importer of oil and gas, but even if the UK becomes a net exporter (which is not expected), the Checkpoint allows the Government 'to consider whether the fuel being exported is lower emission than that of other producers'.[122]

The tests that have been omitted in the final text relate to the scope 3 emissions, investment in energy transition technologies, and the global production gap consideration.

In the draft Checkpoint, the Government asked stakeholders how scope 3 emissions could be measured and monitored in a comparable way. Despite a number of proposed methodologies, and the Government's acknowledgment that it would be possible to calculate UK's scope 3 emissions, the Checkpoint dismisses these as irrelevant.[123] Same fate meets the Global Production

[115] ibid.

[116] NSTA, 'Licensing Rounds' <https://www.nstauthority.co.uk/licensing-consents/licensing-rounds/> accessed 27 September 2023.

[117] BEIS, 'Designing a Climate Compatibility Checkpoint for Future Oil and Gas Licensing in the UK Continental Shelf: Consultation Document' (December 2021) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1042291/oil-gas-licensing-checkpoint> accessed 27 September 2023. Discussion here is based on Daria Shapovalova and Tavis Potts, 'Climate Change: UK Test for New Oil and Gas Fields' Impact on Emissions Targets is not Fit for Purpose' (13 October 2022, the Conversation) <https://theconversation.com/climate-change-uk-test-for-new-oil-and-gas-fields-impact-on-emissions-targets-is-not-fit-for-purpose-191803> accessed 27 September 2023.

[118] BEIS, 'Climate Compatibility Checkpoint Design' (September 2022) <https://www.gov.uk/government/publications/climate-compatibility-checkpoint-design> accessed 27 September 2023.

[119] BEIS and OGUK (n 96).

[120] Climate Change Committee, 'Progress in Reducing Emissions 2022: Report to Parliament' (June 2022) 30, 275–76 <https://www.theccc.org.uk/wp-content/uploads/2022/06/Progress-in-reducing-emissions-2022-Report-to-Parliament.pdf> accessed 27 September 2023.

[121] Oil and Gas Authority, 'Emissions Monitoring Report' (October 2021) at 25 <https://www.nstauthority.co.uk/media/7809/emissions-report_141021.pdf> accessed 27 September 2023.

[122] BEIS (n 118) 13.

[123] BEIS (n 117) 27–28.

Gap considerations. The Government accepts that 'producers globally will ultimately need to leave some oil and gas in the ground in order to meet global climate targets'.[124] However, it is of the view that proactive curtailment of production is not as likely to reduce global carbon emissions as reductions in global consumption, thus presenting it as an 'either-or' solution. There is, thus, little indication of adoption of the initiatives and arguments discussed in Sections 'Fossil fuel production and climate change' and 'Fossil fuels and the international climate change regime' of this article, on international cooperation around phasing out fossil fuels production.

The Government further scrapped the test requiring the industry to invest in the 'energy transition technologies' such as hydrogen and carbon capture and storage, as it 'does not intend to justify continued extraction of oil and gas on the basis of investment in clean energy'.[125]

Finally, the Checkpoint is a non-statutory procedural instrument rather than a substantive requirement. There is, therefore, no way to judicially challenge a new licensing round on climate grounds under the Checkpoint as long the NSTA can demonstrate that the Checkpoint was applied. The NSTA does not publish a report outlining how it applied the Checkpoint, rather only indicating that it has indeed been applied.

Challenging the new oil and gas developments on climate grounds in the UK?

Environmental assessment is the most important step to prevent environmental harm, including climate change impacts, and is applied through the licensing regime. Environmental assessment legislation in the UK was driven by EU law and comes in two forms. A more high-level Strategic Environmental Assessment (SEA) that applies to governmental plans and programmes, including offshore oil and gas licensing rounds. Environmental Impact Assessment (EIA) applies to individual developments of oil and gas. Both SEA and EIA are procedural requirements and even if a significant risk of harm is found, the relevant legislation does not require application refusal. There have been some challenges of EIA on procedural grounds, used as a vehicle to bring the court's attention to substantive environmental issues, but this has not proven to be a successful litigation strategy.

Both SEA and EIA are procedural requirements mandatory for oil and gas developments. SEAs are mandatory for a range of plans and programmes, including offshore oil and gas developments. The SEA must include the consideration of the likely significant effects on the environment, measures to prevent them, and consideration of alternatives.[126] The most recent, fourth SEA (OESEA4) was published in September 2022, taking into account the new policy objectives, marine spatial planning, oil and gas licensing, and offshore renewables.[127] Prior to publication, the OESEA4 has undergone consultation, where the issue of no planned reduction in production has been raised by multiple respondents.[128] The Government responded with reference to the Climate Compatibility Checkpoint and the NSTD.

The EIA regulations[129] require the Secretary of State to consider the environmental impacts of proposed offshore projects when deciding whether to agree to the grant of consent for such prtojects. It is mandatory for any project for the 'extraction of petroleum for commercial purposes where the amount extracted exceeds 500 tonnes per day in the case of oil and 500,000

[124] ibid 32.
[125] ibid 23.
[126] Environmental Assessment of Plans and Programmes Regulations 2004 SI 2004/1633.
[127] BEIS, 'UK Offshore Energy Strategic Environmental Assessment: OESEA4' (2022) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061670/OESEA4_Environmental_Report.pdf> accessed 27 September 2023.
[128] 'UK Offshore Energy Strategic Environmental Assessment: Government response to OESEA4 Public Consultation' (September 2022) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1103149/OESEA4_Public_Consultation_Government_Response.pdf> accessed 27 September 2023.
[129] Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020 SI 2020/1947.

cubic metres per day in the case of gas'.[130] The process of conducting an EIA includes the submission of an environmental statement (ES) to the regulator and for public consultation. As the EIA requirement is procedural in legal nature, challenging the final project decisions based on the EIA requires procedural inconsistencies. The Regulations set out extensive process requirements regarding the content of the ES and the relevant timeframes and publication rules.[131] After the final decision on the project is published, there is scope for challenging this decision in court within three months of the decision.

Although SEA and EIA Regulations require the assessment of impacts on climate, it has been understood by developers and the regulators so far that it is only upstream emissions that are to be considered, rather than downstream or Scope 3 emissions.

Starting with the EIA—even with regard to upstream emissions—there is uncertainty over whether the information provided in ESs will bear much influence on the final authorization decision, especially since the NSTD commitments and the Climate Compatibility Checkpoint are used as 'climate compliance' mechanisms. While the supply decarbonization targets are in line with the commitments so far, the international benchmarking is rather poor.[132] Turning to downstream emissions, the UK courts so far adopted a conservative approach to judicial reviews on the grounds of failure to consider Scope 3 emissions in the authorization of oil and gas projects.

In *Greenpeace Limited v The Advocate General*,[133] claimants argued that it is not only the operational emissions of greenhouse gases but also emissions from subsequent consumption of the extracted oil and gas that should be taken into account.[134] The Court decided in favour of the Government, relying on the reasoning in *R (Finch) v Surrey County Council*[135] (case challenging an onshore oil well site) to state that 'it is the effect of the project, and its operation, that is to be considered and not that of the consumption of any retailed product ultimately emerging as a result of a refinement of the raw material.'[136] *Finch* case has been upheld in the Court of Appeal.[137] However, the Appeal Court disagreed with the conclusion that downstream emissions impact 'is legally incapable of being an environmental effect requiring assessment under the legislation'.[138] Rather, the Court concluded that it was for the county council to decide whether scope 3 emissions should be considered,[139] granting a wide margin of appreciation to the approving authority in the interpretation of the vague legislation.

An interesting aspect of the case is the consideration of the final destination of the produced hydrocarbons. In the Appeal Court's view, the 'ultimate use of the products generated by the subsequent refinement of the crude oil was not part of that project'.[140] The refinement process is seen as 'a separate and substantial industrial activity carried out for profit by the companies concerned' as is the distribution and sale of the refined products.[141] The ultimate conclusion on this issue upholds the county's decision not to include scope 3 emissions in the assessment as they were seen 'as far removed from the proposed development itself, and not causally linked to it' so as not to 'qualify as one of the "likely significant effects of the proposed development" on

[130] Schedule 1.
[131] For a detailed review of the process, see Daria Shapovalova, 'Environmental and Planning Law' in Geoff Hewitt and Terrence C. Daintith (eds), *United Kingdom Oil & Gas Law* (Sweet & Maxwell 2023).
[132] BEIS and OEUK, 'North Sea Transition Deal: One Year On' (2022) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061986/north-sea-transition-deal-one-year-on.pdf> accessed 27 September 2023.
[133] [2021] CSIH 53.
[134] *Greenpeace Limited v the Advocate General* [2021] CSIH 53, para 34.
[135] [2021] PTSR 1160.
[136] *Greenpeace Limited v the Advocate General* (n 134).
[137] *R (on the application of Finch) v Surrey CC* [2022] EWCA Civ 187.
[138] ibid para 43.
[139] ibid para 63.
[140] *R. (on the application of Finch) v Surrey CC* (n 137) para 33.
[141] ibid.

the environment.'[142] The Appeal Court did not 'close the door' on assessing scope 3 emissions, though:

> Whether in other cases, in different circumstances involving development for the extraction of hydrocarbons, 'downstream' impacts might properly be regarded as 'indirect' effects on the environment, so that it would be reasonable and lawful for a local planning authority in those circumstances to require their assessment, is not a question we have to decide. The specifics of such projects will vary greatly from one kind of 'fossil fuel' to another. The need for a wider assessment of greenhouse gas emissions may sometimes be appropriate, and possibly not contentious. One can imagine possible scenarios.[143]

The purpose and destination of the produced resources are key to the Government's approach to publicly endorsing new oil and gas developments with a reference to energy insecurity brought on by the Russian invasion of Ukraine and the spike in oil and gas prices. Although there is no indication that further authorization would alleviate the current energy crisis,[144] the potential contribution of these developments to domestic energy security is used to endorse support for new developments, at least publicly. It is also important to note the dissent of Moylan LJ, who adopted a wider definition of 'project' from the EU law, which requires mandatory EIA for oil development 'for commercial purposes'. He concludes that 'purposive approach to the interpretation of the provisions applicable in this case points strongly towards their application not being so limited'.[145] Non-inclusion of scope 3 emission could thus be a potential ground for judicial challenge, although the outcome of the Climate Compatibility Checkpoint might have an impact on the interpretation of the scope of EIA in that regard. As of September 2023, the *Finch* case is awaiting consideration by the UK Supreme Court.[146]

SEA is a procedural requirement and ultimately the Government has discretion as to which plan to adopt. A potential route to challenging a SEA would be to rely on a court's discretion reviewing function. In the Court of Appeal decisions in the Plan B Heathrow expansion case, claimants argued that there were multiple breaches of SEA procedural requirements, but only the failure to consider the Paris Agreement was the successful claim.[147] This was, however, overturned in the Supreme Court as the Court agreed that 'the UK's obligations under the Paris Agreement were sufficiently taken into account in the UK's domestic obligations under the Climate Change Act 2008'.[148] The so-called *Wednesdbury* approach, based on a reasonableness test,[149] proved to be challenging for environmental law claimants in a number of cases challenging the decisions of public authorities, including the abovementioned *Finch* case.

There is, thus, a rather high threshold for claimants in attempting to challenge fossil fuel projects on climate grounds. The judicial interpretation of international climate obligations appears to be that these are already dealt with under domestic climate change legislation. At the same time, the international equity considerations on limiting fossil fuel production do not appear to feature neither in Government policy nor in judicial practice. Despite ambitious

[142] ibid para 66.
[143] ibid para 77.
[144] Letter from Lord Deben (n 112) reads 'any increases in UK extraction of oil and gas would have, at most, a marginal effect on the prices faced by UK consumers in future'.
[145] *R (on the application of Finch) v Surrey CC* (n 137) para 138.
[146] The Supreme Court, *R (on the application of Finch on behalf of the Weald Action Group) v Surrey County Council and others* <https://www.supremecourt.uk/cases/uksc-2022-0064.html> accessed 27 September 2023.
[147] *Plan B Earth v* Secretary *of* State *for* Transport *(Plan B Earth)* [2020] EWCA Civ 214, para 12.
[148] *R (on the application of Friends of the Earth Ltd and another) v Secretary of State for Transport (Heathrow Airport Ltd, interested party)* [2021] 2 All ER 967, paras 149–150. The court's approach to assessing the standard of review drew some criticism—Joanna Bell, 'The 'Heathrow' Case: Polycentricity, Legislation, and the Standard of Review' (2020) 83 Modern Law Review 1072.
[149] UK Practical Law. A reasoning or decision is Wednesbury unreasonable (or irrational) if it is so unreasonable that no reasonable person acting reasonably could have made it (*Associated Provincial Picture Houses Ltd v Wednesbury Corporation (1948) 1 KB 223*).

domestic climate targets in the UK, the current political and legal approach is not receptive of the proactive limitation of oil and gas production. Different approaches are taken to this issue elsewhere, as Mayer points out in his review of multiple jurisdictions' approach in dealing with scope 3 emissions.[150]

RECONCILING CLIMATE CHANGE AND OIL AND GAS PRODUCTION REGULATION?

The discussions in the preceding sections indicate the increasing pressures both internationally and locally to better integrate climate considerations into the fossil fuel production regulation.

The main challenge of such integration is the multilevel and disjointed regulation of energy and climate. Energy security and climate action are often viewed as competing phenomena, in need of reconciling through concessions from either climate change mitigation or energy security.[151] While the regulation of energy production and consumption is largely State-centric, led by the considerations of security of supply[152]; the regulation of climate change originates from the international level, with national-level climate change legislation being an emerging phenomenon.[153]

Historically, international law on natural resources revolved around the notion of national sovereignty over natural resources, developed to protect the newly decolonized States' right to develop and use their natural resources.[154] Later, customary law and environmental treaties established fundamental principles on the prevention of transboundary harm.[155] However, the application of these principles is challenging in the context of climate change due to its cumulative nature and difficulties in establishing causation.[156] While human rights law has established some protections for communities and individuals from harmful effects of the extractive industries,[157] there is a need for formalization of the right to a healthy environment,[158] right to a stable climate,[159] and the right to access sustainable energy sources.[160]

[150] Benoit Mayer, 'Climate Assessment as an Emerging Obligation under Customary International Law' (2019) 68 (2) International & Comparative Law Review 271, at 293–301.

[151] This is often expressed as Energy Trilemma, where energy security needs to be balanced with energy equity and environmental sustainability, <https://trilemma.worldenergy.org/reports/main/2019/2019%20Energy%20Trilemma%20Index.pdf> accessed 27 September 2023.

[152] David F von Hippel and others, 'Evaluating the Energy Security Impacts of Energy Policies' in Benjamin K Sovacool (ed), *The Routledge Handbook of Energy Security* (Routledge 2010).

[153] The first climate change law was adopted in the United Kingdom in 2008. See Thomas L Muinzer, *National Climate Change Acts: The Emergence, Form and Nature of National Framework Climate Legislation* (Hart Publishing 2020).

[154] UNGA Res 1803 (XVII) (14 December 1962). See Alice Farmer, 'Towards a Meaningful Rebirth of Economic Self-Determination: Human Rights Realization in Resource-Rich Countries' (2006) 39 New York University Journal of International Law and Politics 417. For offshore resources, the UNCLOS confirms sovereign rights over natural resources in the coastal States' exclusive economic zones and continental shelves, United Nations Convention on the Law of the Sea (signed 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS) arts 56(1)(a) and 77(1).

[155] See Convention on Biological Diversity (signed 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 art 3. See also Rio Declaration on Environment and Development (signed 13 June 1992) (1992) 31 ILM 87, principle 2; *Gabčíkovo Nagymaros Project (Hungary v Slovakia)* (Judgment) [1997] ICJ Rep 7 para 53; *Pulp Mills on the River Uruguay (Argentina v Uruguay)* (Judgment) [2010] ICJ Rep 14 para 101. See also Philippe Sands and others, *Principles of International Environmental Law* (4th edn, CUP 2018) 206–11.

[156] Joyeeta Gupta and Susanne Schmeier, 'Future Proofing the Principle of No Significant Harm' (2020) 20 International Environmental Agreements: Politics, Law and Economics 731; Benoit Mayer, 'The Applicability of the Principle of Prevention to Climate Change: A Response to Zahar' (2015) 5 Climate Law 1.

[157] See Jonathan Drimmer, 'Human Rights and the Extractive Industries: Litigation and Compliance Trends' (2010) 3 The Journal of World Energy Law & Business 121.

[158] 'Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment (A/73/188)'; Alan Boyle, 'Human Rights and the Environment: Where Next?' (2012) 23 European Journal of International Law 613.

[159] 'Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment (A/74/161)'.

[160] See eg Yinka Omorogbe, 'Policy, Law, and the Actualization of the Right of Access to Energy Services' in Kim Talus (ed), *Research Handbook on International Energy Law* (Edward Elgar 2014); Adrian J Bradbrook and Judith G Gardam, 'Placing Access to Energy Services within a Human Rights Framework' (2006) 28 Human Rights Quarterly 389.

Although the regulation of energy resource development and use is under the national jurisdiction of States, international energy governance, through a number of organizations, offers solutions to some concerns of large energy producers and consumer States.[161] Such international energy governance has historically been constructed around fossil fuels, with the OPEC and the International Energy Agency both formed due to oil production and security of supply concerns. While new forums, such as the International Renewable Energy Agency, are growing in prominence, there is still a significant mismatch in how energy and climate change are governed at the international and national levels.[162] The newer informal organizations, such as BOGA and PPCA, are reframing international energy governance to a more climate-conscious agenda. The Paris Agreement, while not placing any direct requirements to limit or report on fossil fuel production, could be used to increase transparency in this area. This could be done by eg clarifying guidance with requirement to include information on fossil fuel production and subsidies into NDC or transparency reporting.

Hence, although international law sets out the general rules of energy development and use, the sovereignty over resources places primary decision-making over energy production and use with States. This includes rules on the licensing regimes; health, safety, and environmental regulations; taxation; and labour laws. While climate considerations impact high-level policy decisions on energy, they are not always well integrated into the regulation of fossil fuels, as evidenced in the discussion in Section 'UK regulation of licensing of new oil and gas developments in light of climate change'. Even where there are ambitious climate targets present through international and domestic obligations, climate-driven fossil fuel governance requires a substantive reform of licensing and EIA process and/or a shift in the judicial interpretation.

CONCLUSIONS

This article examined the international and national (UK) mechanisms for better inclusion of climate considerations at the oil and gas development approval stage. It started with a review of international initiatives focusing the lack of engagement with the climate regime and fossil fuel production. In the absence of legal obligations in climate law on fossil fuel production phase out, the non-binding alliances, such as BOGA and PPCA, have a great potential to facilitate political commitments which could turn into legal obligations domestically. However, they currently lack serious engagement from large reserve holders and polluters. Discussions on which resources would be left in the ground would require consideration of a wide array of issues, including resource economics, energy geopolitics, and equity.

The article further analysed the oil and gas development approval regime in the UK with a view to highlighting the lack of integration of climate concerns in the licensing and environmental assessment processes. It demonstrated that the first steps had been taken towards such integration through the update in the NSTA objectives to include net zero, the NSTD, and the Climate Compatibility Checkpoint. Nevertheless, these climate commitment instruments are, for the most part, non-statutory and exclude scope 3 emissions. Challenging new oil and gas production in court based on climate change remains a challenging endeavour under the current legal framework.

[161] See eg Rafael Leal-Arcas, Andrew Filis and Ehab S Abu Gosh (eds), *International Energy Governance: Selected Legal Issues* (Edward Elgar 2014); Sjibren de Jong and Jan Wouters, 'Institutional Actors in International Energy Law' in Kim Talus (ed), *Research Handbook on International Energy Law* (Edward Elgar 2014).

[162] Harald Heubaum and Frank Biermann, 'Integrating Global Energy and Climate Governance: The Changing Role of the International Energy Agency' (2015) 87 Energy Policy 229.

Overall, the uncertainty over the future of fossil fuel production does not facilitate a just energy transition. Refusing to set in place concrete timelines and climate assessment criteria—and what this means for future operations—does not provide certainty for industry or investors. Equally, sudden and drastic measures can lead to investor–state disputes, where fossil fuel companies may seek compensation for the disruption in their economic activities under investment protection treaties. There is a need for clear timelines and action plans for the phase-out of the oil and gas industry in the UK and globally to ensure just transition for workers and communities.